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FINANCIAL LITERACY IN TURKISH PRESCHOOL EDUCATION¹

Abstract: Financial literacy is one of the basic skills of the 21st-century. It is an important skill to survive in the complex economies of the modern era. It is better to develop financial literacy skills at early ages. This study aims to examine the current state of FL education in preschool education in Turkey. For this aim, in this qualitative study, the Turkish preschool education curriculum was examined and the interviews were conducted with 20 preschool teachers constituting the study group. The data collected from document analysis were subjected to descriptive analysis and the data collected by interviews were subjected to content analysis. Results of the study show that Turkish preschool education is not supportive of financial literacy both in terms of curriculum and the teachers. For a strong foundation of FL in Turkey, the Turkish preschool education curriculum should be revised and the preschool teachers must be supported in terms of the development of FL skills at early childhood.

Keywords: Financial literacy, early financial literacy, preschool education, preschool teachers.

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¹ Preliminary results of this study were presented in the 2nd International Elementary Education Congress, October, 23-24, 2019, Muğla, Turkey.

INTRODUCTION

In the modern era in which we witness the incredible improvement of artificial intelligence, scientific, technological and financial improvements have affected educational systems. Nowadays, young people have faced with more complex financial products, services and systems (OECD, 2020). The financial perspective basing on education in this new century forces the schools that were passed down industrial era to be ready for future lifestyles and financial conditions of new generations which will already not exist today (Esteve, 2000). This event triggered a paradigm change in education. The new paradigm requires schools to equip future generations with eccentric knowledge and skills. The suggestions of Partnership for 21st-Century Skills (Battelle for Kids, 2019) on placing programs in schools in which critical thinking, creativity, communication and collaboration skills are aimed to be improved for serving the purpose of the needs in the new century draw a frame of education in the modern era. In The New Vision for Education document based on meta-synthesis prepared by World Financial Forum, 16 skills that are needed for the 21st-century are announced under the main themes of Foundational Literacy, Competencies and Character Qualities (World Economic Forum, 2015). Financial literacy (FL) is stated under the first main theme as one of the basic skills. In the 2023 Education Vision Document declared by the Turkish Ministry of National Education (MoNE), it is stated that it is aimed to improve children's multi-dimensional development to answer the needs of the modern era. It is indicated that an educational perspective that is convenient with 21st-century skills and skill-based activities is commonly adopted in the new educational vision. It is especially pointed that there is a need to design skill-based education and to create awareness on multiple literacies (digital, financial, social media, etc.) stated in the 21st-century skills.

As one of the main literacy types, FL has taken much more place in international literature after the 2008 global crisis and it has become more of an issue nowadays. Some factors such as financial security problems based on financial problems in the entire world increased diversity in financial products and services, low saving rates and unplanned loans make financial literacy more important for people. There are some different definitions for FL in the literature. OECD (2017a) defines FL as *"knowledge and understanding of financial concepts and risks, and the skills, motivation and confidence to apply such knowledge and understanding in order to make effective decisions across a range of financial contexts, to improve the financial well-being of individuals and society, and to enable participation in economic life"* (p.24). The Central Bank of the Republic of Turkey (2015) defines financial literacy as *"getting enough financial knowledge to decide effectively and consciously on a personal budget, and the ability to increase individual and social financial welfare as applying these decisions"* (p.5). According to Roy Morgan Research (2014), FL is *"making conscious and self-confident decisions as all aspects on spending money, saving, budgeting, investing and planning for future"* (p.1). Potrich, Vieira and Mendes-Da-Silva (2016) also defined FL as making suitable financial decisions between different options as using financial knowledge and the ability process of applying these decisions. According to Lusardi and Mitchell (2007), FL is the prerequisite for financial success. In PISA 2012 Students and Money Report, it is stated that financial literacy requires some abilities for children such as getting basic mathematics literacy skills on calculating percentages and transferring currency units; having language skills on comprehending and interpreting the advertisements or some contracts; and controlling emotional and psychological factors that can affect financial decisions (OECD, 2014). In general, as referring to the definitions in the related literature, it can be said that FL is the ability or proficiency of using financial knowledge and skills correctly to supply both individual and social welfare. Improving FL skills is an important factor not only for individual development but also for community development. PISA 2012 results show that there is strongly a positive correlation between FL performance and mathematics performance (0.83) and literacy performance (0.79), and also there is a significant relationship between FL performance and socio-economic status. This is the main reason for improving FL skills of children has taken place near the top educational and financial policies in many countries. In this scope, improving FL skills via systematic education is on the educational agendas nowadays. In some countries, financial concepts have been integrated into regional or national primary and secondary education curriculum instead of adding new ones into heavy curriculums. However, in some countries, FL education strategies have been developed via extracurricular or after-school activities (OECD, 2017a). OECD Council on Principles and Good Practices in Financial Education and Awareness at the very beginning of the 21st-century has recommended starting FL education in schools and as early as possible

(OECD, 2005). Two main reasons for this recommendation of OECD have been stated: at first, predisposing necessary skills for young people before they are active financial consumers; at second, early financial education in schools is more effective than remedial programs for adults. FL research of PISA 2018 indicates that 94% of 15-year-olds have learned financial issues thanks to their parents and many of them have some problems with FL (OECD, 2020). In 20 countries and economics which have been in this research, it is stated that nearly one out of every four students is not adequate even for deciding on basic daily spending issues; nearly one out of every three students have abilities on interpreting and assessing the terms based on banking although about every other students have a bank account or/and bank card, and socio-economically advantageous children have much more possibilities to perform financial literacy. Not being a part of this research is a significant deficiency for Turkey.

Fox, Barthlomease & Lee (2005) who have indicated the importance of FL on understanding and knowing financial terms and making effective financial decisions of consumers emphasize that FL abilities can be developed via systematic financial education under the guidance of a curriculum that includes knowledge, behaviors and attitudes related to FL. Financial education is a process by which consumers can develop an understanding of financial products, risks and opportunities, thus enabling them to make informed financial decisions. Making financial education widely accessible benefits society as a whole, reduce the risk of financial exclusion, and encourage consumers to plan and save, which prevents over-loans (European Economic and Social Committee, 2017).

Plenty of research results show that individuals who have received a quality financial education are more likely to plan for the future, save money and engage in other financially responsible behaviors (Bernheim, Garrett and Maki, 2001; Cole, Sampson and Zia, 2011; Lusardi, 2009; Atkinson and Messy, 2015; Bruhn, Leao, Legovini, Marchetti and Zia, 2016; Miller, Reichelstein, Salas and Zia, 2015; Brickhouse, 2018). It is seen that people who have FL education can decide on financial issues and they can behave more consciously than others on managing their money (Hilgert, Hogarth and Beverly, 2003).

European Insurance Industry (2017) defines financial education as a long-term process that enables children to acquire necessary information and skills for financially responsible behaviors by integrating financial themes into school programs at early ages. Learning about financial topics such as getting money, spending money and saving at early ages forms a strong foundation for good financial decisions in adulthood (Holden, Kalish, Dietrich and Novak, 2009). Credit Union National Association (2005) states in Thrive by Five cite that children can learn money from many different sources; they may observe how the adults use the money before school ages and they can develop an attitude towards using money thanks to this observation. These results show that children meet financial products and services at early ages and there is a necessity for improving FL skills of children via early financial education.

While developing attitudes and habits, people learn from parents and others at early ages. This issue indicates the importance of early interventions (Whitebread and Bingham, 2013). Friedline (2015) states that children can develop financial behaviors at around the age of five and six- and they can get acquisitions related to finance. It is necessary that in their early ages, young people should be given education on budgeting, loaning, controlling the money or borrowing before they get a profession, and there should be financial education programs for surviving on financial issues in the future (Yiğitbaş, Temeloğlu and Şimşek, 2020). Results of the above studies show the importance of providing developmentally appropriate financial education at early ages. However, when financial education politics are examined, it is seen that the target group for financial education is generally old-age groups not for the early childhood period (OECD, 2017a). In a study examining FL programs developed by thirty central banks, Fluch (2007) noticed that only one-third of the programs were for primary school children. In another study examining FL programs, Holden et.al. (2009) pointed that there have been a limited number of programs for early ages. Related to the low level of FL, many studies to develop, implement and improve educational programs fostering FL have been initiated all around the world (Wagner, 2015, p.11). Many countries which understand the importance of FL for young people and its potentials to create a skillful and knowledgeable generation have been started to develop financial education programs for children and young people (OECD, 2017c). They emphasize that schools should be supported to provide FL education programs for young children. In Turkey, studies on FL have been started especially after the economical crisis between the 2002-2008 period. Adalar (2019) indicates after the economical crisis, in the revised primary school

programs, some topics related to FL have been integrated into social studies and science of life courses in 2005. Similarly, Güvenç (2017) stated that although there are some learning outcomes related to FL in the primary and secondary school curriculum, these are not enough to manage people's lives both today and in the future. In Turkey, the initiatives to develop inclusive education programs fostering FL have been supported by both government and non-governmental organizations (NGOs). In 2011, the Financial Stability Committee was founded and “Financial Access, Financial Education, Protection Strategies on Financial Consumers and Action Plans” that was published by this committee has been put into practice (Yiğitbaş et. All, 2020). In 2011, with the collaboration of the Financial Literacy and Access Association (FODER), the Ministry of Family and Social Policies designed FL education programs which consisted of managing money, the effective usage of current sources and loaning issues for children and young people aged 14-25-year-olds who have been both in and out of legal protection (The Ministry of Family and Social Policies, 2016). In 2016, with the collaboration of the Turkey Economic Bank, MoNE General Directorate of Vocational and Technical Education has begun to supply education programs on FL concepts based on budgeting, loaning, borrowing, investing, financial rights and responsibilities for teachers and students (Karataş, 2017). When the above financial education programs in Turkey are examined, it is seen that they have been generally designed for children, young and adult people, there is nearly no specific program for very young learners at preschool age. However, the early childhood period is the most crucial period for human capital formation (Naudeau et.al., 2011). This period in which learning and development have been very fast is seen as a window of opportunity by educators and economists.

The abilities and skills that are acquired in this period of life affect the learning outcomes in the following periods (Heckman, 2008). Early intervention in this period can create a strong beginning for a better life (Kagan & Zigler, 1987), and it provides high economic gaining in longer periods (Heckman and Masterov, 2007).

If it is thought that financial habits are shaped in early childhood periods as permanently, it is clear that this period is a good chance to create a good basis for FL skills (OECD, 2014). Unfortunately, there is no study on early FL education in Turkey. There is a clear need to examine the PEC in terms of FL and look at FL in preschool education from the eyes of preschool teachers for a better understanding of early FL education in Turkey. In this scope, the main aim of this study is to examine the current state of FL education in preschool education in Turkey. As for this main purpose, it is aimed to answer the following questions:

- 1- What are the expected learning outcomes, concepts, activities, learning centers and special days/weeks related to FL in Turkish PEC?
- 2- What are the preschool teachers' views and opinions on the meaning of FL and FL education in preschool education?
- 3- What are the preschool teachers' views and opinions on the current state of FL education in preschool education?
- 4- What are the suggestions of preschool teachers on FL education in preschool education?

METHODOLOGY

DESIGN OF THE STUDY

This study which aims to examine FL education in preschool education is based on a qualitative research approach. Qualitative research methods are studies that aim to reveal participants' views and actions in a detailed way as realistically and holistically (Creswell, 2003; Yıldırım and Şimşek, 2016). With this scope, in this study in order to analyze FL education in preschool education in a detailed and holistic way, at the first stage, the 2013 PEC (MoNE, 2013) was examined; at the second stage, interviews were conducted with preschool teachers.

PARTICIPANTS OF THE STUDY

The participant group of the study includes 20 volunteer female preschool teachers who have been working in public schools in a city on the west side of Turkey in the 2018-2019 school year. While constituting the participant group the convenient and the maximum diversity sampling methods were taken into consideration (Yıldırım and Şimşek, 2016). The demographic characteristics of the participants are presented in Table 1.

Table 1. Demographic Characteristics of the Participants

	f
Experience (year)	
≤10	2
11-20	8
21-30	8
≥31	2
Minimum= 10	Maximum=34
	$\bar{X} = 22$
Class Type	
Independent Preschool	10
Practice preschool	5
Primary School Nursery Class	3
Secondary School Nursery Class	2
Total	20
Age Groups of Preschoolers	
3-4	2
4-5	3
5-6	15

DATA COLLECTION PROCEDURES

In qualitative research methods, observation and interviews can be used to collect data; if it is necessary, documents can also be examined (Yıldırım and Şimşek, 2016). In the first stage of the study, the PEC that has been implemented since 2013 is examined in terms of FL. In this examination, different components of the curriculum that are the expected outcomes, themes, activities and special days/weeks were examined in terms of FL. In the second stage of the study, semi-structured interviews were conducted with preschool teachers. The interview form used in the semi-structured interviews was finalized after feedback from experts from preschool education, qualitative research methods and education economics; and a pilot study with two preschool teachers. In the final version of the interview form, there were six items two of which are “what means FL for you?” and “what are your suggestions for FL education in preschool education?”. Before the interviews, an informed consent form is delivered to the participants. The interviews with preschool teachers who had accepted to be an interviewee voluntarily were conducted in their schools and took 25-30 minutes. The interviews were recorded by mobile phone. Interview audio records were given a code like P1, P2, then transcribed into written documents. Audio and written forms of interviews are being kept in a file in a computer asking for a password to enter.

DATA ANALYSIS

The data collected via the examination of PEC were subjected to descriptive analysis (Yıldırım and Şimşek, 2016). In the descriptive analysis, the data were coded and interpreted based on the themes of expected learning outcomes, concepts, activities, learning centers and special days/weeks. The collected data were subjected to inductive content analysis (Miles and Huberman, 1994). The data transcripts were read few times and coded in two steps: First in-vivo and open coding, second axis coding was conducted. Then the relations between the codes under the specific themes were explained and interpreted and supported via direct quotations. In the content analysis, NVivo 11 was used.

According to Lincoln and Guba, there are different ways of providing reliability in qualitative studies (as cited in Teddlie & Tashakkori, 2009). In this scope, prolonged engagement was provided by asking additional questions during the interviews. For the aim of preventing data loss, the interviews were recorded after the permission of the participants. Two of the recordings were selected randomly to check the researchers' independent codes, and differences of opinions were coded again as making a consensus. While presenting the findings of the study, statistical values were also given to improve objectivity and so, the opportunity for comparison of data was provided. Some direct quotations were used to support interpretations and to reflect the perspectives of the participants. Triangulation was provided by integrating teachers having different characteristics into the study, and by examining the documents to support the data collected from preschool teachers. For the transferability of the study, detailed information about the context and procedures of the study was presented under the title of methodology. For the validity of the

study, the opinions of two experts in qualitative research methods on the design and methodology of the study and expediency for results were taken. For the confirmability, themes derived from data, interpretations and results were shared with two participants of the study.

FINDINGS/RESULTS

In this section, descriptive and content analysis findings are presented.

FL IN TURKISH PRESCHOOL EDUCATION CURRICULUM

The findings related to FL in preschool education curriculum are presented in Table 2.

Table 2. FL in Turkish PEC

Program components		Factors on FL
Expected Outcomes	Cognitive Development Field	Outcome 4. Counting the objects.
		Outcome 5. Observing the objects or creatures.
		Outcome 6. Matching the objects based on their features.
		Outcome 7. Grouping the objects based on their features.
		Outcome 8. Comparing the objects based on their features.
		Outcome 9. Ordering the objects based on features.
		Outcome 16. Subtracting and adding up by using objects.
		Outcome 17. Finding cause-effect relationship.
		Outcome 19. Finding some solutions for problems.
		Outcome 20. Preparing graphics by using object/symbol.
	Social-Emotional Development Fields	Outcome 9. Identifying different cultural features.
		Outcome 16. Identifying the different roles and responsibilities of people in society.
Concepts		Money
		1-20 numbers
Activities		Mathematics
		Preparation for literacy
		Field trips
Learning Centers		Drama center
		Some centers that are created in necessary cases: Bank, shopping centers
Special Days/Weeks		Energy Conversation Week

As a result of the examination of the Turkish PEC, it is seen that there is no directly related outcome on FL within totally 63 expected learning outcomes; however, as it is seen in Table 2, 12 outcomes in cognitive and social/emotional development fields are found as related to FL concepts. In the cognitive development field, outcome 4,5,6,7,8,9 are thought of as related to FL since in learning activities toward observing, matching, comparing, and ordering the objects based on their features money can be used as a learning material; outcome 16 and 20 are seen as related to FL since arithmetic and graphic skills are the basic skills for financial transactions; outcome 17 is seen as related to FL because it is based on a balance of income and expenses, borrowing, loaning, investing; and outcome 19 is thought as related to FL since it is related to the solution of financial problems. In the social-emotional development field, outcome 9 is seen as related to FL since it is thought that money can be used as a cultural factor in the activities recognizing the culture of different countries; outcome 16 is seen as related to FL since the financial professions can be given as examples of different roles and responsibilities in the society.

Table 2 shows that among 84 concepts in PEC, only money and numbers (1-20) are related to FL. As a result of the analysis, even if there are just two concepts for FL, it is seen that the program suggests adding some other concepts if it is needed.

In PEC, there is no direct activity for FL education; however, Table 2 shows that literacy, mathematics and field trip activities are related to FL education. Since they consist of basic mathematics knowledge and problem-solving skills, literacy activities; since the mathematics activities are based on acquiring basic mathematics concepts, reasoning and problem-solving skills; and since the field trips provide observation,

researching, and problem-solving are seen as related to FL. Yet, in the program, it is seen that there is no specific field trip on financial professions and daily practices of financial terms.

On the other side, there is no learning center specific to FL in the program. As for the drama center, while the use of the stethoscope, helmet, chef's hat, and keyboard etc. for teaching different professions was recommended, there are no specific recommendations for using real-life materials such as money, check or credit card related to FL. However, in the program, it is stated that new learning centers can be designed if it is needed. In this sense, it is seen that teachers have the opportunity of designing some places such as a bank, restaurants, shopping centers, etc. to foster the FL skills of children.

Lastly, it was seen that PEC covers 21 of 35 special days/weeks that are defined in -2537-numbered and September-2005-dated- journal of notifications of MoNE. Table 2 shows that from among the 21 special days/weeks in PEC only the Energy Conversation Week was found related to FL since it covers saving. Even though it is stated in the same regulation, neither Entrepreneurship and Conservation nor Forehandedness, Investment and Turkish Domestic Products Week are included in the PEC. It is also seen that Tax Week that was added into special-days/week list by MoNE (2020) is not in the PEC because it has not been updated since 2013.

FINDINGS ON PRESCHOOL TEACHERS' VIEWS AND SUGGESTIONS FOR FL

In the presentation of findings on preschool teachers' views and suggestions, a holistic approach is used. Firstly, main themes and related sub-themes are presented, then direct quotations of participants are given. Content analysis results are visualized and presented in Figure 1.

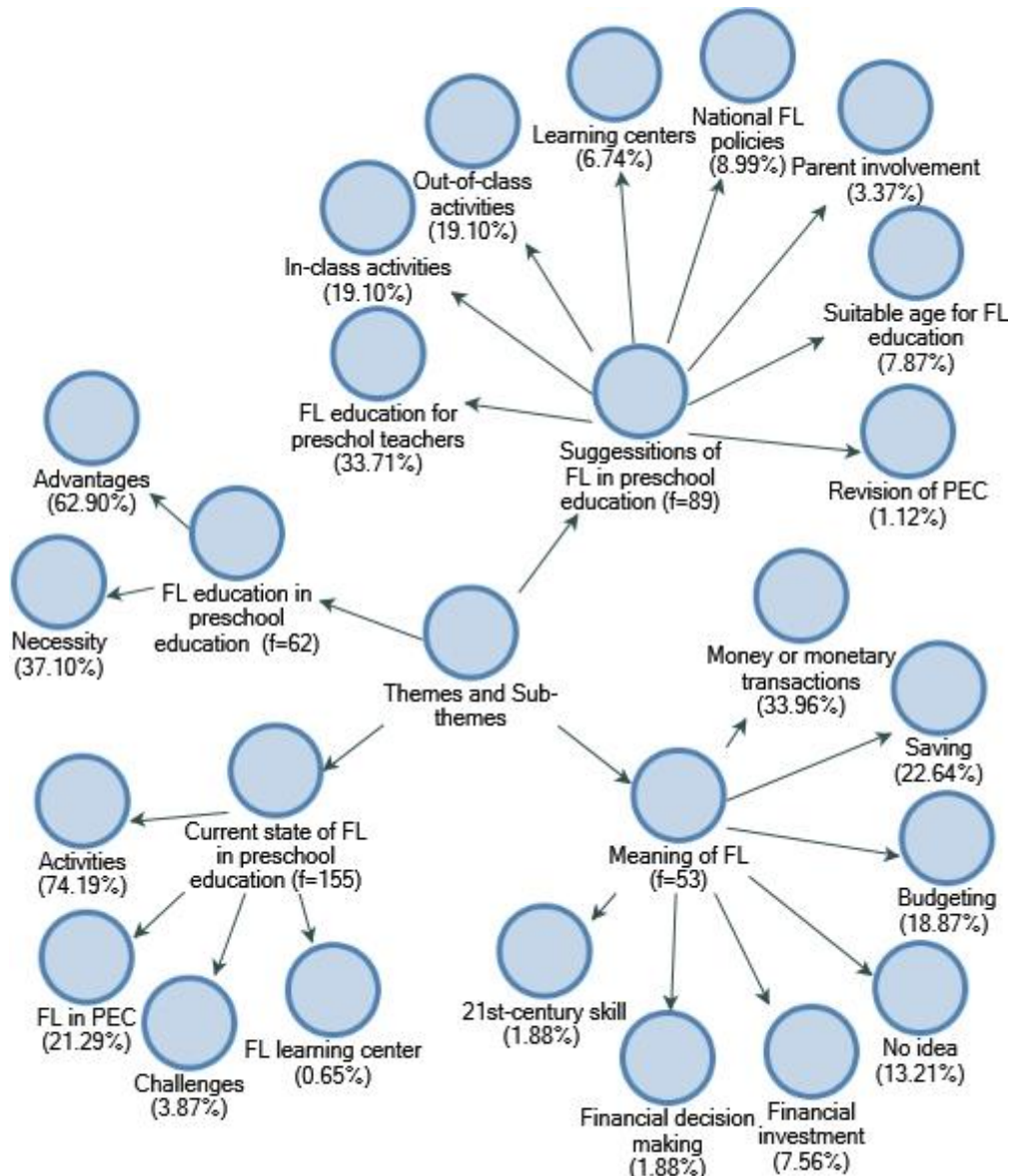


Figure 1. Overall results of content analysis

It is seen in Figure 1 that preschool teachers' views on FL are categorized into four main themes as referring to research questions. In the following section, each main theme is analyzed in its main scope in a detailed way. The findings on the meaning of FL for preschool teachers are presented in Figure 2.

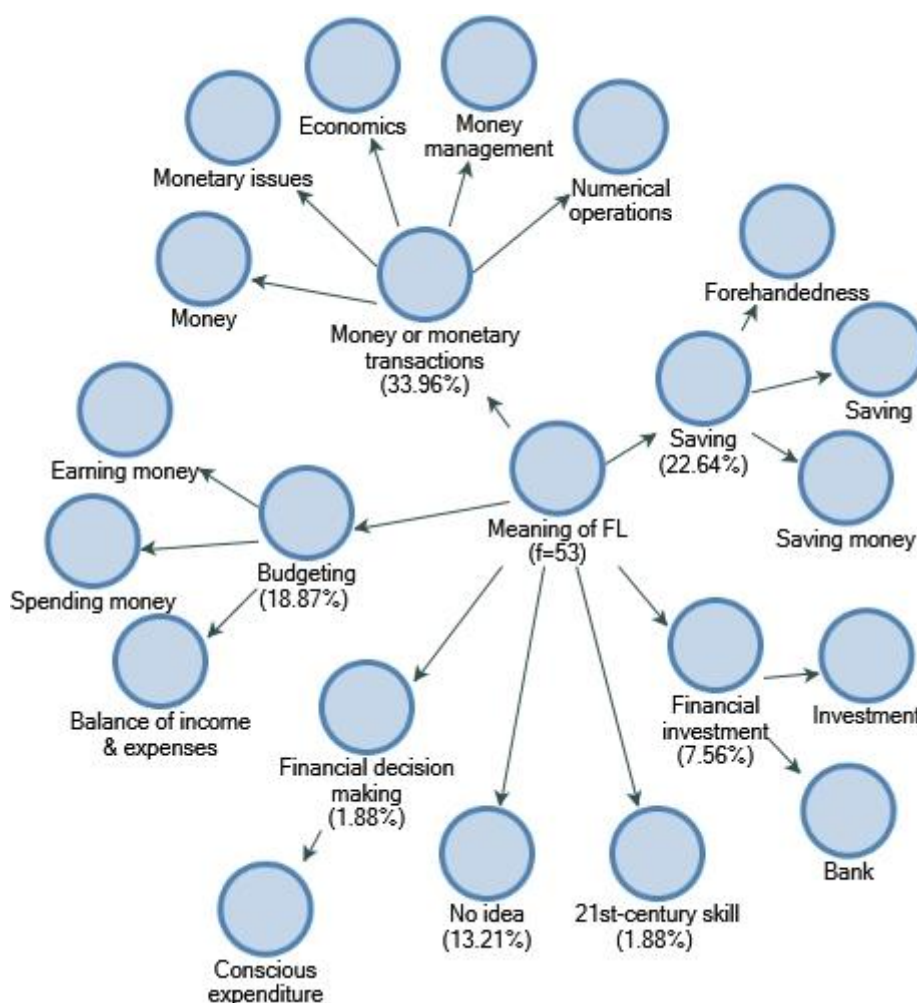


Figure 2. The Findings on what FL means for preschool teachers

In Figure 2, it is seen that 13.21% of preschool teachers' views grouped under the theme of have no idea. It is realized that preschool teachers who have no idea about FL cover 35.00% of the total participants, and the preschool teachers who heard this term first time in this study constitute 20.00% of the total participants. One of the preschool teachers who say s/he knows the meaning of FL defined FL as one of the 21st-century skills; however, it is seen that the other preschool teachers do not mainly have no idea about the FL in general but evokes some terms categorized into themes of money or monetary transactions (33.96%), saving (22.64%), budgeting (18.87%) and financial investment and deciding (9.44%).

In the money and monetary transactions theme, a huge number of participants stated that FL could be a term related to the money or monetary issues; some others referred that FL could be based on logically managing money, and some others stated that this term might be related to numerical operations. As for saving themes, some of the participants stated that FL means saving money and forehandedness; as for budgeting theme, some of them stated that this term was about earning and spending money, and managing balance on income-expenses; as for the financial decision making and investment theme, some participants declared that this term could be related to conscious expenditure, saving and bank terms.

K18. Honestly, I heard it for the first time, I don't know, unfortunately.

K6. I have heard financial literacy term nowadays much more and I know it is a life skill in the 21st-century.

K5. Money, economy are the terms that made me associated. Even if I can't manage it very well, I try to teach it to children more or less.

K17. I think it can be about mathematics... Am I right?

The findings of preschool teachers' views on FL in preschool education are presented in Figure 3.

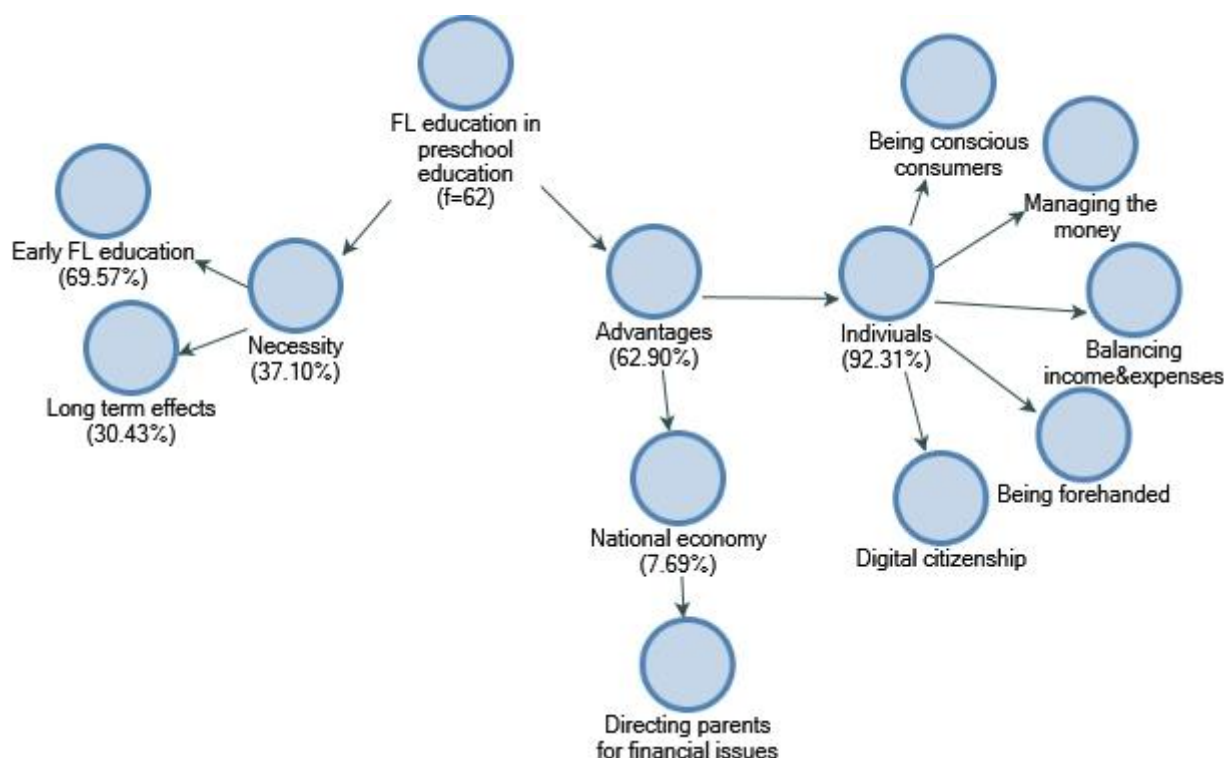


Figure 3. The Preschool teachers' views on FL education in preschool education

Figure 3 shows that the views of preschool teachers on FL education in preschool education are categorized into two main themes. In necessity theme (37.10%), the participants stated that learning in early childhood has long term effects (30.43%), so FL education should be integrated into preschool education (69.57%); even one of the preschool teachers stated FL education is a necessity for all citizens in the society. Under the theme of the advantages (62.90%), the participants stated in an order that FL education can be advantages for individual issues on being conscious consumers, understanding and managing money, being forehanded and improving digital citizenship skills (92.31%), and additionally, it makes an advantage on directing parents for financial issues and profiting for the national economy as being a conscious consumer in the future (7.68%). Figure 3, also, remarks the views of preschool teachers on FL education are concentrated on individual advantages.

K7. The skills taught in early childhood can affect very positively in the future life because children never forgot what they learn at early ages.

K3. I think FL should be learned in all ages. We consume so much as society... I think we should revise our spending and consumption habits.

K4. (Early FL education) It is necessary for managing balance on income-expenses in their family lives and professional lives, loaning, managing financial sources effectively; and then for the national economy, it is necessary.

The findings of the preschool teachers' views on the current state of FL training in preschool education are presented in Figure 4.

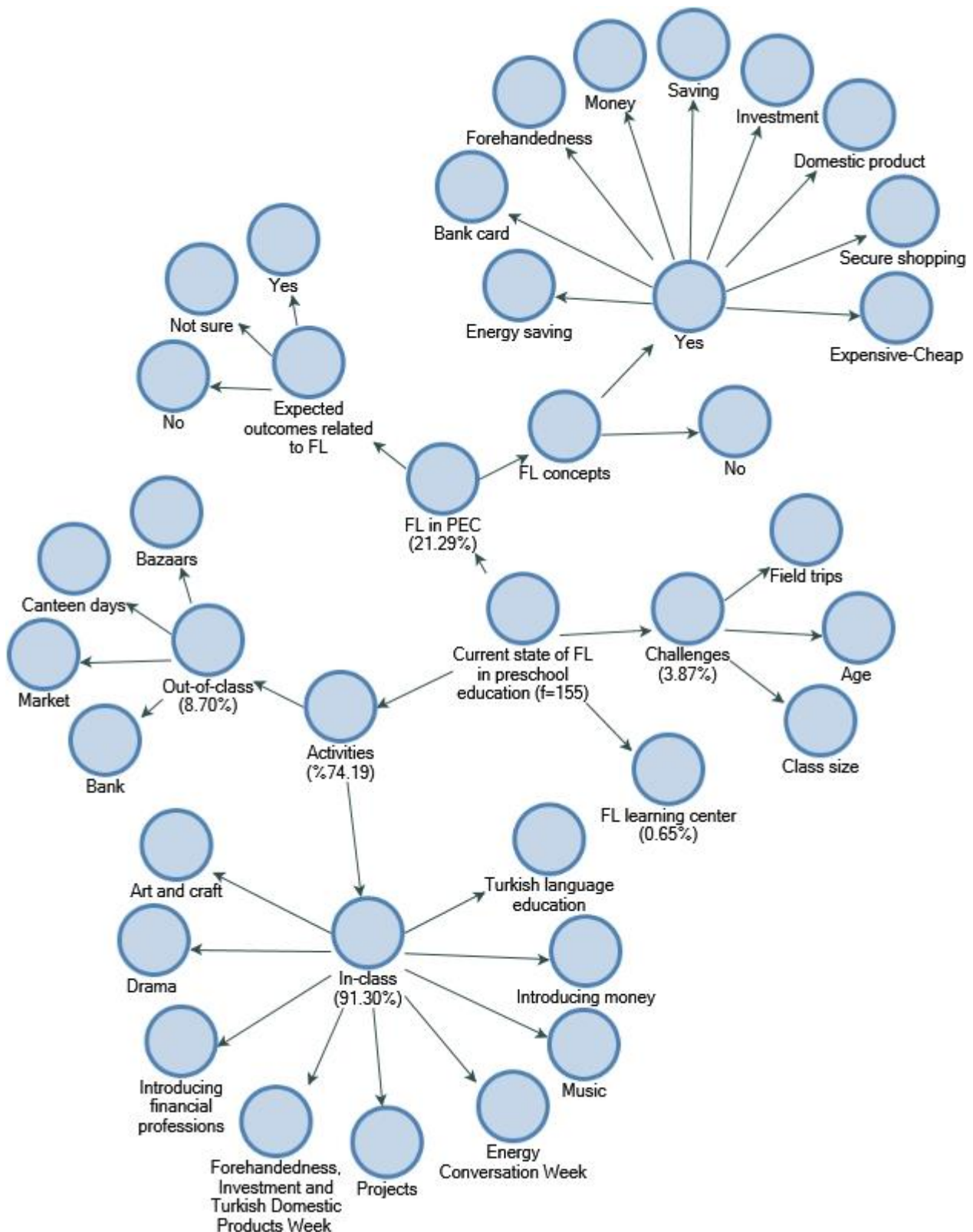


Figure 4. Preschool teachers' views on the current state of FL education in preschool education

The preschool teachers' views on FL education in PEC (21.29%) are categorized into two sub-themes as expected learning outcomes and concepts in Figure 4. In the expected learning outcomes sub-theme, there is an inconsistency among the preschool teachers' views because some of them stated that there have been

some outcomes on FL in the program; but some of them, on the other hand, stated that there has not been any specific outcome for FL education; however, some of them stated that they are not sure about there is any expected learning outcome on FL or not. Similarly, in the sub-theme namely concepts, some of the preschool teachers stated that there has not been any concepts on FL education in the program; however, some of the participant teachers stated there have been some concepts for FL such as energy-saving, forehandedness, loaning, investment, money, domestic products, cheap-expensive, bank card and safety shopping in the program. Hardly, when the findings presented in Table 2 are considered, it is understood that investment, cheap-expensive, bank cards and safety shopping are not included directly in the PEC, but taught by teachers as the concepts.

K6. Surely there are some expected learning outcomes, these are about forehandedness, but we teach them in terms of values, it is a bit parallel issue, here.

K15. There is no outcome on FL in general outcomes. But for concepts, there are some concepts based on cheap-expensive.

K20. ... when we look at this issue, there is no concept on money, but there are some concepts about numbers, yet I think it should be integrated into the program.

K18. There is no concept based on FL, but we indirectly teach some concepts such as money, loaning in the Forehandedness Investment and Turkish Domestic Products Week.

In the activities theme consisting of 74.19% of preschool teachers' views on the current state of FL education, 91.30% of the activities are gathered in-class activities as a sub-theme. In this theme, many of the preschool teachers stated that for FL in preschool education, they generally design some activities in Energy Conversation Week and Forehandedness, Investment and Turkish Domestic Products Week such as pointing the significance of saving money, water, energy and instruments, and making a moneybox, saving money in moneybox at home or in class. On the other hand, two of the preschool teachers stated they don't organize any activities for this week since they think that the activities designed in these weeks are not as suitable for the purpose of the Week. Even it is seen in Table 2 that Forehandedness, Investment and Turkish Domestic Products Week is not given a place in the PEC, the findings in Figure 4 show that this week is commonly presented by teachers in preschool education.

K2. Early habits of children in these ages go on the same way. We just teach it in energy conversation week. We teach only we shouldn't turn on the water, we should put off the lights. Indeed, we teach these things every time. Additionally, we teach something on the use of our domestic products, manage money and to be forehanded in Turkish Domestic Products week. We do not teach any other concepts.

K5. We have not presented domestic products week for two years. I think it is not so useful since it is based on just consumption.

K14. I do making a moneybox activity in Forehandedness, Investment and Turkish Domestic Products Week. I want them to save money in their moneybox under the control of their parents... and buy some small presents with this money.

K4. In Turkish Domestic Products Week... at the same time, we teach barcodes of domestic products.

Additionally, the preschool teachers indicated that they have used some activities such as reading stories or poems based on loaning in Turkish language education, drama and music lessons; project works like e-twinning and zero waste, doing art and craft activities like designing moneybox or imaginary money; and some activities on recognizing money as a term. The preschool teachers who have been teaching in younger groups stated that children cannot recognize money because of their cognitive development level; however, many of the other preschool teachers who have been teaching in 5-year-olds indicated that children could know money as a term. Some of the preschool teachers specified that children in older groups could recognize just coins as money, and some of the children could learn money with the help of interactive smart boards or toy money. Two of the participants indicated that they have teaching banking as a profession for a related job with FL, however, it is not on purpose of teaching FL concepts, but they teach this profession under the main theme of professions that are consisted in PEC if there are some bank employee parents incidentally in their target groups.

K4. We design our own money ourselves or we may want them to color money pictures given as photocopies or papers.

K7. For instance, I sometimes bring some Monopoly money for shopping activities in class.

K12. For designing moneybox activity, children bring 1 Turkish lira, 25 or 50 kurus,... but there is no specific activity to identify money.

K13. We did not define money. We only say to children that they can save both coins and banknotes in their moneybox.

In Figure 3, it is seen that there are some out-of-class activities on FL education apart from in-class activities, but at a rare amount (8.70%). Some of the preschool teachers stated that they have done some out-of-class but in-school activities like canteen days in schools; and these days teachers encourage children to shop at the canteen, even some of the teachers said that they want their students to use the wallet as a part of canteen day activity. Some of the teachers indicated that they visited markets, bazaars and banks in the past years, however, they have not visited these places nowadays. The views of the preschool teachers under the theme of challenges (3.87%) can show the reasons for not conducting out-of-class activities. Some of the preschool teachers who have been teaching in younger groups stated that out-of-class activities are not so meaningful for children, there are some handicaps for field trips and big class sizes make it harder for teachers; for this reason, they have not designed these activities even if they did them before. As different from the other teachers, one of the teachers remarked that there was not any FL learning center in preschool classrooms. This finding supports the findings presented in Table 2, however, it shows that teachers do not use the flexibility of the program on designing different learning centers as learning environments fostering FL.

K11. To get them ready for real-life situations, to teach using money or knowing the value of money, we design canteen days for children. They bring money in their wallets, we go to the canteen in school, they line up there and then and pay money for shopping.

K5. Before, we went to a supermarket with an older group of children... but with a three-age group, it is difficult.

K1. They pay money is everywhere, in... bazaars, markets come to my mind, but we need to think about the safety of children, for this reason, we cannot put many of the activities in our mind into practice, unfortunately.

K12. We have not designed any learning center for FL education in our classroom until today.

K5. I designed a shopping center near the playing house, but I never think it was related to FL education.

The findings of the preschool teachers' suggestions for FL are presented in Figure 5. It is seen in the figure that there are eight themes for the preschool teachers' views on suggestions for FL education in preschool education. As a parallel finding of Figure 2 stating lack of knowledge, in Figure 5, the theme on training preschool teachers for FL concepts is shined out as a finding. Under this theme, teachers suggested that this education should be conducted by experts in a way of supporting active participation, with the content of the meaning of FL, FL education in preschool education, designing FL activities for children and FL learning centers/environments in preschool education. Additionally, some of the teachers suggested additional content covering conscious consumption, budgeting and managing money to develop their own FL skills.

K6. There can some seminars on what can be taught on FL or how it can be taught to children.

K20. Training can give us, new ideas on what can be done for different activities in terms of money or how activities can be enhanced on this concept.

K3. First of all, I would like to learn how I manage my own money because I always say that we cannot differentiate needs and desires in general.

K14. By the educations, FL skills can be spread to the society as starting with us.

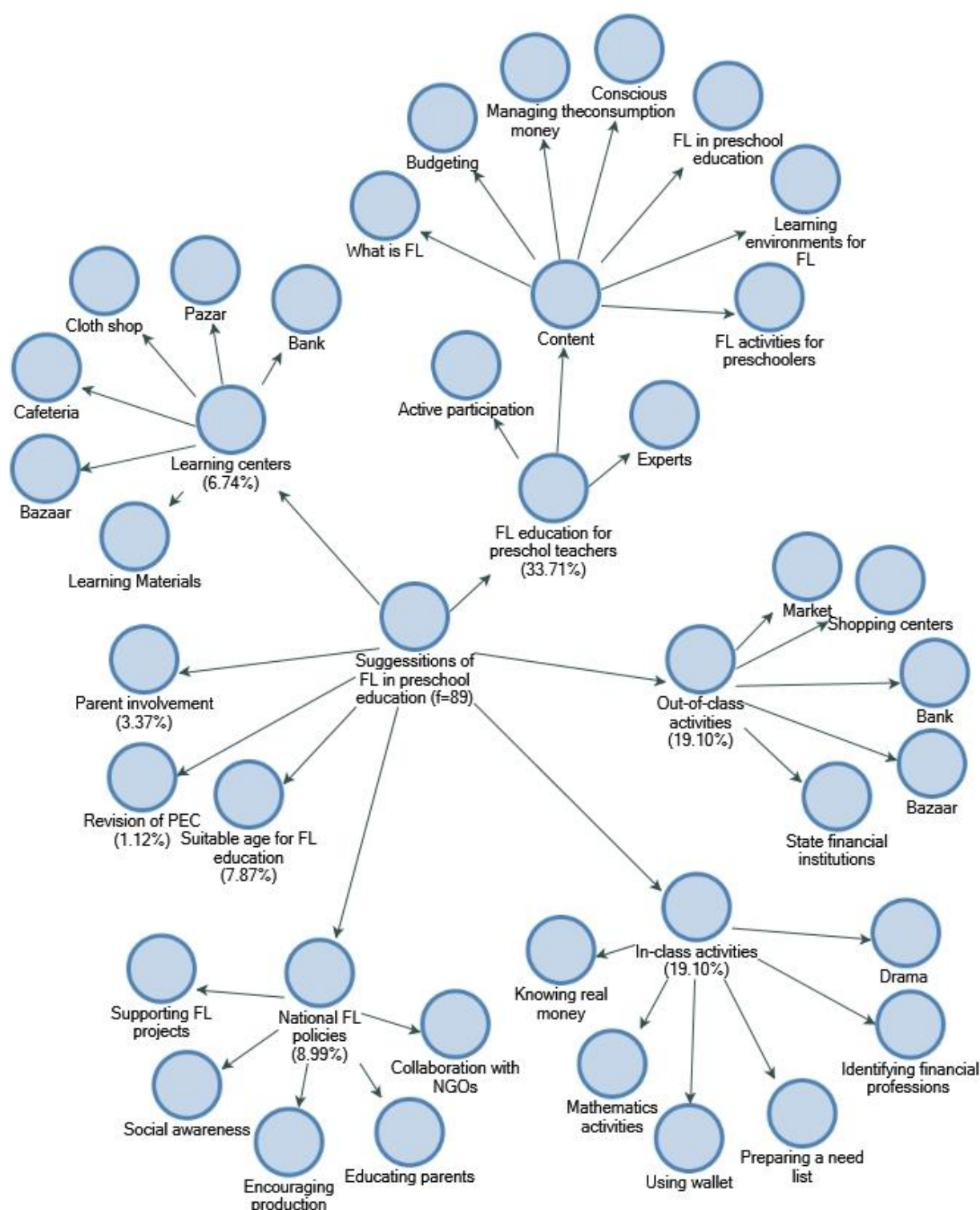


Figure 5. The preschool teachers' suggestions for FL in preschool education

The preschool teachers suggest that there can be some in-class activities such as using wallet, drama or mathematics activities, preparing a need list, knowing real money, and identifying some professions like banking, bookkeeping and work of tradesmen. As for out-of-class activities, some of the preschool teachers

suggest that there can be school visits to supermarkets, bazaars or shopping centers, theatres and cinemas; and banks or administration of finance in cities. Some of the preschool teachers who think FL education can be supported thanks to FL learning centers suggest in learning center theme (6.74%) that there can be some learning centers such as a bank, toy or cloth shops, cafeteria and bazaar in preschools, and there can be some toy-money or credit cards as real-like materials. As referring to the findings in Table 2 on the recommendation for designing different learning centers if needed, these findings show that teachers have the clear need to revise PEC with the perspective of FL.

K9. Banks can be visited to see the actions here, bazaar shopping can be demonstrated.

K18. Until now, I don't think to visit banks. I will consider on visiting places that are related to the FL concept. ... maybe, I can invite a bank officer to class.

K12. In games, artificial money or expired credit cards can be used.

Some of the preschool teachers who point out the importance of parents as models for financial issues to their children and maintaining FL education at home suggest that parent participation can be supplied (3.37%) for FL education in preschool education.

K20. Even if we teach them in schools, these cannot be realized if parents do not support them at home.

In age group theme (7.87%), some of the preschool teachers suggested teaching FL skills to 4-5-year-old children but not earlier than this age group.

K20. Since money is an abstract term. As learning numbers, children can learn money as a usable term in 5-year-old.

The views of the preschool teachers who think FL education should not be limited to preschool education are categorized into the theme namely developing national FL policies (8.99%). Some of the preschool teachers suggest that parents and society should raise awareness on FL concept; some others, also, suggest that production should be encouraged, teachers' projects on FL should be supported and there should be a collaboration between NGOs and schools.

K17. There is a tendency of our society as I use it; if it remains, it remains; if it is not, it perishes. At heart, we need to raise awareness for our society.

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

In this study which aims to analyze the current state of financial literacy in preschool education, at first, PEC is examined in terms of FL, and then the views and suggestions of preschool teachers on FL in preschool education are tried to be determined.

When the PEC is examined as a document, descriptive analysis findings show that there is no specific expected outcome on FL in PEC; however, there are 12 outcomes that are indirectly related to FL and only numbers (1-20) and money are determined as the concepts related to FL in the program. Similarly, there is no activity directly related to FL education; yet, there are some activities on preparation for literacy, mathematics and field trip activities supporting FL skills indirectly. Although the PEC suggests organizing learning environments under some thematic names as the learning centers, there is no learning center specified for FL in classrooms. Barely, in the PEC, it is also suggested that there can be different or new learning centers in case of necessity; in this sense, it is indicated in this study that PEC provided teachers the flexibility of designing different learning centers such as a bank, market, post office, restaurant, shopping center, etc. to develop FL skills of children in the class. Additionally, as referring 21 special days/weeks for preschool education, it is seen that there is a special week namely Energy Conversation Week for children, and also it is realized that there is another special week namely Forehandedness, Investment and Turkish Domestic Products Week that is commonly celebrated in preschools even if it is not included in the program, but the main purpose of this week is not based on FL skills. These findings make it harder to say that PEC that has been used since 2013 supports the development of FL skills of children. In their study on analyzing FL programs for preschoolers, Holden et. al (2009) state that there is a limited number of programs for preschool education; there is no combination of current FL education programs and children's cognitive development levels, and there is no consensus on effective methods for early financial literacy education. However, Fluch (2007) indicates that the main purpose of early childhood

education programs should be based on recognizing money with the help of a basic and enjoyable way. Council for Economic Education (2012) points that financial education starts in elementary schools in the USA, yet it should be started at earlier ages to present enough financial competencies for children. OECD suggests that financial education should start as early as possible to improve FL for children, and this education should go on during whole academic life as systematically. Additionally, it is stated that both teaching financial issues as a new lesson or integrating it into other lessons can be an effective way of financial education (OECD/INFE, 2015). Holden et.al. (2009) emphasize that financial concepts should be a part of preschool education as one of the most effective ways to teach these concepts to children. Although the studies show that FL should be presented in formal education as a planned way for early ages, the findings of this study indicated that the Turkish PEC is poor at developing the FL skills and it should be improved as soon as possible. The national strategy plan and eleventh development plan designed by the Capital Markets Board of Turkey (2014) aimed to improve FL as including financial issues in primary, secondary and higher education programs in Turkey. However, in a study completed after these decisions, Güvenç (2017) indicated that even if there are some expected learning outcomes related to FL in primary, secondary and high school programs, they are not suited to the needs of today's economy. It is aimed to integrate FL education into upper education programs even in an old-fashioned way; however, not giving preschool education a leading role in systematic education programs is accepted as an important deficiency for Turkey. The results of this study call for expanding FL education politics in a way of starting from preschool education and updating PEC in line with the needs of FL skills required in the modern world. The suggestions of Başaran and Ulubey (2018) on integrating financial literacy issues into PEC confirm the curriculum revision call of this study.

The findings that are determined via content analysis show that the preschool teachers' views on FL education in preschool are categorized under the themes namely the meaning of FL, FL education in preschools, the current state of FL and suggestions for FL in preschool education. The findings on the meaning of the FL indicate that nearly one-third of the participant teachers do not have any knowledge about FL; one-fifth of the teachers have never heard FL as a term before this study, and the others can define this term just as using some basic financial concepts such as money, financial issues, loaning or budgeting. Similar results can be true of other adult groups, teachers, or candidate teachers. In a study by Leumann, Heumann, Syed and Aprea (2016), the participants from different countries and different professions defined financial literacy as just budgeting, loaning, earning money, spending money, borrowing, preventing to borrow and managing to retirement. According to the results of a study conducted with 3009 adults by the cooperation of The World Bank and Capital Markets Board in 2012, many of the adults in Turkey have knowledge on basic financial concepts like interest and they could calculate basically; however, it was seen that many of the adults have low performance on financial issues requiring more knowledge and complex computational skills (TEDMEM, 2016). In a study conducted with Social Sciences teachers, Seyhan (2020) states that social science teacher can define financial literacy in terms of basic financial concepts, economic politics and interpreting financial developments; as for financial management, they can define it as budgeting, deciding on economical issues and managing money as general. Similarly, in the studies which aim to determine financial literacy knowledge of in-service teachers and candidate teachers, it is seen that the level of financial literacy is low in both groups (Lucey, 2008; Akhan, 2015; Lucey, Meyers and Smith, 2017). Not only teachers but also academicians have a low level of self-confidence in teaching financial concepts (Henning and Lucey, 2017). OECD suggests that teachers should be supported on training for financial issues, getting sources for these issues, being aware of the importance of financial education and teaching financial concepts as consistently (OECD/INFE, 2015). In their study realized in secondary schools, Deng, Chi, Teng, Tang and Chen (2013) announced that there is a positive correlation between teachers' financial abilities/knowledge and presenting an effective financial education in their classes. The findings of both this study and other studies stated above show that in-service and/or pre-service training on FL concepts is significant for teachers both as the practitioners and role models of financial literacy education in schools. It is seen that there are some websites in Australia, the USA, Japan, England, Estonia, Holland, Spain and Portugal on financial literacy programs and materials for teachers (Temizel and Özgüler, 2015; TEDMEM, 2016). In Turkey, with the cooperation of MoNE and TEB (Turkish Economy Bank), 1000 teachers have been trained to get a training certificate on FL education via "I Can Manage My Budget Project". In another study, with a protocol between the Turkish Economy Bank

and General Directorate of Vocational and Technical Education, there has been some training for teachers and students on FL concepts to inform them on some basic terms such as managing budgets, saving and investing issues and create common awareness on FL concepts (TEDMEM, 2016). There is no information about the disciplines of the participant teachers for that study; however, it is seen that in the financial action plan of Turkey, some basic financial issues are aimed to be improved for primary and secondary school teaching programs in general, and there is no mention about FL PEC.

Many of the preschool teachers in this study have not any knowledge about FL and many of them, only know the basic terms about FL. This result takes attention to the missed opportunities for FL education in Turkey. It is a well-known issue that the early childhood period is a “pivotal development window” (OECD, 2017b, p. 148). A qualified preschool education creates a strong foundation for children (Heckman and Masterov, 2007), it also positively affects the following stages of life (Heckman, 2008), academic success (OECD, 2020; IEA, 2013), and the quality of life in adulthood (García, Heckman, Leaf and Prados, 2017; Kagıtcıbası, Sunar, Bekman, Baydar and Cemalcılar, 2009). Its benefits also for the society and economy are well known (Heckman, 2012; Kaytaz, 2005; Temple and Reynolds, 2007). The qualified FL education in preschool education is a gateway to create human resources demanded by modern complex economies. For this reason, developing preschool teachers and initiating the development of FL skills in preschool education can be one of the most promising politics for Turkey.

The preschool teachers think that early FL education is necessary for both individuals and the national economy because they believe that early learnings have more long-lasting effects. European Insurance Industry (2017) emphasized that FL concepts should be integrated into teaching programs to change the financial behaviors of people, and it should start in preschool education; as in this way, not just educated people but also a larger group of people can be affected by financial education. Studies show that very young learners can successfully learn some basic financial terms such as money, exchanging, investment, saving, unemployment, inflation and poverty, etc. with a well-designed financial education (Schug and Hagedorn, 2005) and they can survive as a productive and well-adjusted citizen in the complexity of economy and finance (Clark, Shug & Harrison, 2009)

In different studies, additionally, it is seen as important that getting financial education at early ages and attending some meetings about financial literacy components in school-parent environments are significant issues for acquiring financial competencies (Whitebread and Bingham, 2013; Racanello and Herrera-Guzman, 2014; Totenhagen, Casper, Faber, Bosch, Wiggs and Borden, 2015; Rudeloff, 2019). In Turkey, within the collaboration of the Central Bank of the Republic of Turkey (TCMB) and The Scientific and Technological Research Council of Turkey, a journal “Curious Juniors” which consists of shopping, loaning, kurus and moneybox concepts were delivered to preschoolers; again, with the collaboration of TCMB and TRT Kids TV Channel, some cartoons based on financial issues like “Kurus Family” were developed for children (Karataş, 2017). In the light of these findings, it can be said that the development of similar materials and activities for preschool education and the integration of FL in PEC can have an important role to improve both individual and national financial welfare.

The preschool teachers’ views on the current state of FL training in preschool education are gathered under the theme of the challenge in terms of FL training in PEC, activities, FL learning centers and FL concepts in preschool education. The preschool teachers think that there is no learning outcome related to FL in preschool education and this finding is parallel to the findings of PEC analysis. However, there are some hesitant preschool teachers for FL outcomes in the program; it can be reasoned by the lack of knowledge on FL concepts or not designing PEC with the perspective of improving FL skills. Additionally, the low level of benefiting from the PEC by preschool teachers can have a role in this case (Kılınç, Kurtulmuş, Kaynak-Ekici and Bektaş, 2021; Tican-Başaran and Ulubey, 2018). Similar to the outcomes, some preschool teachers think that there is no concept related to FL; some others think that there is only money as a concept for FL; and some preschool teachers say some terms which are not included in the program for FL. This finding shows that teachers have to digress from the program and there is a necessity to revise PEC. As considering the necessity of key partners’ suggestions for an effective financial education program (Lusardi, 2009), preschool teachers’ views play an important role in updating PEC.

The preschool teachers realize some in-class and out-of-class activities for FL concepts. It is understood that preschool teachers generally design some activities in Energy Conversation, and Forehandedness, Investment and Turkish Domestic Products Weeks as stressing the importance of using energy, water

sources, money and encouraging saving by some in-class activities such as saving money in a moneybox, e-twinning and zero waste projects, and reading poems and stories based on saving in terms of FL concepts. As it is suggested by Şimşek (2019), preschool teachers design some storytelling activities for FL education; however, the main purpose of these activities is not FL but teaching some values on saving. The preschool teachers design a limited number of out-of-class activities like canteen days for FL education, and they do not prefer visiting banks, bazaars, or markets because of some safety problems in terms of crowded classrooms at early ages. Another reason for not preferring out-of-class activity for FL education is children's readiness to understand financial concepts. Supporting this finding Sherraden (2013), stated that preschool teachers think that FL education is not suitable for children under five years of age. The limitation of the activities for FL in Turkish preschool classes can be derived from teachers' knowledge, attitudes, or pedagogical education in terms of FL. Some studies stated that teachers lack the knowledge and abilities on financial education although they were aware of the significance of financial education (Seyhan, 2020; Way and Holden, 2009). OECD (2015) reported that there are serious problems in terms of teachers' competencies for financial education in schools. In this sense, it can be said that there is a need for empowering preschool teachers on financial education for preschoolers.

The findings of this study show that preschool teachers do not design FL learning centers and they use a limited number of teaching materials for FL education. As stated before, this finding can be related to the preschool teachers' lack of FL learning centers in the PEC and not using the opportunity provided by PEC to be able to design different learning centers if it is needed. These findings show that there is a need for revision of the preschool education environment in a way of supporting FL. Opletalova's (2014) suggestion about using some materials like course books for FL education, methodological guides, web-portals, worksheets and technological devices for FL would lead the curriculum revisions.

The suggestions of the preschool teachers on FL training in preschool education are focused on FL education for preschool teachers and in-class or out-of-class activities; however, there are some suggestions on national politics, age groups, learning centers, parent involvement and PEC in terms of FL. Parallel to the findings of this study on the lack of FL knowledge of the preschool teachers, they suggest training the preschool teachers about FL. They suggest that this training should be presented by experts of FL education encouraging the active participation of teachers. Additionally, they proposed a content comprising the titles of FL; FL in preschool education; FL activities in preschool education; FL learning centers; teaching FL skills for preschoolers, and some self-development skills such as conscious consumption, budgeting, and managing money for teacher education. In the related studies, it is stated that the integration of FL education into teacher training programs is important to integrate financial education in school programs (Henning and Lucey, 2017), to develop suitable learning activities in terms of age groups (Adalar, 2019) and to improve the self-reliance of teachers on FL education (Quick, 2014). As referring to the findings of both this study and other related studies, it is understood that preschool teachers need to be supported on FL. For this reason, the integration of in-service and pre-service education on FL education into preschool teacher training programs is seen as a primarily preferred politics.

The preschool teachers suggest some activities such as using wallet, drama, mathematics, preparing need list, recognizing real money and presenting some professions like bank officer, accountant and tradesmen for in-class activities. As for out-of-class activities, some preschool teachers suggest visiting markets, bazaars, shopping centers; some others suggest visiting banks and financial services in cities. They also suggest that there can be FL learning centers such as a bank, toy-cloth shops, cafeteria and bazaars; and there can be toy money or expired credit cards as real-life materials. These findings show that preschool teachers need to revise learning centers from the FL perspective, considering the opportunity stated by the program on designing new learning centers in case of necessity.

The preschool teachers stated the importance of parents as being a model for financial issues and maintaining FL education at home. They suggest that parents should participate in FL training in preschool education. Likewise, PISA 2015 results show that students generally learn financial issues from their parents and the FL performance of students who have been talking on these issues with their parents is higher (OECD, 2017a.). Participant teachers think that FL education is not limited to preschool education. They suggest that national politics should be developed in terms of FL education; people in the society should raise awareness on FL concepts, production should be encouraged in the society; the projects on FL education for teachers should be supported and there should be a collaboration with NGOs. Te'eni-Harari

(2016) states that parent's and peer's attitudes and accessibility of money have important roles in children's saving perceptions. According to another study, parents' talking with children on managing money has a key role to affect children's financial knowledge and attitudes (Shim, Xiao, Barberve Lyons, 2009). In this sense, conducting FL education with school-parent collaboration helps to maintain this education more effectively. As consisting of some financial concepts such as introduction to finance, budgeting, loaning, saving, credit and credit card; the source namely "Financial Literacy" which was developed by the Ministry of Family and Social Politics in 2011 for the content of Family Education Program is a keystone for the further studies. Educating parents for financial issues and preparing easily reachable materials, contents and handbooks for families are important.

In conclusion, the study showed that Turkish preschool education is not supportive of financial literacy both in terms of curriculum and the teachers. Both the findings of this study and other related studies state the necessity of providing FL education at early ages in a systematic way. For a systematic FL education in Turkey, firstly, the Turkish PEC needs to be revised in terms of current national action plans. No later than the revision of the PEC Turkish national action plan in which there is no place for FL education should be revised. Preschool teachers must be supported in terms of FL education, learning centers should be designed on FL skills for preschoolers, learning environments in preschool education should be enriched in terms of contents and materials, out-of-class activities should be designed to teach financial processes to children. For this reason, it is useful to think that FL education is a process that can be realized not only by the efforts of schools but also by a collaboration of parents and financial institutions.

Although this study is limited to 20 preschool teachers in the west side of Turkey, it is thought that this study can give an idea on early FL education in Turkey as a country implementing a central preschool education. However, duplicating this study with larger groups and different research methods is thought as useful for further studies.

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REFERENCES

- Adalar, Hayati. "Sosyal Bilgiler öğretmen eğitiminde finansal okuryazarlık ve öğretimi: bir model önerisi" Unpublished Doctoral Thesis. Gazi University, Ankara, 2019.
- Akhan, Nadire Emel. "Economic literacy levels of social studies teacher candidates". *World Journal of Education*, 5(1) (2015): 25-39.
- Atkinson, Adele and Messy, Flore-Anne. "Financial education for migrants and their families". *OECD Working Papers on Finance, Insurance and Private*, 38, (2015). Retrieved from https://www.oecd-ilibrary.org/finance-and-investment/financial-education-for-migrants-and-their-families_5js4h5rw17vh-en
- Battelle for Kids. "Framework for 21st-century learning". (2019). Retrieved from http://static.battelleforkids.org/documents/p21/P21_Framework_Brief.pdf
- Bernheim, Douglas B., Garrett, Daniel M. and Maki, Dean M.. "Education and Savings: The Long-Term Effects of High School Financial Curriculum Mandates". *Journal of Public Economics*, 80(3) (2001): 435-465.
- Brickhouse, Tonja Custis. "Breaking Cycles Through Targeted Financial Literacy Education for Fifth- Through Eighth-Grade Students". Unpublished Doctoral Thesis, Walden University, Minneapolis, 2018.
- Bruhn, Miriam, et. all. "The impact of high school financial education: Evidence from a large-scale evaluation in Brazil". *American Economic Journal: Applied Economics*, 8(4) (2016): 256-295.
- Clark J. R., Schug, Mark C. and Harrison, Ashley S.. "Recent trends and new evidence in economics and finance education". *Journal of Economics and Finance Education*, 8 (1) (2009): 1-10.
- Cole, Shawn, Sampson, Thomas and Zia, Bilal. "Financial literacy, financial decisions, and the demand for financial services: Evidence from India and Indonesia". Cambridge, Mass.: Harvard Business School, 2009.
- Council for Economic Education. "Survey of the States: Economic and Personal Finance Education in Our Nation's Schools 2011". New York, NY: Council of Economic Education, 2012.
- Credit Union National Association. "Thrive by Five™ : Teaching Your Preschooler About Spending and Saving". (2005). Retrieved from [https://personal-finance.extension.org/thrive-by-five/#:~:text=Thrive%20by%20Five%20\(TM\)%3A,about%20money%20in%20young%20children.&text=Children%20learn%20about%20money%20from,using%20money%20and%20buying%20things.](https://personal-finance.extension.org/thrive-by-five/#:~:text=Thrive%20by%20Five%20(TM)%3A,about%20money%20in%20young%20children.&text=Children%20learn%20about%20money%20from,using%20money%20and%20buying%20things.)
- Creswell, John W. "Research design: Qualitative, quantitative, and mixed methods approaches". London: Sage Publications, Inc, 2003.

- Deng, Hsu-Tong, et. All. "Influence of financial literacy of teachers on financial education teaching in elementary schools". *International Journal of e-Education, e-Business, e-Management and e-Learning*, 3(1) (2013): 68-73.
- Esteve, Jose M. "The transformation of teachers' role at the end of twentieth century. New challenges for the future". *Educational Review*, 52(2) (2000): 197-208.
- European Economic and Social Committee. "Financial Education for all European Financial education strategies and best practices within the European Union Second Edition". (2017). Retrieved from <https://www.eesc.europa.eu/sites/default/files/resources/docs/qe-02-16-362-en-n.pdf>
- European Insurance Industry. "Financial education in a digital age". (2017). Retrieved from <https://www.insuranceeurope.eu/financial-education-digital-age-initiatives-european-insurance-industry>
- Fluch, Manfred. "Selected Central Banks' Economic and Financial Literacy Programs". *Monetary Policy & the Economy*, 3, (2007): 80-104.
- Fox, Jonathan, Bartholomae, Suzanne, and Lee, Jinkook. "Building the case for financial education". *Journal of consumer affairs*, 39(1) (2005): 195-214.
- Friedline, Terri. "A Developmental Perspective on Children's Economic Agency". *The Journal of Consumer Affairs*, 49(1) (2015): 39-68.
- García, Jorge Luis, et. all. "The long-term benefits of quality early childcare for disadvantaged mothers and their children". (2017) Retrieved from <https://voxeu.org/article/long-term-benefits-quality-early-childcare>
- Güvenç, Hülya. "Öğretim programlarımızda finansal okuryazarlık". *İlköğretim Online* 16(3) (2017): 935-948.
- Heckman James J. "The Heckman equation: Invest in early childhood development, reduce deficits, strengthen the economy". (2012). Retrieved from https://heckmanequation.org/assets/2013/07/F_HeckmanDeficitPieceCUSTOM-Generic_052714-3-1.pdf
- Heckman, James J., and Masterov, Dimitriy V. "The productivity argument for investing in young children". *Applied Economic Perspectives and Policy*, 29(3) (2007): 446-493.
- Heckman, James J.. "Schools, skills, and synapses". *Economic Inquiry*, 46(3) (2008): 289-324
- Henning, Mary Beth, and Lucey, Thomas A.. "Elementary Preservice Teachers' and Teacher Educators' Perceptions of Financial Literacy Education". *The Social Studies*, 108(4) (2017): 163-173.
- Hilgerth, Marianne A., Hogarth, Jeanne M., and Sondra G. Beverly. "Household financial management: The connection between knowledge and behavior". *Federal Reserve Bulletin*, 89(7) (2003): 309-322.
- Holden, Karen, et.all. "Financial literacy programs targeted on preschool children: Development and evaluation". University of Wisconsin-Madison: La Follette School of Public Affairs, 2009.
- IEA. "Policy Brief: Is participation in preschool education associated with higher student achievement?". (2013). Retrieved from http://pub.iea.nl/fileadmin/user_upload/Policy_Briefs/IEA_Policy_Brief_Dec2013.pdf
- Kagan, Sharon L., and Zigler, Edward F. (Eds.). "Early schooling: The national debate". New Haven, CT, US: Yale University Press, 1987.
- Kagitcibasi, Cigdem, et. all. "Continuing effects of early enrichment in adult life: The Turkish early enrichment project 22 years later". *Journal of Applied Developmental Psychology*, 30(6) (2009): 764-79.
- Karataş, Çiğdem. "Finansal okuryazarlığın geliştirilmesinde merkez bankalarının rolü ve Türkiye Cumhuriyet Merkez Bankası için bir değerlendirme". Unpublished Dissertation, Türkiye Cumhuriyet Merkez Bankası İletişim ve Dış İlişkiler Genel Müdürlüğü, Ankara, 2017.
- Kaytaş, Mehmet. "Türkiye'de okul öncesi eğitimin fayda-maliyet analizi". İstanbul: Anne Çocuk Eğitim Vakfı Yayını, (2005). Retrieved from <https://acev.org/wp-content/uploads/2017/11/turkiyede-okuloncesi-egitiminin-fayda-maliyet-analizi.pdf>
- Kılınç, Fatma Elif, et. all. "Okul öncesi öğretmenlerinin etkinlik planı hazırlama becerilerinin incelenmesi: Uyarlama, aile katılımı ve değerlendirme". *Trakya Eğitim Dergisi*, 11(1) (2021): 252-266.
- Leumann, Seraina, et. all. "Towards a comprehensive financial literacy framework: voices from stake-holders in European vocational education and training". In Economic competence and financial literacy of young adults (eds. E. Wuttke, J. Seifried and S. Schumann). Stuttgart: Verlag Barbara Budrich, 2016.
- Lucey Thomas. "Exploring pre-service elementary teachers' confidence in teaching financial education: The effects of discovery-based student-centered activities". *Teacher Educators' Journal*, 15, (2008): 1-6.
- Lucey, Thomas, Meyers, Derek J. H. and Smith, Ryan. "Teaching teachers about retirement and investments: A comparison of three interventions". *Citizenship, Social and Economics Education*, 16(1) (2017): 52-68.
- Lusardi, Annamaria, and Mitchell, Olivia S.. "Baby Boomer Retirement Security: The Roles of Planning, Financial Literacy, and Housing Wealth". *Journal of Monetary Economics*, 54(1) (2007): 205-224.
- Lusardi, Annamaria. "Planning for retirement: The importance of financial literacy". *Public Policy and Aging Report*, 19(3) (2009): 7-13.
- Miles, Matthew B., and Huberman, A. Micheal. "Qualitative data analysis: An expanded Sourcebook. (2nd ed)." Thousand Oaks, CA: Sage, 1994.
- Miller, Margaret, et al. Can you help someone become financially capable? A meta-analysis of the literature. *The World Bank Research Observer*, 30(2) (2015): 220-246.
- Ministry of Family and Social Policies. 2015 Yılı İdare Faaliyet Raporu. Ankara, 2016. Retrieved from <https://ailevecalisma.gov.tr/Uploads/sgb/uploads/pages/arge-raporlar/2015-yili-idare-faaliyet-raporu.pdf>
- Ministry of National Education. "2023 Eğitim Vizyonu", (2019). Retrieved from http://2023vizyonu.meb.gov.tr/doc/2023_EGITIM_VIZYONU.pdf

- Ministry of National Education. "Okul öncesi eğitim programı". Ankara, 2013. Retrieved from <http://tegm.meb.gov.tr/dosya/okuloncesi/ooproram.pdf>
- Ministry of National Education. "Millî eğitim bakanlığı eğitim kurumları sosyal etkinlikler yönetmeliği". (2020). Retrieved from https://ogm.meb.gov.tr/meb_iys_dosyalar/2019_09/25145204_SOSYAL_ETKYNYLYKLER_YON.pdf
- Naudeau, Sophie, et. all. "Investing in young children: An early childhood development guide for policy dialogue and project preparation". Washington D. C.: The World Bank, 2011.
- OECD. "PISA 2012 Results: Students and Money: Financial literacy skills for the 21st century (Volume VI)". OECD Publishing, Paris, 2014.
- OECD. "PISA 2015 Results (Volume IV): Students' Financial Literacy". Paris: OECD Publishing, 2017a.
- OECD. "Recommendation on Principles and Good Practices for Financial Education and Awareness". OECD Publishing, Paris, 2005.
- OECD. "Starting Strong 2017: Key OECD Indicators on Early Childhood Education and Care". Paris: OECD Publishing, 2017b.
- OECD. "PISA 2015 Assessment and Analytical Framework: Science, Reading, Mathematics, Financial Literacy and Collaborative Problem Solving, revised edition". Paris: OECD Publishing, 2017c.
- OECD. "PISA 2018 Results (Volume IV): Are Students Smart about Money?". Paris: OECD Publishing, 2020.
- OECD/INFE. "National Strategies for Financial Education". OECD/INFE Policy Handbook, (2015).
- Opletalova, Alena. "Financial education and financial literacy in the Czech education system". *Procedia - Social and Behavioral Sciences*. 171, (2015): 1176-1184.
- Potrich, Ani Caroline Grigion, Vieira, Kelmara Mendes, and Mendes-Da-Silva, Wesley. "Development of a Financial Literacy Model for University Students". *Management Research Review*, 39(3) (2016): 356-376.
- Quick, Jennifer M. "Curriculum Development". In APEC Guidebook on Financial and Economic Literacy in Basic Education (Ed. Wang Yan). Singapore: Human Resources Development Working Group, 2014.
- Raccanello, Kristiano and Herrera-Guzman, Eduardo. "Educacion e inclusion financiera [Financial education and inclusion]". *Latin American Journal of Educational Studies/ Revista Latinoamericana de Estudios Educativos (Mexico)*, XLIV(2) (2014): 119-141.
- Roy Morgan Research. "ANZ Survey of Adult Financial Literacy in Australia". Final Report, Melbourne, 2014.
- Rudeloff, Michelle. "The influence of informal learning opportunities on adolescents' financial literacy". *Empirical Research in Vocational Education and Training*, 11, (2019): 1-17.
- Schug, Mark C. and Hagedorn, Eric A. "The Money Savvy Pig™ Goes to the Big City: Testing the effectiveness of an economics curriculum for young children". *The Social Studies*, 96(2) (2005): 68-71.
- Capital Markets Board. "Finansal erişim, finansal eğitim, finansal tüketicinin korunması stratejisi ve eylem planları". Ankara: Sermaye Piyasası Kurulu, 2014. Retrieved from <http://www.spk.gov.tr/displayfile.aspx?action=displayfile&pageid=1076&ext=pdf>
- Seyhan, Ayşe. "Sosyal bilgiler dersinde finansal okuryazarlık becerisinin kazandırılmasına yönelik öğretmen görüşleri". *Recep Tayyip Erdoğan Üniversitesi Sosyal Bilimler Dergisi*, 11, (2020): 88-113.
- Sherraden, Margaret Sherrard. "Building Blocks of Financial Capability". In Financial Education and Capability: Research, Education, Policy, and Practice (eds. Julie Birkenmaier, Margaret Sherrard Sherraden, and Jami Curley). New York: Oxford University Press, 2013.
- Shim, Soyeon. "Pathways to life success: A conceptual model of financial well-being for young adults". *Journal of Applied Developmental Psychology*, 30(6) (2009): 708-723.
- Şimşek, Selçuk. "Hayat ve Sosyal Bilgiler programları ve ders kitaplarındaki finansal okuryazarlık becerisi geliştirmeye yönelik durum incelenmesi". *Uluslararası Sosyal ve Beşeri Bilimler Araştırma Dergisi*, 6(42) (2019): 2618-2632.
- Te'eni-Harari, Tali. "Financial literacy among children: the role of involvement in saving money". *Young Consumers*, 17(2) (2016): 197-208.
- Teddlie, Charles and Tashakkori, Abbas. "Foundations of mixed methods research: Integrating quantitative and qualitative approaches in the social and behavioral sciences". USA: SAGE Publications, Inc, 2009.
- TEDMEM. "Temel bir yaşam becerisi: finansal okuryazarlık". (2016). Retrieved from <https://tedmem.org/mem-notlari/degerlendirme/temel-bir-yasam-becerisi-finansal-okuryazarlik>
- Temizel, Fatih and Özgüler, İsmet. "A review of financial education". *Business & Management Studies: An International Journal*, 3(1) (2015): 1-16.
- Temple, Judy A. and Reynolds, Arthur J.. "Benefits and costs of investments in preschool education: Evidence from the child-parent centers and related programs". *Economics of Education Review*, 26(1) (2007): 126-144.
- The Central Bank of Turkey. "Bülten, 37". (2015): 1-6. Retrieved from https://www.tcmb.gov.tr/wps/wcm/connect/d4c2f827-0004-4973-8dfd-68b2f787a1a3/TCMB_Bulten_37.pdf?MOD=AJPERES&CACHEID=ROOTWORKSPACE-d4c2f827-0004-4973-8dfd-68b2f787a1a3-m3fB9EJ
- Tican Başaran, Semra and Ulubey, Özgür. "2013 Okul öncesi eğitim programının değerlendirilmesi". *Ankara Üniversitesi Eğitim Bilimleri Fakültesi Dergisi*, 51(2) (2018): 1-38.
- Totenhagen, Casey J., et. all. Youth financial literacy: A review of key considerations and promising delivery methods. *Journal of Family and Economic*, 36, (2015): 167-191.
- Wagner, Jamie. "An analysis of the effects of financial education on financial literacy and financial behaviors". Dissertations, Theses, and Student Research from the College of Business. (2015). Retrieved from <https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1054&context=bussnessdiss>

- Way, Wendy L. and Holden, Karen C. "Teachers' background and capacity to teach personal finance: Results from national survey". *Journal of Financial Counseling and Planning*, 20(2) (2009): 64-78.
- Whitebread, David. and Bingham, Sue. "*Habit formation and learning in young children*". The money advice service, (2013). Retrieved from <https://mascdn.azureedge.net/cms/the-money-advice-service-habit-formation-and-learning-in-young-children-may2013.pdf>
- World Economic Forum. "*New vision for education. Unlocking the potential of technology*". Geneva: Boston Consulting Group & World Economic Forum. (2015). Retrieved from http://www3.weforum.org/docs/WEFUSA_NewVisionforEducation_Report2015.pdf
- Yıldırım, Ali, and Şimşek, Hasan. "*Sosyal bilimlerde nitel araştırma yöntemleri (10. Ed.)*". Ankara: Seçkin Yayıncılık, 2016.
- Yiğitbaş, Şennaz, Temeloğlu, Erdem and Şimşek, Adnan. "Ortaöğretim çağındaki gençlerde finansal eğitimin finansal okuryazarlık üzerindeki etkisi". *IBAD Sosyal Bilimler Dergisi*, 2020, 411-432.

MEDIATING ROLE OF WORK-LIFE BALANCE AND JOB SATISFACTION IN THE RELATIONSHIP BETWEEN PERSON-JOB FIT AND LIFE SATISFACTION AMONG TEACHERS

Abstract: This study aims to determine the intermediary role of work-life balance (WLB) and job satisfaction (JS) in the relationship between person-job (PJ) fit and life satisfaction (LS) based on perceptions of teachers. A total of 401 teachers working in schools in Denizli province were included in the study. The Person-Job Fit Scale, Work-Life Balance Scale, Job Satisfaction Scale, and Life Satisfaction Scale were employed to collect data. Based on the results of correlation analysis, positive significant relationships were found between all variables. Structural equation model analyses showed that JS and WLB together can play a full intermediary role in the relationship between PJ fit and LS. When the mediating roles of these two variables were examined separately, and it was identified that JS had a full mediating role and WLB had a partial mediating role in the relationship between PJ fit and LS.

Keywords: Person-job fit, work-life balance, job satisfaction, life satisfaction, teacher

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INTRODUCTION

As a natural consequence of the fast changes and transformations seen in society today, educational organizations must effectively manage human resources in order to meet the demands of society. Given that the most critical element of educational organizations is teachers, the role of teachers is indisputable in increasing the quality of education. Teachers, who transfer the culture and values of the society in which they live as well as initiate change for the development of that society and adapt to change, need to feel psychologically well in order to be able to display the behaviours expected of them. Low life satisfaction of teachers negatively affects their performance and other elements of the education system. Duckworth, Quinn, and Seligman (2009) found that life satisfaction (LS) predicts the performance of teachers and remarked that students prefer teachers whose LS levels are higher and whose energy and positive attitudes are able to change the mood of the whole class. Similarly Braun, Schonert-Reichl and Roeser (2020) found that teachers' LS is a significant predictor of students' prosocial behavior. Based on the findings of his research, Chan (2011) stated that teachers' dissatisfaction with life can bring along negative and intense feelings that they are emotionally exhausted in their interactions with others. Rani (2016) called attention to the significant relationship between LS and teacher effectiveness. Qiao and Lina (2019) stated that individual LS has an important effect on mental health and work enthusiasm.

According to Maslach and Leiter (1999), satisfied teachers are likely to hold their jobs longer, to be able to engage in more responsive, positive and consistent interaction with students, and to influence positively students' performance (cited in Al Atyya, 2015). Therefore, detecting the LS of teachers who are experiencing feelings of inadequacy, dissatisfaction, and burnout in their jobs because of frequent changes in education policies, economic difficulties, workload, indifference of parents and students, or problems with school administrators (Telef, 2011) and then determining the variables that are effective in LS are of importance. In this study, the intermediary role of job satisfaction (JS) and work-life balance (WLB) in the relationship between the LS of teachers and person-job (PJ) fit will be tried to be determined.

Positive emotions in employees have been brought to the fore with the increasing importance given to positive psychology and positive organizational behaviour in recent years. One of the concepts concerning the psychological well-being of employees is life satisfaction. LS refers to the subjective evaluation of an individual of his/her own quality of life according to the standards set by him/her (Shin & Johnson, 1978). In LS, which represents the cognitive component of subjective well-being (Diener, Diener, & Diener, 1995; Diener, Suh, Lucas & Smith, 1999; Diener, 2000), an important concept within the context of the positive psychology approach, when an individual evaluates his/her own life, he/she takes into account factors such as social relationships, work life, physical health, and income (Diener & Lucas, 1999). In a similar way, LS can be explained as an individual's evaluation of the quality of his/her life in areas such as family, friends as a whole, with the criteria he/she has formed regarding what a good life is (Christopher, 1999). LS shows the level of harmony that an individual feels between his/her goals and what he/she has achieved. Therefore, it can be said that the more the targets of an individual are in harmony with his/her accomplished goals, the higher his/her LS level is (Krause, 2004).

It is seen that, in order to explain LS in teachers, studies have been conducted in which the relationship of LS was explored with variables such as burnout (Avşaroğlu, Deniz, & Kahraman, 2005; Chan, 2011; Çelik & Üstüner, 2018; Özyürek, Gümüş, & Doğan, 2012; Soba, Babayigit, & Demir, 2019), organizational trust (Yılmaz & Sünbül, 2009), self-efficacy (Telef, 2011), workplace loneliness (Yılmaz & Aslan, 2013), job alienation (Şirin & Şirin, 2015), work-family and family-work conflict (Firat & Cula, 2016; Türker & Çelik, 2019), meaningful jobs (Shyim & Korb, 2016), and JS (Avşaroğlu et al., 2005; Aydınhan & Koç, 2016; Demirel, 2014; Firat & Cula, 2016; Karaaslan, Uslu, & Esen, 2020; Lent et al., 2011; Shyim & Korb, 2016). Some of these studies dealt with the relationship of variables only with LS, while some of them added other variables to this relationship.

Fit theory assumes that people have an innate need to adapt to their surroundings and seek environments that suit their characteristics. Since individuals prefer consistency and want to maintain control over their lives and reduce uncertainty, need belonging, and want happiness and LS, they often try to fit (Yu 2013, cited in Van Vianen, 2018). Accordingly, it can be said that the perception that individuals are adapted to their jobs will increase their LS. It is interesting that although the harmony between job demands and abilities of employees and their placement in a job accordingly are considered to be very important factors

in determining the effectiveness of various types of organizations, this topic seems to be surprisingly neglected in the education management literature. One probable reason for this is that teacher placement is often a top-down process, especially in education systems where principals are not authorized to hire or dismiss teachers (Bogler & Nir, 2015).

PJ fit is defined as the match of the abilities of an individual with the demands of a job or a match provided by the job with the individual's needs/desires (Edwards, 1991). The definition of PJ fit given by Edwards emphasizes that job fit occurs when a person meets the demands of a job or when a job meets the needs of a person (Kristof-Brown, 2000). Two approaches stand out here. The components of the need-supply perspective involve the desires/needs of individuals and the characteristics and qualifications of a job that can meet those needs. The needs of an individual include targets, psychological needs, interests, and values. What is offered or presented to an individual is defined as the general characteristics of the task in question, salary, and other job qualifications. The demand-skill perspective, on the other hand, considers the job demands required to fulfil the duties of the job and the abilities that an individual can use to meet the job needs. Job demands are typically the abilities, knowledge, and skills that are necessary to perform at a level acceptable for the job. These abilities include experience, abilities, and education or knowledge and skills of the individual (Sekiguchi, 2004: 184).

When studies dealing with PJ fit are examined, it is observed that there are studies that prove that the concept is related to other concepts such as organizational commitment, performance, JS, intention to quit, organizational support, and organizational citizenship. O'Reilly (1977) remarked that personality traits interact with job characteristics and affect job attitudes and the performance of the individual. The findings of Caldwell and O'Reilly (1990) showed that PJ fit is strongly associated with a range of outcomes, including job performance and JS. Cable and DeRue (2002) discovered that perceived needs-supplies fit is associated with career satisfaction and occupational commitment. Kristof-Brown, Zimmerman ve Johnson (2005) pointed out that PJ fit positively affects performance, JS, and task performance. Li and Hung (2010) found that PJ fit improves both task performance and organizational citizenship behaviour. Price (2012, cited in Bogler & Nir, 2015) found that the fitness of the expectations of the employee regarding job duties and actual organizational roles has an effect on JS. Among the studies on the job fit of teachers, Westfall (2012) found that there is a positive relationship between PJ fit of teachers and their JS. Player, Youngs, Perrone, and Grogan (2017) found that leadership and PJ fit predicted an individual's retention at a school and in the teaching profession, respectively, and a strong correlation existed between high PJ fit and reduced probability of teachers leaving the profession. Bogler and Nir (2015) reported that the only variable predicting both types of satisfaction (external and internal) and both types of commitment (professional and organizational) according to the perceptions of teachers is the fitness between job demands and abilities of the individual. There are studies dealing with the relationship between PJ fit and LS (Burnette & Pollack, 2013; Çırpan, Vardarlier, & Koçak, 2019; Dursun, Kaya, & İftar, 2015; Ilies, Yao, Curseu, & Liang, 2019); however, no such study carried out with teachers has been found.

Another variable to be addressed in this study is WLB. Definitions offered to date regarding WLB include providing satisfaction at work and at home with minimal role conflict and being functional (Clark, 2001: 362), the relationship between institutional and cultural times and between work and non-work areas (Felstead, Jewson, Phizacklea, & Walters, 2002: 56), the individual's perception that work and non-work activities are compatible and contribute to current life priorities (Kalliath & Brough, 2008), and the compatibility of the demands from the work area with the demands from other areas such as family and leisure time (Pichler, 2009: 451). Considering the common ground of these definitions, it is possible to say that WLB can create a balance between the work of an individual and other activities outside of work. Different classifications have been made for activities or areas in or outside of work. According to Williams (2001: 488), WLB is achieved by balancing the needs in three interconnected areas: Time and area of interest (What do we require to be able to properly care for other individuals and jobs, such as child care, adult care services, or cleaning?), personal time and space (What do we need to take care of ourselves and to protect the soul, mind, and body?), and time and space of work (What do we require to gain self-sufficiency economically and balance this with other areas, such as maternity leave, part-time hours, or flexible hours?). In a similar way, Byrne (2005: 54) mentioned that this concept is related to balancing the five aspects of our lives (work, family, friends, health, and ourselves or our soul) at any point in time. Guest (2002) stated in his model that WLB can affect JS, LS, mental health/well-being, stress/illness,

performance, and reflections on other people at home and at work. Similarly, Bryne (2005) stated that benefits of WLB for both employees and employers as a result of its effects include employees feeling valued, increased productivity, decreased absenteeism, loyalty or commitment, better relations with management, improved self-esteem, health, concentration, and confidence.

When the studies on the relationship between WLB and LS were considered, only one study with teachers was found. Gorsy and Panwar (2016) discussed the relationships between personality traits, WLB, and LS among public school and private school teachers. It has been determined in different samples (Haar, 2013; Haar, Russo, Sunyer, & Ollier-Malaterre, 2014; Kuzulu, Kurtulmuş, & Özkan, 2013; Toker & Kalıpçı, 2020; Umer & Zia-ur-Rehman, 2013; Yusuf & Khan, 2018) that the relationship is now being studied more. Jensen, Liu, and Schøtt (2017) discussed the intermediary role of WLB and JS in the relationship between renovation and LS in their study of entrepreneurs. Taşdelen-Karçkay and Bakalım (2017) found a positive and significant relationship between WLB and LS. Noda (2020) discovered using OECD Better Life Index data that WLB does contribute to the LS of people in developed countries.

JS, which is the last variable to be discussed in this study, is generally defined as the positive emotions felt by an individual as a result of evaluating his/her job (Vroom, 1964; Locke, 1976) or the degree of enjoying it (Spector, 1996). It is also expressed as the sum of the feelings and beliefs individuals have about their current jobs. Individuals may have attitudes about various aspects of their jobs, such as duties assigned to the job, co-workers, supervisors or subordinates, and salaries as well as attitudes about their jobs as a whole. The degree of JS can lead to many potential consequences such as performance, absenteeism, quitting, organizational citizenship behaviour, and well-being (George & Jones, 2008). JS affects LS, physical health, performance, and productivity (Locke, 1976). Considering that work is an indispensable element of the life of an individual, it is inevitable that JS affects LS. Keser (2005) remarked that JS directly affects the LS of an individual. As stated above, there are many studies (Avşaroğlu et al., 2005; Aydınhan & Koç, 2016; Demirel, 2014; Fırat & Cula, 2016; Karaaslan et al., 2020; Lent et al., 2011; Shyim & Korb, 2016) dealing with the relationship between JS and LS among teachers.

In summary, looking at the previous studies, it was seen that the relationship between LS and PJ fit, WLB, and JS were discussed separately. PJ fit, JS and LS or WLB, and JS and LS were discussed together in a small number of studies conducted among different samples. However, there is no study conducted with teachers or other working groups that deals with these four variables together. An integrated examination of these factors in a single study can help to better understand the LS of teachers. In addition, these variables, whose relationships with LS were examined separately in previous studies, may have an integrated effect on LS. Therefore, the current study was designed to examine the relationships between LS, PJ fit, WLB, and JS. Moving from the above-mentioned relationships and theoretical explanations, the intermediary role of WLB and JS in the relationship between PJ fit and LS of teachers will be tested. More precisely, in the event that teachers think they are fit for their jobs in terms of their knowledge, skills, and abilities and that their jobs meet their expectations, it was assumed that they will be able to balance their jobs and lives outside of their jobs, be more satisfied by their jobs, and thus evaluate their lives more positively.

METHOD

PARTICIPANTS

This study comprised 401 teachers working in kindergartens, primary schools, secondary schools, and high schools in Denizli province in the 2020-2021 academic year. While 255 of the participants were female (63.6%), 146 were male (36.4%). Considering the distribution according to the types of school they worked in, 37 kindergarten (9.2%), 116 primary school (28.9%), 112 secondary school (27.9%), and 136 (33.9%) high school teachers were included in the study.

DATA COLLECTION TOOLS

PERSON-JOB FIT SCALE

Kristof et al. (2005) suggested that there is perceived fit, subjective and objective fit regarding PJ fit. It is referred to as perceived fit when the individual makes a direct assessment about it, as subjective fit when the individual makes an indirect assessment, and as objective fit when the fit is calculated indirectly by

different sources. In this study, since the measurement of PJ fit is based on teacher perceptions, it may be categorized as perceived fit. “The Person-Job Fit Scale” developed by Brkich, Jeffs, and Carless (2002) and adapted to Turkish by Kerse (2018) was employed in order to determine perceptions of teachers of PJ fit. The scale in question consists of nine items and one dimension. With this 5-point Likert-type scale, teachers were asked to evaluate the expressions from “Strongly Disagree (1)” to “Fully Agree (5)”. Four of the nine items in the scale were coded in reverse. The internal consistency coefficient of the scale was found as $\alpha = 0.91$ by Kerse (2018), and it was calculated as 0.85 in this study. Goodness of fit in Confirmatory Factor Analysis (CFA) was calculated as ($\chi^2/\text{sd} = 1.851$, RMSEA = 0.078, RMR = 0.07, IFI = 0.98, TLI = 0.965, CFI = 0.98) by Kerse (2018). In this study, goodness of fit in (CFA) also supported one factor structure of The Person-Job Fit Scale ($\chi^2/\text{sd} = 3.183$, RMSEA = 0.07, SRMR = 0.03, IFI = 0.98, TLI = 0.96, CFI = 0.98, GFI = 0.96).

WORK-LIFE BALANCE SCALE

“The Work-life Balance Scale” developed by Taşdelen-Karçkay and Bakalım (2017) was used to determine perceptions of teachers of WLB. The scale consists of eight items and is a 7-point Likert-type scale with one dimension. Teachers participating in the study were asked to choose one of the options from the level of “Strongly Disagree (1)” to the level of “Totally Agree (7)” for the statements in the scale. The scale does not include items coded in reverse. The reliability of the scale was reported as $\alpha = 0.92$. In this study, $\alpha = 0.96$ was found. Goodness of fit in CFA was calculated as ($\chi^2/\text{sd} = 2.76$, RMSEA = 0.07, SRMR = 0.025, IFI = 0.98, CFI = 0.98, GFI = 0.96) by Taşdelen-Karçkay and Bakalım (2017). Goodness of fit in CFA supported one factor structure of The Work-life Balance Scale in this study ($\chi^2/\text{sd} = 3.716$, RMSEA = 0.08, SRMR = 0.03, IFI = 0.99, TLI = 0.98, CFI = 0.99, GFI = 0.97).

JOB SATISFACTION SCALE

Perceptions of teachers of JS were measured with the “Job Satisfaction Scale” developed by Brayfield and Rothe in 1951 and adapted into Turkish by Keser and Bilir (2019), whose short form was created by Judge, Locke, Durham, and Kluger (1998). There are five items in this 5-point Likert-type scale consisting of a single dimension. Teachers were asked to rate themselves between “Strongly Disagree (1)” and “Strongly Agree (5)”. The internal consistency coefficient of the scale was found as $\alpha = 0.85$ by the researchers, and it was $\alpha = 0.79$ in this study. Two items of this scale are coded in reverse. Goodness of fit in CFA was calculated as ($\chi^2/\text{sd} = 4.6$, RMSEA = 0.05, CFI = 0.92, GFI = 0.91) by Keser and Bilir (2019). Goodness of fit in CFA also supported one factor structure of The Job Satisfaction Scale in this study ($\chi^2/\text{sd} = 1.957$, RMSEA = 0.05, SRMR = 0.02, IFI = 0.99, TLI = 0.99, CFI = 0.99, GFI = 0.99).

LIFE SATISFACTION SCALE

Finally, the “Life Satisfaction Scale” developed by Diener, Emmons, Larsen, and Griffin (1985: 72) and adapted to Turkish by Dağlı and Baysal (2016) was used to measure LS. The researchers used this scale, which was a 7-point Likert-type scale in the original version, as a 5-point Likert-type scale. The scale includes five items and one dimension. Teachers were asked to rate themselves in the range of “I Never Agree (1)” to “I Totally Agree (5)” for each item. The internal consistency coefficient of the scale was found as $\alpha = 0.88$ by the researchers who performed the adaptation, and it was calculated as 0.92 in this study. The scale does not include items coded in reverse. Goodness of fit in CFA was calculated as ($\chi^2/\text{sd} = 1.17$, RMSEA = 0.03, SRMR = 0.019, CFI = 1.00, GFI = 0.99) by Dağlı and Baysal (2016). In this study, goodness of fit in CFA also supported one factor structure of The Life Satisfaction Scale in this study ($\chi^2/\text{sd} = 1.660$, RMSEA = 0.04, SRMR = 0.01, IFI = 0.99, TLI = 0.99, CFI = 0.99, GFI = 0.99).

DATA ANALYSIS

The data of the study were analysed with the SPSS and AMOS programs. The relationships between the variables considered in this study were determined by performing Pearson correlation analysis. Structural equation model (SEM) analysis was conducted to test the role of JS and WLB in the relationship between PJ fit and LS. A two-stage path was followed for SEM analyses. In the first stage, the measurement model was tested to evaluate the validity of the relationships between implicit variables. In the second stage, structural model analysis was performed to test the validity of the hypothetical model suggested. The significance level was taken as at least 0.05 in the study, and other significance levels (0.01 and 0.001) were also shown.

Indexes used to evaluate the suitability of the model created in the study are similarity ratio chi-square statistics (χ^2/sd), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR). Fit indexes are the goodness of fit index (GFI), comparative fit index (CFI), Tucker-Lewis index (TLI), relative fit index (RFI) and normed fit index (NFI).

Marsh and Hocevar (1988) emphasized that the value obtained as a result of the χ^2/sd operation should be less than 3 to represent a good fit, and it should be less than 5 to show sufficient fit in order for the tested model to be compatible with the real data. For the RMSEA, Browne and Cudeck (1993) stated that RMSEA values equal to or less than 0.05 represent good fit, those between 0.05 and 0.08 show sufficient compliance, and those between 0.08 and 0.10 show moderate fit. For the SRMR, a value equal to or less than 0.05 corresponds to a perfect fit, and values of 0.08 or less represent acceptable fit. The GFI, CFI, TLI, NFI, and RFI take values ranging from 0 to 1. Values of 0.95 and above correspond to perfect fit and values between 0.90 and 0.95 correspond to acceptable fit (Kline, 2011; Tabachnick & Fidell, 2013).

RESULTS

DESCRIPTIVE STATISTICS AND CORRELATION ANALYSIS

The arithmetic mean, standard deviation, kurtosis and skewness, and Pearson correlation values between variables are given in Table 1 for the variables of PJ fit, WLB, JS, and LS. Accordingly, positive and significant relationships were found between all variables.

Table 1. Descriptive Statistics and Correlation Analysis (N=401)

	Mean	Standard deviation	Skewness	Kurtosis	1	2	3	4
1. PJ fit	3.79	0.79	-0.54	-0.22	1			
2. WLB	5.29	1.39	-1.20	0.94	0.51**	1		
3. JS	3.94	0.75	-0.98	1.34	0.73**	0.48**	1	
4. LS	3.23	0.96	-0.31	-0.29	0.50**	0.54**	0.54**	1

**p < 0.001

MEASUREMENT MODEL

In the measurement model, the implicit variables of PJ fit and WLB were determined through two parcels. The items of the scales were used to determine the implicit variables of JS and LS. Four implicit variables and 14 observed variables were used in the measurement model analysis.

CFA conducted in order to test the validity of the measurement model showed that the data-model fit was at an acceptable level [$\chi^2(71, N = 401) = 282.524, p < 0.001$ ($\chi^2/\text{sd} = 3.979$), RMSEA = 0.09 (0.08-0.10), SRMR = 0.05, IFI = 0.95, TLI = 0.93, CFI = 0.95, GFI = 0.91].

STRUCTURAL MODEL

Four implicit variables and 14 observed variables were utilized in the structural model analysis. SEM analysis showed that the data-model fit was at an acceptable level [$\chi^2(71, N = 401) = 282.524, p < 0.001$ ($\chi^2/\text{sd} = 3.979$), RMSEA = 0.09 (0.08-0.10), SRMR = 0.05, IFI = 0.95, TLI = 0.93, CFI = 0.95, GFI = 0.91]. SEM analyses showed that PJ fit can directly predict JS ($\beta = 0.88, p < 0.001$) and WLB ($\beta = 0.59, p < 0.001$) but not LS ($\beta = 0.04, p = 0.079$). SEM analyses also showed that LS was directly predicted by both JS ($\beta = 0.39, p < 0.001$) and WLB ($\beta = 0.35, p < 0.001$). Finally, SEM analyses demonstrated that PJ fit indirectly predicts LS through JS and WLB (ab. = 0.54). Whether this indirect effect is significant or not was tested with the bootstrapping (5000) method. Analyses indicated that the indirect effect of PJ fit on LS through JS and WLB can vary between ab. = 0.27 and 0.95 at a 95% confidence interval, which is significant at $p < 0.001$. Therefore, the SEM analyses have shown that JS and WLB can play a full intermediary role in the relationship between PJ fit and LS. Finally, analysis showed that PJ fit explained 78% of the variance in JS, 35% of the variance in WLB, and 46% of the variance in LS with three variables (Table 2 and Figure 1).

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Table 2. Direct, Indirect and Total Values Between Variables

Variable	Direct effect	Indirect effect	Total effect
Model-1			
PJ fit→WLB	0.59***		0.59***
PJ fit→ JS	0.88***		0.88***
PJ fit→ LS	0.04 ^{ns}	0.54*** (95% CI = 0.27-0.95)***	0.58***
WLB→ LS	0.35***		0.35***
JS→ LS	0.39***		0.39***
Model-2			
PJ fit→JS	0.88***		0.88***
PJ fit→ LS	0.16 ^{ns}	0.41** (95% CI = 0.14-0.76)**	0.57**
JS→ LS	0.47***		0.47***
Model-3			
PJ fit---→WLB	0.58***		0.58***
PJ fit---→ LS	0.33***	0.23** (95% CI = 0.15-0.31)***	0.56***
WLB---→ LS	0.39***		0.39***

^{ns} p > 0.05, **p < 0.01, ***p < 0.001

The analyses were then repeated to determine which of the variables of JS and WLB had the higher intermediary effect. First, the intermediary role of JS in the relationship between PJ fit and LS was tested. SEM analysis showed that the model-data fit was acceptable [$\chi^2(51, N = 401) = 220.00, p < 0.001$ ($\chi^2/sd = 4.134$), RMSEA = 0.09 (0.08-0.10), SRMR = 0.05, IFI = 0.95, TLI = 0.93, CFI = 0.95, GFI = 0.91].

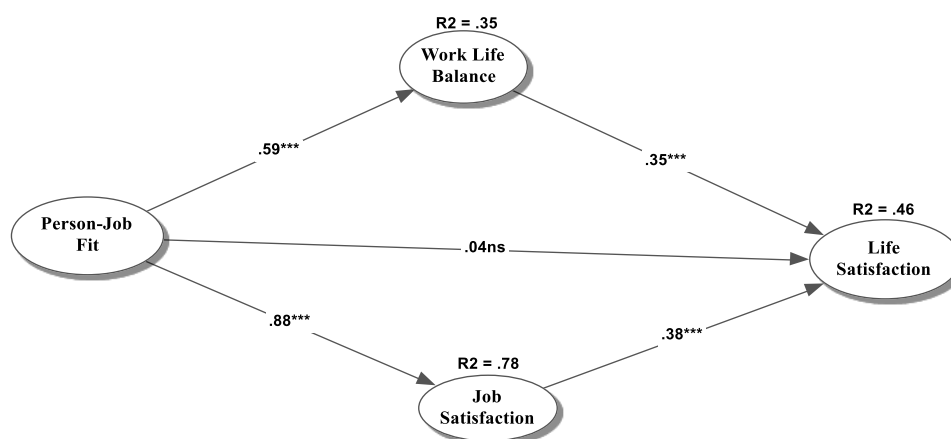


Figure 1. Structural model values

SEM analyses showed that PJ fit can directly predict JS (= 0.88, $p < 0.001$) and JS can predict LS (= 0.47, $p < 0.001$), but PJ fit cannot directly predict LS (= 0.16, $p = 0.28$). Analyses also showed that PJ fit can indirectly predict LS through JS (ab.= 0.41). Whether this indirect effect was significant or not was tested with the bootstrapping (5000) method. Analyses indicated that the indirect effect of PJ fit on LS through JS can vary between ab. = 0.14 and 0.76 at a 95% confidence interval, which is significant at the $p < 0.01$ level. Therefore, SEM analyses have shown that JS can fully mediate the relationship between PJ fit and

LS. Finally, the analyses have shown that PJ fit explains 78% of the total variance in JS, and PJ fit and JS together explain 38% of the total variance in LS.

Secondly, the intermediary role of WLB in the relationship between PJ fit and LS was tested. SEM analysis showed that the model-data fit was at an acceptable level [$\chi^2(24, N = 401) = 98.126, p < 0.001$ ($\chi^2/sd = 4.089$), RMSEA = 0.09 (0.07-0.11), SRMR = 0.03, IFI = 0.97, TLI = 0.96, CFI = 0.97, GFI = 0.95].

SEM analyses revealed that PJ fit directly predicts WLB ($= 0.58, p < 0.001$) and LS ($= 0.33, p < 0.001$), and WLB can predict LS ($= 0.39, p < 0.001$). Analyses also showed that PJ fit predicts LS indirectly through WLB ($ab.= 0.23$). Whether this indirect effect was significant or not was tested with the bootstrapping (5000) method. Analyses showed that the indirect effect of PJ fit on LS through WLB can vary between $ab. = 0.15$ and 0.31 at a 95% confidence interval, which is significant at $p < 0.001$. Therefore, SEM analyses have shown that WLB can partially mediate the relationship between PJ fit and LS. Finally, the analyses have shown that PJ fit explains 35% of the total variance in WLB and 41% of the total variance in LS with PJ fit and WLB.

DISCUSSION AND SUGGESTIONS

This study was undertaken to determine the mediating role of WLB and JS in the relationship between PJ fit and LS in teachers. The results obtained from this study show that (1) all variables are significantly correlated with each other, (2) the relationship between PJ fit and LS is mediated by WLB and JS, and (3) the mediating effect of JS is higher among the variables of JS and WLB.

The results showed that PJ fit can directly predict JS and WLB. Studies support the proposition that individuals easily get satisfaction from jobs that are compatible with their personality types related to their careers and adapt to these jobs (Spokane, 1985; Tinsley, 2000; cited in Carless, 2005). Davis (1988) remarked that JS among employees occurs when the characteristics of the job and the requests of the employees match each other (cited in Yilmaz, 2012). The fitness between individual characteristics and situational characteristics has long been a significant explanation of differences in individual performance and JS (Caldwell & O'Reilly, 1990). Kılıç and Yener (2015) reported in their study that as the level of harmony between what an individual's job offers or requires and the expectations for his/her skills increases, the level of satisfaction of the individual from his/her job will also increase. These results are similar to those reported by Bogle and Nir (2015), who discovered that PJ fit is related to the inner satisfaction of teachers, and to those of Kristof et al. (2005), who found that PJ fit positively affects JS. They are also consistent with the conclusions of Westfall (2012), who found that there is a positive relationship between PJ fit and JS; of Peng and Mao (2015), who found that PJ fit significantly predicts JS; and of Chhabra (2015), who found that there is a positive relationship between job fit and JS. Another variable that can be predicted directly by PJ fit is WLB. When the literature was examined, no study on this was found. However, theoretical explanations for WLB confirm this relationship. For example, Guest (2002) mentioned organizational factors such as job demands, organizational culture, and personal factors such as adaptability while explaining the determinants of WLB in his model.

According to the results of this study, while PJ fit can directly predict JS and WLB, it cannot directly predict LS. In other words, PJ fit predicts LS not directly, but indirectly through JS and WLB. Thus, it is possible to say that it will not be enough for teachers to think that they are fit for their job in terms of their knowledge, skills, and abilities and that their job meets their expectations in order to get satisfied in their lives. Life satisfaction of teachers will be achieved through positive feelings of them towards their job and their ability to establish the balance between their job and their lives outside of it. Studies that addressed the relationship between PJ fit and LS with mediating variables as in this study, have been found. Çırpan et al. (2019) discussed the mediating role of self-improvement in the relationship between PJ fit and LS. Park, Monnot, Jacob, and Wagner (2011) studied the mediating effect of self-assessment on the relationship between PJ fit and subjective well-being. They stated that the dimensions of PJ fit (need/supply, demands/skills) may affect different aspects of subjective mental health. Since LS also represents a cognitive component of subjective well-being (Diener et al., 1995; Diener et al., 1999; Diener, 2000), this study also supports these findings.

Analyses showed that LS is directly predicted by both JS and WLB. The results of the study in which Jensen et al. (2017) discussed the mediating role of WLB and JS in the relationship between innovation and LS

were in line with the present findings. The literature includes many studies regarding the positive relationship between JS and LS (Aşan & Erenler, 2008; Avşaroğlu et al., 2005; Aydınhan & Koç, 2016; Çevik & Korkmaz, 2014; Demirel, 2014; Dikmen, 1995; Fırat & Cula, 2016; Judge & Watanabe, 1993; Karaaslan et al., 2020; Lent et al., 2011; Rice, Near, & Hunt, 1980; Shyim & Korb, 2016). The results of the studies of Haar (2013), Haar et al. (2014), Kuzulu et al. (2013), Taşdelen-Karçkay and Bakalım (2017), Toker and Kalıpçı (2020), Umer and Zia-ur- Rehman (2013), Yusuf and Khan (2018) support the finding that LS is predicted by JS. Guest (2002) stated in his model, which demonstrated the symptoms, nature, and results of WLB, that one of the results of WLB is LS.

Finally, it was tried to determine which of the variables of JS and WLB had a higher mediating effect. The mediating roles of these two variables were examined separately, and it was identified that JS had a full mediating role and WLB had a partial mediating role in the relationship between PJ fit and LS as a result of the analyses. This finding supports the importance of JS among teachers in terms of LS and other organizational outcomes. It is observed that when employees in an organization are not sufficiently motivated and JS is not achieved, they often do not use their skills and cannot transform their potential into performance (Barutçugil, 2004). Since teachers are individuals who can directly indicate the quality of education, it is much more important for educational organizations to ensure the satisfaction of teachers (Yılmaz & Kırıl, 2014).

As a result, it can be said that as the perceptions of teachers that they are suitable for their jobs concerning their knowledge, skills, and abilities and that they meet the expectations of their jobs increase, the satisfaction that they obtain from their jobs will increase and they will achieve more balance between their work and their life outside of work. This, in turn, will reflect positively on their LS. Therefore, it can be said that the selection process of teacher candidates is of great importance at this point. However, when looking at the process in Turkey, teacher candidates take the Higher Education Institutions Exam (YKS) in order to enter a teaching program and the Public Personnel Selection and Placement Exam (KPSS) in order to be appointed as a teacher to an official institution. As of 2016, it has been decided to conduct interviews in the appointment of the candidates, where the candidates are invited up to three times the field quota after the KPSS score ranking. No other written, oral, or performance exams are applied to measure teaching skills or physical and personal characteristics in addition to these exams.

According to Yazıcı (2009), it is seen that external factors stand out in the professional choices of teacher candidates in Turkey, their choices are not conscious, and they choose independently of their interests and abilities. This suggests that teacher candidates do not adequately consider variables such as personality, interest, and ability when choosing their profession. Making the choice of profession independently of these variables is one of the obstacles facing individuals as they attempt to pursue their profession in a satisfactory way throughout life (http://www.egitim.hacettepe.edu.tr/belge/OgretmenEgitimi-istihdam_Raporu.pdf).

New regulations can be made for the selection process and vocational training of teacher candidates to increase the PJ fit of teachers. In the selection of teacher candidates for the relevant faculties and programs, besides the university exam, written and oral exams that measure their professional skills and attitudes and whether their personal, physical, and other characteristics are suitable for the profession should be applied. Practical courses such as internships can also be increased in education faculties. Services such as the necessary guidance and orientation to reduce the adjustment problems of new teachers can be increased. Considering this from the need/supply perspective, which is another dimension of PJ fit, in order to increase PJ fit, the features offered by the profession to teachers should be able to meet their demands and needs. In this direction, steps can be taken to make the teaching profession more attractive by meeting expectations of teachers such as working conditions, salary, participation in decisions, etc.

The findings of this study should be evaluated to the extent of their limitations. First, data were obtained from teachers who work in schools in Denizli, Turkey. The study could be repeated with data obtained from larger samples. Besides teachers, parents and students can also be included in future studies. In addition to the PJ fit, which was the independent variable in this study, person-environment fit could also be added. The mediating role of other variables such as family-work and work-family conflict, alienation, and burnout can be taken into consideration in the relationship between PJ fit and LS among teachers.

REFERENCES

- Al Atyya, Asmaa Abdullah. "The perceived levels of burnout and job satisfaction of Qatari general and special education teachers." *Psycho-Educational Research Reviews*, 4 (1) (2015): 3-9.
<https://www.journals.lapub.co.uk/index.php/perr/article/view/118>.
- Aşan, Öznur, and Esra Erenler. "İş tatmini ve yaşam tatmini ilişkisi [Relationship between job satisfaction and life satisfaction]." *Suleyman Demirel University Journal of Faculty of Economics & Administrative Sciences*, 13 (2) (2008): 203-216.
- Avşaroğlu, Selahattin, M. Engin Deniz, and Ali Kahraman. "Teknik öğretmenlerde yaşam doyumu iş doyumu ve mesleki tükenmişlik düzeylerinin incelenmesi [The Investigation of the levels of life satisfaction, job satisfaction and professional burnout in technical teachers]." *Selçuk University Journal of Institute of Social Sciences*, 14 (2005): 115-129.
- Aydintan, Belgin, and Hakan Koç. "The relationship between job satisfaction and life satisfaction: an empirical study on teachers." *International Journal of Business and Social Science*, 7 (10) (2016): 72-80.
- Barutçugil, İsmet. *Stratejik insan kaynakları yönetimi [Strategic human resources management]*. İstanbul: Kariyer Publishing, 2004.
- Bogler, Ronit, and Adam E. Nir. "The contribution of perceived fit between job demands and abilities to teachers' commitment and job satisfaction." *Educational Management Administration & Leadership*, 43 (4) (2015): 541-560.
- Braun, Summer S., Kimberly A. Schonert-Reichl, and Robert W. Roeser. "Effects of teachers' emotion regulation, burnout, and life satisfaction on student well-being." *Journal of Applied Developmental Psychology*, 69 (2020): 101151.
<https://doi.org/10.1016/j.appdev.2020.101151>
- Brayfield, Arthur, and Harold Rothe. "An index of job satisfaction." *Journal of Applied Psychology*, 35 (5) (1951): 307-311.
- Brkich, Mariana, Danielle Jeffs, and Sally Carless. "A Global self-report measure of person-job fit." *European Journal of Psychological Assessment*, 18 (1) (2002): 43-51.
- Browne, Michael W., and Robert Cudeck. "Alternative ways of assessing model fit." *Testing structural equation models*, Ed. Bollen, Kenneth A., and J. Scott Long. Newbury Park, CA: Sage, 1993. 136-162.
- Burnette, Jeni L., and Jeffrey M. Pollack. "Implicit theories of work and job fit: Implications for job and life satisfaction." *Basic and Applied Social Psychology*, 35 (4) (2013): 360-372.
- Byrne, Una. "Work-life balance: Why are we talking about it at all?" *Business Information Review*, 22 (1) (2005): 53-59.
- Cable, Daniel, and D. DeRue. "The Convergent and Discriminant Validity of Subjective Fit Perceptions." *Journal of Applied Psychology*, 87 (5) (2002): 875-884.
- Caldwell, David F., and Charles A. O'Reilly III. "Measuring person-job fit with a profile-comparison process." *Journal of Applied Psychology*, 75 (6) (1990): 648-657.
- Carless, Sally A. "Person-job fit versus person-organization fit as predictors of organizational attraction and job acceptance intentions: A longitudinal study." *Journal of Occupational and Organizational Psychology*, 78 (3) (2005): 411-429.
- Chhabra, Bindu. "Person-Job Fit: Mediating role of job satisfaction & organizational commitment." *Indian Journal of Industrial Relations*, 50 (4) (2015): 638-651.
- Chan, David W. "Burnout and life satisfaction: Does gratitude intervention make a difference among Chinese school teachers in Hong Kong?" *Educational Psychology*, 31 (7) (2011): 809-823.
- Christopher, John Chambers. "Situating psychological well-being: Exploring the cultural roots of its theory and research." *Journal of Counseling & Development*, 77 (2) (1999): 141-152.
- Clark, Sue Campbell. "Work cultures and work/family balance." *Journal of Vocational Behavior*, 58 (3) (2001): 348-365.
- Çelik, Osman Tayyar, and Mehmet Üstüner. "The relationship between teachers' burnout and life satisfaction." *Journal of Theoretical Educational Science- ICSE*, (2018): 41-60.
- Çevik, Nüket Kirci, and Oya Korkmaz. "Türkiye'de yaşam doyumu ve iş doyumu arasındaki ilişkinin iki değişkenli sıralı probit model analizi [Bivariate ordered probit analysis of the relationship between the life satisfaction and the job satisfaction in Turkey]." *Academic Review of Economics & Administrative Sciences*, 7 (1) (2014): 126-145.
- Çırpan, Hüseyin, Pelin Vardarlıer, and Ömer Erdem Koçak. "Kişi-iş uyumu ve yaşam doyumu ilişkisinde işte kendini yetiştirmenin aracı etkisi [Mediating effect of thriving at work on the relationship between person-job fit and life satisfaction]." *Balikesir University Journal of Social Sciences Institute*, 22 (41) (2019): 237-252.
- Dağlı, Abidin, and Nigah Baysal. "Yaşam doyumu ölçeğinin Türkçe'ye uyarlanması: Geçerlik ve güvenirlik çalışması [Adaptation of the satisfaction with life scale into turkish: The study of validity and reliability]." *Electronic Journal of Social Sciences*, 15 (59) (2016): 1250-1262.
- Demirel, Hüsne. "An investigation of the relationship between job and life satisfaction among teachers." *Procedia-Social and Behavioral Sciences*, 116 (2014): 4925-4931.
- Diener, Ed. "Subjective well-being: The science of happiness and a proposal for a national index." *American Psychologist*, 55 (1) (2000): 34-43.
- Diener, Ed., et al. "The satisfaction with life scale." *Journal of Personality Assessment*, 49 (1) (1985): 71-75.
- Diener, Ed, et al. "Subjective well-being: Three decades of progress." *Psychological Bulletin*, 125 (2) (1999): 276-302.
- Diener, Ed, Marissa Diener, and Carol Diener. "Factors predicting the subjective well-being of nations." *Journal of Personality and Social Psychology*, 69 (1995): 851-864.
- Diener, Edward, and Richard E. Lucas. "Personality and subjective well-being." *Well-being: The foundations of hedonic psychology*, Ed. Kahneman, Daniel, Edward Diener, and Norbert Schwarz. New York: Russell Sage Foundation, 1999. 213-229.

- Dikmen, Ahmet Alpay. "İş doyumu ve yaşam doyumu ilişkisi [Job satisfaction and life satisfaction relationship]." *Ankara University Journal of Social Sciences*, 50 (3) (1995): 115-140.
- Duckworth, Angela Lee, Patrick D. Quinn, and Martin EP Seligman. "Positive predictors of teacher effectiveness." *The Journal of Positive Psychology*, 4 (6) (2009): 540-547.
- Dursun, Salih, Uğur Kaya, and Emel İhtar. "Kişilik-iş uyumunun duygusal tükenmişlik ile iş ve yaşam doyumu üzerindeki etkisi: Muhasebe meslek mensupları üzerinde bir uygulama [The effects of fit of personality- job over emotional exhaustion and job-life satisfaction: an application on accounting professionals]." *Karadeniz Technical University Institute of Social Sciences Journal of Social Sciences*, 5 (9) (2015): 55-69.
- Edwards, Jeffrey R. "Person-job fit: A conceptual integration, literature review, and methodological critique." *International review of industrial and organizational psychology*, Ed. Cooper, Cary L., and Ivan T. Robertson. John Wiley & Sons, 1991. 283-357.
- Felstead, Alan, et al. "Opportunities to work at home in the context of work-life balance." *Human Resource Management Journal*, 12 (1) (2002): 54-76.
- Fırat, Z. Mehmet, and Serpil Cula. "İş-aile çatışması, aile-iş çatışması ve iş doyumunun öğretmenlerin yaşam doyumu üzerindeki etkisi [The impacts of work-family conflict, family-work conflict and job satisfaction levels on teachers' overall life satisfaction]." *Başkent University Journal of Education*, 3 (2) (2016): 146-155.
- George, Jennifer M., and Gareth R. Jones. *Understanding and managing organizational behavior*. 5. Edition. New Jersey: Pearson Prentice Hall, 2008.
- Gorsy, Chanderkant, and Neeraj Panwar. "Work-life balance, life satisfaction and personality traits among teaching professionals." *International Journal in Management & Social Science*, 4 (2) (2016): 98-105.
- Kerse, Gökhan. "The impact of job crafting on person-job fit: "I am compatible with my work because I can make changes in my work"." *Atatürk Üniversitesi İktisadi ve İdari Bilimler Dergisi*, 32 (4) (2018): 941-958.
- Guest, David E. "Perspectives on the study of work-life balance." *Social Science Information*, 41 (2) (2002): 255-279.
- Haar, Jarrod M. "Testing a new measure of work-life balance: A study of parent and non-parent employees from New Zealand." *The International Journal of Human Resource Management*, 24 (17) (2013): 3305-3324.
- Haar, Jarrod M., et al. "Outcomes of work-life balance on job satisfaction, life satisfaction and mental health: A study across seven cultures." *Journal of Vocational Behavior*, 85 (3) (2014): 361-373.
- Ilies, Remus, et al. "Educated and happy: A four-year study explaining the links between education, job fit, and life satisfaction." *Applied Psychology*, 68 (1) (2019): 150-176.
- Jensen, Kent Wickstrøm, Ye Liu, and Thomas Schøtt. "Entrepreneurs innovation bringing job satisfaction, work-family balance, and life satisfaction: In China and around the world." *International Journal of Innovation Studies*, 1 (4) (2017): 193-206.
- Judge, Timothy A., et al. "Dispositional effects on job and life satisfaction: The role of core evaluations." *The Journal of Applied Psychology*, 83 (1) (1998): 17-34.
- Judge, Timothy A., and Shinichiro Watanabe. "Another look at the job satisfaction-life satisfaction relationship." *Journal of Applied Psychology*, 78 (6) (1993): 939-948.
- Kalliath, Thomas, and Paula Brough. "Work-life balance: A review of the meaning of the balance construct." *Journal of Management & Organization*, 14 (3) (2008): 323-327.
- Karaaslan, İzzettin, Tuna Uslu, and Serkan Esen. "Beden eğitimi öğretmenlerinin mesleki tükenmişlik, iş doyumu ve yaşam doyumlarının incelenmesi [Research on occupational burnout, job satisfaction and life satisfaction of physical education teachers]." *Journal of Health and Sport Sciences*, 3(1) (2020): 7-18.
- Keser, Aşkın, and Kadriye Burcu Öngen Bilir. "İş tatmini ölçeğinin türkçe güvenilirlik ve geçerlilik çalışması [Turkish reliability and validity study of job satisfaction scale]." *Kirkalreli University Journal Of Social Sciences*, 3 (3) (2019): 229-239.
- Kılıç, Kemal Can, and Didem Yener. "Birey-örgüt ve birey-iş uyumunun çalışanların iş tutumlarına etkisi: Adana ilinde bankacılık sektöründe çalışanlar üzerine bir araştırma [The effect of person-organization and person-job fit on employees' job attitudes: A research on employees in the banking sector in Adana.]." *Journal of Çukurova University Institute of Social Sciences*, 24 (1) (2015): 161-174.
- Kline, Rex B. *Principles and practice of structural equation modeling*. New York: Guilford Press, 2011.
- Krause, Neal. "Lifetime trauma, emotional support, and life satisfaction among older adults." *The Gerontologist*, 44 (5) (2004): 615-623.
- Kristof-Brown, Amy L. "Perceived applicant fit: Distinguishing between recruiters' perceptions of person-job and person-organization fit." *Personnel Psychology*, 53 (3) (2000): 643-671.
- Kristof-Brown, Amy L., Ryan D. Zimmerman, and Erin C. Johnson. "Consequences of individuals' fit at work: A meta-analysis of person-job, person-organization, person-group, and person-supervisor fit." *Personnel psychology*, 58 (2) (2005): 281-342.
- Kuzulu, Ece, Selver Kurtuldu, and Gülşah Vural Özkan. "İş yaşam dengesi ile yaşam doyumu ilişkisi üzerine bir araştırma [A research on the relationship between work life balance and life satisfaction]." *The Sakarya Journal of Economics*, 2 (1) (2013): 88-127.
- Lent, Robert W., et al. "Predicting the job and life satisfaction of Italian teachers: Test of a social cognitive model." *Journal of Vocational Behavior*, 79 (1) (2011): 91-97.
- Li, Chung-Kai, and Chia-Hung Hung. "An examination of the mediating role of person-job fit in relations between information literacy and work outcomes." *Journal of Workplace Learning*, 22 (5) (2010): 306-318.

- Locke, Edwin A. "The nature and causes of job satisfaction." *Handbook of industrial and organizational psychology*, Ed. M. D. Dunnette. Chicago, IL: Rand McNally, 1976. 1297-1349.
- Marsh, Herbert W., and Dennis Hocevar. "A new, more powerful approach to multitrait-multimethod analyses: Application of second-order confirmatory factor analysis." *Journal of Applied Psychology*, 73 (1) (1988): 107-117.
- Noda, Hideo. "Work-life balance and life satisfaction in OECD countries: A cross-sectional analysis." *Journal of Happiness Studies*, 21 (4) (2020): 1325-1348.
- Özyürek, Arzu, Hasan Gümüş, and Soner Doğan. "Examination of burnout and life satisfaction levels of teachers and school administrators." *Journal of Human Sciences*, 9 (2) (2012): 892-904.
- Park, Hyung, et al. "Moderators of the relationship between person-job fit and subjective well-being among Asian employees." *International Journal of Stress Management*, 18 (1) (2011): 67-87.
- Peng, Yuwen, and Chao Mao. "The impact of person-job fit on job satisfaction: the mediator role of self efficacy." *Social Indicators Research*, 121 (3) (2015): 805-813.
- Pichler, Florian. "Determinants of work-life balance: Shortcomings in the contemporary measurement of WLB in large-scale surveys." *Social Indicators Research*, 92 (3) (2009): 449-469.
- Player, Daniel, et al. "How principal leadership and person-job fit are associated with teacher mobility and attrition." *Teaching and Teacher Education*, 67 (2017): 330-339.
- Qiao, Yan, and Che Lina. "An investigation and research on life satisfaction of rural teachers in China." *US-China Education Review*, 9 (4) (2019): 192-201.
- O'Reilly III, Charles A. "Personality-job fit: Implications for individual attitudes and performance." *Organizational Behavior and Human Performance*, 18 (1) (1977): 36-46.
- Rani, Anjana. "A study of relationship between life satisfaction and teacher effectiveness of secondary school teachers on the basis of stream." *Indian Journal of Applied Research*, 6(10) (2016): 217-219.
- Rice, Robert W., Janet P. Near, and Raymond G. Hunt. "The job-satisfaction/life-satisfaction relationship: A review of empirical research." *Basic and Applied Social Psychology*, 1 (1) (1980): 37-64.
- Sekiguchi, Tomoki. "Person-organization fit and person-job fit in employee selection: A review of the literature." *Osaka Keidai Ronshu*, 54 (6) (2004): 179-196.
- Shin, Doh C., and Dan M. Johnson. "Avowed happiness as an overall assessment of the quality of life." *Social Indicators Research*, 5 (1) (1978): 475-492.
- Shyim, Emmanuel Clementina, and Katrina A. Korb. "Factors contributing to the life satisfaction of secondary school teachers in Jos North LGA." *Journal of Educational Foundations*, 6 (1) (2016): 27-36.
- Soba, Mustafa, Ali Babayiğit, and Ebru Demir. "Yaşam doyum ve tükenmişlik; öğretmenler üzerine bir araştırma [Life satisfaction and burnout; a research on teachers]." *Mehmet Akif Ersoy University Journal of Social Sciences Institute*, 9 (19) (2017): 269-286.
- Spector, Paul E. *Industrial and organizational psychology: Research and practice*. USA: John Wiley & Sons, Inc., 1996.
- Şirin, Hatice Deveci, and Erkan Faruk Şirin. "The relationship between life satisfaction levels and work alienation in physical education teachers." *Asian Journal of Instruction*, 3(2) (2015): 1-14.
- Tabachnick, Barbara G., and Linda S. Fidell. *Using multivariate statistics*. USA: Pearson, 2013.
- Taşdelen-Karçay, Arzu, and Orkide Bakalım. "The mediating effect of work-life balance on the relationship between work-family conflict and life satisfaction." *Australian Journal of Career Development*, 26 (1) (2017): 3-13.
- Telef, Bülent Baki. "The study of teachers' self-efficacy, job satisfaction, life satisfaction and burnout." *Elementary Education Online*, 10 (1) (2011): 91-108.
- Toker, Boran, and M. Bahadır Kalıpçı. "İş-Yaşam Dengesinin Yaşam Doyumuna Etkisinde İşe Gömülmüşlüğü Aracılık Rolü [Job embeddedness as a moderator of the impact of work-life balance on life satisfaction: An application in hospitality business]." *Journal of Business Research*, 12 (1) (2020): 888.-901.
- Türker, Yusuf, and Kazım Çelik. "Öğretmenlerde iş ve aile çatışmasının yaşam doyumunu üzerindeki etkisinde iş doyumunun aracı rolü [Mediating role of job satisfaction in the effect of work and family conflict on teachers' satisfaction with life]." *Hacettepe University Journal of Education*, 34 (1) (2019): 242-258.
- Teacher Education and Employment in Turkey: Current Status and Recommendations Report*. Hacettepe University Faculty of Education: Ankara, 2017. http://www.egitim.hacettepe.edu.tr/belge/OgretmenEgitimi-istihdam_Raporu.pdf
- Westfall Jr, Richard E. An analysis of person-job fit, job satisfaction, and student academic performance. Unpublished doctoral dissertation, 2012. <https://eric.ed.gov/?id=ED548295>
- Williams, Fiona. "In and beyond New Labour: towards a new political ethics of care." *Critical Social Policy*, 21 (4) (2001): 467-493.
- Vroom, Victor H. *Work and motivation*. San Francisco: Wiley and Sons Inc., 1964.
- Umer, Rabia, and Muhammad Zia-ur-Rehman. "Impact of work life balance and work life conflict on the life satisfaction of working women: A case study of higher education sector of twin cities of Pakistan." *Academic Research International*, 4 (5) (2013): 445-458.
- Van Vianen, Annelies EM. "Person-environment fit: A review of its basic tenets." *Annual Review of Organizational Psychology and Organizational Behavior*, 5 (2018): 75-101.
- Yılmaz, Meryem, and Erkan Kırıl. "The relationship between motivation and job satisfaction of secondary school teachers". *Psycho-Educational Research Reviews* ,3 (3) (2014): 74-90.
<https://www.journals.lapub.co.uk/index.php/perr/article/view/114>.

- Yılmaz, Kürşad. "İlköğretim okulu öğretmenlerinin iş doyumu düzeyleri ile örgütsel vatandaşlık davranışları arasındaki ilişki [The relationship between primary school teachers' job satisfaction levels and organizational citizenship behaviors]." *Anadolu Journal of Educational Sciences International*, 2 (2) (2012): 1-14.
- Yılmaz, Ercan, and Hüseyin Aslan. "Öğretmenlerin iş yerinde yalnızlıkları ve yaşam doyumları arasındaki ilişkinin incelenmesi [Examination of relationship between teachers' loneliness at workplace and their life satisfaction]." *Pegem Journal of Education & Instruction*, 3 (3) (2013): 59-69.
- Yılmaz, Ercan, and Ali Murat Sünbül. "Öğretmenlerin yaşam doyumları ve okullardaki örgütsel güven düzeyi [The organizational confidence level in school and saturation of the life of teacher]." *Qafqaz University Publications*, (26) (2009): 172-179.
- Yusuf, Subooh, and Sajid Ali Khan. "Impact of work-life balance on life satisfaction among Qatar police personnel." *IAETSD Journal for Advanced Research in Applied Sciences*, 5 (3) (2018): 420-424.

EFFECT OF AN INSTRUCTIONAL DESIGN BASED ON THE ALGO-HEURISTIC THEORY OF INSTRUCTION ON STUDENTS' MATHEMATICS PERFORMANCE AND LOGICAL THINKING SKILLS

Abstract: The main aim of this research is to examine the effect of an instructional design based on the Algo-Heuristic Theory of Instruction (AHTI) on students' mathematics performance and logical thinking skills in the subject of 7th grade mathematics. The research is grounded in a mixed method. In the quantitative part of the research, a quasi-experimental design including pretest, posttest, retention test and retention monitoring test with experimental, placebo and control groups is used, while the qualitative section is based on a case study. The study group of the research consisted of three classes at a secondary school having a "medium" level of achievement. The quantitative and qualitative data of the study revealed that with the effect of the instructional design based on the AHTI, the mathematics performance of students in the experimental group increased, and that their logical thinking skills were positively impacted. Furthermore, it was revealed that students in the experimental group were able to transfer the stages of the Landamatics algorithm that they learned in the unit named "Ratios and Proportions" to their performance in science.

Keywords: Algo-Heuristic Theory of Instruction, Mathematics Instruction, Logical Thinking Skills, Science Performance.

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INTRODUCTION

Since mankind first appeared on the world stage, mathematics has had great importance in achieving the technology used in shaping the current world. For this reason, from past to present, importance has always been given to mathematics instruction. The value of mathematics in the modern world, in which developments in the field of science and technology play increasingly effective roles, is indisputable (Jacobs, et. al., 2007, p. 258).

On the other hand, the conducted studies (Baykul, 1991; Fidan and Baykul, 1991 and 1992; MEB, 1999 and 2003; cited in Baykul, 2014; MEB-PISA, 2016, MEB-TIMMS, 2016) reveal that student achievement in the subject of mathematics, which is so important, is generally low. The results obtained by the Turkish Ministry of National Education (MEB) in the central examination system, which has been frequently changed (LGS, OKS, SBS, TEOG and LGS) in recent years for entry into secondary education (high school), show similarity with the results of the current study. As a reflection of this situation, the subject of mathematics in schools is perceived as a difficulty which is faced by many students throughout their educational lives.

The contemporary understanding of education has subjected teachers to the necessity and responsibility of choosing and applying instructional approaches which will achieve learning at the highest level (Yılmaz, 2001; cited in Tatar and Dikici, 2008, p. 184). In mathematical education, conceptual and computational information complement each other and conceptual information is essential for application of computational information (Baki and Kartal, 2004; Soylu and Aydın, 2006; cited in Özbek and Uyumaz, 2020). Since the subject of mathematics has a symbolic and abstract nature (Steiner, 2007), it differs in a number of characteristics from other branches of science such as practical and social sciences (cited in İlhan, et. al., 2013, p. 117). Therefore, when the approaches to be used in mathematics instruction for increasing students' performance are being determined, it is important for the specific structure of the subject of mathematics to be taken into consideration. One of the approaches that can be used in mathematics teaching is the Algo-Heuristic Theory of Instruction (AHTI).

The AHTI was developed in the 1950s by Lev Landa. This theory is concerned with the cognitive processes that take place during the elementary and systematic analysis of information and the acquisition and implementation of information, as well as with the psychomotor skills. This theory allows students to internalise the thought processes and steps of understanding that they need to use when they are learning something new. By enabling learners to develop their general thought processes, it teaches them to understand information better, become high-level learners and transfer knowledge to new situations (Setiawan, 2007, p. 276).

The AHTI is also known as *Landamatics*. The theory, which was first referred to as the AHTI, was later expressed as Landamatics by American academicians (Landa, 1995, p. 1). The aim of Landamatics is, by means of thought methods based on small elements and clear information, to solve different problems having similar logical structures.

There are three methods for using instructional strategies included in the Landamatics approach (Reigeluth, 1999):

1. Guided Discovery: A method requiring the use of the six steps.
2. Expository Teaching: The same six steps are performed as in guided discovery, but the first two steps are given in ready form to students with suitable demonstrations.
3. Combination Approach: Depending on the teacher's objectives, some steps are taught with the discovery method and some with the expository method.

Setiawan (2007, p. 276) states that despite many benefits and areas of use, a number of problems can be experienced with implementation of Landamatics at primary school level. He states that for students to extract the desired information from educational materials, they will require the assistance of the teacher. He states the fact that students at that level do not possess summarisation and analysis skills as the reason for this. According to Setiawan, the AHTI can be applied to students at secondary level and above. The fact that at secondary level, students have entered the period of abstract operation, increases the possibilities for the AHTI to be implemented in the instruction of different subjects. One of these subjects is that of mathematics. Mathematics is one of the important tools used for solving problems, not only in science, but also in our daily lives. Due to this importance, outcomes related to mathematics are included in curricula at

all levels and in all fields from elementary education, and even preschool education programmes, right up to postgraduate education programmes. The reason why the necessary importance is given to mathematics teaching in schools at all levels and in all countries is that mathematics is an indispensable tool in scientific studies and in daily life (Baykul, 2014, p. 26).

As a result of the search for a system in education in Turkey, it is seen that in recent years, changes have been made to curricula at various intervals. From the 2005-2006 academic term onwards, radical changes encompassing all subjects have been made to primary curricula (Çırakoğlu and Saracaloğlu, 2009). In line with these changes, the secondary school mathematics curriculum was also revised in 2006 and 2009, and later in 2013, 2017 and 2018.

Scientific thinking skills such as: observation, classification, measurement, conclusion, forecasting, judging, induction, inference, data interpretation, variables control, etc. The application of these skills is one of the fundamental objectives of scientific education. When these skills are acquired by students, they help them to cope with renewable life problems (Adel, 2020, p. 69). Another of the competences that play an important role in student achievement in mathematics instruction is logical thinking skills. The skill of logical thinking, which is one of the cognitive skills, occupies an important place in students' success (Barr, 1994). Logical thinking ability is one of the most frequently emphasised subjects in studies conducted in the field of education. Studies related to logical thinking skills (Gökçe and Saraçoğlu, 2018; Ayal et al., 2016; Korkmaz, 2016; Bouhnik and Giat, 2009; Bozdoğan, 2007; Johnson and Lawson, 1998; Valanides, 1996) reveal that there is a positive relationship between logical thinking ability and achievement.

The aim of this study is to examine the effect of an instructional design developed based on the AHTI on seventh-grade students' mathematics performance and logical thinking skills in the subject of mathematics. As a result of the pilot study that was conducted, it was determined that learning environments based on the AHTI in the subject of mathematics were effective in ensuring students' retention of information for learning geometry and in fostering problem-solving and mathematical thinking skills in students. Based on this, enriching the literature with a similar study was considered necessary.

The main aim of the study is to examine the effect of an instructional design developed according to the AHTI on seventh-grade students' mathematics performance and logical thinking skills in the subject of mathematics. Within the scope of the main aim of the research, the hypotheses and subproblems for which answers were sought are given below:

1. There is a statistically significant difference between students in the experimental group of the mathematics instruction design based on the AHTI, and those in the control and placebo groups in terms of :
 - a) Scores in the mathematics achievement pre-test, post-test, retention test and retention monitoring test,
 - b) Scores for logical thinking skills, and
 - c) Scores in the science achievement test.
2. What are the views of students regarding the mathematics instruction design based on the AHTI?
3. How do students behave in relation to the mathematics instruction design based on the AHTI, according to observers' perceptions?

METHOD

DESIGN

This research is based on a mixed design. Due to the nature of the research problem, qualitative and quantitative data were gathered together in the study. In this, design was used, in which the qualitative and quantitative data were gathered concurrently or consecutively, which could be used to answer the hypotheses and subquestions, and in which the analyses of the data sets were conducted independently of one another. In the quantitative part of the research, a quasi-experimental design including pre and post-tests, retention test, and retention monitoring test with experimental, placebo and control groups was used, while the qualitative section is based on a case study. The research design is a 3x4 mixed design.

In this research, with the aim of revealing the differences that might occur in the experimental group due to the instructional programme that was applied, besides the control group, a placebo group was included. The reason for selecting the placebo group in this study was to monitor any change brought about in

participants' behaviours by the presence of the researcher or by the awareness of the participant that he/she was being observed, and thereby, to increase the strength of the experimental design.

SAMPLE

The study group for the implementation of the research consisted of 88 students attending three different classes of the seventh grade at a public secondary school affiliated to the Ministry of National Education and located in the district of Çiğli, Izmir Province, in the 2017-2018 academic year, in Turkey. Using the multi-stage cluster sampling method, three 7th grade classes from the school where the implementation was to be made were each assigned to the experimental, placebo and control groups, respectively. Information related to the students who participated in the study is given in Table 1.

Table 1. Participant Information

Group	Gender		Total
	Female	Male	
Experimental	17	11	28
Control	16	14	30
Placebo	17	13	30
Total	50	38	88

DATA COLLECTION TOOLS

The data were gathered by means of a mathematics achievement test, a logical thinking skills test, a science achievement test (open-ended form), a semi-structured interview form, reflective diaries and an observation form.

MATHEMATICS ACHIEVEMENT TEST (MAT)

The MAT was developed and used by the researcher to determine the levels of achievement of students participating in the research in the subject of mathematics with regard to the unit named "Ratios and Proportions".

The item strength and item discrimination values of the items of the developed MAT were analysed according to the criterion value intervals table, and the items that needed to be removed and items that could be included in the test were determined.

According to the item analyses, the item strengths of the questions were revealed to be at easy or medium levels, and their item discrimination levels were determined as medium or good. Following the item analyses that were made, items that needed to be rejected and items with low discrimination values according to the criterion values were removed from the test, and the number of questions was reduced to 25. When the values related to the 25-question multiple choice MAT are examined, it is seen that the values calculated were 13.98 for arithmetic mean, 6.93 for standard deviation, 18.00 for mode, 17.00 for median, .56 for average strength and .92 for KR-20 value. By giving the multiple choice MAT its final form, this test was used to determine students' academic achievement related to the subject of mathematics. For the MAT, their normal distribution was examined within each group (experiment, control, and placebo). To examine whether there was a difference among the groups' mathematics achievement test scores before the implementation, the mean pre-test scores were compared. The equivalence of variance of pre-test scores before the analysis ($p=.082$) was checked, and the hypothesis that "there is no statistically significant difference in variance between groups" was accepted ($p>.05$).

LOGICAL THINKING SKILLS TEST (LTST)

The LTST was developed by Tobin and Capie (1981), and a reliability value of .79 was calculated for its original form. The Turkish translation and adaptation of the test was carried out by Geban, et. al. (1992), and a Cronbach alpha internal consistency reliability coefficient of .77 was found for the test. For the present study, an internal consistency reliability coefficient of .85 was calculated.

OPEN-ENDED SCIENCE ACHIEVEMENT TEST (SAT)

The SAT was developed with the aim of examining the possible effects of the AHTI on the achievement of outcomes of students in the experimental group on the topic of "Mirrors" in the unit named "Interaction of Light with Matter".

For the question items prepared according to the 2 outcomes related to the topic of "Mirrors" included in the "Interaction of Light with Matter" unit of the 7th grade science curriculum, the views of an expert in

the field of science (a faculty member), curriculum development specialists (three faculty members and two doctoral research assistants), three science teachers and one Turkish teacher were sought.

The SAT, which was developed with the aim of examining the possible effects of the AHTI on the achievement of outcomes of students in the experimental group in the topic of “Mirrors” in the unit named “Interaction of Light with Matter”, was also applied to designated students to determine whether or not students in the experimental group used the stages of the Landamatics algorithm that they had learnt, in different disciplines. Accordingly, the test was applied to the specified students -a total of six students obtaining the highest scores (three students) and the lowest scores (three students)- based on the “extreme or deviant case sampling” method of purposive sampling. While the specified six students attempted to solve the test individually by reasoning out loud, they were video-recorded.

The SAT consisting of open-ended questions was developed with the aim of examining the possible effects of the AHTI on experimental group students’ achievement of the outcomes in the “Mirrors” unit. The science achievement test was evaluated by three different raters (the subject teacher and two branch teachers) using a graded scoring key, by applying it to the experimental, control and placebo groups. When Kendall’s coefficient of concordance was examined, a statistically significant degree of concordance was observed between the assessments made by the three raters ($W=.94$; $p<.01$).

Normal distribution within the experimental, control and placebo groups was examined for the science achievement test. When the statistics for the experimental, control and placebo groups in the SAT are examined according to the Shapiro-Wilk test, it is seen that normal distribution was achieved ($p>.05$).

SEMI-STRUCTURED INTERVIEW FORM

For the interviews conducted with the students who took part in the research, a semi-structured interview form, consisting of four open-ended questions prepared in line with the aims of the research, was developed. While the interview forms were being developed, subjects aimed at determining the perceptions and feelings of students in the experimental group regarding the implemented programme were taken into consideration. For the validity of the draft form, the views of a total of six experts, namely, two mathematics teachers, three faculty members working in the curriculum and instruction department and one Turkish teacher, were obtained, and the interview questions were revised based on the feedback provided by the experts. Following the expert views obtained for the interview questions included in the form, interviews were held with three students for the purpose of a pilot study, questions that were unclear or difficult to understand were revised, and the interview form was given its final shape.

OBSERVATION FORM

Within the scope of the research subject, in the experimental group, with the aim of revealing the observations related to student behaviours in the teaching-learning process with which the instruction based on the AHTI was implemented, field notes were taken by the researcher and branch teacher. For this purpose, an observation form, comprising six steps to conform with the steps of the AHTI, was developed. After the preparation of the draft observation form, for its validity, the views of three curriculum development specialists, all of whom are faculty members, were sought. In line with the views provided by these experts, the observation form was given its final shape.

REFLECTIVE DIARY

Within the scope of the research subject, in the experimental group, a reflective diary was created in order to determine the perceptions, views and feelings of students in the experimental group regarding the teaching-learning process with which the instruction based on the AHTI was implemented. On each page of the reflective diary are questions for students to answer, related to how the activities conducted in the lesson had gone, what the students had done and how they thought they performed during the activities. Following the preparation of the draft reflective diary, for its validity, three curriculum development specialists, all of whom are faculty members, were consulted for their views. In line with the views provided by these experts, the reflective diary was given its final shape.

DATA COLLECTION

The quantitative data of the research were collected with the measurement tools that would be used in the experimental model. The qualitative data of the research were gathered with a diversification strategy using three different qualitative data collection techniques. The researcher participated in the instruction process

in the experimental group as an observer, and carried out the structured observation process. Moreover, apart from the researcher, another mathematics teacher also took part in the instruction process as an observer by keeping field notes on the observation form. The reflective diaries (record books) kept by the students formed the data sources in the document examination section of the research. Following the implementation of the instruction programme, students in the experimental group were separated into lower, middle and upper groups according to their posttest scores. Then, information about students in each group was obtained from the classroom teacher. Next, interviews were held with specified students related to their voluntariness for participating in the study. Finally, nine students (three from each group) were specified, and interviews were conducted with these students.

DATA ANALYSIS AND INTERPRETATION

The analysis of the data collected via the tests and measurement tool was performed with the SPSS 21 software program. After entry of the data, independent samples t-test was used to measure differences within groups, while two-factor repeated measures ANOVA was used to measure differences between groups. In the scoring key that was prepared for the open-ended measurement tool for science achievement, concordance between the scores of three different scorers was examined using Kendall's coefficient of concordance. The SAT, which was developed with the aim of examining the possible effects of the AHTI on the achievement of outcomes of students in the experimental group in the topic of "Mirrors" in the unit named "Interaction of Light with Matter", was also applied to designated students to determine whether or not students in the experimental group used the stages of the Landamatics algorithm that they had learnt, in different disciplines. Accordingly, the test was applied to the specified students -a total of six students obtaining the highest scores (three students) and the lowest scores (three students)- based on the "extreme or deviant case sampling" method of purposive sampling. While the specified six students attempted to solve the test individually by reasoning out loud, they were video-recorded. The video recordings lasted 7 minutes on average. By watching the video recordings together with a mathematics field expert who is a faculty member, the question of whether the students had used their reasoning skills according to the steps of the Landamatics algorithm in their problem-solving process was analysed with the typological analysis technic.

For analysis of the data obtained in the interviews conducted with the students, the content analysis method was used. To test the validity of the data obtained as a result of the analysis, the results of the individual analyses were discussed by the researchers, consensus was reached, and to calculate the rate of agreement, the formula "Agreement = Number of Agreements/(Number of Agreements + Number of Disagreements) X 100" was used, and as a result, it was determined that a rate of agreement of 91% in the analyses related to the students was achieved. This rate is accepted as reliable for research (Miles and Huberman, 1994). Descriptive analysis technique was used for reliability of the analyses of the data obtained from the reflective diaries. Data were coded separately by two expert coders, inter-rater consistency was examined, and it was seen that they had a rate of agreement of 88%.

With the aim of supporting and increasing the validity of the interviews made with the students, observation was made by the researcher and a mathematics teacher for a total of 20 hours in 5 different classes for 2 lesson periods each. For analysis of the data obtained from the observation form, the descriptive analysis technique was used. For reliability of the analyses, the data were coded separately by two expert coders, inter-rater consistency was examined, and it was seen that they had a rate of agreement of 85%.

IMPLEMENTATION PROCESS

The implementation period of the research lasted for a total of 14 weeks. The experimental applications of the research were carried out in the "Ratios and Proportions" unit by the branch teachers in all three groups. Execution of the instruction in the groups lasted six weeks, excluding the application of the tests. Prior to implementation of the programmes, the MAT and LTST were applied to the groups as the pre-test. While the mathematics instructional design developed according to the AHTI was carried out in the experimental group, the existing programme, in which the traditional expository method and question-answer technique were used, was implemented in the control group. However, different from the control group, a programme enriched with worksheets was carried out in the placebo group. During the implementation process, the qualitative data of the research were gathered with a diversification strategy using three different qualitative data collection techniques. The researcher participated in the instruction process in the experimental group

as an observer, and carried out the structured observation process. Moreover, apart from the researcher, another mathematics teacher also took part in the instruction process as an observer by keeping field notes on the observation form. The reflective diaries kept by the students formed the data sources in the document examination section of the research.

FINDINGS

FINDINGS RELATED TO THE FIRST HYPOTHESIS

One-Way analysis of variance Results for the Mathematics Achievement Pre-test scores of the groups are given in Table 2.

Table 2. One-way Analysis of Variance for Pre-test Scores of Groups in MAT

Source of Variance	Total Squares	sd	Mean Squares	F	p
Between Groups	313.037	2	156.519	.688	.506
Within Groups	19350.679	85	227.655		
Total	19663.716	87			

As a result of the analysis, no statistically significant difference ($F_{(2-85)}=.688$, $p>.05$) was observed between MAT pre-test mean scores of participants in the experimental group ($\bar{X}=32.60$), the control group ($\bar{X}=37.20$), or the placebo group ($\bar{X}=35.60$).

To examine whether there was a difference between pre-test and post test scores of the three groups in the MAT, the groups' mean scores were compared using one-way analysis of variance. The results of analysis are given Table 3.

Table 3. One-way Analysis of Variance of Differences in Pre-test and Post test Scores of Groups in MAT

Source of Variance	Total Squares	sd	Mean Squares	F	p	η^2
Between Groups	2681.885	2	1340.942	3.747	.028	.08
Within Groups	30416.831	85	357.845			
Total	33098.716	87				

As a result of the analysis, a statistically significant difference ($F_{(2-85)}=3,747$, $p>.05$) was observed between MAT mean scores of participants in the experimental group ($\bar{X}=27.54$), the control group ($\bar{X}=14$), and the placebo group ($\bar{X}=21.73$). Moreover, as a result of the Scheffé multiple comparison test that was performed, a statistically significant difference was found between the experimental group and control group in favour of the experimental group. According to the test result, the effect size ($\eta^2=.08$) is medium level.

To examine whether there was a difference between post-test and retention test scores of the three groups in the mathematics achievement test, the groups' mean scores were compared using one-way analysis of variance. The results of analysis are given Table 4.

Table 4. One-way Analysis of Variance of Differences in Post-test and Retention Test Scores of Groups in MAT

Source of Variance	Total Squares	sd	Mean Squares	F	p
Between Groups	358.092	2	179.046	.542	.584
Within Groups	28113.181	85	330.744		
Total	28471.273	87			

As a result of the analysis, no statistically significant difference ($F_{(2-85)}=.542$, $p>.05$) was observed between MAT mean scores of participants in the experimental group ($\bar{X}= - 4.71$), the control group ($\bar{X}= - 4$), or the placebo group ($\bar{X}= .13$). The findings reveal that there was a non-significant decrease in mean scores of all groups.

Accordingly, to determine whether there was a difference between MAT post-test and retention test scores within the groups themselves, mean scores of each group were compared using t-test for dependent groups. The results of analysis are given Table 5.

Table 5. Dependent Groups T-Test Analysis of Differences between MAT Post-test and Retention Test Scores of Experimental, Control and Placebo Groups

Measurement	Group	N	\bar{X}	S	sd	t	p
Post-test	Experimental	28	60.14	14.42	27	1.35	.190
	Control	30	51.20	17.34	29	1.11	.276
	Placebo	30	57.33	19.01	29	.45	.964
Retention Test	Experimental	28	55.43	20.45	27	1.35	.190
	Control	30	47.20	19.12	29	1.11	.276
	Placebo	30	57.20	20.72	29	.45	.964

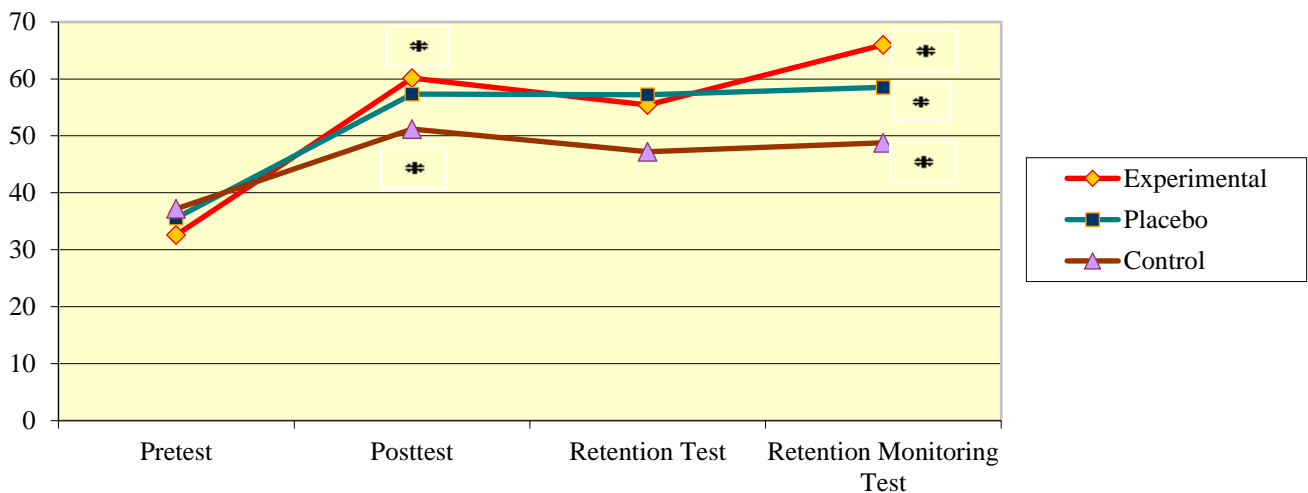
As a result of the t-test for the experimental group, a statistically significant difference was not observed ($t_{(27)}=1.35$, $p>.05$) between MAT mean scores in the post-test ($\bar{X}=60.14$) and retention test ($\bar{X}=55.43$). A non-significant decrease was seen between mean scores in the post-test and retention test for the experimental group. As a result of the t-test for the control group, a statistically significant difference was not observed ($t_{(29)}=1.11$, $p>.05$) between mean scores in the post-test ($\bar{X}=51.20$) and retention test ($\bar{X}=47.20$). The t-test result for the placebo group did not reveal a statistically significant difference ($t_{(29)}=.45$, $p>.05$) in mean scores for the post-test ($\bar{X}=57.33$) and retention test ($\bar{X}=57.20$).

To examine whether there was a difference between retention test scores and retention monitoring test scores of the three groups in the MAT, the groups' mean scores were compared using one-way analysis of variance. The results of analysis are given Table 6.

Table 6. One-way Analysis of Variance of Differences in Retention Test and Retention Monitoring Test Scores of Groups in MAT

Source of Variance	Total Squares	sd	Mean Squares	F	p	η^2
Between Groups	1583.640	2	791.820	3.306	.041	.07
Within Groups	20356.724	85	239.491			
Total	21940.364	87				

As a result of the analysis, a statistically significant difference ($F_{(2,85)}=3.306$, $p>.05$) was observed between MAT mean scores of participants in the experimental group ($\bar{X}=10.57$), the control group ($\bar{X}=1.60$), and the placebo group ($\bar{X}=1.33$). Moreover, as a result of the Scheffé multiple comparison test that was performed, a statistically significant difference was found between the experimental group and control group, and the experimental group and placebo group, in favour of the experimental group. The test result reveals that the calculated effect size ($\eta^2=.07$) is medium level. The changes in the groups' MAT mean scores are shown in Fig. 1.


 Figure 1. Changes in MAT Mean Scores of Groups
 (* Groups between which there were significant differences in mean scores)

To examine whether there was a difference among the LTST scores of the groups selected for the experimental design, the mean pre-test scores of the groups were compared using one-way analysis of variance. The results of analysis are given Table 7.

Table 7. One-way Analysis of Variance for Pre-test Scores of Groups in LTST

Source of Variance	Total Squares	sd	Mean Squares	F	p
Between Groups	.044	2	.22	.23	.977
Within Groups	80.274	85	.944		
Total	80.318	87			

As a result of the analysis, no statistically significant difference ($F_{(2,85)}=.23$, $p>.05$) was observed between LTST pre-test mean scores of participants in the experimental group ($\bar{X}=1.32$), the control group ($\bar{X}=1.30$), or the placebo group ($\bar{X}=1.26$).

To examine whether there was a difference between pre-test and post-test scores of the three groups in the LTST, the groups' mean scores were compared using one-way analysis of variance. The results of analysis are given Table 8.

Table 8. One-way Analysis of Variance of Differences in Pre-test and Post-test Scores of Groups in LTST

Source of Variance	Total Squares	sd	Mean Squares	F	p	η^2
Between Groups	18.306	2	9.153	8.502	.000	.17
Within Groups	91.512	85	1.077			
Total	109.818	87				

As a result of the analysis, a statistically significant difference ($F_{(2,85)}=8.502$, $p>.05$) was observed between LTST mean scores of participants in the experimental group ($\bar{X}=2.11$), the control group ($\bar{X}=1.03$), and the placebo group ($\bar{X}=1.27$). The test result shows that the effect size ($\eta^2=.17$) is large. Moreover, as a result of the Scheffé multiple comparison test that was performed, a statistically significant difference was found between the experimental group and control group, and the experimental group and placebo group, in favour of the experimental group.

Accordingly, to determine whether there was a difference between LTST pre-test and post-test scores within the groups themselves, mean scores of each group were compared using t-test for dependent groups. The results of analysis are given Table 9.

Table 9. Dependent Groups T-Test Analysis of Differences between LTST Pre-test and Post-test Scores of Experimental, Control and Placebo Groups

Measurement	Group	N	\bar{X}	S	sd	t	p
Pre-test	Experimental	28	1.32	.94	27	10.51	.000
	Control	30	1.30	.99	29	1.11	.276
	Placebo	30	1.27	.98	29	7.35	.000
Post-test	Experimental	28	3.46	1.57	27	10.51	.000
	Control	30	2.30	1.91	29	1.11	.276
	Placebo	30	2.53	1.76	29	7.35	.000

As a result of the t-test for the experimental group, a statistically significant difference was observed ($t_{(27)}=10.51$, $p>.05$) between LTST mean scores in the pre-test ($\bar{X}=1.32$) and post-test ($\bar{X}=3.46$). The test result reveals that the calculated effect ($d=1.99$) is at a very high level. As a result of the t-test for the control group, a statistically significant difference was not observed ($t_{(29)}=1.11$, $p>.05$) between mean scores in the pre-test ($\bar{X}=1.30$) and post-test ($\bar{X}=2.30$). As a result of the t-test for the placebo group, a statistically significant difference was observed ($t_{(29)}=7.35$, $p>.05$) between mean scores in the pre-test ($\bar{X}=1.27$) and post-test ($\bar{X}=2.53$). The test result shows that the calculated effect ($d=1.34$) is at a very high level. The changes in the groups' LTST mean scores are shown in Fig. 2.

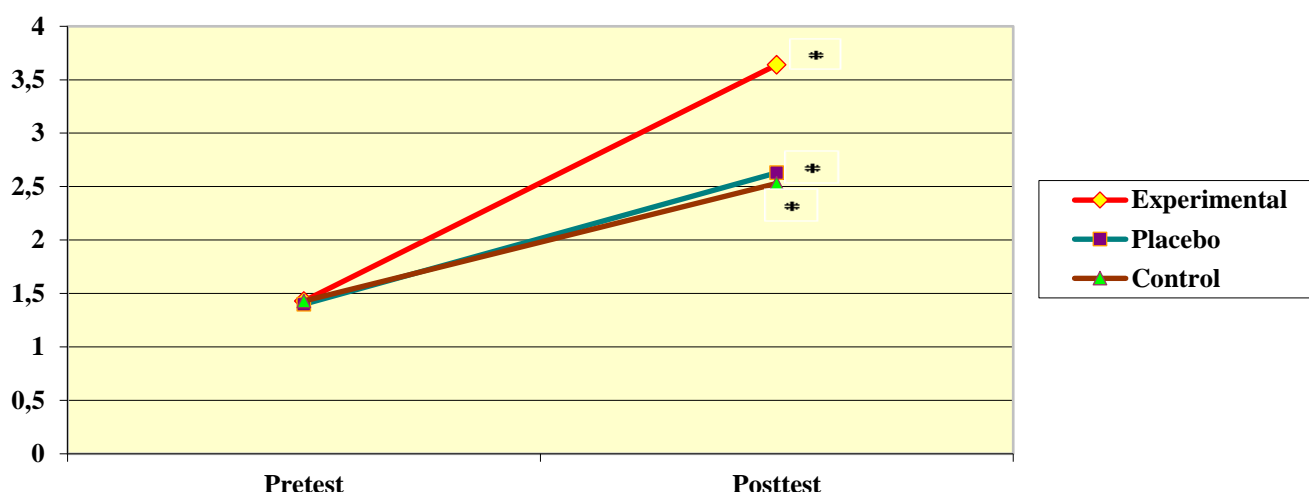


Figure. 2. Changes in LTST Mean Scores of Groups
 (* Groups between which there were significant differences in mean scores)

To examine whether there was a difference between science achievement test (SAT) scores of the three groups in the SAT, the groups' mean scores were compared using one-way analysis of variance. The results of analysis are given Table 10.

Table 10. One-way Analysis of Variance for Pre-test Scores of Groups in SAT

Source of Variance	Total Squares	sd	Mean Squares	F	p	η^2
Between Groups	2581.610	2	1290.805	9.787	.000	.19
Within Groups	11210.390	85	131.887			
Total	13792.000	87				

As a result of the analysis, a statistically significant difference ($F_{(2-85)}=9.787$, $p>.05$) was observed between SAT mean scores of participants in the experimental group ($\bar{X}=44.57$), the control group ($\bar{X}=37.17$), and the placebo group ($\bar{X}=31.23$). The test result shows that the effect size ($\eta^2=.19$) is large. Moreover, as a result of the Scheffé multiple comparison test that was performed, a statistically significant difference was found between the experimental group and control group, and the experimental group and placebo group, in favour of the experimental group. According to these data, the instructional design based on the AHTI can be considered to have had a positive effect on the experimental group's achievement of outcomes in the "Mirrors" unit.

The SAT, which was developed to examine the possible effects of the AHTI on the achievement of outcomes of students in the experimental group in the unit named "Mirrors", was also applied to designated students to determine whether or not students in the experimental group used the stages of the Landamatics algorithm, which they learned in the unit named "Ratios and Proportions" in different disciplines. The results of analysis are given Table 11.

When the findings are examined, student behaviours arising from the structure of the questions in the test - reading the problem out loud, explaining the problem in writing, giving reasons, etc.- were observed and behaviours such as attempting to recreate the problem, dividing the solution into stages, transferring the skill, and reorganising the information, were also observed. Moreover, it was seen that in the process of solving certain problems, students in the upper group avoided displaying behaviours related to algorithmic thinking by giving quick responses to the questions, whereas students in the lower group displayed behaviours related to algorithmic thinking.

Based on the findings, the interpretation can be made that while attempting to solve the test given to them out loud, the students analysed the data given in the problem, organised the data by reviewing their existing knowledge, created solutions according to the situation, explained their reasons related to the solutions by writing them down, adapted their mental skills to new situations, and organised and reorganised the information.

Table 11. Students' Levels of Using Landamatics Algorithm

Landamatics Steps	Cognitive Process	Student Behaviours	f	Upper Group Lower Group
Mental Processes Guiding the students to discover the system of mental operations	Thinking about the problem	Reading the problem out loud	42	21 21
		Repeating the data given in the problem	9	4 5
		Writing the data given in the problem	5	3 2
		Drawing a diagram to discover the data given in the problem	2	2 0
		Total	58	30 28
Assisting the students in becoming aware of what they do in their minds when performing a task and then formulating a method that goes with it.	Awareness of one’s own thought processes	Giving reasons for the solution	33	17 16
		Analysing the data given in the problem	15	9 6
		Reviewing their knowledge	10	6 4
		Total	58	32 26
Assisting the students in learning to apply the discovered method.	Deciding how the knowledge will be used	Organising their knowledge for the solution	20	11 9
		Creating options for the solution	14	10 4
		Organising the options	14	10 4
		Eliminating options	14	10 4
		Total	62	41 21
			f	Upper Group
Assisting the students in internalising the discovered method.	Generating appropriate solutions for the problem situation	Explaining the solution by writing it	33	19 14
		Explaining the solution by drawing it	13	9 4
		Attempting to recreate the problem	7	5 2
		Performing an operation	6	4 2
		Making a comparison	6	4 2
		Dividing the solution into stages	2	2 0
		Total	67	43 24
			f	Upper Group
Assisting the students in automising the discovered method.	Transferring the knowledge to new situations	Transferring the skill	6	4 2
		Total	6	4 2
			f	Upper Group
Evaluating whether the intended degree of generalisation has been achieved	Checking achievement and accuracy of the solution	Reorganising the information	2	1 1
		Total	2	1 1

FINDINGS RELATED TO THE FIRST SUB-PROBLEM

FINDINGS OBTAINED FROM THE INTERVIEWS HELD WITH THE STUDENTS

When the findings obtained as a result of the content analysis of students' views, expressed in the interviews, about what the subject of mathematics reminded them of and about the importance of this subject for them are examined; it is seen that the responses given by the students are grouped under the themes of "Things Evoked by the Subject of Mathematics" and "Importance of the Subject".

In the theme of Things Evoked by the Subject of Mathematics, in response to the question "What does mathematics remind you of?" answers were given by the students as "related to daily life", "operations", "numerical logic", "intelligence", "reasoning", "shopping" and "difficulty" of students.

In the theme of Importance of the Subject, the subject of mathematics was regarded as important by the students due to its “effect on high school placement score”, “relationship with other subjects” and “necessity for lessons” of students.

Based on these indications, it can be said that, albeit for different reasons, students regarded the subject of mathematics as important.

When the findings obtained as a result of the content analysis of students’ views about their expectations from the subject of mathematics and about the degree of fulfillment of their expectations are examined; it is seen that the responses given by the students are grouped under the themes of “Expectations from the Subject of Mathematics” and “Degree of Fulfillment of Expectations”.

In the theme of Expectations from the Subject of Mathematics, in response to the question “What are your expectations from the subject of mathematics?” answers were given by the students as “a different experience”, “anxiety”, “high expectation”, “low expectation” and “exciting” of students.

In the theme of Degree of Fulfilment of Expectations, answers were given by the students as “enjoyable”, “effective”, “facilitating”, “permanent”, “attention-grabbing”, “appealing”, “participatory” and “absorbing” of students as measures of the extent to which their expectations were fulfilled.

Based on these indications, it can be said that although the students had different expectations from the subject of mathematics before the instruction process began, when the lessons were over, the expectations of students with positive expectations were fulfilled, while the expectations of students who had lower expectations and who felt anxious were fulfilled in a more positive way than they had expected.

When the findings obtained as a result of the content analysis of students’ views about the differences between this lesson and the mathematics lessons taught previously are examined; it is seen that the responses given by the students are grouped under the theme of “Differences in Instruction of the Subject”.

It can be seen that regarding differences noticed by the students in instruction of the subject compared to their previous mathematics lessons, the instruction was found to be “enjoyable”, “different”, “effective”, “facilitating”, “permanent”, “motivating”, “attention-grabbing”, “appealing”, “exciting”, “participatory” and “absorbing” of students.

When the findings obtained as a result of the content analysis of students’ views about the contribution made by the algorithm used in the subject of mathematics and of the activities carried out in class are examined; it is seen that the responses given by the students are grouped under the theme of “Contribution Made”.

Examining students’ views related to the methods, techniques and activities applied in the teaching of the lessons, the activities were found to be effective, to play a facilitating role in learning, to be useful, to be a guide for problem solving, to make learning permanent of the students; and to enable quick thinking in problem solving, effective participation in in-class activities, group activities and cooperation in learning, logical thinking in problem solving and faster learning of the students.

In line with these findings, it can be said that the methods, techniques and activities applied in the lessons made a positive contribution to students’ performance in the subject of mathematics.

When the findings obtained as a result of the content analysis of students’ views about making the subject of mathematics more effective are examined; it is seen that the responses given by the students are grouped under the theme of “Making the Subject More Effective”. In order to make the subject of mathematics more effective, it was suggested that the model should be applied in other school subjects, that the model should be applied in other topics, that the implementation of the programme should be continued and that the model should be applied over a longer period on the students.

In line with these findings, it can be said that in order to make the subject of mathematics more effectively, students wanted the programme to be implemented in other school subjects and in other topics of mathematics, and wanted the programme to be extended over a longer period.

FINDINGS OBTAINED FROM THE STUDENTS’ REFLECTIVE DIARIES

When the result of the descriptive analysis of the notes taken by the students in the experimental group in their diaries, regarding the instructional design that was applied based on the AHTI, findings related to how the lessons went are examined; it can be said that the students enjoyed the activities, and that they found them good/very good and enjoyable, but that some students, albeit few in number, sometimes did not enjoy the activities and had difficulty with the activities especially in the evaluation sections.

When the result of the descriptive analysis of the notes taken by the students in their diaries, findings related to the things that the students did in the lessons are examined; it can be said that during the activities in the lessons, the students performed numerical operations, answered the questions asked by the teacher, took part in the activities in the lessons, and enjoyed themselves in the activities, although some students, albeit few in number, were bored and had difficulty during the activities. In this context, it can be said that the instructional design based on the AHTI included students in the lessons by making them active.

When the result of the descriptive analysis of the notes taken by the students in their diaries, findings related to students' views on their performance during the lessons are examined; it is seen that the students mostly found their performances in the activities to be good/very good, and that they participated actively in the activities. It can be said that the instructional design based on the AHTI enabled the students to regard their performances as adequate.

FINDINGS RELATED TO THE SECOND SUB-PROBLEM

FINDINGS OBTAINED FROM THE RESEARCHER'S FIELD NOTES

When the result of the descriptive analysis of the researcher's observation of students in the experimental group, findings related to students' behaviour during the implementation are examined; it can be said that the activities in the mathematics lessons conducted according to the AHTI attracted the attention and aroused the curiosity of the students, motivated them, directed them towards inquiry, collaboration and investigation, increased their efforts, and sometimes made the subject entertaining. However, in the sections of the lessons named *Evaluating whether the intended degree of generalisation has been achieved*, it was observed that some students, albeit few in number, were unwilling/bored, and that a few students also had difficulty. The fact that some evaluation activities in this section were difficult for several students since they were unable to focus on the process can be given as a reason for this.

FINDINGS OBTAINED FROM THE TEACHER'S FIELD NOTES

When the result of the descriptive analysis of the branch teacher's observation of students in the experimental group, findings related to students' behaviour during the implementation are examined, it can be said that the activities in the mathematics lessons conducted according to the AHTI attracted the attention and aroused the curiosity of the students, motivated them, directed them towards inquiry, collaboration and investigation, increased their efforts, and sometimes made the subject entertaining. Furthermore, although some students sometimes had difficulty in expressing the operations mathematically and behaved unwillingly in the sections of the lessons named *Assisting the students in becoming aware of what they do in their minds when performing a task and then formulating a method that goes with it*, they discovered the operations with the support of the teacher. In the sections of the lessons named *Evaluating whether the intended degree of generalisation has been achieved*, it was also observed that some students, albeit few in number, were unwilling/bored, that some students only partially took part in the lessons, and that some students needed the support of the teacher due to having difficulty. The fact that some evaluation activities in this section were difficult for several students since they were unable to focus on the process can be given as a reason for this.

CONCLUSION AND DISCUSSION

The quantitative findings of the study related to the students' mathematics achievement reveal that the experimental algorithm was effective on students' mathematics performance and that the mathematics instructional design developed according to the AHTI had a significant effect on experimental group students' mathematics achievement post-test mean scores compared to those of students in the control group. In the study he conducted to determine the effect of mathematics instruction based on the AHTI, Landa (1995, p. 44) concluded that students' problem-solving competences increased significantly. Similarly, Rufi'i (2015, p. 942) investigated the effectiveness of AHTI-based instruction on development of preservice teachers' academic achievement, and found that the implementation increased the students' academic achievement. On the other hand, the findings reveal that no statistically significant difference was found between mathematics achievement post-test and retention test mean scores of the experimental, control and placebo groups, and that there was a non-significant decrease in mean scores of all groups. The fact that during the implementation period, students in the experimental group had their mid-year holiday

for two of the four weeks between the post-test and the retention test, can be counted among the reasons for this decrease in scores. In fact, a certain decrease in retention test scores is an expected result. The non-significant decrease in scores between post-test and retention test shows that although students in the experimental group were on holiday, they did not forget the applications in the instruction process based on the AHTI. However, the findings reveal that there was a statistically significant difference between mathematics achievement retention test and retention monitoring test mean scores of the experimental, control and placebo groups, in favour of the experimental group. Al Sheraa and Abdul-kader (2013, p. 24) examined the effect of AHTI-based instruction on achievement of students in the computer department, and as a result of the research, determined that the implementation had a positive impact on students' academic achievement and retention scores. The statistically significant difference found between the groups' retention test and retention monitoring test mean scores in favour of the experimental group can be explained by the fact that the AHTI-based instruction process was designed in a spiral structure. The fact that throughout the instruction process, the algorithms included in the teaching plans and the concepts they included were repeated when the occasion and need arose, and were used again in the evaluation activities, played an effective role in the retention of learning in students in the experimental group.

When the qualitative findings of the study related to students' mathematics performance are examined, it is seen that results corresponding to the quantitative findings were obtained. In the interviews made with the students, by stating that they regarded the subject of mathematics as important and that their expectations from the subject of mathematics were positively fulfilled, students related these to their academic achievement. By finding the instruction of the lessons entertaining, different, effective and facilitating, and recognising that this was different to that of their previous mathematics lessons, students were able to develop a positive attitude towards the applications carried out in class. In parallel with this, the fact that students stated that the algorithm used and the activities carried out in the lessons made a positive contribution to their mathematics performance, reveals that they considered themselves successful in this subject. With regard to geometry instruction, it was seen that AHTI-based learning environments were evaluated as entertaining and enjoyable by students, and that they contributed to effective assimilation and interpretation of the topics by students (Çirakoğlu and Vural, 2016, p. 156). Similarly, it was stated that a blended learning environment, based on the AHTI increased students' academic achievement regarding skills for preparing presentations, had a positive effect on attitudes towards lessons, and increased levels of motivation (Aygün, 2011, p. 73). Furthermore, in the diaries that they kept, students stated that they enjoyed the activities conducted in class in a number of aspects. They found the mathematics instructional process conducted according to the AHTI to be excellent, appealing and enjoyable; and by mostly evaluating their performances in the activities as good, they considered themselves to be active participants. Similarly, the results of the observations related to students' behaviours reveal that activities carried out increased students' efforts, developed their inquiry, collaboration and investigation skills, and sometimes made the subject entertaining. In one of a limited number of studies examining students' views and behaviours in an AHTI-based learning environment, Landa (1998, p. 34) determined that the activities in an implementation carried out in a geometry class went very well, that the students grasped the implementation process very well, and that they learned how to implement this process themselves. On the other hand, it is striking that some students, though few in number, held the view that they sometimes did not enjoy the activities and grew bored in the activities, and that they had difficulty especially in the activities in the evaluation sections. This situation shows a parallel with the observation results. It was seen that especially in the activities in the evaluation sections of the lessons, some students, though few in number, were unwilling/bored, and that some students also needed the support of the teacher due to having difficulty. The main reason for this situation is the fact that these students' levels of readiness were low. When the pre-test results of the few students who were bored, behaved unwillingly and had difficulty in the implementation process were examined, it was determined that the students' basic mathematics knowledge was poor. The views and observation findings of the practising teacher are such as to support this result. In this context, Tall (1992, p. 5) revealed some of the reasons for learning difficulties determined in mathematics to be inadequate knowledge of basic mathematics, inability to transform verbal expressions into mathematical symbols and lack of knowledge of algebra, geometry and trigonometry. Moreover, Tall and Razali (1993, p. 220) emphasised that some students experienced a series of difficulties in using concepts and coordinating operations.

The findings related to the students' science achievement test reveal that the experimental algorithm was effective on students' science performance and that the mathematics instructional design developed according to the AHTI had a significant effect on the science achievement post-test mean scores of students in the experimental group compared with those of students in the placebo and control groups. In a study conducted with the aim of determining the effect of physics instruction based on the AHTI, and different from the existing teaching programme, elementary school students' ability to solve more than 40% of problems with medium and advanced levels of difficulty was tested, and it was determined that the students solved 88% of the problems (Landa, 1995, p. 44). Moreover, it was found that students specified for the aim of determining whether or not students in the experimental group used the stages of the AHTI algorithm, which they learned in the unit named "Ratios and Proportions", in different disciplines, solved the science achievement test individually by reasoning out loud, and when the findings obtained from the findings obtained from the images recorded in the videos were examined, similar results to the quantitative findings were obtained. Distinctive cognitive behaviours, such as attempting to recreate the problem, dividing the solution into stages, transferring the skill, and reorganising the information, were observed in the students. In this context, Landa (1998, p. 34) argued that the AHTI allows students to internalise the thought processes and steps of understanding that they need to use when they are learning something new, and that by enabling learners to develop their general thought processes, it teaches them to understand information better and transfer knowledge to new situations. On this point, Landa (1998, p. 4) asserted that the theory gives importance to how students need to think and to their awareness of their own thought processes. In this context, it is seen that the students displayed behaviours related to algorithmic thinking while solving certain problems.

The quantitative findings of the study reveal that the experimental algorithm was effective on students' logical thinking skills and that the mathematics instructional design developed according to the AHTI had a significant effect on experimental group students' logical thinking skills post-test mean scores compared to those of students in the placebo and control groups. No study can be found in the literature in which a relationship between the AHTI and logical thinking skills is revealed. However, Landa (1998, p. 1) stated that the reason why many students experience problems in being able to solve similar problems to the ones that they learn is that a general reasoning method is not taught to students as an instructional system, and argued that the AHTI approach creates reliable, scientific, concept-compatible generalisations different from the empirical generalisations that form in the student's mind. On this point, it is striking that there is a direct connection between logical thinking skills and the reasoning method specified by Landa.

To sum up, the quantitative and qualitative findings of the study reveal that under the effect of the mathematics instructional design developed based on the AHTI, students in the experimental group increased their success in mathematics and science, and their logical thinking skills were also positively affected. The obtained results show similarity with theoretical explanations on this subject field (Landa, 1974, 1984, 1987, 1995 and 1998) and the results of the majority of studies conducted in the literature (Landa, 1995, 1998; Leff, 2004; Aygün, 2011; Al Sheraa et. al., 2013, p. 24; Rufi'i, 2015).

REFERENCES

- Adel M. ElAdl. "Effectiveness Of A Brain-Based Learning Theory In Developing Mathematical Skills And Scientific Thinking Among Students With Learning Disabilities In Oman". *Psycho-Educational Research Review*, 9 (2) (2020): 67-74.
- Al Sheraa, Riyad et. al. "Designing A Teaching-Learning Based On Landamatics in Computer Architecture and Its Effect in Achievement". *Magistra*, 84 (25) (2013): 16-24.
- Ayal, Carolina et. al. "The Enhancement of Mathematical Reasoning Ability of Junior High School Students by Applying Mind Mapping Strategy". *Journal of Education and Practice*, 7 (25) (2016): 50-58.
- Aygün, Mustafa. "Algo-Heuristik Kurama Dayalı Harmanlanmış Öğrenme Ortamlarının Öğrencilerin Sunum Hazırlama Becerilerine, Bilgisayara Karşı Tutumlarına ve Bilişim Teknolojileri Dersine Güdülenme Düzeylerine Etkisi". Unpublished master's dissertation, Ahi Evran University Institute of Science and Technology, 2011.
- Baykul, Yaşar. *Ortaokulda Matematik Öğretimi 5-8.Sınıflar* (2nd Ed). Ankara: Pegem Academy Publishing, 2014.
- Bouhnik, Dan and Giat, Yahel. "Teaching High School Students Applied Logical Reasoning". *Journal of Information Technology Education*, 8 (1) (2009).
- Bozdoğan, Ayşegül. "Fen Bilgisi Öğretiminde Çalışma Yaprakları ile Öğretimin Öğrencilerin Fen Bilgisi Tutumuna ve Mantıksal Düşünme Becerilerine Etkisi". Unpublished master's dissertation, Çukurova University Institute of Social Sciences, 2007.

- Çırakoğlu Murat and Akar Vural Ruken. "A Video-case on Mathematic Lesson Practise Based on Algo-heuristic Teaching Theory". *4th International Curriculum and Instruction Congress Proceeding Book*, 1 (2016): 143-158.
- Çırakoğlu, Murat and Saracaloğlu, Asuman Seda. "İlköğretimin Birinci Kademesinde Çoklu Zekâ Kuramı Uygulamalarının Erişiye Etkisi". *Turkish Journal of Educational Sciences*, 7 (2) (2009): 424-449.
- Geban, Ömer et. al. "Effects of computer simulations and problem solving approaches on high school students". *Journal of Educational Research*, 86 (1992): 5-10.
- Gökçe, Hasan and Saraçoğlu, Sibel. "Bilgisayar Destekli Öğretimin 8. Sınıf Öğrencilerinin Asitler ve Bazlar Konusundaki Akademik Başarı Düzeylerine, Mantıksal Düşünme Yeteneklerine ve Tutumlarına Etkisi". *Kastamonu Education Journal*, 26 (4) (2018): 1383-1394.
- İlhan, Mustafa, et. al. "Matematik Öğrenme Yaklaşımları Ölçeği'nin (MÖYÖ) Geliştirilmesi: Geçerlik ve Güvenirlik Çalışması". *Bartın University Journal of Education Faculty*, 2 (2) (2013): 113-145.
- Jacobs, Victoria et. al. "Professional development focused on chilrens's algebraic resoning in elementary school". *Journal for Research in Mathematics Education*, 38 (3) (2007): 258-288.
- Johnson, Margaret and Lawson, Anton "What are the Relative Effects of Reasoning Ability and Prior Knowledge on Biology Achievement in Expository and Inquiry Classes?" *Journal of Research in Science Teaching*, 35 (1) (1998): 89-103.
- Korkmaz, Özgen. "The Effect of Scratch- and Lego Mindstorms Ev3-Based Programming Activities on Academic Achievement, Problem-Solving Skills and Logical-Mathematical Thinking Skills of Students". *Malaysian Online Journal of Educational Sciences*, 4 (3) (2016): 73-88.
- Landa, Lev. *Algorithmization in Learning and Instruction*. Educational Technology Publications, 1974.
- Landa, Lev. "Algo-Heuristic Theory of Performance, Learning, and Instruction: Subject, Problems, Principles". *Contemporary Educational Psychology*, 9 (1984): 235-245.
- Landa, Lev *Instructional Theories in Action, Lessons Illustrating Selected Theories and Models*. Charles M. Reigeluth Edt., Hillsdale, NJ, Lawrence Erlbaum Associates. Hillsdale, NJ, 1987.
- Landa, Lev. *Why Schools Fail to Teach Thinking and the Ability to Effectively Learn and What to Do About It (the Landamatics Solution)*. New York: Landamatics International, 1995.
- Landa, Lev. Landamatics Instructional Design Theory and Methodology for Teaching General Methods of Thinking. *Annual Meeting of the American Educational Research Association Oral Presentation*. San Diego, CA, 13-17 Nisan, 1998.
- Leff, Laurence. "Landamatics in Teaching Computer Programming". *Journal of Computer Science Education* January, 2004.
- Miles, Matthew and Huberman, Michael. *Qualitative Data Analysis: An expanded Sourcebook*. (2nd Ed). Thousand Oaks, CA: Sage, 1994.
- Milli Eğitim Bakanlığı [MEB]. *Ortaokul Matematik 7 Öğretmen Kılavuz Kitabı*, Ankara: Milli Eğitim Bakanlığı Yayınları, 2014.
- Milli Eğitim Bakanlığı [MEB]. *Matematik Dersi Öğretim Programı (İlkokul ve Ortaokul 1, 2, 3, 4, 5, 6, 7 ve 8. Sınıflar)*. Ankara: Milli Eğitim Bakanlığı Yayınları, 2017.
- Milli Eğitim Bakanlığı [MEB-PISA]. *Uluslararası Öğrenci Değerlendirme Programı PISA 2015 Ulusal Raporu*, 2016.
- Milli Eğitim Bakanlığı [MEB-TIMSS]. *Uluslararası Matematik Ve Fen Eğilimleri Araştırması TIMSS 2015 - Ulusal Matematik Ve Fen Bilimleri Ön Raporu*, 2016.
- Nunes, Terezinha, et. al. The Contribution of Logical Reasoning to the Learning of Mathematics in Primary School. *British Journal of Developmental Psychology*, 25 (1), (2007): 147-166.
- Özbek, Gülnur and Uyumaz Gizem. "The Impact Of Dialogic Teaching On Academic Success And Anxiety Regarding Mathematics Courses". *Psycho-Educational Research Review*, 9 (2), (2020): 22-38.
- Reigeluth, Charles. *Instructional-Design Theories and Models Volume II: A New Paradigm of Instructional Theory*. Mahwah, New Jersey: Lawrence Erlbaum Associates, 1999.
- Rufi'i. Adibuana. "The Development of Algo-Heuristic Model: To Improve Student Learning Acquisition in Statistics at Elementary School Teacher Education". *International Journal of Social Science and Humanity*, 5 (11), (2015): 937-943.
- Setiawan, Djoni. "Indonesian's High School E-learning System Design Using Algo-Heuristic Model". *Oral Presentation. The International Conference on Electrical Engineering and Informatics*. Bandung, Endonezya, 2007.
- Tall, David. "Students' Difficulties in Calculus", Proceedings of Working Group 3 On Students' Difficulties in Calculus. *Oral Presentation. ICME-7*, 13-28, Québec, Canada, 1992.
- Tall, David and Razali, Mohamad Rashidi. "Diagnosing Students' Difficulties in Learning Mathematics. Int. Jnl of Math". *Edn in Sc. & Tech*. 24 (2), (1993): 209-222.
- Tatar, Enver and Dikici, Ramazan. "Matematik Eğitiminde Öğrenme Güçlükleri". *Mustafa Kemal University Journal of Social Sciences Institute*. 5 (9), (2008): 183-193.
- Valanides, Nicos. "Formal Reasoning and Science Teaching". *School Science and Mathematics*, 96 (2), (1996): 99-107.

THE ASSOCIATIONS BETWEEN LEARNING-TEACHING CONCEPTIONS AND TECHNOLOGICAL PEDAGOGICAL CONTENT KNOWLEDGE: A STRUCTURAL EQUATION MODELING STUDY

Abstract: Competency in technological pedagogical content knowledge is one of the fundamental standards to become a qualified teacher in 21. century. Teachers are expected to have TPACK with technology integration efficacies in their classroom. This research aims to explain the roles of TPACK and its components on behaviorist and constructivist learning – teaching conceptions. Designed as an explanatory research the current study employs hypotheses explaining cause – result connections amongst independent variables (knowledge of technology, knowledge of pedagogy and content knowledge), mediators (technological content knowledge, pedagogical content knowledge, technological pedagogical knowledge, and technological pedagogical content knowledge) and dependents (behaviorist and constructivist teacher conceptions). One of the structural equation modeling applications benefits from path analysis to uncover these associations. Mediation effects between them are tested through the Sobel tests and bias-corrected bootstrapping confidence interval. The path analyses point out that behaviorist teacher conception is just affected by technology knowledge. They show also that technology and pedagogy knowledge have indirect effects on constructivist teacher conceptions via technological content, pedagogical content, technological pedagogical knowledge, and TPACK. It is found that content knowledge is an agent directly affecting constructivist teacher conceptions. It is suggested that teachers should take part in workshops, projects etc. on TPACK or technology integration.

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INTRODUCTION

Teaching new skills for students has changed teachers' roles from behaviourist theory to constructivist one in the 21st century. They also differ in missions, educational goals, learning – teaching understandings. On the one hand, in behaviourist theory, teachers transmit the content for students and ask them to memorize it through teacher-centered teaching strategies (Cleaver, 1975). Behaviourist teachers tend to prefer direct instruction as a teaching method. They always use basic technologies (e.g. PowerPoint) related to it in their classroom (Howard et al., 2000). On the other hand, in constructivist theory, teachers are expected to help them learn 21st century skills (e.g., problem-solving, critical thinking, decision-making) via student-centered strategies (Klieme & Clausen, 1999; Hoagland, 2000). Hasweh (1996) found that constructivist teachers help students more elaborate their ideas and concepts than behaviourists do. Constructivist teachers seek technologies (e.g. simulations, hypermedia with forums) that can engage students in problem-solving, conceptual understanding, critical thinking, and discussion outcomes (Entwistle, Skinner, Entwistle & Orr, 2000). For example, in case of hypermedia, it allows to understand the complexity of teaching, provide constructivist teaching methods and facilitate classroom discussions (Hughes, Packard & Pearson, 2000). Lampert, Heaton & Ball (1994) found that behaviourist approaches to teaching student teachers about constructivist approaches to mathematics instruction are effective in changing teachers' beliefs. Hypermedia environment by Lampert Heaton & Ball (1994) provided with several materials student teachers to experience real time math teaching apart from presenting them with behaviourist methods.

As been understood from the discussion above, Web-based applications like hypermedia are closely intertwined with constructivist pedagogical approaches. Concerning the role of novel technologies on knowledge acquisition, Tomei (2005) stated that teachers, educational institutions, and other stakeholders should reshape pedagogical and instructional approaches in addition to in-class resources to minimize the gap between contemporary instructional and learning methods and explicit instruction methods. He also expressed that the constructive process necessitates integrating technology into pedagogy and content knowledge. Some research show that constructivist pedagogy assisted technologies allowed to develop student teachers or teachers' TPACK (Schrum et al., 2005; Mishra & Koehler, 2006; Marreo et al., 2010; Pryor & Bitter, 2008; Harper & Cox, 2012; Meng & Sam, 2013; Yiğit, 2014; Durdu & Dağ, 2017; Karakuş, 2018; Atun & Usta, 2019). Henceforth, it is possible to say that TPACK has resulted from constructivist theory and approaches. TPACK term developed by Mishra & Koehler (2006), which is based on Shulman's pedagogical content knowledge (1986) concept and developed by Pierson's (2001) addition of technology knowledge, has become widespread with the use of constructivist theory and approaches in education (Mishra & Koehler, 2009; Harris, Mishra & Koehler, 2009; Schmidt et al. 2009).

In recent years, researchers (Koehler & Mishra, 2005; Mishra & Koehler, 2006) put forward technological pedagogical content knowledge (TPACK) to define teachers' knowledge about integrating technology efficiently into teaching and learning contexts (Yiğit, 2014). Harris, Mishra & Koehler (2009) considered TPACK as a way of thinking about technology integration. It is also regarded as an efficient teaching strategy that helps teachers develop sophisticated and dynamic knowledge (Lu, 2014). Liu (2013) defined it as a practical approach that allows teachers to integrate the technology into the classroom. Competency in TPACK is one of the fundamental standards to become a qualified teacher (Apau, 2017; Şahin, 2019; Şimşek & Sarsar, 2019; Alpaslan, Ulubey & Ata, 2021). Henceforth, teacher training curricula and teacher educators should not only focus on how to use the technology but also connect it with content and pedagogy (Sweeney & Drummond, 2013; Kraglund-Gauthier & Moseley, 2019; Yangın-Ersanlı, 2016; Uysal & Gündoğdu, 2019).

TECHNOLOGICAL PEDAGOGICAL CONTENT KNOWLEDGE

The foundations of TPACK lie in the concept 'pedagogical content knowledge' that Shulman (1986) proposed as a combination of pedagogy and content knowledge. TPACK, which evolved by integrating the technology into PCK as a result of Pierson's (2001) study, was conceptualized and developed by Mishra & Koehler (2006) as a holistic competency framework or teaching approach regarding the development of teachers' knowledge of technology, pedagogy, and content. In this study of Mishra & Koehler (2006), while explaining the relationship between technology (TK), pedagogy (PK), and content knowledge (CK), they also explained the paired interactions in these fields of knowledge. As a result of these interactions, concepts related to pedagogical content knowledge (PCK), technological content knowledge (TCK), technological pedagogy knowledge (TPK), and technological pedagogical content knowledge (TPACK), which is a

combination of TK, CK and PK, have evolved (Mishra & Koehler, 2006). Technological pedagogical content knowledge refers to teachers' knowledge to integrate the technology into their instruction in any content area (Mishra & Koehler, 2006, 2009; Schmidt et al. 2009). TPACK is an integrated knowledge enabling to incorporate technology consciously into the instruction in which teachers teach the subject using appropriate pedagogy and technology in a given content (Schmidt et al. 2009; Abbitt, 2011). Via TPACK, teachers may interpret associations among content, pedagogy, and technology knowledge. This interpretation enables teachers to use suitable pedagogical methods and technological tools (Schmidt, et al., 2009).

TECHNOLOGICAL KNOWLEDGE

Technology knowledge covers knowledge from simple tools such as books, chalk, blackboards to more advanced technologies such as the internet and digital video. Teachers with more comprehensive technological capabilities have the ability to use tools such as word processors, worksheets, browsers, and e-mail, knowledge of computer hardware and operating systems in the context of advanced technologies (Mishra & Koehler, 2006). They also know and have an ability to use instruments such as information and computer networks, digital content, e-books, internet sites, multimedia, Mobil technologies, multi-touchable cooperative software, virtual settings with multi-users (Qasem & Viswanathappa, 2016). Eventually, teachers equipping with technology knowledge accomplish a range of diverse tasks using information technology, and develop various ways of achieving a particular task (Mishra & Koehler, 2009).

PEDAGOGICAL KNOWLEDGE

Pedagogical knowledge encompasses knowledge about the methods, techniques, and processes of learning and teaching, students' nature (e.g., needs, interests, readiness), and strategies used to evaluate students' understandings (Mishra & Koehler, 2006). It also covers knowledge on instructional method and processes as well as dealing with classroom management, measurement and assessment, course design, and student assessment (Schmidt et al., 2009). Teachers with in-depth pedagogy knowledge understand how students learn, acquire skills and develop positive attitudes towards learning (Mishra & Koehler, 2006).

CONTENT KNOWLEDGE

It is concerned with knowledge about the themes or the subject matter in a given discipline. That is, teachers must grasp and understand the content they instruct. In terms of content knowledge, teachers should know basic facts, concepts, processes, and theories in their field. They should also understand the nature of knowledge and thinking in different disciplines as well as the deeper knowledge about components of the branch they study (Mishra & Koehler, 2006). For example, science lesson covers scientific facts and theories, the scientific method, and evidence-based logic. On the other hand, as for art lesson, it includes knowledge of art history, famous creations, sculptures, artisans and their historical contexts (Mishra & Koehler, 2009).

TECHNOLOGICAL CONTENT KNOWLEDGE

It explains the knowledge about which technologies to use to teach the subject matter or themes of a discipline. In technological content knowledge, teachers must know the subject matter well. They also understand that it can be taught and manipulated successfully by technology. For instance, a math teacher can employ Geometr's Sketchpad to teach subjects in Geometry. The software allows students to manipulate shapes and form, providing tangible illustrations of ideas, formulations, and concepts (Mishra & Koehler, 2006). In another instance, imagine Scratch software in disciplines such as science or physics. Teachers can use it to teach science subjects allowing students to create animations, games, and stories and be motivated to learn and understand them easily (Ouahbia et al., 2015).

PEDAGOGICAL CONTENT KNOWLEDGE

PCK was first described by Shulman (1986) as pedagogical knowledge that is applicable to teaching a particular content. Shulman's idea is consistent with the concept 'Pedagogical content knowledge' Mishra & Koehler (2006) proposed as a component of TPACK framework. PCK is concerned with the representation and formulation of notions, pedagogical methods, knowledge of conditions affecting student learning, and knowledge of students' prior knowledge. It also includes knowledge related to teaching strategies that incorporate appropriate conceptual illustrations to address student challenges and misunderstandings and promote meaningful learnings. Moreover, it also involves knowledge of what the

students bring to the learning situation, which might be either facilitative or dysfunctional for the particular learning task (Mishra & Koehler, 2006).

TECHNOLOGICAL PEDAGOGICAL KNOWLEDGE

Technological pedagogy knowledge is knowledge about a repertoire of technological instruments used in learning and teaching. It also covers the ability to choose an instrument based on its suitability, strategies for employing its affordances, knowledge of pedagogical strategies, and the ability to apply those strategies to use technologies. Teachers understand that many instruments can be utilized for a particular task. Teachers know instruments necessary for keeping class records, lesson planning, assessment, student participation and motivation, and knowledge of generic technology-based applications such as WebQuests, discussion platforms, and chat rooms (Mishra & Koehler, 2006). Teachers can change and transform their instructions to an effective format using particular technologies. For example, Chen & Jang (2013) incorporated e-books into teaching processes, allowing students' learning and motivation, (b) their learning of complex and abstract concepts, (c) increasing interactions between teacher and students, and (d) directing teachers to think flexibly.

LEARNING – TEACHING CONCEPTIONS

BEHAVIORIST LEARNING CONCEPTIONS

As a psychological study area, behaviorist movement based on observing and analyzing how controlled environmental stimuli affect human behaviors. It has impacted learning and teaching processes as a result of Ivan Pavlov and Frederick Skinner's conditioning experiments. According to behaviorist tradition, learning means observable and measurable changes occurred in behaviors of a human being. The learner makes an association between stimulus and effect, and changes his/her behavior following this association. The teachers' role is to manipulate the environment to reinforce desirable behavioral changes (Brau, Fox & Robinson, 2020). By this tradition, a behaviorist teacher focuses just on transmitting knowledge to students (Richardson, 1996). Behaviorist instructional design comprises discrete and segmented knowledge and skills rather than the integration or structuring of knowledge and a holistic conceptual understanding.

CONSTRUCTIVIST LEARNING CONCEPTIONS

Constructivism opposes behaviorist approaches as well as some cognitive learning philosophies (Bhattacharjee, 2015). It is a philosophy based on the epistemological construction of knowledge instead of transmission and storage. According to constructivist conception, the learner's role is to build and transform knowledge (Applefield, Huber & Moallem, 2001). In this conception, students construct knowledge through activities since it is not wholly transmitted by the teacher (Cox, 2011). The teacher is considered as an agent mediating student and knowledge (Richardson, 1996). The constructivist teacher employs active learning strategies to scaffold activities and performances (so that students proceed from simple to complex), explore information and concepts, and construct knowledge and meanings (Hassad, 2011). They also create lessons for students to solve problems independently instead of direct instruction. Furthermore, they student-centered activities and cooperative learning projects based on students' basic curiosity about the world (Berube, 2001). They provide opportunities to collaborative study and problem-solving in classrooms (Cox, 2011). Accordingly, they utilize efficient instruments and strategies such as speaking, discussion, and inquiry to improve students' communication and thinking skills (Naeem & Basher &, 2014; Bay, Başaran & Döş, 2021). They also regulate the learning environment integrating the technology by considering students' needs and course content (Sang et al., 2010; Ertmer, 2005; Molebash, 2002).

THEORETICAL RELATIONSHIPS BETWEEN TPACK AND LEARNING – TEACHING CONCEPTIONS

Proposed as a framework on the inclusion of technology (Harris, Mishra & Koehler, 2009), TPACK is closely associated with technological skills (Kazu & Erten, 2011). Web 2 tools, excel, digital stories, communication technologies develop teachers' TPACK (Kul, Aksu & Birisci, 2019; Loong, 2014; Sancar-Tokmak, Sürmeli & Özgelen, 2014; Apeanti, 2016; Wright & Akgündüz, 2018). In fact, there are associations between TPACK and self-efficiency beliefs about technology or technology integration (Keser, Karaoğlu-Yılmaz & Yılmaz, 2015; Karakuş, 2018; Jaipal-Jamani et al, 2015; Kozikoğlu & Babacan, 2019). For example, it is founded that student teachers improve technology, pedagogy, and content knowledge in a digital story-assisted course (Sancar-Tokmak, Sürmeli & Özgelen, 2014; Kul, Aksu & Birisci, 2019). A study investigating the association between technological and pedagogical knowledge

showed that teachers' use of technology helps them develop their pedagogical designs and stimulate information-seeking behaviors (Kraglund-Gauthier & Moseley, 2019). Piotrowski & Witte (2016) discovered that flipped classrooms and practices as a technological pedagogical method enhanced their technology expertise and TPACK. Şahin, Çelik, Aktürk & Aydın (2013) put forward that TPACK should be assessed holistically, and its' combinations (TK, PK, CK, TCK, TPK, TPACK) have an impact on another one. In other words, teachers' technological knowledge or content knowledge increases the development of theirs' TPACK.

Constructivist approaches increase TPACK while behaviorist instructional approaches present a low technological pedagogical content knowledge (Güneş & Bahçivan, 2016). Teachers are expected to use student-centered or constructivist learning methods with technology in their classroom. Technology usage in education improves cooperative learning; provides flexible learning; facilitates independent learning on time and setting (van Braak, 2001; Bauer, & Kenton, 2005; Jonassen, Howland, Moore, & Marra, 2003). Based on binary theoretical associations amongst TK, PK, CK, TCK, PCK, TPK, TPACK and behaviorist, and constructivist learning – teaching conceptions in previous studies, a matrix of 30 hypotheses is created as shown in Table 1.

H0 hypothesis: any independent variable has no direct or indirect impact on a dependent variable

H1 hypothesis: any independent variable has direct or indirect impact on a dependent variable

For H1 hypothesis, a reference or references is/are presented to point out an association between two variables in Table 1.

For H0 hypothesis, a blank is left since there is not any association between two variables in Table 1.

30 hypotheses are divide into 6 sets of hypotheses by dependent variables as stated below.

H1, H2, and H3 hypotheses are created relating to direct effects on technological content knowledge.

H4, H5, H6 and H7 hypotheses are created relating to the direct, and indirect effects on pedagogical content knowledge.

H8, H9, H10, H11, and H12 are created relating to the direct, and indirect effects on technological pedagogical knowledge.

H13, H14, H15, H16, H17 and H18 are created relating to the direct and indirect effects on technological pedagogical content knowledge.

H19, H20, H21, H22, and H23 are created relating to the direct and indirect effects on behaviorist teacher style.

H24, H25, H26, H27, H28, H29, and H30 are created relating to the direct and indirect effects on constructivist teacher style.

6 hypotheses sets are tested and interpreted respectively in Table 3, 4, 7, 10, 13, and 14.

As stated previously, the present study aims to test theoretical associations amongst independent (TK, CK, PK), mediating (TCK, PCK, TPK, TPACK), and dependent (behaviorist and constructivist conceptions) variables via the survey data obtained for this study. It shows how technology integration and TPACK applications impact constructivist conceptions of the most valuable educational approaches in the 21st century. It is thought that the results of the current study will be beneficial for teacher educators to transform their practices from behaviorist approaches to constructivist ones.

Table 1. Studies showing theoretical associations between TPACK and its components and behaviorist – constructivist teachers conceptions

	Behaviorist [H19]	Constructivist [H26]	TK	PK [H6]	CK [H7]	TCK [H3]	PCK [H6]	TPK [H10]	TPACK [H8]
TK	Smith, Kim & McIntyre, 2015	van Braak, 2001; Smith, Kim & McIntyre, 2015; Bauer, & Kenton, 2005; Jonassen, Howland, Moore, & Marra, 2003	X	van Braak, 2001; Roschelle 2000; Lehtinen et al. 1998.	Şahin, Çelik, Aktürk & Aydın, 2013	Sancar-Tokmak, Sürmeli & Özgelen, 2014; Şahin, Çelik, Aktürk & Aydın, 2013	Şahin, Çelik, Aktürk & Aydın, 2013	Kraglund-Gauthier & Moseley, 2019; Şahin, Çelik, Özgün-Koca, Meagher & Edwards, 2010; Aktürk & Aydın, 2013; Piotrowski & Witte, 2016; Baturay & Gökçeşlan & Şahin, 2017	Roschelle 2000; Lehtinen et al. 1998
PK	[H20] X	[H25]	O	X	O	[H1] Sancar-Tokmak, Sürmeli & Özgelen, 2014; Şahin, Çelik, Aktürk & Aydın, 2013	[H4] Şahin, Çelik, Aktürk & Aydın, 2013	[H9] Şahin, Çelik, Aktürk & Aydın, 2013	[H14] Şahin, Çelik, Aktürk & Aydın, 2013
CK	[H21] X	[H24]	O	O	X	[H2] Sancar-Tokmak, Sürmeli & Özgelen, 2014; Şahin, Çelik, Aktürk & Aydın, 2013	[H5] Şahin, Çelik, Aktürk & Aydın, 2013	[H8] Şahin, Çelik, Aktürk & Aydın, 2013	[H13] Şahin, Çelik, Aktürk & Aydın, 2013
TPK	[H2] X	[H29]	[H10] Kraglund-Gauthier & Moseley, 2019; Şahin, Çelik, Özgün-Koca, Meagher & Edwards, 2010; Aktürk & Aydın, 2013; Piotrowski & Witte, 2016; Baturay & Gökçeşlan & Şahin, 2017	[H9] Şahin, Çelik, Aktürk & Aydın, 2013; Piotrowski & Witte, 2016	[H8] Şahin, Çelik, Aktürk & Aydın, 2013	[H12] Şahin, Çelik, Aktürk & Aydın, 2013	[H16] Şahin, Çelik, Aktürk & Aydın, 2013	O	[H18] Figgl, Gallagher, Scott & Ciampa, 2015; Piotrowski & Witte, 2016; Baturay & Gökçeşlan & Şahin, 2017
PCK	[H22] X	[H27] Makgato, 2012	[H6] Şahin, Çelik, Aktürk & Aydın, 2013	[H4] Şahin, Çelik, Aktürk & Aydın, 2013	[H5] Şahin, Çelik, Aktürk & Aydın, 2013	[H7] Şahin, Çelik, Aktürk & Aydın, 2013	O	[H11] Şahin, Çelik, Aktürk & Aydın, 2013	[H16] Şahin, Çelik, Aktürk & Aydın, 2013
TCK	[H23] X	[H28]	[H3] Sancar-Tokmak, Sürmeli & Özgelen, 2014; Şahin, Çelik, Aktürk & Aydın, 2013	[H1] Sancar-Tokmak, Sürmeli & Özgelen, 2014; Şahin, Çelik, Aktürk & Aydın, 2013	[H2] Sancar-Tokmak, Sürmeli & Özgelen, 2014; Şahin, Çelik, Aktürk & Aydın, 2013	X	[H11] Şahin, Çelik, Aktürk & Aydın, 2013	[H12] Şahin, Çelik, Aktürk & Aydın, 2013	[H17] Şahin, Çelik, Aktürk & Aydın, 2013
TPACK	[H5] Güneş & Bahçivan, 2016; Smith, Kim & McIntyre, 2015	[H30] Güneş & Bahçivan, 2016; Niess, van Zee & Gillow-Wiles, 2011; Kafyulilo, 2010	[H15] Kazu & Erten, 2014; Kul, Aksu & Birisci, 2019; Keser, Karaoğlu-Yılmaz & Yılmaz, 2015; Loong, 2014; Karakuş, 2018; Kozikoğlu & Babacan, 2019; Apeanti, 2016; Wright & Akgündüz, 2018	[H14] Şahin, Çelik, Aktürk & Aydın, 2013	[H13] Şahin, Çelik, Aktürk & Aydın, 2013	[H17] Şahin, Çelik, Aktürk & Aydın, 2013	[H16] Şahin, Çelik, Aktürk & Aydın, 2013	[H18] Figgl, Gallagher, Scott & Ciampa, 2015; Piotrowski & Witte, 2016; Baturay & Gökçeşlan & Şahin, 2017	X

METHOD

THE RESEARCH MODEL

Aiming to investigate the effects of student teachers' technological pedagogical content knowledge (TPACK) on learning–teaching conceptions, the current study was designed as an explanatory (causal) research. The researchers employ the present model to establish causal–effect connections between independent and dependent variables (Cohen, Manion & Morrison, 2018). The study tried to explain the effects of technology, pedagogy, and content knowledge as independent variables on behaviorist and constructivist teacher conceptions as dependent variables by mediating technological content, pedagogical content, technological pedagogical knowledge, and technological pedagogical content knowledge. Assumptions like defining time order among variables, correlating them with another one, and eliminating alternative variables must be considered to establish such a causal–effect connection (Neuman, 2009).

Defining time order. Technology (TK), pedagogy (PK), and content knowledge (CK) are some of the primary components in TPACK. Technological content (TCK), pedagogical content (PCK), technological pedagogical knowledge (TPK), and technological pedagogical content knowledge (TPACK) are derived from them. Technology, pedagogy, and content knowledge exist prior behaviorist (BLTC) and constructivist (CLTC) learning – teaching conceptions. So, TCK, PCK, TPK, and TPACK pre-exist with a behaviourist and constructivist conceptions.

Correlating them with another one. There are significant correlations among independent, mediators, and dependent variables. For this reason, correlational analysis was conducted to determine connections amongst TK, PK, CK, TCK, PCK, TPK, TPACK, and behaviorist and constructivist conceptions.

Eliminating alternative variables. The pre-requisite explains the effects of technology, pedagogy, content knowledge on behaviorist and constructivist conceptions mediating technological content, pedagogical content, technological pedagogical knowledge, and technological pedagogical content knowledge. It was benefited from path analysis and mediation analysis to test this pre-requisite.

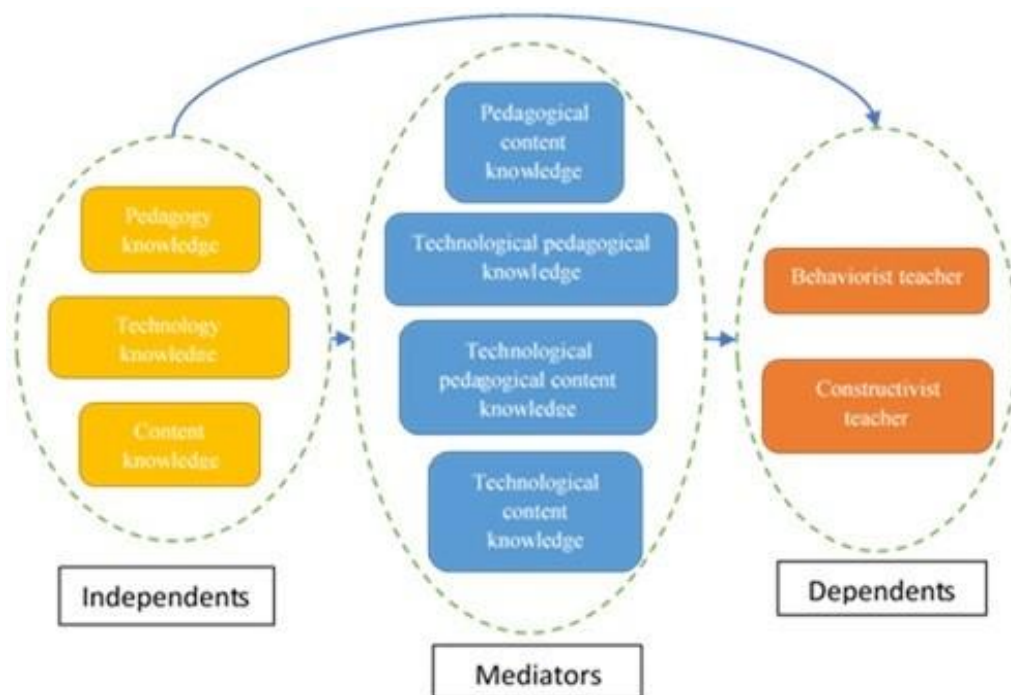


Figure 1. Hypothesis model

As shown in Figure 1, the hypothesis model is established following the cause – result associations amongst independents, mediators, and dependents.

THE UNIVERSE AND SAMPLE

The sample of the present research consisted of 362 university students at Faculty of Islamic Sciences at a public university in Turkey. Participants were included in study using convenient sampling method. Convenient sampling refers to selecting suitable or suitable persons, depending on circumstances such as

time, cost, and location. A researcher, who conducts the research with the students in the classes he/she teaches, determines the sample by the convenience sampling method (Canbazoglu-Bilici, 2019). For this reason, in this study, the researcher collected data only from students in this faculty, as he could easily reach his students in his classes, and it would be less costly to study. Specifically, the study focused specially student groups enrolled and completed pedagogical formation course at least since TPACK and learning – teaching conceptions are constructs explaining a qualified teacher (Apau, 2017). For this reason, not taking any pedagogical formation course, freshman students were excluded. Junior, sophomore and senior students participated in the study voluntarily. Table 1 presents frequencies and percentiles of students in study group.

Table 1. Frequencies and percentiles of student teachers in study group

Gender	(f)	(%)
Male	239	66
Female	123	34
Class degree		
Sophomore	131	36,2
Junior	88	24,3
Senior	143	39,5
Total	362	100

As seen in Table 1, 209 (%66) females, and 123 (%34) males of 362 students participated in the study. They are 131 sophomore (%36,2), 88 junior (%24,3), and 143 senior (%39,5) student teachers.

DATA COLLECTION INSTRUMENTS

Technological pedagogical content knowledge scale and learning – teaching conceptions scale were employed as data collection instruments.

TECHNOLOGICAL PEDAGOGICAL CONTENT KNOWLEDGE SCALE

The technological pedagogical content knowledge scale developed by Horzum, Akgün & Öztürk (2014) was used to measure student teachers' TPACK self-efficiency. It consists of 7 components and 51 items. The components are technology knowledge (6 items), pedagogy knowledge (7 items), content knowledge (8 items), technological content knowledge (6 items), pedagogical content knowledge (8 items), technological pedagogical knowledge (8 items) and technological pedagogical content knowledge (8 items). The inter-consistency coefficients calculated for the present study are in turn .870, .839, .892, .864, .905, .785, .905.

LEARNING – TEACHING CONCEPTIONS SCALE

Developed by Chan and Elliot (2004), and adapted by Aypay (2011) to Turkish language, the scale comprises 30 items, reducing two components. It includes behaviorist teacher conceptions (18 items) and constructivist teacher conceptions (12 items). Inter-consistency coefficients of two components are respectively calculated to be .832 and .750. in the current study.

DATA ANALYSIS

The data analysis of current study consists of three successive stages: Descriptive statistics, path analysis, and mediation analysis.

DESCRIPTIVE STATISTICS

Binary correlations amongst variables were calculated to test the effects of student teachers' TPACK on learning – teaching conceptions firstly since it is examined if variables are related with the others to explain the presence of the cause – result connections amongst variables (Neuman, 2009). For this reason, Pearson Moments Product Correlation Analysis and descriptive statistics were computed to deal with technological knowledge, pedagogical knowledge, content knowledge, technological content knowledge, pedagogical content knowledge, technological pedagogical knowledge, and technological pedagogical content knowledge and behaviourist and constructivist teachers conceptions.

PATH ANALYSIS

Path analysis was carried out using the maximum likelihood method to test the fit between the data and hypothesis model based on theoretical connections. The maximum likelihood method is used to estimate parameters of data stack with a normal distribution (Bryne, 2010). Some reference indices are checked to

understand the fit between the data and the hypothesis model. That χ^2/sd parameter is below 3 points out superior fit (Kline, 2011). As Goodness Fit Indices (GFI), Adjusted Goodness Fit Indices (AGFI), Comparative Fit Indices (CFI), and Incremental Fit Indices (IFI) reach 1 (one), the model indicates superior fit (Arbuckle, 2014). Root Mean Squared Errors Approximation (RMSEA) also should be less than .05 for model fit (Hu & Bentler, 1999). Technology, pedagogy, and content knowledge are independents; behaviourist and constructivist teacher conceptions are dependents.

MEDIATION ANALYSIS

Technological content knowledge, pedagogical content knowledge, technological pedagogical knowledge, and technological pedagogical content knowledge are considered as mediators. Mediation analysis is carried out to explain causality between independents and dependents (Hicks & Tingley, 2011). The Sobel test is performed to reinforce the significance of mediation effect in partial or full mediators (Preacher & Hayes, 2008). The mediation effect is also tested via the Bias-corrected Bootstrapping method. The method presents evidence about the mediation effect through bias-corrected confidence intervals (Shrout & Bolger, 2002). It creates confidence intervals for thousands of data sets resembling the available data via AMOS. The data with 2000 samples of % 95 likelihood are created. The estimation coefficient, confidence interval, and significance values for each parameter are calculated. The estimation coefficient is expected to be higher than 0 (zero) (Jung, Lee, Gupta & Cho, 2019).

There are more mediators in the present mediation analysis than one between an independent and dependent variable. These mediators create a multi serial mediation effect for causality. The purpose of multi serial mediation is to search for direct and indirect effects between independent and dependent variables where X (independents) affects M1 (first mediator), M1 has an impact on M2 (second mediator), and M2 affects Y (dependents) (Hayes, 2013).

RESULTS

In this section, uncovering the direct and indirect effects of TPACK and its components on behaviourist and constructivist learning – teaching conceptions, path analysis results are presented.

Figure 2 shows the direct and indirect effects of technology, pedagogy, content knowledge on behaviourist and constructivist teacher conceptions mediating technological content knowledge, pedagogical content knowledge, technological pedagogical knowledge, and technological pedagogical content knowledge. The results of these effects are presented in detail in separate topics.

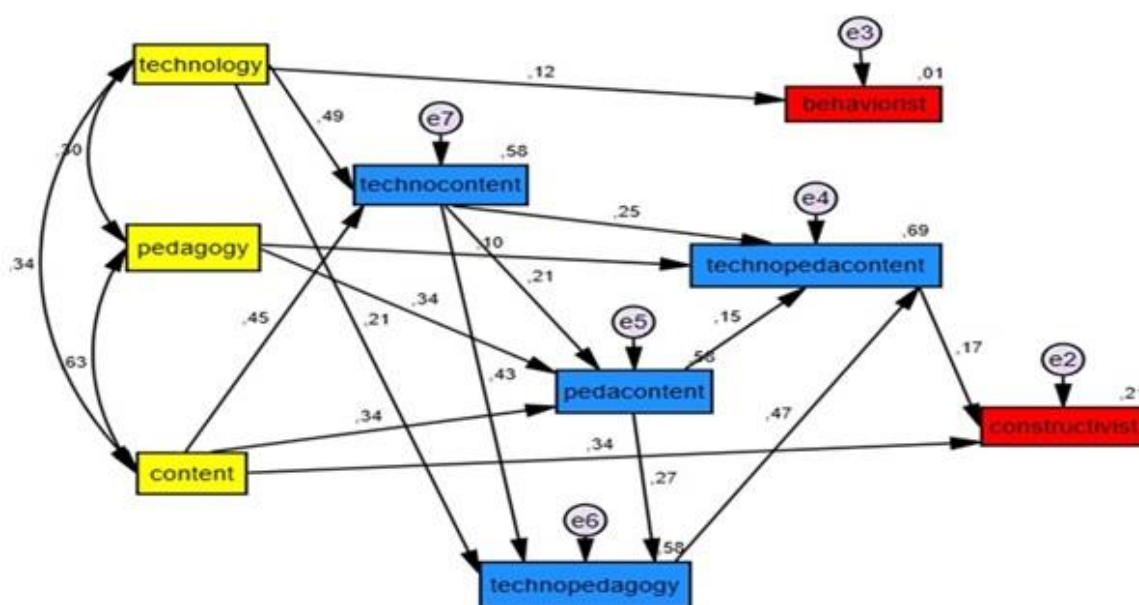


Figure 2. Path analysis diagram

Table 2 indicated that the chi-square value test ($\chi^2/sd=2.41$) is a superior fit according to the reference coefficients. It points out that IFI (Incremental Fit Indices), GFI (Goodness Fit Indices), and AGFI

(Adjusted Goodness Fit Indices) also have a superior fit while RMSEA (Root Mean Squared Error Approximate) has an acceptable fit (Blunch, 2008; Bryne, 2010).

Table 2. A comparison of values observed and goodness indices accepted

Parameter	Measurement values	Superior fit	Acceptable fit	Fit degree
CMIN/ sd	2,409	$0 \leq \chi^2 / df \leq 2$	$2 \leq \chi^2 / df \leq 3$	Superior
p		.05>		
GFI	,975	$0,95 \leq GFI \leq 1,00$	$0,90 \leq GFI \leq 0,95$	Superior
AGFI	,937	$0,90 \leq AGFI \leq 1,00$	$0,85 \leq AGFI \leq 0,90$	Superior
IFI	,985	$0,95 \leq GFI \leq 1,00$	$0,90 \leq GFI \leq 0,95$	Superior
CFI	,985	$0,97 \leq CFI \leq 1,00$	$0,95 \leq CFI \leq 0,97$	Superior
RMSEA	,062	$0 \leq RMSEA \leq 0,05$	$0,05 \leq RMSEA \leq 0,08$	Acceptable

THE DIRECT EFFECTS ON TECHNOLOGICAL CONTENT KNOWLEDGE

Table 3 shows that student teachers' PK has no impact on TCK ($p > .05$). H1 hypothesis is rejected based on this result. The H2 hypothesis is confirmed since there is a significant effect of CK on TCK ($\beta = .45$, $p < .05$). It is seen that TK affects TCK ($\beta = .49$, $p < .05$). It is possible to say that the H3 hypothesis is accepted. The results also indicate that TK and CK account for %58 of the variance on TCK. Table 3 shows path analysis results showing direct effects on technological content knowledge.

Table 3. Path analysis results showing direct effects on technological content knowledge

Hypothesis	Independent variables (IV)	Dependent variable (DV)	Direct effects	p	Total variance explained on (DV) by (IVs)	Accept/ reject
H1	PK	TCK	None	>.05	% 58	X
H2	CK		.45	.00		✓
H3	TK		.49	.00		✓

THE DIRECT AND INDIRECT EFFECTS ON PEDAGOGICAL CONTENT KNOWLEDGE

Path analysis results of the direct and indirect effects on pedagogical content knowledge are presented in Table 4.

Table 4. Path analysis results of the direct and indirect effects on pedagogical content knowledge

Hypothesis	Independent variables (IV)	Dependent variable (DV)	Direct effects (Beta)	p	Indirect effects (Beta)	p	Total variance explained on (DV) by (IVs)	Accept/ reject
H4	PK	PCK	.34	.00	None	>.05	%58	✓
H5	CK		.35	.00	.09	.00		✓
H6	TK		None	>.05	.10	.00		✓
H7	TCK		.21	.00	None	>.05		✓

Table 4 points out that PK directly impacts PCK ($\beta = .34$, $p < .05$). According to the results, PK is an independent variable affecting directly PCK ($\beta = .35$, $p < .05$). It also found that CK affects it by mediating TCK ($\beta = .09$, $p < .05$). Another result indicates that TK has no impact on PCK but mediates TCK ($\beta = .10$). This result explains that H4, H5, H6, and H7 hypotheses are accepted. Also, PK, CK, and TCK explain %85 of variance on PCK.

Table 5. Sobel test results of the effects of independents on one dependent via mediators

IV	R.C.	S.E.	MV	R.C.	S.E.	DV	Z value	p	Statue
TK	.434	.032	TCK	.181	.038	PCK	4.49	.00	Full
CK	.549	.044					4.45	.00	Partial

Path analysis shows us that it has a role as a partial mediator since CK directly impacts PCK and indirectly affects it through TCK. The mediator effect is tested with the Sobel test. The mediator effect of TCK is significant ($Z = 4.49$, $p < .05$). The results indicate that TC affects PCK only through TCK. Accordingly, it is seen that TCK has a mediator effect between CK and PCK. The Sobel tests confirm that the mediation effect is significant ($Z = 4.45$, $p < .05$).

Table 6. Bootstrap analysis results

Parameter	Estimation	Lower bound	Upper bound	P
T→TCK→PCK	.079	.040	.123	.001
C→TCK→PCK	.099	.052	.160	.001

Another method used to define the mediation effect is bias-corrected bootstrapping confidence interval as well as the Sobel test. The method presents robust evidence related to the significance of indirect effects (Shrout ve Bolger, 2002). The parameter value estimated for the mediation effect of TCK between TK and PCK is found as .079. The value is significant for the mediation effect of TCK. The coefficient tells us that the mediator effect of TCK is significant at the .001 level. Similarly, the estimation coefficient for the mediation effect of TCK between CK and PCK is computed as .099. It is found that the estimation coefficient (.052 - .160) confidence interval is significant.

THE DIRECT AND INDIRECT EFFECTS ON TECHNOLOGICAL PEDAGOGICAL KNOWLEDGE

Table 7 points out path analysis results of the direct, and indirect effects on technological pedagogical knowledge.

Table 7. Path analysis results of the direct, and indirect effects on technological pedagogical knowledge

Hypothesis	Independent variables (IV)	Dependent variable (DV)	Direct effects	p	Indirect effects	P	Total variance explained on (DV) by (IVs)	Accept/reject
H8	CK	TPK	None	>.05	.31	.00	.579	✓
H9	PK		None	>.05	.09	.00		✓
H10	TK		.21	.00	.23	.00		✓
H11	PCK		.27	.00	none	>.05		✓
H12	TCK		.43	.00	.06	.00		✓

As seen in table 7, it is understood that CK affects TCK ($p>.05$). On the other hand, it is found that CK has an impact on TPK through TCK ($\beta=.31$, $p<.05$). As in CK, PK has no impact on although it affects TPK via TCK ($\beta=.09$, $p<.05$). It is also found that TK has direct and indirect effects on it through both TCK and PCK ($\beta=.23$, $p<.05$). Furthermore, TCK has a direct impact on TPK ($\beta=.27$, $p<.05$) as well as indirectly affecting it via PCK ($\beta=.06$, $p<.05$). It is possible to say that H8, H9, H10, H11, and H12 hypotheses are accepted on these results. Consequently, it is found that CK, PK, K, PCK, and TCK explain %58 of variance on TPK.

Table 8. Sobel test results of the effects of independents on one dependent via mediators

IVs	R.C.	S.E.	MV	R.C.	S.E.	DV	Z value	p	Statue
TK	.434	.032	TCK	.437	.051	TPK	7.24	.00	Partial
CK	.549	.044					7.06	.00	Full
PK	.339	.044	PCK	.317	.049		4.95	.00	Full
CK	.371	.054					4.71	.00	Full

As shown in Table 8, TK has both a direct and indirect via TCK impact on TPK. It can be stated that TCK plays a partial mediation role between TK and TPK. The Sobel test presents a shred of evidence about the significance of TCK's mediator role ($Z=7.24$, $p<.05$). Path analysis results indicate that CK can affect TPK just through TCK. It can be said that TCK is significantly a full mediator on this result ($Z=7.06$, $p<.05$). The results point out that PCK has a mediation effect on the cause – result connection between PK and TPACK. The Sobel test proves that PCK is a full mediator ($Z=4.95$, $p<.05$). Furthermore, an independent variable, CK is an independent variable of the effect on TPK via PCK. As a result of the Sobel Test, it can be said that the mediation effect role of PCK is significant ($Z=4.71$, $p<.05$).

Table 9. Bootstrap analysis results

	Estimation	Lower bound	Upper bound	p
T → TCK → TPK	.190	.143	.240	.001
T → TCK → PCK → TPK	.025	.013	.042	.000
C → TCK → TPK	.240	.185	.309	.001
P → PCK → TPK	.107	.061	.166	.001
C → PCK → TPK	.118	.076	.169	.01

Bias corrected bootstrapping analysis explains in Table 9 that the estimation value is calculated as .190 for the mediation role of TCK between TK and TPK. The value proves that the mediation role of TCK is significant in confidence interval (.143-.240). In multiple series mediator analysis, the estimated value is .025 in confidence interval (.013-.042) for TCK and PCK as mediators between TK and PK ($p < .05$). Bootstrapping analysis shows that the estimation value is .240 (.185-.309) for a mediator effect of TCK between CK and TPK. Furthermore, a conclusion is reached that PCK has a mediator effect between both PK-TPK (.107, .061-.166) and C-TPK (.118, .076-.169).

THE DIRECT AND INDIRECT EFFECTS ON TECHNOLOGICAL PEDAGOGICAL CONTENT KNOWLEDGE

Path analysis results of the direct and indirect effects on technological pedagogical content knowledge are shown in Table 10.

Table 10. Path analysis results of the direct and indirect effects on technological pedagogical content knowledge

Hypothesis	IVs	DVs	Direct effects	p	Indirect effects	p	Total variance explained on (DV) by (IVs)	Accept/reject
H13	CK	TPACK	None	>.05	.32	.00	.579	✓
H14	PK		.10	.00	.09	.00		✓
H15	TK		None	>.05	.35	.00		✓
H16	PCK		.15	.00	.13	.00		✓
H17	TCK		.25	.00	.26	.00		✓
H18	TPK		.48	.00	-	-		✓

Path analysis results show that CK has no direct impact on TPK but affect indirectly it via TCK ($\beta = .32$, $p < .05$). It is also seen that PK, another independent variable, affect directly TPACK ($\beta = .10$, $p < .05$). In addition, via PCK, PK has an indirect effect on TPACK ($\beta = .09$, $p < .05$). On the other hand, TK has an indirect impact ($\beta = .35$, $p < .05$) on it through TCK, PCK, and TPK, although it does not directly affect TPACK ($p > .05$). Initially, PCK, TCK, and TPK are regarded as mediators; then, they are considered independents. PCK affects directly ($\beta = .15$, $p < .05$) and indirectly TPACK ($\beta = .13$, $p < .05$) via TPK. A TCK and TPK as independent variables directly impact TPACK ($\beta = .26$; $\beta = .48$; $p < .05$). The path analysis shows that H13-H18 hypotheses are approved. Eventually, it is concluded that CK, PK, TK, TCK, PCK, and TPK account for % 58 of the variance on TPACK.

Table 11. Sobel test results of the effects of independents on one dependent via mediators

IVs	R.C.	S.E.	MVs	R.C.	S.E.	DVs	Z value	p	Statue
TK	.434	.032	TCK	.236	.041	TPACK	5.30	.00	Full
CK	.549	.044					0.01	0.99	None
PK	.339	.044	PCK	.158	.047	TPACK	3.08	.00	Partial
CK	.371	.054					3.01	.00	Full
TK	.190	.041	TPK	.437	.040	TPACK	4.63	.00	Full
TCK	.181	.038	PCK	.158	.047		2.75	.00	Partial

As indicated in Table 11, TK indirectly affects TPACK via TCK. Accordingly, it is concluded that TCK has a full mediator effect. The Sobel test confirms the significance of TCK's mediator effect ($Z = 5.30$, $p < .05$). TCK mediates wholly between CK and TPACK. However, the Sobel test proves us that the mediation effect of TCK is no significant between two ($p > .05$). On the other hand, PK has both direct and indirect impacts on TPACK via PCK. It can be said that it has a significant and partial mediation effect by looking at Sobel test results ($Z = 3.08$, $p < .05$). It is also seen that PCK as a mediator has a significant effect between PK and TPK, according to Sobel test results ($Z = 3.01$, $p < .05$). In addition, TK affects TPACK via just TPK. The Sobel test shows this effect as significant ($Z = 4.63$, $p < .05$). Finally, TK affects, directly and indirectly, TCK through PCK. It is estimated as significant via The Sobel test ($Z = 2.75$, $p < .05$).

As seen in Bias-corrected bootstrapping analysis (Table 12), the estimation value of mediation effect of TCK between TK and TPACK is .102 and significant at confidence interval (.039 - .169). In multiple serial mediation analyses, the estimation coefficient for an impact of TK on TPACK via TCK and PCK as mediators is .012, and the confidence interval is .005 - .027 ($p < .05$).

Table 12. Bootstrap analysis results

	Estimation	Lower bound	Upper bound	p
T→TCK→TPCK	.102	.039	.169	.002
T→TCK→PCK→TPCK	.012	.005	.027	.003
T→TPK→TPCK	.083	.043	.141	.002
T→TCK→PCK→TPK→TPCK	.011	.004	.023	.001
P→PCK→TPCK	.053	.018	.111	.006
P→PCK→TPK→TPCK	.047	.020	.092	.002
C→TCK→TPCK	.129	.046	.207	.002
C→PCK→TPCK	.059	.026	.107	.003
C→TCK→PCK→TPCK	.016	.006	.035	.003
C→TCK→PCK→TPK→TPCK	.014	.005	.029	.001

THE DIRECT AND INDIRECT EFFECTS ON BEHAVIOURIST TEACHER CONCEPTIONS

Table 13 indicates the direct and indirect effects on behaviourist teacher conceptions.

Table 13. Path analysis results of the direct and indirect effects on behaviorist teacher style

Hypothesis	Independent variables (IVs)	Dependent variable (DV)	Direct effects	p	Indirect effects	p	Total variance explained on (DV) by (IVs)	Accept/reject
H19	TK	Behaviorist teacher style (BTS)	.12	.00	None	>.05	1.4	✓
H20	PK		none	>.05	None	>.05		✓
H21	CK		none	>.05	None	>.05		✓
H22	PCK		none	>.05	None	>.05		✓
H23	TCK		none	>.05	None	>.05		✓

As shown in Table 13, it is seen that TK directly affects behaviourist teacher conceptions (BTC) ($\beta=.12$, $p<.05$). It can be said that TK explains % 4 of variance on BTC. H19-H23 hypotheses are accepted according to these results.

THE DIRECT AND INDIRECT EFFECTS ON CONSTRUCTIVIST TEACHER CONCEPTIONS

Path analysis results of the direct and indirect effects on constructivist teacher style are indicated in Table 14.

Table 14. Path analysis results of the direct and indirect effects on constructivist teacher style

Hypothesis	Independent variables (IVs)	Dependent variable (DV)	Direct effects	p	Indirect effects	p	Total variance explained on (DV) by (IVs)	Accept/reject
H24	CK	Constructivist teacher style (CTS)	.34	.00	.05	.00	21	✓
H25	PK		None	>.05	.03	.00		✓
H26	TK		None	>.05	.03	.00		✓
H27	PCK		None	>.05	.05	.00		✓
H28	TCK		None	>.05	.05	.00		✓
H29	TPK		None	>.05	.08	.00		✓
H30	TPACK		.17	.00	None	>.05		✓

Path analysis results point out that CK affects directly ($\beta=.34$, $p<.05$) and indirectly ($\beta=.05$, $p<.05$) constructivist teacher conceptions (CTC) via TCK, PCK, and TPACK. It is seen that PK ($\beta=.03$), TK ($\beta=.03$), PCK ($\beta=.05$), TCK ($\beta=.05$), and TPK ($\beta=.08$) as independents have indirect effects on CTC. Finally, TPACK has a direct impact on CTC ($\beta=.17$, $p<.05$). It is found that CK, PK, TK, TCK, PCK, TPK, and TPACK represent % 21 of variance on CTC.

Table 15. Sobel test results of the effects of independents on one dependent via mediators.

IVs	R.C.	S.E.	MVs	R.C.	S.E.	DV	Z value	p	Statue
PK	.108	.041	TPACK	.111	.037	(CTS)	1.98	.01	Full
TCK	.236	.041					2.66	.01	Full
PCK	.158	.047					2.23	.01	Full
TPK	.437	.040					2.89	.00	Full

As is shown in Table 15, PK, TCK, PCK, and TPK have the effects on CTC by mediating just TPACK. It is concluded in the Sobel test results that TPACK has significant mediation effect between a group of independents and dependent ($p<.05$).

Table 16. Bootstrap Analysis Results

	Estimation	Lower bound	Upper bound	p
T→TCK→TPCK→CTS	,011	,004	,025	.002
T→TCK→PCK→TPCK→CTS	,001	,000	,004	.003
T→TPS→TPCK→CTS	,009	,003	,019	.004
T→TCK→PCK→TPS→TPCK→CTS	,001	,000	,003	.002
P→PCK → TPCK→CTS	,006	,002	,016	.006
P→ PCK → TPS → TPCK→CTS	,005	,002	,012	.004
C→ TCK → TPCK→CTS	,014	,005	,032	.002
C→ PCK → TPCK→CTS	,006	,002	,016	.003
C→TCK → PCK → TPCK→CTS	,002	,001	,005	.003
C→TCK→PCK → TPS → TPCK→CTS	,002	,000	,004	.002

Bias corrected Bootstrapping analysis shows that estimation coefficient and confidence intervals of mediation effects of several mediators between TK, CK, and PK as independents and CTC as a dependent are found as expected.

DISCUSSION AND CONCLUSION

Aiming to uncover the relationships between technological pedagogical content knowledge and learning – teaching conceptions, the present study indeed tried to explain the roles of technological pedagogical content knowledge and its components on behaviourist and constructivist teacher conceptions. Hypotheses derived from theoretical associations in previous research was tested and assessed using this study's data. The findings indicate that technology knowledge plays a role in behaviourist teaching conceptions. It possible to say that this result supports our hypothesis. Regardless of how technology is used, it represents a significant part of behavioural and constructivist learning and teaching processes. However, based on the results of path analysis, it can be said that technology in constructivist teaching has a much more influential role than behavioural teaching. Teachers in behavioural tradition utilize technologies like smart boards, PowerPoint, OER, etc., transferring the content to students as direct instruction is one of the methods that behaviourist teachers use frequently, (Hickman, 2017). This method makes the instruction inefficient and monotone without ICT support (Pardimin, Arcana & Supriadi, 2019). For this reason, direct instruction with no ICT causes a decrease in teacher efficiency on adapting teaching students' leaning at their own pace and differentiating the instruction considering students' development and context (Luke, 2014). Accordingly, behaviourist teachers often employ technological instruments in order to extend the restricted capacity of direct instruction on student learning and facilitate the instruction. In other words, it is possible to say that technology is an agent explaining behaviourist teacher competencies.

The findings show that technology knowledge indirectly affects constructivist conception mediating TCK, PCK, TPK and TPACK but no direct effect on it. With the inclusion of technology in education, teachers have used technological knowledge to design activities and lesson plans in the context of TPACK. However, technological pedagogical knowledge could not be developed when technology is not used in ways to provide inquiry-based experiences to increase students' learning (Özgün-Koca, Meagher & Edwards, 2010). So, teachers can have technological pedagogical knowledge only if they integrate it with given instructional method. The conclusion was confirmed by the results from the path analysis in the present study. Baturay, Gökçearslan & Şahin, (2017) found that there is any significant and positive association between outputs of technology integration like computer based instruction and TPACK. They understood that technology and technological pedagogy knowledge are considerably associated with computer-based instruction compared to other skills related to TPACK. The instruction has become constructivist when computer or technology is blended with pedagogical methods (Smith, Kim & McIntyre, 2015). Accordingly, teachers regard technology as effective tools to develop constructivist practices and stimulate students' curiosity. These constructivist methods enable to learn students independently as well as providing active and positive learning environments (Azizinezhad & Hashemi, 2011).

The findings point out that technological pedagogical content knowledge is closely related to constructivist teaching conceptions. It is concluded that TPACK and its components have direct and indirect effects on constructivist teacher conceptions. Teachers with higher TPACK are inclined to employ students centered strategies such as collaborative methods, allowing to students explore and solve problems (Niess, van Zee & Gillow-Wiles, 2011). The inclusion of technology with constructivist methods helps students learn rich

and diverse knowledge, and deal with complex issues about students. It also provides experience in creating rich and unique outputs. The experience supports teachers - students' cooperation making meaningful discussion through technological instruments (Roschelle 2000; Lehtinen et al. 1998). It is possible to make an infer that our hypotheses are accepted based on the findings of studies mentioned.

Furthermore, several studies on relations between learning-teaching conceptions and TPACK are discussed above. It was concluded that the more constructivist student teachers are, the higher TPACK levels are. The conclusion was supported by the findings of these studies. For example, a study of Kafyulilo (2010) found that student teachers easily improved TPACK when they took part in microteaching, lesson design, and sharing ideas with peers. Another study also explained an association between behaviourist and constructivist teachers and TPACK. Behaviourist teachers have the low technological content knowledge and TPACK. The study asserted that teachers should employ student-centered learning and teaching conceptions to help them use technology efficiently. But the same study indicated that a teacher using student-centered strategies has a low TPACK. It can be said that a teacher with student-centered beliefs does not mean they can use the technology efficiently (Smith, Kim & McIntyre, 2015). For this reason, TPACK together with its components, is a teaching issue to be assessed holistically (Şahin, Çelik, Aktürk & Aydın, 2013). Harris & Hofer (2011) also sought two research questions 'How does TPACK affect teachers' instructional planning?' and 'how TPACK can be improved?' TPACK assisted teacher workshop in the current study uncovered that teachers' choice and use became conscious, differentiated, and strategic; the instructional planning transformed constructivist one. They also established quality standards for technology integration. Hence, it is possible to say that TPACK with other components transform learning – teaching processes into constructivist teaching.

The findings also show that content knowledge directly impacts on constructivist teacher conceptions. We make an inference that as student teachers learn concepts, ideas, and theories in discipline they are studying, they would have capacity to use effectively constructivist approaches throughout their instructions. Apart from technology and pedagogy knowledge, it is seen that content knowledge alone is an independent variable that affects directly the constructivist teaching approach. Besides, it is thought that they know where and how an instructional method or material is used or even how a technology is integrated when they know really content or subjects well at their disciplines. The integration process necessitates them comprehend the content in-depth. For this reason, it can be said that it is an influential factor in affecting immediately constructivist teacher conceptions and the hypothesis is accepted on inferences and discussions.

It is also concluded that technology has different roles in behaviourist and constructivist teaching conceptions. On the one hand, technology knowledge directly impacts behaviourist teaching conceptions. The hypothesis is accepted based on the result. Hickman (2017) expressed that behaviourist teachers always use it to present information, allowing students to understand quickly and effectively and they are the instructor and activator of technology. We have reached an inference that behaviourist teachers regard it as just an instrument based on both our study and Hickman's expressions (2017).

On the other hand, technology knowledge affects constructivist teacher understandings through TCK, TPK, PCK, and TPACK. The results prove to us that our hypotheses are accepted. There are complex and in-depth associations between technology knowledge and constructivist teacher understandings, as can be understood from these results. That is, it is concluded that constructivist teachers have the capacity to use the technology on purpose way intertwined with TCK, TPACK, PCK, and TPACK. Likewise, Hickman (2017) supported our conclusion stating that constructivist teachers reflect on technology usage. In a constructivist instruction, technology is used purposefully for instructional events such as technology integration, technology or computer-assisted instruction, TPACK based applications etc. As a result, it is stated that constructivist teachers' technology use differs in that students' higher-order development from that of behaviourist usage. Accordingly, they help students use independently it for practice, exploration, research, personalized learning, etc. (Hickman, 2017).

RECOMMENDATIONS

It is suggested that teachers should take part in workshops, projects, etc., on TPACK or technology integration. Since TPACK is closely related to technology integration, teachers must introduce and employ a variety of technological instruments in an instructional design. For this reason, they should be involved in technological material design projects where blending the technology with given pedagogical approaches

and methods so that they can design constructivist instruction at their classrooms and provide students with opportunities of studying and learning with peers in collaborative groups.

REFERENCES

- Abbitt, Jason. "An Investigation of the Relationship Between Self-Efficacy Beliefs About Technology Integration and Technological Pedagogical Content Knowledge (TPACK) Among Preservice Teachers". *Journal of Digital Learning in Teacher Education*, 27 (4), 134-143, 2011.
- Akturk, Ahmet Oğuz & Saka Ozturk, Handan. "Teachers' TPACK Levels and Students' Self-efficacy as Predictors of Students' Academic Achievement". *International Journal of Research in Education and Science (IJRES)*, 5 (1), 283-294, 2019.
- Alpaslan, Muhammet Mustafa, Ulubey, Özgür, & Ata, Rıdvan. "Adaptation of Technological Pedagogical Content Knowledge Scale into Turkish Culture Within the Scope of 21st Century Skills". *Psycho-Educational Research Reviews*, 10 (1), 77-91, 2021.
- Atun, Handan. & Usta, Erhan. "The Effects of Programming Education Planned with TPACK Framework On Learning Outcomes". *Participatory Educational Research (PER)*, 6 (2), 26-36, 2019.
- Apau, Stephen Kwakye. "Technological Pedagogical Content Knowledge Preparedness of Student-Teachers of the Department of Arts and Social Sciences Education of University of Cape Coast". *Journal of Education and Practice*, 8 (10), 167-181, 2017.
- Apeanti, Wilson Osafo. "Contributing Factors to Pre-service Mathematics Teachers' E-readiness for ICT Integration". *International Journal of Research in Education and Science (IJRES)*, 2 (1), 223-238, 2016.
- Applefield, James. M., Huber, Richard. & Moallem, Mahnaz. "Constructivism in Theory and Practice: Toward A Better Understanding". *High School Journal*, 84 (2), 35-53, 2001.
- Arbuckle, James. IBM SPSS Amos 23 User's Guide. IBM, Amos Development Corporation. Retrieved from ftp://public.dhe.ibm.com/software/analytics/spss/documentation/amos/23.0/en/Manuals/IBM_SPSS_Amos_User_Guide.pdf. 2014.
- Atar, Cihat, Bağcı, Hakkı. & Aydın, Selami. "An Investigation of Pre-Service English Teachers' Level of Techno-Pedagogical Content Knowledge". *Journal of Language and Linguistic Studies*, 15 (3), 794-805, 2019.
- Aypay, Ayşe. "Öğretme ve Öğrenme Anlayışları Ölçeği'nin Türkiye Uyarlaması ve Epistemolojik İnançlar ile Öğretme ve Öğrenme Anlayışları Arasındaki İlişkiler". *Kuram ve Uygulamada Eğitim Bilimleri*, 11 (1), 7-29, 2011.
- Azizinezhad, Masoud & Hashemi, Masoud. "Technology as a Medium for Applying Constructivist Teaching Methods and Inspiring Kids". *Procedia - Social and Behavioral Sciences*, 28, 862-866, 2011.
- Baturay, Meltem Huri, Gökçearslan, Şahin. & Şahin, Şemsettin. "Associations Among Teachers' Attitudes Towards Computer-Assisted Education and TPACK Competencies". *Informatics in Education*, 16 (1), 1-23, 2017.
- Bauer, John & Kenton, Jeffrey. "Toward Technology Integration in the Schools: Why It Isn't Happening". *Journal of Technology and Teacher Education*, 13 (4), 519-546, 2005.
- Bay, Erdal, Başaran, Mehmet & Döş, Bülent. "The Reasons for Gaining and Losing the Popularity of a Paradigm in Constructivism: Why? And How?". *Psycho-Educational Research Reviews*, 10 (1), 8-24, 2021.
- Berube, Clair T. "A study of the effects of constructivist-based vs. traditional direct instruction on 8th grade science comprehension" (Unpublished Doctorate Thesis), Old Dominion University, Virginia, 2001.
- Bhattacharjee, Jayeeta. "Constructivist Approach to Learning—An Effective Approach of Teaching Learning". *International Research Journal of Interdisciplinary and Multidisciplinary Studies*, 1 (6), 65-74, 2015.
- Blunch, Niels. J. *Introduction to structural equation modelling using SPSS and AMOS*. California: SAGE Publications, 2008.
- Brau, Bekki, Fox, Nathan. & Robinson, Elizabeth. Behaviorism (Eds. R. Kimmons & S. Caskurlu), The Students' Guide to Learning Design and Research. USA: EdTech Books, 2020.
- Byrne, Barbara M. *Structural equation modelling with AMOS: basic concepts, applications, and programming* (2nd ed.). New York, NY: Routledge, 2010.
- Canbazoglu-Bilici, Sedef. "Örnekleme yöntemleri" (Eds. H. Özmen & O. Karamustafaoğlu). *Eğitimde araştırma yöntemleri*. Ankara: Pegem, 2019.
- Chen, Ho-Yuan. & Jang, Syh-Jong. "Exploring the Reasons for Using Electric Books and Technological Pedagogical and Content Knowledge of Taiwanese Elementary Mathematics and Science Teachers". *TOJET: The Turkish Online Journal of Educational Technology*, 12 (2), 131-141, 2013.
- Cleaver, Thomas J. "A Behaviorist Teacher's Creed". *American Biology Teacher*, 37 (5), 298-299, 1975.
- Cohen, Louis, Manion, Lawrence & Morrison, Keith. *Research methods in education* (8th edition). UK: Routledge, 2018.
- Cox, Murray William. "The effects of behaviourist and constructivist instruction on student performance in college-level remedial mathematics" (Unpublished Doctorate Thesis), Texas A&M University, Texas, 2011.
- Dexter, Sara. "ETIPS: Educational technology integration and implementation principles". In P. Rogers (Ed.), *Designing instruction for technology-enhanced learning* (pp. 56-70). Hershey, PA: Idea Group Publishing, 2002.
- Durdu, Levent & Dag, Funda. "Pre-Service Teachers' TPACK Development and Conceptions Through A TPACK-Based Course". *Australian Journal of Teacher Education*, 42 (11), 150-171, 2017.
- Entwistle, Noel, Skinner, Don, Entwistle, Dorothy., & Orr, Sandra. "Conceptions and Beliefs about "Good Teaching": An Integration of Contrasting Research Areas". *Higher Education Research and Development*, 19 (1), 5-26, 2000.
- Ertmer, Peggy A. "Teacher Pedagogical Beliefs: The Final Frontier in Our Quest for Technology Integration?". *ETR&D*, 53 (4), 25-39, 2005.

- Graham, Charles at al. "TPACK Development in Science Teaching: Measuring the TPACK Confidence of In-service Science Teachers". *TechTrends*, 53 (5), 70 – 79, 2009.
- Güneş, Erhan & Bahçivan, Eeralp. "A Multiple Case Study of Preservice Science Teachers' Tpack: Embedded in a Comprehensive Belief System". *International Journal of Environmental & Science Education*, 11 (15), 8040-8054, 2016.
- Harper, Suzanne & Cox, Dana Christine. "Developing TPACK alongside professional vision of teaching mathematics with technology". *34th Annual Meeting of Psychology of Mathematics Education*, North America, 2012.
- Harris, Judith B. & Hofer, Mark J. "Technological Pedagogical Content Knowledge (TPACK) in Action: A Descriptive Study of Secondary Teachers' Curriculum-Based, Technology-Related". *JRTE*, 43 (3), 211 – 229, 2011.
- Harris, Judith, Mishra, Punya & Koehler, Matthew. "Teachers' Technological Pedagogical Content Knowledge and Learning Activity Types: Curriculum-Based Technology Integration Reframed". *JRTE*, 41 (4), 393 – 416, 2009.
- Hashweh, Maher. Z. "Effects of Science Teachers' Epistemological Beliefs in Teaching". *Journal of Research in Science Teaching*, 33, 47-63, 1996.
- Hassad, Rossi A. "Constructivist and Behaviourist Approaches: Development and Initial Evaluation of a Teaching PRACTICE Scale for Introductory Statistics at the College Level". *Numeracy*, 4 (2), 1 – 33, 2011.
- Hayes, Andrew F. *Methodology in the social sciences. Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. USA: Guilford Press, 2013.
- Hicks, Raymond & Tingley, Dustin. "Causal Mediation Analysis". *The Stata Journal*, 11 (4), 605 – 619, 2012.
- Hoagland, Matthew A. Utilizing Constructivism in the History Classroom. ED 482 436, 2000.
- Horzum, Mehmet Barış, Akgün, Özcan Erkan & Öztürk, Ergün. "The Psychometric Properties of the Technological Pedagogical Content Knowledge Scale". *International Online Journal of Educational Sciences*, 6 (3), 544 – 557, 2014.
- Howard, Bruce. C., McGee, Steven., Schwartz, Neil., & Purcell, Steve. "The Experience of Constructivism: Transforming Teacher Epistemology". *Journal of Research on Computing in Education*, 32 (4), 455–465, 2000.
- Hu, Li-Tze & Bentler, Peter M. "Cutoff Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria Versus New Alternatives". *Structural Equation Modelling*, 6 (1), 1-55, 1999.
- Hughes, Joan E., Packard, Becky, Wai-Ling & Pearson, P. "David. Pre-service teachers' Perceptions of Using Hypermedia and Video to Examine the Nature of Literacy Instruction". *Journal of Literacy Research*, 32 (4), 599–629, 2000.
- Jaipal-Jamani, Kamini, et al. "Collaborative Professional Development in Higher Education: Developing Knowledge of Technology Enhanced Teaching". *The Journal of Effective Teaching*, 15 (2), 30-44, 2015.
- Jonassen, David. H. et al. *Learning to solve problems with technology: A constructivist perspective* (2nd. Ed). Columbus, OH: Merrill/PrenticeHall, 2003.
- Jung, Kwanghee at al. "Comparison of Bootstrap Confidence Interval Methods for GSCA Using a Monte Carlo Simulation". *Front. Psychol*, 10, 1 – 11, 2019.
- Kafyulilo, Ayoub. C. "Practical use of ICT in science and mathematics teachers' training at Dar es Salaam University College of Education: An analysis of prospective teachers' technological pedagogical content knowledge" (Unpublished Master's Thesis), University of Twente, Twente, 2010.
- Karakuş, Fatih. "An Examination of Pre-Service Teachers' Technological Pedagogical Content Knowledge and Beliefs Using Computer Technology in Mathematics Instruction". *IUMPST: The Journal*, 3, 1-13, 2018.
- Kazu, İbrahim Yaşar & Erten, Pınar. "Teachers' Technological Pedagogical Content Knowledge Self-Efficacies". *Journal of Education and Training Studies*, 2 (2), 126-144, 2014.
- Keating, Thomas. M. & Evans, Ellen. "Three computers in the back of the classroom: Preservice teachers' conceptions of technology integration". *Paper presented at the Annual Meeting of the American Educational Research Association*, Seattle, WA, 2001.
- Keser, Hafize, Karaoğlu-Yılmaz, Fatma Gizem. & Yılmaz, Ramazan. "TPACK Competencies and Technology Integration Self-Efficacy Perceptions of Pre-Service Teachers". *Elementary Education Online*, 14 (4), 1193-1207, 2015.
- Kivunja, Charles. "Embedding Digital Pedagogy in Pre-Service Higher Education to Better Prepare Teachers for The Digital Generation". *International Journal of Higher Education*, 2 (4), 131-142, 2013.
- Klieme, Eckhard & Clausen, Marten. "Identifying facets of problem solving in mathematics instruction". *Paper presented at the Annual Meeting of the American Educational Research Association*, Montreal, 1999.
- Kline, Rex B. *Principles and practice of structural equation modelling* (3rd ed.). New York, NY: Guilford Press, 2011.
- Koehler, Matthew. J., & Mishra, Punya. "What Happens When Teachers Design Educational Technology? The Development of Technological Pedagogical Content Knowledge". *Journal of Educational Computing Research*, 32 (2), 131–152, 2005.
- Kozikoğlu, İshak & Babacan, Nuri. "The Investigation of the Relationship Between Turkish EFL Teachers' Technological Pedagogical Content Knowledge Skills and Attitudes Towards Technology". *Journal of Language and Linguistic Studies*, 15 (1), 20-33, 2009.
- Kraglund-Gauthier, Wendy & Moseley, Jane. "Building Teaching–Learning Capacities of Online Nurse Educators: Using TPACK to Frame Pedagogical Processes and Identify Required Supports". *Canadian Journal of Learning and Technology*, 45(1), 1-21, 2019.
- Kul, Umit, Aksu, Zeki, & Birisci, Salih. "The Relationship Between Technological Pedagogical Content Knowledge and Web 2.0 Self-Efficacy Beliefs". *International Online Journal of Educational Sciences*, 11 (1), 198-213, 2019.
- Kuo, Nai-Cheng. "Action Research for Improving the Effectiveness of Technology Integration in Preservice Teacher Education". *i.e.: inquiry in education*, 6 (1), 1-9, 2015.
- Lampert, M., Heaton, R., & Ball, D. "Using technology to support a new pedagogy of mathematics teacher education". *Journal of Special Education Technology*, 12, 276-289, 1994.

- Lehtinen, Erno et al. "Computer supported collaborative learning: A review". University of Turku, University of Helsinki. Available at: <http://etu.utu.fi/papers/clnet/clnetreport.html>. 1998.
- Liu, Shih-Hsiung. "Exploring the Instructional Strategies of Elementary School Teachers When Developing Technological, Pedagogical, And Content Knowledge Via a Collaborative Professional Development Program". *International Education Studies*, 6 (11), 58-68, 2013.
- Loong, Esther Yook-Kin. "Using the Internet in High School Mathematics". *IndoMS-JME*, 5 (2), 108-126, 2014.
- Lu, Liangyue. "Cultivating Reflective Practitioners in Technology Preparation: Constructing TPACK through Reflection". *Educ. Sci.*, 4, 13-35, 2014.
- Luke, Allan. "On Explicit and Direct Instruction". *Australian Literacy Association Hot Topics*, 1-4, 2014.
- Marreo, Meghan E., Woodruff, Karen. A., & Schuster, Glen. S. & Riccio, Jessica Fitzsimons. "Live, Online Short-Courses: A Case Study of Innovative Teacher Professional Development". *International Review of Research in Open and Distance Learning*, 11 (1), 81-95, 2010.
- Meng, Chew Cheng & Sam, Chap Sam. "Developing Pre-Service Teachers' Technological Pedagogical Content Knowledge for Teaching Mathematics with The Geometer's Sketchpad Through Lesson Study". *Journal of Education and Learning*, 2 (1), 1-8, 2013.
- Mishra, Punya, & Koehler, Matthew. J. "Technological Pedagogical Content Knowledge: A new framework for teacher knowledge". *Teachers College Record*, 108 (6), 1017-1054, 2006.
- Mishra, Punya, & Koehler, Matthew. J. "What is Technological Pedagogical Content Knowledge?" *Contemporary Issues in Technology and Teacher Education*, 9(1), 60-70, 2009.
- Molebash, Philip. E. "Constructivism Meets Technology Integration: The CUFA Technology Guidelines in an Elementary Social Studies Methods Course". *Theory & Research in Social Education*, 30 (3), 429-455, 2002.
- Naeem, Abdul. & Basheer, Abdul. "Teachers' perceptions about constructivist learning in Afghan Schools: Mathematics teachers' perceptions and usage of question-answer, individual and group work methods considering constructivism". Retrieved from <http://www.diva-portal.org/smash/get/diva2:812318/FULLTEXT01.pdf>. 2014.
- Neuman, W. Lawrence. *Social research methods: Qualitative and quantitative approaches* (7th Edition). USA: Pearson Education, 2009.
- Niess, Margeret L., van Zee, Emily H. & Gillow-Wiles, Henry. "Knowledge Growth in Teaching Mathematics/Science with Spreadsheets: Moving PCK to TPACK through Online Professional Development". *Journal of Digital Learning in Teacher Education*, 27 (2), 42-52, 2011.
- Ouahbia, Ibrahim et al." Learning Basic Programming Concepts by Creating Games with Scratch Programming Environment". *Procedia - Social and Behavioral Sciences*, 191, 1479-1482, 2015.
- Özgün-Koca, S. Asli. Meagher, Michael & Edwards, Michael Todd. "Preservice Teachers' Emerging TPACK in A Technology-Rich Methods Class". *The Mathematics Educator*, 19 (2), 10-20, 2010.
- Pardimin, Arcana, Nyoman & Supriadi, Didi. "Developing Media Based on the Information and Communications Technology to Improve the Effectiveness of the Direct Instruction Method in Mathematics Learning". *Journal for the Education of Gifted Young Scientists*, 7 (4), 1311-1323, 2019.
- Pierson, Melissa E. (2001). "Technology Integration Practice as a Function of Pedagogical Expertise". *Journal of Research on Computing in Education*, 33 (4), 413-430.
- Piotrowski, Amy & Witte, Shelbie. "Flipped Learning and TPACK Construction in English Education". *International Journal of Technology in Teaching and Learning*, 12 (1), 33-46, 2016.
- Preacher, Kristopher & Hayes, Andrew. "Contemporary approaches to assessing mediation in communication research". In Hayes, A. F., Slater, M. D., & Snyder, L. B. (Eds.), *The SAGE sourcebook of advanced data analysis methods for communication research* (pp. 13-54). Sage Publications, 2008.
- Pryor, Caroline, R., & Bitter, Garry G. "Using Multimedia to Teach In-service Teachers: Impacts on Learning, Application, and Retention". *Computers in Human Behavior*, 24 (6), 2668-2681, 2008.
- Qasem, Aewa Ahmed Abdo & Viswanathappa, Gandla. "Blended Learning Approach to Develop the Teachers' TPACK". *Contemporary Educational Technology*, 7 (3), 264-276, 2016.
- Richardson, Virginia. "From Behaviorism to Constructivism in Teacher Education". *Teacher Education and Special Education*, 19, 1- 16, 1996.
- Roschelle, Jeremy M., et al. "Changing how and what children learn in school with computer-based technologies". *Children and Computer Technology*, 10 (2). Available online at: http://www.futureofchildren.org/usr_doc/vol10no2Art4%2Epdf 2000.
- Şahin, İsmail, et al. "Analysis of Relationships Between Technological Pedagogical Content Knowledge and Educational Internet Use". *Journal of Digital Learning in Teacher Education*, 29 (4), 110-117, 2013.
- Şahin, İsmail. "Development of Survey of Technological Pedagogical and Content Knowledge (TPACK)". *TOJET: The Turkish Online Journal of Educational Technology*, 10 (1), 97-105, 2011.
- Sancar-Tokmak, Hative, Sürmeli, Hikmet. & Özgelen, Sinan. "Preservice Science Teachers' Perceptions of Their TPACK Development After Creating Digital Stories". *International Journal of Environmental & Science Education*, 9, 247-264, 2014.
- Sang, Guoyuan. et al. "Student Teachers' Thinking Processes and ICT Integration: Predictors of Prospective Teaching Behaviors with Educational Technology". *Computers & Education*, 54 (1), 103-112, 2010.
- Schmidt, Denise A. et al. "Technological Pedagogical Content Knowledge (TPACK): The Development and Validation of an Assessment Instrument for Preservice Teachers". *JRTE*, 42 (2), 123-149, 2009.
- Schrum, Lynne et al. "Post-Secondary Educators' Professional Development: Investigation of an Online Approach to Enhancing Teaching and Learning". *Internet and Higher Education*, 8 (4), 279-289, 2005.

- Shafie, Hidayu, Majid, Faizah. Abd. & Ismail, Izaham. Shah. "Technological Pedagogical Content Knowledge (TPACK) in Teaching 21st Century Skills in the 21st Century Classroom". *Asian Journal of University Education*, 15 (3), 24-33, 2019.
- Shrout, Patrick E., & Bolger, Niall. "Mediation in Experimental and Nonexperimental Studies: New Procedures and Recommendations". *Psychological Methods*, 7 (4), 422-445, 2002.
- Shulman, Lee, S. "Those Who Understand: Knowledge Growth in Teaching". *Educational Researcher*, 15 (2), 4-14, 1986.
- Şimşek, Ömer & Sarsar, Fırat. "Investigation of the Self-efficacy of the Teachers in Technological Pedagogical Content Knowledge and Their Use of Information and Communication Technologies". *World Journal of Education*, 9 (1), 196-208, 2019.
- Şimşek, Ömer & Yazar, Taha. "Examining the Self-efficacy of Prospective Teachers in Technology Integration According to Their Subject Areas: The Case of Turkey". *Contemporary Educational Technology*, 10 (3), 289-308, 2019.
- Smith, Ryan, Kim, Somin, & McIntyre, Leighton. "Relationships between prospective mathematics teachers' beliefs and TPACK". In T. Bartell, K. Bieda, R. Putnam, K. Bradfield, & H. Dominguez. (Eds.), *Proceedings of the 37th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp.1218-1225). East Lansing, MI: Michigan State University, 2015.
- Sweeney, Trudy & Drummond, Aaron. "How Prepared are our Pre-service Teachers to Integrate Technology? A Pilot Study". *Australian Educational Computing*, 27 (3), 117-123, 2013.
- Tomei, Lawrence A. *Taxonomy for the technology domain*. USA: Information Science Publishing, 2005.
- Uysal, Selami & Gündoğdu, Kerim. "Bilgisayar ve Öğretim Teknolojileri Eğitimi Öğrencilerinin Web Pedagogik İçerik Bilgisi, Program Yaklaşımları ve Öz Düzenleme Becerilerinin İncelenmesi". *Uluslararası Türkçe Edebiyat Kültür Eğitim Dergisi*, 8 (3), 1902-1928, 2019.
- van Braak, Johan. "Individual Characteristics Influencing Teachers' Class Use of Computers". *Journal of Educational Computing Research*, 25 (2), 141-157, 2001.
- Wright, Belgin & Akgunduz, Devrim. "The Relationship between Technological Pedagogical Content Knowledge (TPACK) Self-efficacy Belief Levels and the Usage of Web 2.0 Applications of Pre-service Science Teachers". *World Journal on Educational Technology: Current Issues*, 10 (1), 70-87, 2018.
- Yangın-Ersanlı, Ceylan. "Improving Technological Pedagogical Content Knowledge (TPACK) of Pre-service English Language Teachers". *International Education Studies*, 9 (5), 18-27, 2016.
- Yiğit, Melike. "A review of the literature: How Pre-service Mathematics Teachers Develop Their Technological, Pedagogical, and Content Knowledge". *International Journal of Education in Mathematics, Science and Technology*, 2 (1), 26-35, 2014.

TEACHERS' INFORMAL LEARNING IN THE CONTEXT OF DEVELOPMENT: RESOURCES, BARRIERS, AND MOTIVATION

Abstract: This research focuses on teachers' professional learning. In this context, the purpose of the research is to determine the informal learning resources, motivations and barriers in the learning process from the teachers' perspective. In the research, one of the qualitative methods, basic qualitative research design was used. Participants of the study consisted of 21 teachers who were determined with maximum diversity sampling. Research data were collected through face-to-face interviews with the participants. The semi-structured interview form prepared by the researchers was used in the interviews. The data obtained as a result of the interviews were transferred to the computer program and analyzed by content analysis method. Three themes were determined as a result of the analysis. These are informal learning resources, learning motivation and professional learning barriers. Teachers' informal learning resources are divided into two sub-themes as interactive and personal, while learning motivation is divided into two sub-themes as intrinsic and extrinsic sources of motivation. The barriers to the learning process are divided into four sub-themes. These are personal barriers, school-related barriers, work-related barriers, and barriers caused by central policies. Since teachers have different kinds of learning methods, creating the sources that support these methods, linking the teachers' professional developments with their career progressions and averting the dilemmas caused by work and family perceptions and transforming the schools into learning environments are the main suggestions made as a result of the research.

Keywords: informal learning, professional development, learning resources, learning motivation, teaching profession

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INTRODUCTION

While the professional development of teachers has become the focus of research in recent years, it has been considered as a way of improving teachers' qualifications in the documents about education policies. Education systems' achieving their purposes and student success largely depends on teachers' professional competencies and their abilities to employ them (İlğan, 2020; Yaylacı, 2013). Apart from this, advancements in information and communication technologies (Gürkan, Başaran & Büyüköztürk, 2019), success rate of reforms, consistent competitiveness of education system in international areas (Bayar, 2014), improving the classroom activities necessitate consistent professional development for teachers. Moreover, teachers' capitals are their knowledge, skills and attitudes (Jeong, Han, Lee, Sunalai & Yoon, 2018). Therefore, teachers are expected to learn until the end of their careers (Hoekstra, 2007). Within this scope, teachers' formal and informal learning sources, learning motivations, barriers to professional development and their reflections on intra-class activities have begun to be widely discussed in the literature (Avidov-Ungar, 2016; Can, 2019; Kyndt, Gijbels, Grosemans & Donche, 2016; Thomson & Turner, 2015).

There is a consensus among researchers about the effect of teachers' professional learning on student success and school success (Scribner, 2003). The positive effect of teachers' professional development on students' learning has also been demonstrated by empirical research (Buczynski & Hansen, 2010; Wei, Darling-Hammond, Andree, Richardson & Orphnaos, 2009; Yoon, Duncan, Lee, Scarloss & Shapley, 2007). With the increase in studies that reveal the positive effect of professional learning on classroom practices and student success, teachers' professional development resources, barriers, and support structures have become an important component of international evaluation studies such as TALIS, PISA, and TIMSS. This has caused countries to come up with alternative ways to support teachers' learning in the context of their professional development. In this context, in-service training practices, which have become traditional in recent years in Turkey, are criticized (Uştu, Taş & Sever, 2016; Yalçın İncik & Akbay, 2018), and teachers' informal and formal learning practices are discussed in recent studies (Bektaş, Kılınç & Gümüş, 2020; Can, 2019; Özgenel, 2019).

Although there is a wide range of studies in international literature about teachers' informal learning resources, professional development, motivation and barriers, Turkey might be asserted to be deprived of such a wide literature in terms of teachers' informal learning practices. In that context, the sources used by teachers for informal learning, the barriers to the professional development and teachers' motivation sources are the notions that led to this research.

TEACHERS' INFORMAL LEARNING RESOURCES IN THE CONTEXT OF PROFESSIONAL DEVELOPMENT

Teachers' professional development has been a subject matter discussed under the title of in-service training for many years. Being officially organized, in-service trainings are the activities in which teachers passively participate and scholars exchange their knowledge and experience on various issues. There are studies in the literature that support this point of view (Aycacı, Bakırcı ve Yıldız, 2014; Kubat, 2018). Recently, teachers have started to be seen as students who can both lead and formulate their learnings and needs, triggering the concept of professional learning to be more common compared to professional development (Labone & Long, 2016; Louws, Meirink, Veen & Driel, 2017;). The change in this perspective represents the transition to the constructivist approach among the knowledge-transfer approaches in the class, and this new perspective has led suchlike change to be formed in the models of professional learning as well (Labone & Long, 2016). Therefore, professional learning has started to be handled in the body of literature both as informal and formal learning opportunities and as changes in teachers' behaviours, abilities and knowledge for improving in-class practices (Hoekstra & Korthagen, 2011). Likewise, in this research, teachers have been considered as professionals who are aware of their learning needs and take on the responsibility of learning from informal sources by using their learning methods.

Teachers' professional learning contains various designed learning methods, which improve teachers' abilities, knowledge and teaching applications, encourage their personal, social and emotional improvements and eventually affect learning outcomes of students in a positive way (Darling-Hammond et al. 2009). Teachers' learning might be in formal, informal or incidental ways. No consensus has been reached among the scholars on drawing a distinction between these methods. However, the environment where learning takes place, formalness, being scheduled, being started by someone and eventually the purpose of learning separate them from each other.

Being known as common learning and unofficial learning, informal learning is generally confused with formal learning. Livingston (2001) describes informal learning as activities which include individuals' seeking for their sense of knowledge, ability and perception, taking place apart from educational programs organized by institutions. Yet, Kyndt et al. (2014) describe informal learning as learning opportunities characterized by lack of organization and planning in terms of context, aid, period, and aims of learning. Moreover, by stressing the self-orientation of a person, Jeong et al. (2018) define informal learning as collective and personal acquisition of knowledge and ability which is started by individuals to serve the purposes of an individual or institution. Being named as organized education, formal education represents activities whose characteristics are defined as being aided and structured in terms of their aims, context and instructional scaffolding by educational institution, checked by teacher or directory and result either in certification or receiving bonuses (Levenberg & Caspi, 2010). Within this scope, it is possible to sum up differences between formal and informal education as follows (Fraut; 2004; Donitsa-Schmidt & Zuzovsky, 2020; Kyndt, Dochy & Nijs, 2008; Lecat, Beusaert & Raemdonck, 2018):

- While the aims of informal learning are determined by individuals depending on their needs, the aims of formal learning are determined by institutions.
- While formal learning is actualized in more structured, class-like environments, informal learning generally does not require a specific environment, even an instructor.
- While informal learning is planned by individuals without being based on any curriculum, formal learning is based on curriculum planned by institution.
- Whereas informal learning is done voluntarily, formal learning emerges as a necessity.

Some researchers (Hoekstra, Brekelmans, Beijaard & Korthagen, 2009; Shirrell, Hopkins & Spillane, 2019) confine informal learning to the learning process in workplaces by asserting that informal learning is embedded in ordinary work routines, some others (Opfer, Pedder & Lavicza, 2010; Watkins & Marsick, 1992) broaden the concept of informal learning by taking incidental learning into account as well. Taking time focus into consideration based on if it is planned or not, Eraut (2004) discussed incidental learning as an informal learning in his typology. In this typology, there are three types of learning. These are incidental/implicit learning, reactive learning and intentional learning. Incidental/implicit learning is a type of learning which is unplanned and free from any conscious attempt. Reactive learning is unplanned, yet, when an opportunity shows up, the individual attempts to learn. Intentional learning includes both planned and conscious activities. Depending on intention and consciousness, Schugurensky (2000) defined three types of informal learning as well. These are self-oriented learning (both conscious and intended), incidental learning (conscious but unintended), implicit learning (neither conscious nor intended). In this research, informal learning was taken as a process in which teachers undertake their professional learning to meet their needs as self-oriented, conscious and intentional individuals.

Researchers have tried to determine and categorize widely-used informal learning resources to distinguish it from the other learning types. Meirink, Meijer and Verloop (2007) and Hoekstra et al. (2009) classified informal learning into four major types: (1) learning by experimentation, (2) learning by consultation, (3) learning by doing, (4) learning by reflection. Kwakman (2003), on the other hand, classified it as learning by reading, trying, reflection and collaboration. In their systematic analysis research to analyze the outcomes of informal learning, Kyndt et al. (2016) came to the conclusion that there are 129 unique learning activities in informal learning for teachers. The most-stated informal learning activities in the research were determined as reading educational literature, observation, collaboration with colleagues, reflection, learning by doing/experiencing, surfing the internet and social media, experimentation, trial and error, exchange of ideas (unspecified), sharing the materials and sources and finally storytelling. Researchers came up with a typology in which informal learning sources were grouped under seven categories. In this typology, informal learning sources were classified as communication and debate with others, trying and testing, learning from others without interaction, personal activities, reflection on action, participation in extracurricular activities and confrontation with difficulties. Lohman (2006) described informal learning resources without classifying as; (1) speaking with others, (2) collaboration, (3) observing colleagues, (4) sharing the materials and sources with others, (5) looking up on the internet, (6) scanning the professional journals and publications, (7) trial and error, (8) pondering on actions. Apart from these, reading a book, watching education-related TV channels, attending conferences and workshops, taking up courses for skills development, school and museum visits, discussion with colleagues and etc. can be regarded as informal

learning resources. Since in-service trainings are centrally carried out by The Ministry of National Education (MoNE) within a certain plan and program, they were not considered as informal learning resources in this research.

Although teachers have many formal and informal learning sources, there are many barriers to accessing these sources and starting a learning process. They might be grouped as personal, contextual and job-related factors. Kwakman (2003) stated that professional attitudes, exhaustion, value placed on learning, work diversity, work pressure and autonomy might be the barriers to professional learning. Workplace relationships, support by school administration and school culture might be of contextual factors. Kedzior and Fifield (2004) classified these barriers as school factor, region factor, time structure, content of professional learning and cost. While micro (at school level) and macro (policy) barriers to teachers' informal learnings might affect the accessibility of learning sources, they may also cause motivation loss for teachers.

One of the primary concerns about professional learning is the question of "What are the factors motivating teachers for professional learning?" Motivation is seen as a crucial antecedent of participation in professional development by researchers (Bigsby & Firestone, 2017; Hoekstra, 2007). Likewise, having access to a great number of sources does not guarantee teachers' striving for professional learning activities. The distinctive feature of informal learning is that it is started and maintained by students. Therefore, motivational factors leading personal behaviours greatly affect the initiation and maintainance of the learning process. Based on the self-determination theory, in de Wal, den Brok, Hooijer, Martens and van den Beemt (2014) found that teachers who had more intrinsic motivation participated more in professional learning activities. Gorozidis and G. Papaioannou (2014) found that autonomous motivation is a significant predictor of teachers' participation in professional development activities. Thus, teachers' learning motivation can be considered as a significant variable that might affect the professional learning process.

PURPOSE AND IMPORTANCE OF THE RESEARCH

Depending on the centralized structure of the education system in Turkey, in-service trainings organized by MoNE have been utilized as a model of professional development for years. However, courses and seminars included in in-service training which is a traditional model of professional development, are far from ensuring the expected contribution to teachers' qualifications. These programs do not include some particulars such as collaboration between teachers, professional sharing, collective participation, and interactive learning (Eroğlu & Özbek, 2018). Bellibaş and Gümüş (2016) claim that the centralized structure of MoNE, which influences the execution of all educational programs, prevents sustainable and effective professional development activities from being pervasive among teachers. Beside this, according to 2019-2020 statistics, 1.117.686 teachers serve in MoNE (MoNE, 2020). Therefore, access to in-service trainings might not always be possible for teachers.

As an alternative to in-service trainings, focusing on teachers' informal learning resources can make contributions to the establishment of supportive elements in schools and improvement of central policies that may support teachers' professional development. In this context, this research aimed to determine teachers' informal learning resources, their motivation and barriers to professional learning. In accordance with this purpose, the answers to the following questions were sought:

- What are teachers' informal learning resources in the context of professional development?
- What are the barriers to teachers' professional learning?
- What are the factors motivating teachers for professional learning?

METHOD

RESEARCH DESIGN

Qualitative research method was used in this research, which aims to determine teachers' informal learning resources and their motivation and barriers to professional learnings. Explaining how individuals form the interaction between the real and social life is the main goal in basic qualitative research. In this research type, the data can be collected through the interviews which are modulated in accordance with the theoretical part of the research. In qualitative research, peoples' lives and the meanings attributed to their experiences with their lives are analyzed by researchers (Merriam, 2009).

STUDY GROUP

Study group of this research consists of 21 teachers who served in public schools located in Denizli within the years of 2019-2020. The maximum diversity sampling method was used in the study according to gender, school type and socio-economic level of the school. Teachers participated in the study voluntarily. Teachers in the study group serve in different schools and grades. Teachers were given the codes between M1- M8 and F1 – F13. Information about the participants are illustrated in Table 1.

Having analyzed the demographic data of the participants, it is seen that eight participants are male and thirteen of them are female. One participant serves in kindergarten, two participants serve in private schools, two participants serve in primary school, three participants serve in vocational high school, five participants serve in secondary school and eight participants serve in Anatolian high school. While three of the teachers have master's degree, eighteen of them have bachelor's degree. One of the schools is located in a village, seven schools are located in the district, and thirteen of them are located in the central district. One of these schools has low, fourteen schools have middle and three of the schools have high socioeconomic status.

Table 1. Information About the Participants

Participant	Gender	Sen.	School Type	Ed. Lev	Sch.Loc	S.E.Level
M1	Male	10	Secondary	Bachelor	District	Middle
M2	Male	6	Secondary	Bachelor	District	Middle
M3	Male	14	Primary	Bachelor	Central District	High
M4	Male	16	Vocational H.S	Bachelor	District	Low
M5	Male	19	Secondary	Bachelor	Central District	Low
M6	Male	25	Anatolian H.S	Bachelor	Central District	Middle
M7	Male	15	Anatolian H.S	Bachelor	Central District	Middle
M8	Male	25	Anatolian H.S	Bachelor	Central District	Middle
F1	Female	10	Primary	Bachelor	District	Middle
F2	Female	14	Vocational H.S	Bachelor	District	Middle
F3	Female	7	Secondary	Postgraduate	District	High
F4	Female	19	Kindergarten	Bachelor	Central District	Middle
F5	Female	20	Vocational H.S	Bachelor	District	Low
F6	Female	17	Special Education	Bachelor	Central District	Middle
F7	Female	17	Special Education	Bachelor	Central District	Low
F8	Female	26	Anadolu Lisesi	Bachelor	Central District	Middle
F9	Female	16	Anatolian H.S	Postgraduate	Central District	High
F10	Female	28	Anatolian H.S	Bachelor	Central District	Middle
F11	Female	9	Anatolian H.S	Bachelor	Central District	Middle
F12	Female	15	Anatolian H.S	Bachelor	Central District	Middle

DATA COLLECTION

Research data were collected through semi-structured interview form. The following steps were used for the preparation of the interview form: The questions were determined by the researchers, taking into account the purpose and sub-purposes of the study. In the next stage, the semi-structured interview form was sent to expert for opinion, together with the purpose and sub-objectives of the research. A pilot interview was conducted with three participants using the form prepared in line with the feedback received. As a result of the interviews, new questions were added to the questionnaire and the form was made ready for application. Interview question examples (1- What kind of learning resources do you use in the context of professional development? 1-a) ... 2- Why do you need professional learning? What is the driving force for professional learning?). The place and time of the interview were determined by contacting with the teachers who had volunteered to participate in research. Teachers were informed about the professional learning and the aim of the research before the interview. It was stated that the recorder would be used upon teachers' permission and a privacy statement was signed respecting the privacy of teachers' names and voice records by the teachers who had given permission. All of the teachers allowed voice recorders to be utilized. At the end of these processes, interviews, which lasted between 30-45 minutes, were conducted.

DATA ANALYSIS

The sound recordings obtained as a result of the research were transformed into written text. Content analysis method, one of the most-used methods among qualitative research methods (Özdemir, 2010), was used during the reporting process of the transcribed data. In content analysis method, researchers create the themes (Silverman, 2014) and related codes (Merriam, 2013) which are determined either during the

research process or before the research in line with the literature. The themes in this research were created during the analysis process. In the first stage, coding was done by reading the data. In the second stage, themes were created by bringing together the related codes. In the third stage, selective reading was done in order to reveal new codes that might be related to the themes. In the last stage, a consensus was reached by evaluating the codes and themes created by the researchers. Three themes were created as a result of the data analysis. These are informal learning resources, learning motivation and learning barriers. Sub-themes related to these themes were created and associated with the codes, and these structures were visualized and presented in the findings section.

VALIDITY AND RELIABILITY

In qualitative research, validity is the accuracy of research results and reliability is the repeatability of these results (Yıldırım & Şimşek, 2011). Participant control, triangulation, longitudinal observation in the field, rich and intense description, peer review and external control are the validity methods (Creswell & Miller, 2000), at least two of which are suggested be used in qualitative research (Creswell, 2007). In the current study, peer review and participant control methods were used. Participant control is considered as a crucial method for the reliability of research (Lincoln & Guba, 1985). Primarily, research data and results for peer review were shared online with a specialist in the field. Following the online meeting, final checks were completed. Thereafter 10 people were chosen to be interviewed again. The acquired codes, subthemes and themes as a consequence of the analyses and peer review were shared during these interviews. The results were ensured to be checked by participants as well. To provide the reliability, the data were sent to the specialist who was initially not included in the research and subsequently asked for content analysis. The obtained results were compared with each other and the compatibility percentage between two codings was calculated as 88%. According to Miles, Huberman and Saldana (2014), the compatibility percentage between encoders is expected to be at least 85-90%. According the conducted processes for validity and reliability, the research results can be suggested to be both valid and reliable.

FINDINGS

In this research, codes, themes and subthemes about teachers' informal learning resources, their motivation and the barriers to learning process were determined as a result of the conducted interviews with participants.

TEACHERS' INFORMAL LEARNING RESOURCES

With regard to teachers' informal learning resources, two themes were determined as interactive and personal resources. Interactive resources are the sources in which teachers either assume active roles or rather become the ones receiving more information while not being fully active. Personal resources might be perceived as practices actualized by teachers' themselves and through which they gain access to information in different ways, receiving knowledge without being involved in any interaction. The theme, subtheme and codes are shown in Figure 1.

Interactive resource theme consists of two subthemes as active and passive ones. Teachers sometimes enter in a process of active-passive learnings by observing. In this process, teachers observe experienced teachers and also obtain information from their managers and advisers. This issue was expressed by M3 as "... I have benefited a lot from experienced teachers. I have observed their relationships with students and other teachers in the school. From time to time, I have asked about their experiences in teaching. All of these experiences have contributed a lot to my professional learning." F5, on the other hand, talked of her interaction with her adviser teacher as "My adviser teacher was so good in the first school where I did my first internship. His/her (unspecified) relationship with students was so good and intimate. I learnt a lot from my adviser" Some of the teachers see especially their principals whom they get along with to be information sources. On this issue, F4 stated that "when you are close with school management, you can get information about school management. I want to be a school administrator in the future and I think the information I obtain from principals will be of help when I become an administrator." Teachers are also involved in active interaction and learn through mutual collaboration with their colleagues. Other sources through which teachers obtain information interactively are students and parents. Especially those who serve in regions far away from their cultures enter in a mutual learning process with their students. F3 stated on this issue that "I used none of the knowledge I was taught at university. I was designated in the city of

..... there was nobody who could speak Turkish properly. I tried to communicate with students. I was teaching mathematics while they were teaching me the language.”

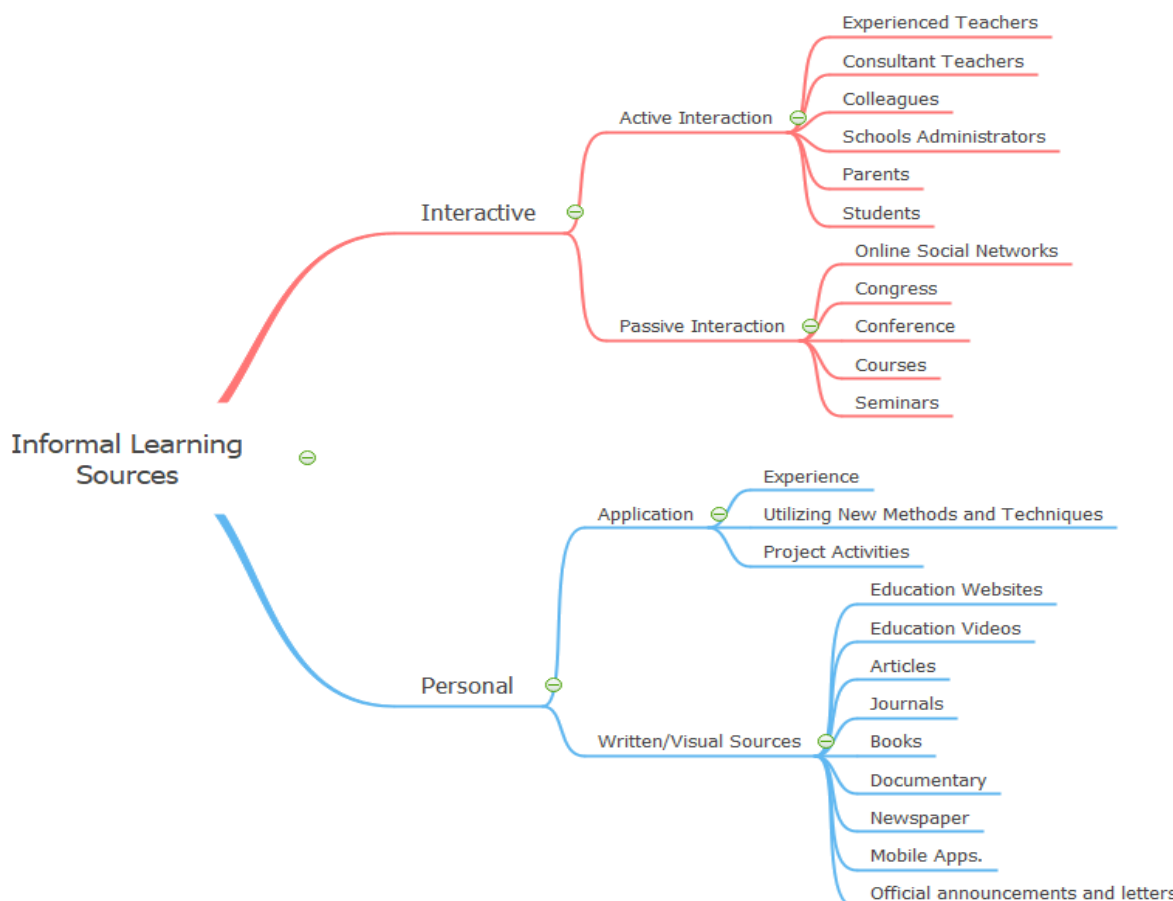


Figure 1. Informal learning sources of teachers

Teachers widely use online social networks as passive informal learning resources. M7 is a teacher using the online social networks and the internet as informal learning resources. He stated that “I try to bring my colleagues’ applications shared on social networks and the internet in the school. I participate in online courses that can improve me.” Moreover, M4 indicated that he uses social media as a learning source by saying that “I use Twitter. I follow the various accounts for the latest improvements in education through social media.” Likewise, F2 remarked that learning sources have been diversified for teachers by saying “I use education groups and social networks. Information sources have changed. We do not necessarily need formal education to get information about something anymore.” Congresses, courses, conferences and seminars are also teachers’ informal learning resources. According to most of the participants, these activities are of informal learning resources. Several participants shared their experiences about these sources. M4 said that “I attended an educational coaching course. It was so beneficial”; M5 remarked as “I improve myself through various courses. I took a family counselling course. Beside this, I participate in conferences and seminars relating to my field.”; F1 also stated that “I attend the courses that draw my attention. I also try to participate in congresses relating to my field.”

Teachers’ informal learning resources consist of two subthemes as application and written/visual sources. Experience consists of activities in which teachers take a part in person. Teachers’ learning which takes place during their serving in the profession might be considered in this context. On this issue, F3 said that she learnt new information during her professional practices: “.... There were not experienced teachers to guide me. I learnt everything by practising. In this context, information taught at universities is limited as well. The information ‘taught’ by instructors who have not experience in the field is not effective.” Teachers also contribute to their professional learnings by utilizing new methods and techniques during teaching. F2 stated that she experiences a learning process by testing the usefulness of applications about which she has heard on the social media and observing the reactions given by her students. Another personal learning source illustrated in teachers’ application theme is the project activities. It is possible to say that teachers have the opportunity to acquire information in project activities by practising. F7, who sees project activities

as a personal learning source, addressed the importance of project activities by saying that “I have taken part in several projects. You come together with teachers from different schools and even countries in these projects. Therefore, it brings about an environment where there is information exchange and this information is put into practice. These facts have contributed a lot to me professionally.”

It is possible to suggest that teachers often make use of written and visual materials as personal learning resources. When the acquired key codes were analyzed, most codes were grouped under this theme. Some of the participants indicated their personal learning resources. For instance F11 said that “I read a book and follow education-related websites.”; F9 also stated that “I watch educational videos. The videos by master scholars in the field of education are of great help. I also like watching documentaries. I think documentaries are one of the sources that should be followed as well.” Likewise, M2 said that “...there are mobile applications. I download and use them actively.”

TEACHERS’ LEARNING MOTIVATION

Teachers’ learning motivation was observed under two themes as intrinsic and extrinsic motivation. The self-determination theory put forward by Ryan and Deci (2000) was used to determine the themes in teachers’ learning motivation. The codes and themes with regard to teachers’ learning motivation were illustrated in Figure 2.

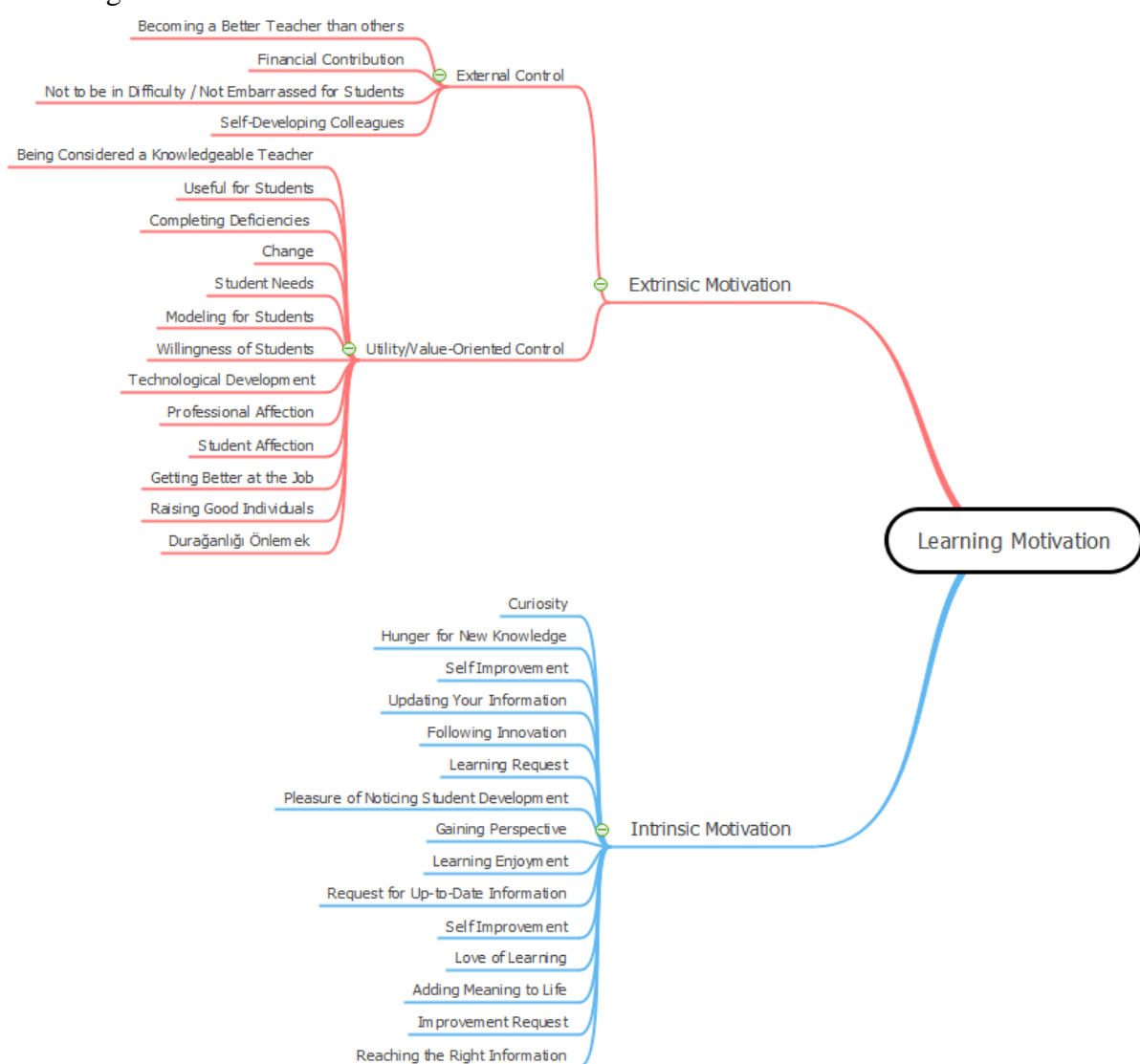


Figure 2. Teachers Learning Motivation

Teachers’ extrinsic motivation elements consist of two subthemes as external control and utility/value-oriented control. External control refers to situations in which reward or punishment are seen as motivational elements. In this theme, it might be suggested that teachers are motivated for learning to receive the reward or avoid punishment. M1 remarked that it is a source of extrinsic motivation to be one step ahead from other teachers: “... Being one step ahead from the others motivates people. It also

encourages me to learn...” The pleasure caused by the sense of being ahead can be said to be a sort of award for teachers. F4 expressed her opinion by saying that “I always improve myself. The courses I have taken also contribute to me financially in return. For instance, I took a training of trainers certification in the field of internet-based content development. I served in in-service trainings as an instructor thanks to this certification.” Teachers’ another learning motivation is not being embarrassed in front of their students. F11, who is of this opinion, said that “My students are so curious. They always ask questions. I am scared of being embarrassed if I cannot answer them.” Teachers also gain learning motivation when they are together with other self-improving teachers. F1 expressed her feelings by saying that “... I see teachers improving themselves professionally and I do not want to fall behind because the difference between improving teachers and not improving ones is so clear.”

Another subtheme under the extrinsic motivation theme is utility/value-oriented control. In the utility/value-oriented control theme, social honor is of concern rather than reward or punishment. Teachers are eager for professional learning to be seen knowledgeable and better in their profession. Teachers also want professional learning to hinder monotony. M3, who said that “Feedbacks that I receive from my students motivate me. We have an experienced teacher whose feedbacks also motivate me.” and another teacher F4, who stated that “I want to be better in my profession. Monotony is not for me. Thus, I attend the trainings and learn new information.”, clarified these assumptions. Another motivation source accentuated under this subtheme is the changes taking place in the world and knowledge acquisition methods. On this issue, F10 addressed the motivation brought by changes in the world: “Having access to knowledge is so easy now. The world changes fast and I try to improve myself for not being behind my time.” F13, whose motivation source is also change, stressed the speed of changes by saying that: “The changes take place fast in my profession. There always appear new programs and requirements. Therefore, I must keep up with these changes.”

Internal factors which are the source of motivations for professional development were also often mentioned by teachers. There are fifteen different codes located under the theme of intrinsic motivation sources. These codes can be seen as factors motivating the teachers internally with regard to requirements of the profession. Teachers are motivated to learn for different reasons such as thirst and curiosity for knowledge or refreshing their knowledge. On this assumption, M1 said that learning new information motivates him: “ ...I also like learning new information. Refreshing the knowledge helps people professionally keep up to date. Both my learning and teaching motivation increases.” Some of the teachers, on the other hand, enjoy the changes that come in sight in students thanks to their acquired knowledge. Regarding this issue, F2 said that “... Seeing that students learn something new motivates me.” Likewise, F5 addressed how this delight arisen from teaching motivates her “I love my students so much. Seeing the changes taking place in them gives me pleasure.”

BARRIERS TO LEARNING

Barriers to teachers’ learning were grouped under four themes based on teachers’ opinions. These are personal, school-related, job-related and central policies-related barriers. However, some teachers said that there is not any barrier to learning. The codes and themes with respect to the barriers to learning are illustrated in Figure 3.

As it is shown in Figure 3, some key codes are located under more than one theme. For instance, workload may seem related to the profession and central policies. This is because teaching not only requires itself to be done in the class but also involves a preparation process for lesson out of working hours. Therefore, workload is an barrier caused by the job itself. At the same time, extra duties such as being a hall monitor, training courses, and assignments given for national holidays are all duties given as a result of central policies. So, workload can be said to be related with central policies as well.

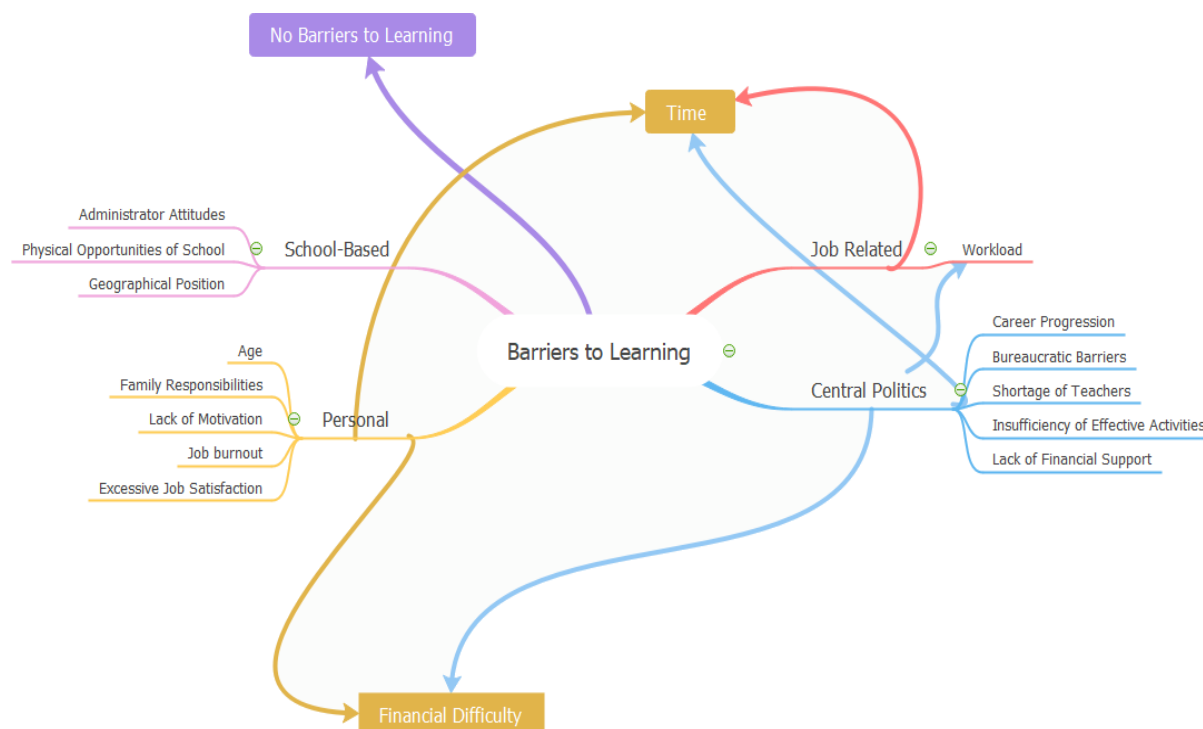


Figure 3. Barriers to Learning

Analyzing personal barriers to learning, some barriers such as age, family responsibilities, job burnout, lack of motivation and excessive job satisfaction come to the forefront. The barriers caused by central policies are career progression, bureaucratic barriers, shortage of teachers, insufficiency of effective activities and lack of financial support. Whereas workload is a job-related barrier, administrators' attitudes, physical opportunities and geographical position of school are school-related barriers. Workload has also been taken as an barrier caused by central policies in this research. Financial difficulty is an barrier caused by both personal and central policies. M3's opinion on this issue is "Lack of time, workload and working hours are the biggest barriers. I come home from school, I get prepared for tomorrow's lesson. I also look after my children in the house. The time flies by in the meantime. I hardly find time to rest. Therefore, it is so hard to find time for improving myself. When it comes to weekends, there is a course in the school. I dedicate Sundays to my family." Having analyzed M3's opinions on the issue, some of the factors such as workload, time, family responsibilities and extra duties seem to be the personal barriers to learning. M8 also said that "... I am experiencing job burnout. I am getting old. If I were younger, I would pursue a master's degree. But I think I am late for this kind of things now." F2 also expressed herself in a broader perspective saying that "I cannot make time for myself. You must allocate time for the family at night. Since I am the only teacher in my branch at the school, I cannot take part in activities because it is so hard to get permission. I want to participate in congresses but I can't afford to go to other cities and pay participation fees. Even though we overcome these problems, school principal objects to us by emphasizing teacher shortage in the school.". F3 added her opinion by saying that "... Full-time schooling limits us in terms of time. Moreover, there are not effective activities organized on a local basis for us. We apply to central courses but end up being refused. There are paid courses but it is hard to maintain consistency under these financial conditions. If I had an opportunity, I would prefer to go to different countries, observe their education systems and schools but I cannot find that chance". F6, who elaborated her opinions, stated that "If there was a room devoted to teachers' learning, I could plan and carry out my professional development. For instance, since it is tiring and takes time, we cannot go to our houses at break times. It is impossible to do something in the teachers' room because it is full of noise and people. Therefore, it would be great if we had a room devoted to, if not personal, a few teachers. Yet, it is impossible to possess this kind of chance with the possible physical conditions of school. Furthermore, teachers who have improved themselves and are more beneficial to students, might be provided with financial support. The financial aid might be given for courses that are necessary for teachers' trainings. Since we are destitute of these chances, our professional development remains in the background."

DISCUSSION, CONCLUSION AND SUGGESTIONS

It has become both a necessity and an obligation for teachers to go on learning in the context of their professional development throughout their careers. As a matter of fact, while the changes in teacher-student roles in knowledge and technology require teachers to acquire new knowledge and skills, teachers' professional learning is considered an important factor for student and school success. Professional learning can take place in formal and informal ways. Informal learning process is an important tool for professional development as it is a process initiated by teachers in line with their interests and needs. In this context, the current study aimed to determine teachers' informal learning sources, barriers (barriers) to professional learning, and teachers' professional learning motivation based on teachers' opinions.

As a result of the research, teachers' informal learning resources were gathered under two sub-themes as interactive and individual learning resources. Interactive learning resources are divided into two categories, depending on their intensive interaction with their colleagues or other education stakeholders as well as their active participation in the process. These are active interaction and passive interaction. Experienced teachers, counselors, colleagues, school administrators, parents and students are informal learning resources teachers actively interact with. In this process, teachers learn actively by sharing information, discussing various issues, acting together in solving problems, or by transforming the communication process with parents, students and school administrators into a learning process. The other category is passive interactive informal learning resources, which are online social networks, congresses, conferences, courses, and seminars. Passive interactive learning resources are learning resources where there is limited interaction with other colleagues, and teachers generally assume the role of receiving information. Another theme, individual learning resources, refers to the learning resources where there is no interaction in the learning process, teachers directly apply to information resources or they learn by doing and experiencing. This theme is divided into two categories as written and visual materials and practicing. While teachers' finding out useful and practical methods constitutes important learning resources, applying new methods in the classroom, writing projects, and taking part in projects are practical informal learning resources.

There are different classifications for teachers' informal learning resources in the literature. While Lohman and Woolf (2001) discussed learning resources in the form of information exchange, experimentation, and environmental scanning, Kwakman (2003) discussed them as reading, experimenting, reflection, and collaboration. In the current study, a classification has been made by taking interaction as the focus. In the studies on the reflection of teachers' different learning activities on classroom practices and its effect on student achievement (Akiba, 2012; Appova & Arbaugh, 2018; Camburn & Han, 2017), collaborative and interactive learning activities were found to be more effective than other learning resources. In addition, it can be suggested that teachers who value interaction with their colleagues and turn this into a learning resource will be highly likely to make reflective practices. According to the TALIS 2018 results, teachers attend face-to-face courses and seminars, read the professional literature, and participate in the training conferences more despite the positive impacts of interaction-based learning resources on teaching practices. These activities are learning resources that offer teachers limited or no interaction at all. There are studies reporting that especially activities in the form of courses, seminars, and conferences are ineffective and are not put into practice (Sıcak & Parmaksız, 2016; Uçar & İpek, 2006). It can be suggested that such activities with a one-way flow of information trigger a temporary motivation for teachers, but are not effective in transferring new professional knowledge to classroom practices. Although the research did not focus on the frequency of use of learning resources, the fact that the participant teachers did not mention interactive informal learning resources such as coaching, common classroom observations, and research-based learning point out these resources are not used much.

Another finding of the study is related to teachers' professional learning motivation. Teachers' professional learning motivation was discussed and classified within the framework of self-determination theory put forward by Ryan and Deci (2000). In this context, two themes were created as internal motivation and external motivation. Teachers' desire to learn, curiosity, love of learning, updating their knowledge, and self-actualization, and their orientation towards professional learning due to the fact that they take pleasure from learning itself are their internal motivation sources. Teachers' external motivation sources are divided into two sub-themes as external control and benefit/value-oriented control. Teachers may turn to informal professional learning in order to get various rewards or avoid punishment. These resources are brought

together under the external control sub-theme. In addition, teachers might tend to learn in order to be beneficial to individuals, due to professional love and professional values. In this context, the factors such as raising good individuals, being a good role model for students, completing the deficiencies, love of profession and students are sources of motivation considered under the benefit / value-oriented control sub-theme. Previous studies also found that love of learning, professional commitment and self-development were important sources of intrinsic motivation for teachers (Lohman, 2005). Uştu et al. (2016) found that the most important factors motivating teachers to maintain their professional development are the sense of conscience and their students. In the current study, it can be said that professional values and love of students stand out as motivation sources within the benefit / value-oriented control sub-theme. Scribner (1999) considered the lack of knowledge and skills of teachers as sources of intrinsic motivation in his study and addressed financial gains as an extrinsic motivation factor. The results of our research have expanded the intrinsic and extrinsic motivation sources by addressing professional learning motivation within the framework of self-determination theory.

What makes informal learning more valuable than formal learning is that it begins instinctively and the individual is driven by intrinsic motivation. Thus, teachers start the learning process and take on the responsibility of learning by managing time under their own control until they achieve their aims. As a matter of fact, Özkan and Anıl (2014), in their study using TALIS 2008 data, concluded that teachers' voluntary participation in professional development activities in line with their needs and the time allocated for professional development categorized countries largely correctly in terms of their success. Besides, related studies in the literature revealed that there are significant relationships between teachers with different motivation profiles and their participation in professional development practices. In this context, Jansen et al. (2014) found that teachers with high intrinsic motivation and integrated regulation levels spend more time for professional development. As a result, teachers' professional learning motivation may arise from different sources. This study has also found that teachers generally lay emphasis on intrinsic motivation sources; however, it can be suggested that regulations to be made in the school structure and in central policies in accordance with the external motivation sources can encourage teachers to maintain professional learning.

Another finding of the study is about the barriers to teachers' professional learning. As a result of the research, it has been found that these barriers stem from school, individuals, profession and the central policies. In teachers' opinions, the geographical location and physical conditions of the school and the attitudes of the administrators are the barriers to learning. In this study, it has been found that age, low motivation, family burden, burnout and occupational satisfaction are individual barriers to professional learning, while workload has been found to be due to the characteristics of the profession. Finally, it has been concluded that lack of career progression, bureaucratic attitudes, shortage of academic staff at school, lack of qualified professional development activities and lack of financial incentives are barriers stemming from central policies. The time barrier is associated with both categories as it is related to both individual and professional characteristics, while financial insufficiency is associated with central policies and individual barriers. Domestic and international studies also support our research findings. Physical conditions were found to be one of the biggest barriers to teachers' professional learning in the study conducted by Özgenel (2019), whereas Opfer and Pedder (2011) found that the structures and support in the school affected teachers' learning. Bigsby & Firestone (2017) stated that time constraint and personal factors as well as material and social incentives were barriers to teachers' learning, while Kedzior and Fifield (2004) reported that the structure of professional development activities, time constraint, the content of professional development, school and region factors were the barriers to professional learning. Furthermore, the professional development barriers of teachers were found to emerge as legal regulations, education policy, administrators' attitudes, working conditions, low motivation, burnout, economic problems, professional status and political effects in a comprehensive study carried out by Can (2019); however, Yurdakul (2008) pointed out that burnout and teachers' point of view to professional development, particularly in experienced teachers, are the biggest barriers to professional learning.

According to TALIS report (2018) published by OECD (2019), the lack of incentives for professional development, professional development activities' overlapping with school hours and lack of support by the school management are the most common barriers to teachers' learning expressed by teachers in Turkey. Although these results provide supporting evidence for our research finding in that context, professional

development barriers can be suggested to be the main reason for the lack of motivation for professional learning in teachers.

Based on the research results, some inferences concerning the school structure and central policies that will support teachers' professional learning have been made; first, it has been determined that teachers use different sources for professional learning, which may be due to teachers' learning styles and inclinations. However, the effect of collaborative learning based on interactivity on both learning and transferring learning into practice is well known. In addition, when the time constraint, work burden and family-related barriers taken together, it can be suggested that practices that will allow teachers to interact at school will be an important resource for teachers' learning. In this context, school principals encouraging coaching and mentoring practices, classroom observations, group work, joint projects and action research can support teachers' professional learning. In addition, providing access to these resources (books, magazines, internet, educational portals, and etc.) can be supported centrally for teachers who prefer various learning methods. Second, although financial incentives are a source of motivation for teachers, lack of career advancement and lack of incentives can also be a barrier to professional learning. Within this framework, teachers' professional development can be associated with career advancement, and legal arrangements can be made in personal rights and financial incentives for professional development. Third, time constraint, work and family burden, lack of executive support, centralized policies and low motivation are major barriers to professional learning. In this context, turning the school into a learning environment for teachers can be a solution to overcome the barriers like time, work and family burden, which points to the support of administrators and a collaborative school culture. Finally, bureaucratic barriers such as 'written permit' that prevent teachers from participating in professional learning activities can be rearranged, and central courses and seminars can be organized as practice-weighted and interaction-oriented.

LIMITATIONS

However, the study has meaningful results about teachers' learning resource, we can talk about some limitations. since a qualitative approach has been adopted in this research, teachers' professional learning resources are limited to the learning resources specified by the participants. These findings are limited as the study primarily focused on teachers' learning resource and did not explore how often these learning resources are used and to what extent the information acquired from these sources is transferred into the classroom environment. Finally, the lack of findings regarding the effects of teachers' informal learning on students and school success is another limitation of this study. In this context, further studies should be conducted both qualitatively and quantitatively to research to what extent teachers transfer professional learning to the classroom, how often they use these sources, and the effect of teachers' learning on students and school success.

REFERENCES

- Akiba, Motoko. "Professional learning activities in context: A statewide survey of middle school mathematics teachers." *Education Policy Analysis Archives* 20. (14) (2012): 1-36.
- Appova, Aina and Fraine Arbaugh. "Teachers' motivation to learn: implications for supporting professional growth." *Professional Development in Education* 44. (2018): 5-21.
- Avidov-Ungar, Orit. "A model of professional development: Teachers' perceptions of their professional development." *Teachers and Teaching* 22. (2016): 653-669.
- Ayvacı, Hakan Şevki, Bakırcı, Hasan and Yıldız, Mehmet. "Fen bilimleri öğretmenlerinin hizmet içi eğitim uygulamalarına ilişkin görüşleri ve beklentileri." *Amasya Üniversitesi Eğitim Fakültesi Dergisi* 3. 2 (2014): 357-383.
- Bayar, Adem. "The components of effective professional development activities in terms of teachers' perspective." *International Online Journal of Educational Sciences* 6. (2014): 319-327.
- Bektaş, Fatih., Ali Çağatay Kılınç and Sedat Gümüş. The effects of distributed leadership on teacher professional learning: mediating roles of teacher trust in principal and teacher motivation. *Educational Studies* (2020)
- Bellibas, Mehmet Sukru, and Emine Gumus. "Teachers' perceptions of the quantity and quality of professional development activities in Turkey." *Cogent Education* 3. 1 (2016): 1-15.
- Bigsby, James B., and William A. Firestone. "Why teachers participate in professional development: Lessons from a schoolwide teacher study group." *The New Educator* 13. 1 (2017): 72-93.
- Buczynski, Sandy and C Bobbi Hansen. "Impact of professional development on teacher practice: Uncovering connections." *Teaching and Teacher Education* 26. (2010): 599-607.
- Camburn, Eric M., and Seong Won Han. "Teachers' professional learning experiences and their engagement in reflective practice: A replication study." *School Effectiveness and School Improvement* 28. 4 (2017): 527-554.

- Can, Ertuğ. "Öğretmenlerin meslekî gelişimleri: Engeller ve öneriler." *Eğitimde Nitel Araştırmalar Dergisi* 7. (2019): 1618-1650.
- Creswell, John W., and Cheryl N. Poth. *Qualitative inquiry and research design: Choosing among five approaches*. California: Sage Publications, 2016.
- Creswell, John W., and Dana L. Miller. "Determining validity in qualitative inquiry." *Theory into practice* 39.3 (2000): 124-130.
- Donitsa-Schmidt, Smadar and Ruth Zuzovsky. "The effect of formal, nonformal and informal learning on teachers' promotion to middle leadership roles in schools." *International Journal of Leadership in Education* 23. (2020): 371-387.
- Eraut, Michael. "Informal learning in the workplace." *Studies in Continuing Education* 26. 2 (2004): 247-273.
- Eroğlu, Mehmet, and Ramazan Özbek. "Zümre öğretmenler kurulu toplantılarının mesleki gelişim bağlamında incelenmesi." *Researcher: Social Science Studies* 6. 3 (2018): 255-271.
- Gorozidis, Georgios, and Athanasios G. Papaioannou. "Teachers' motivation to participate in training and to implement innovations." *Teaching and Teacher Education* 39. (2014): 1-11.
- Gürkan, Burcu, Semra Tican Başaran, and Şener Büyüköztürk. "Öğretmenlerin mesleki gelişimi." *Eğitime Bakış Dergisi* 14. 43 (2018): 17-25.
- Hoekstra, Annemarieke. "Experienced Teachers' Informal Learning in the Workplace. IVLOS Series." Online Submission (2007).
- Hoekstra, Annemarieke, Mieke Brekelmans, Douwe Beijaard and Fred Korthagen. "Experienced teachers' informal learning: Learning activities and changes in behavior and cognition." *Teaching and Teacher Education* 25. 5 (2009): 663-673.
- Hoekstra, Annemarieke, and Fred Korthagen. "Teacher learning in a context of educational change: Informal learning versus systematically supported learning." *Journal of teacher Education* 62. 1 (2011): 76-92.
- İlğan, Abdurrahman. *Öğretmenlerin mesleki gelişimi ve denetimi: Öğrenen öğretmenler, başarılı öğrenciler*. Ankara: Anı Yayıncılık, 2012.
- in de Wal, Joost Jansen, Perry J.den Brok, Janneke G.Hooijer, Rob L.Martens, Antoinevan den Beemt. "Teachers' engagement in professional learning: Exploring motivational profiles." *Learning and Individual Differences* 36 (2014): 27-36.
- Jeong, Shinhee, Soo Jeoung Han, Jin Lee, Suravee Sunalai and Seung Won Yoon. "Integrative literature review on informal learning: antecedents, conceptualizations, and future directions." *Human Resource Development Review* 17. 2 (2018): 128-152.
- Kedzior, Margaret and Steve Fifeield. "Teacher professional development." *Education Policy Brief* (2004): 1-6.
- Kubat, Ulaş. "Fen bilimleri öğretim programına yönelik öğretmenlere verilen hizmet içi eğitimin öğretmen görüşlerine göre değerlendirilmesi." *Muğla Sıtkı Koçman Üniversitesi Eğitim Fakültesi Dergisi* 4. 2 (2018): 1-8.
- Kwakman, Kitty. "Factors affecting teachers' participation in professional learning activities." *Teaching and Teacher Education* 19. 2 (2003): 149-170.
- Kyndt, Eva, Filip Dochy, and Hanne Nijs. "Learning conditions for non-formal and informal workplace learning." *Journal of Workplace Learning* 21. 5 (2009): 369-383.
- Kyndt, Eva, et al. "Teachers' everyday professional development: Mapping informal learning activities, antecedents, and learning outcomes." *Review of Educational Research* 86. 4 (2016): 1111-1150.
- Labone, Elizabeth, and Janette Long. "Features of effective professional learning: A case study of the implementation of a system-based professional learning model." *Professional Development in Education* 42. 1 (2016): 54-77.
- Lecat, Antoine, Simon Beusaert, and Isabel Raemdonck. "On the relation between teachers'(in) formal learning and innovative working behavior: the mediating role of employability." *Vocations and Learning* 11.3 (2018): 529-554.
- Levenberg, Ariella, and Avner Caspi. "Comparing perceived formal and informal learning in face-to-face versus online environments." *Interdisciplinary Journal of E-Learning and Learning Objects* 6. 1 (2010): 323-333.
- Lincoln, Yvonna S., and Egon G. Guba. *Naturalistic inquiry*. California: Sage Publications, 1985.
- Livingstone, David W. "Adults' informal learning: Definition, findings, gaps and future research." *Centre for the Study of Education and Work, Toronto* (2001)
- Lohman, Margaret C., and Nicholas H. Woolf. "Self-initiated learning activities of experienced public school teachers: Methods, sources, and relevant organizational influences." *Teachers and Teaching* 7. 1 (2001): 59-74.
- Lohman, Margaret C. "A survey of factors influencing the engagement of two professional groups in informal workplace learning activities." *Human Resource Development Quarterly* 16.4 (2005): 501-527.
- Lohman, Margaret C. "Factors influencing teachers' engagement in informal learning activities." *Journal of Workplace Learning* 18. 3 (2006):141-156.
- Louws, Monika L., et al. "Teachers' self-directed learning and teaching experience: What, how, and why teachers want to learn." *Teaching and Teacher Education* 66. (2017): 171-183.
- Milli Eğitim Bakanlığı. *Milli Eğitim İstatistikleri Örgün Eğitim 2019-2020*. Retrieved July 5, 2020, from https://sgb.meb.gov.tr/www/icerik_goruntule.php?KNO=396.
- Meirink, Jacobiene A., Paulien C. Meijer, and Nico Verloop. "A closer look at teachers' individual learning in collaborative settings." *Teachers and Teaching: Theory and Practice* 13.2 (2007): 145-164.
- Merriam, Sharan B. *Qualitative research: A guide to design and implementation*. San Francisco: Jossey-Bass, 2009.
- Merriam, Sharan. B. *Nitel araştırma desen ve uygulama için bir rehber*. (Çeviri Ed.: S. Turan). Ankara: Nobel Yayın Dağıtım, 2013
- Miles, Matthew. B., A. Michael Huberman, and Johnny Saldana. *An expanded sourcebook: qualitative data analysis* (3rd Edition). California: Sage Publications, 2014.
- OECD. *TALIS 2018 results (Volume I): Teachers and school leaders as lifelong learners*. Paris: TALIS, OECD Publishing, 2019.

- Opfer, V. Darleen, David G. Pedder, and Zsolt Lavicza. "The role of teachers' orientation to learning in professional development and change: A national study of teachers in England." *Teaching and Teacher Education* 27.2 (2011): 443-453.
- Özdemir, Murat. "Nitel veri analizi: Sosyal bilimlerde yöntembilim sorunsalı üzerine bir çalışma." *Eskişehir Osmangazi Üniversitesi Sosyal Bilimler Dergisi* 11.1 (2010): 323-343.
- Özer Özkan, Yeşim, and Duygu Anıl. Öğretmen mesleki gelişim değişkenlerinin ayırt edicilik düzeyi. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi* 29.4 (2014): 205-216.
- Özgenel, Mustafa. "Öğretmenlerin mesleki gelişimlerine ilişkin fenomenolojik bir araştırma." *Akademik Platform Eğitim ve Değişim Dergisi* 2.2 (2019): 128-143.
- Ryan, Richard M., and Edward L. Deci. "Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being." *American Psychologist* 55.1 (2000): 68.
- Schugurensky, Daniel. "The forms of informal learning: Towards a conceptualization of the field." *New Approaches for Lifelong Learning (NALL) Fourth Annual Conference, October 6-8, 2000*, <https://tspace.library.utoronto.ca/bitstream/1807/2733/2/19formsofinformal.pdf>
- Scribner, Jay Paredes. "Professional development: Untangling the influence of work context on teacher learning." *Educational Administration Quarterly* 35.2 (1999): 238-266.
- Scribner, Jay Paredes. "Teacher learning in context: The special case of rural high school teachers." *Education Policy Analysis Archives* 11 (2003): 12.
- Shirrell, Matthew, Megan Hopkins, and James P. Spillane. "Educational infrastructure, professional learning, and changes in teachers' instructional practices and beliefs." *Professional Development in Education* 45.4 (2019): 599-613.
- Sıcak, Ali. & Ramazan Şükrü Parmaksız. "İlköğretim kurumlarındaki mesleki çalışmaların etkililiğinin değerlendirilmesi." *İnönü Üniversitesi Eğitim Fakültesi Dergisi* 17.1 (2016): 17-33.
- Silverman, David. *Interpreting qualitative data*. California: Sage Publications, 2014.
- Thomson, Margareta Maria, and Jeannine Turner. "Teaching motivations, characteristics and professional growth: Results from the Great Expectations (GE) programme in the United States." *Educational Psychology* 35.5 (2015): 578-597.
- Uçar, Rezzan., and Cemalettin İpek. "İlköğretim okullarında görev yapan yönetici ve öğretmenlerin MEB hizmet içi eğitim uygulamalarına ilişkin görüşleri." *Yüzüncü Yıl Üniversitesi Eğitim Fakültesi Dergisi* 3.1 (2006): 34-53.
- Uştü, Hasan, Ayşe Mentiş Taş and, Binali Sever. "Öğretmenlerin mesleki gelişime yönelik algılarına ilişkin nitel bir araştırma." *Elektronik Mesleki Gelişim ve Araştırma Dergisi* 4.1 (2016): 15-23.
- Watkins, Karen E., and Victoria J. Marsick. "Towards a theory of informal and incidental learning in organizations." *International Journal of Lifelong Education* 11.4 (1992): 287-300.
- Wei, Ruth Chung, Linda Darling-Hamond, Alethea Andree, Nikole Richardson and Stelios Orphanos. "Professional Learning in the Learning Profession: A Status Report on Teacher Development in the US and Abroad. Technical Report." *National Staff Development Council* (2009).
- Yalçın İncik Eylem and, Sinem Evin Akbay. "Ortaöğretim öğretmenlerine yönelik bir çalışma: mesleki gelişim faaliyetlerine yönelik tutumları ve eğitim ihtiyaçları." *Electronic Turkish Studies* 13.27 (2018):1653-1676.
- Yaylacı, A. Faruk. "Öğretmenlerin kendilerini geliştirmelerine ilişkin yaklaşım sorunu." *Uşak Üniversitesi Sosyal Bilimler Dergisi* 6. ÖYGE Özel Sayısı (2013): 25-40.
- Yıldırım A, Şimşek H. *Sosyal bilimlerde nitel araştırma yöntemleri* (9. Baskı). Ankara: Seçkin Yayıncılık, 2013.
- Yoon, Kwang Suk, Teresa Duncan, Silvia Wen-Yu Lee, Beth Scarloss and, & Kathy L. Shapley. "Reviewing the evidence on how teacher professional development affects student achievement. issues & answers. rel 2007-no. 033." *Regional Educational Laboratory Southwest (NJ1)* (2007).

ESTABLISHMENT AND CHALLENGES OF RESEARCH UNIVERSITIES IN TURKEY²

Abstract: This qualitative research aims to examine the establishment and challenges of research universities in Turkey. To this end, specifying their missions, funding, leadership, autonomy, physical and academic infrastructures of research universities were researched. The data were collected through interviews and analyzed with content analysis technique. Research results revealed that as all research universities in Turkey were chosen among existing universities without making their missions clear, preparing their academic and physical infrastructures ready in advance, they face severe challenges regarding specifying their missions, leadership, funding, and autonomy, physical and academic infrastructure. Only a benefit of having considerably %25 more academic staff employment chance was noted in the study. It can be concluded that the idea of the establishment of research universities has no clear understanding, and due to insufficient planning, unclear policies, and legal base, they are bound to fail in the long term.

Keywords: Higher education, universities, research universities, university management

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INTRODUCTION

As pioneer institutions, universities play crucial roles in the development of a country both economically and socially. Bloom, Curran and Brint (2020) noted that these universities are crucial for the high-impact product, which can help to deal with leading social and economic problems of a country. Altbach (2013) defined research universities as academic units “committed to the creation and dissemination of knowledge, in a wide range of disciplines with suitable laboratories, libraries, and other infrastructures which will allow them to teach and research at the highest level”. Because of the roles they carry out, the establishment process, organizational structures and working routines of universities become highly important.

As Scott (2006) and Laredo (2007) underlined, from the establishment of the first university to the latest one, the central mission of universities has long been defined to train students and prepare them for the professional activities they will later undertake. They are also expected to conduct research and publicize the results of their studies, provide other academic and public services to the society in which they operate. However, Kurul Tural (2007) noted that social conditions and social relations significantly influenced universities throughout the 20th century. In this frame, the modern university elevated the mission of public service and differentiated their teaching mission to research mission. This mission differentiation required to establish new types of universities. As a result of this understanding, many countries are hoping to establish research universities.

Research universities are central institutions that provide access to global science, produce basic and applied research, and educate young scholars and researchers of the academy and the society. Although the roots of research universities can be attributed to the foundation Humboldt University in 1809, their establishment started after World War II to fulfil fundamental research such as CNRS in France, Max Planck in Germany, CNR in Italy, CSIC in Spain or Riken in Japan (Mugabi, 2014).

Establishing research universities is a worldwide phenomenon (Mohrman, Ma & Baker, 2008). Countries consider having at least a research university to participate in the global knowledge economy and benefit from science and scholars (Deem, Mok & Lucas, 2007). According to Altbach (2011) modern societies cannot do without research universities. This compels to the establishment trend of research universities, and as a result, the community of research universities is rapidly expanding in emerging economies worldwide (Liu, Wang & Cheng, 2011).

Kearney and Lincoln (2013) underlined that research universities are considered important to many countries in their higher education systems. Countries hope to develop their research and advanced education capacity in order to train human resources for their economy such as high-level specialists, scholars, scientists and researchers. These universities also generate new knowledge to support national innovation system of countries (The World Bank, 2002). It is emphasized that these universities support programs, research centers, research production, faculty collaboration, teaching and research facilities (Bland, Bruce, Deborah, Risbey & Staples, 2005; Mohrman, Ma & Baker, 2008). Similarly, Altbach (2004) and Salmi (2009) noted that a research university is characterized as excellence in research, academic freedom and an intellectually stimulating environment. Moreover, Ben-David (1977) and Shils (1997) reported that a research university is not only an institution, it is an idea and; therefore, it is essential to specify their missions well, provide adequate funding to be able to conduct researches, employ good leaders, provide autonomy and provide physical and academic infrastructures. In this regard, this research aims to analyze the establishment and challenges of research universities in Turkey. To this end, this qualitative research purposes to examine specifying their missions, funding, leadership needs, and autonomy, physical and academic infrastructures of research universities.

LITERATURE REVIEW

There are some essential missions of universities. These are teaching, conducting research, producing researches, and sharing the results of these results with wider society (Engwall, 2020). Universities have been functioning with these missions for a long time. However, in the past decades, the missions of universities have been questioned and they are forced to change their forms of service delivery and production process. As a result, new missions are defined for these institutions. In this regard, they are required to be more research oriented. As a result of this new mission, new universities appeared all over the world. These new universities are research universities.

When research universities are concerned all over the world, some characteristics come to the forefront. Bienenstock (2008) puts these characteristics as high quality faculty committed to research and teaching, high quality graduate students who want to learn to perform research or function with advanced expertise, an intellectual climate that encourages scholarship, facilities in which teaching and research can be performed effectively and funding for operations and instruction. In this study, these characteristics fall into five categories as specifying their missions, funding, leadership, and autonomy, physical and academic infrastructures.

SPECIFYING MISSIONS OF RESEARCH UNITIES

The missions of research universities comprise of a number of critical elements ranging from the type of management to determining their academic priorities (Masataka, Watanabe & Hata, 2014). All countries attempt to specify the missions of these universities to be different from other university types with emphasis on applied research, practice-oriented research and research development (Leporia & Kyvik, 2010). In this context, their prime mission is to foster a research culture (LERU, 2013).

The research culture is the structure that gives significance of research behavior. This culture requires open, collaborative relationships among faculty members and a supportive culture is valued there (Cheetham, 2007; Huenneke, Stearns, Martinez & Laurila, 2017). Pratt, Margaritis and Coy (1999) emphasize that there are certain characteristics of a good research environment like clarity in the goals, research focus, positive group climate, decentralized and participative management, good command of communication, qualified human resources and competency in leadership. In addition, reward structures for research contributions, sustained inquiry, and various stages of productivity is supposed to be developed in such an environment. Another mission of these universities is to educate graduate students, scholars and young researchers. Through this mission, they are expected to prepare human resources that will contribute to future research. By training future researchers, universities contribute to the society as well.

A further mission of research universities is to transfer produced knowledge in Ph.D. students and graduates to economy and other public services. Here, number and type of contracts, collaboration with partners are the essential elements (Schoen, Laredo, Bellon & Sanchez, 2007). Also, research universities were established with a civic mission to prepare students for active participation in a diverse democracy and develop knowledge for the improvement of communities (Checkoway, 2001). The belief here is that research universities might affect the entire educational system and societal system in total. The final mission of these institutions is to produce scientific publications, continuous training, consultancy and internships (LERU, 2013). Within this mission, universities are expected to provide solutions to social and economic problems the society encounter.

FUNDING RESEARCH UNIVERSITIES

A necessity for research universities is to provide adequate funding which will allow these institutions to conduct research without facing financial constraints. To Altbach (2009), maintaining research universities requires sustained funding to keep them functioning effectively. Altbach (2011), Salmi (2009) and Hladchenko, de Boer and Westerheijden (2016) state that establishing research institutions is quite costly and requires a huge amount of financial support.

In most countries, these universities are funded by public sources. In the United States, they receive only 15% of their basic funding from the state governments for operational expenses and research activities. Hereunder, Athans (2001) underlined that excellent research centers receive more research funding than mediocre ones. Research requires extra funds, and therefore, their budgets should be larger than other types of universities. Since this amount cannot be provided by the government, these universities are expected to raise their own funds from different sources by signing contracts with public and private organizations, generating endowments and gifts, and tuition fees (Altbach, 2009; Salmi, 2009). If they cannot increase their funds, it can be a serious problem for research universities in the long term.

LEADERSHIP AT RESEARCH UNIVERSITIES

Leadership is a key aspect for research universities. Previous research showed that leadership characteristics can influence research productivity (Lertputtarak, 2008; Bland et al., 2005). Kok and McDonald (2017) found that successful leaders in highly productive universities have some specific characteristics namely practical, visionary, directed goals clearly, trustworthy, and tended to give empowerment and autonomy to their staff.

According to Bland et al. (2005), leadership characteristics consists of four aspects: scholarship, research orientation, capability to fulfil all critical leadership roles, and active leadership participation. Moreover, research university leaders should have a participative leadership style by organizing frequent meetings, setting expectations for all members to contribute to decision-making and making information available to the group (Miller & Marchant, 2009). Salmi (2009) stressed that these universities require strong and competent leaders to translate the research vision into the mission. At these universities, leaders should develop a challenging vision for the university, set clear research goals and communicate them effectively. Also, leaders at research universities need to understand the research agenda and implement it accordingly.

AUTONOMY AT RESEARCH UNIVERSITIES

Universities are complex and autonomous organizations (OECD, 2007). According to The Lima Declaration on Academic Freedom and Autonomy of Institutions of Higher Education (1988), university autonomy means the independence of universities from the state and all other forces in terms of their decisions in order to establish educational policies, finance and administration. Babalola, Jaiyeoba and Okediran (2007) university autonomy means freedom of universities from external control regarding academic, administrative and financial matters. In this manner, university autonomy has four dimensions. The first dimension is academic autonomy, which is required to decide on degree supply, scope, aims and methods of research curriculum and methods of teaching. The other dimension is financial autonomy that has a right to acquire and allocate funding, decide on tuition fees and accumulate surplus. The third dimension is organizational autonomy, which consists of establishing university structures, signing contracts and electing decision-making bodies. The final dimension is staff autonomy, which is the responsibility for recruitment, salaries and promotions.

When research universities are concerned, the spirit of a research university includes a commitment to academic freedom. According to Altbach (2011), Salmi (2009) and Erdoğan (2018) a considerable degree of autonomy must be provided to meet specific institutional missions. Therefore, research universities need strengthened autonomy and academic freedom to develop and maintain their strengths there.

PHYSICAL AND ACADEMIC INFRASTRUCTURE AT RESEARCH UNIVERSITIES

Research competency and academic infrastructures are defined as competent human resources and physical infrastructure endowments. At research universities, basic research infrastructures are laboratories and research centers (Videka, Blackburn & Moran, 2019). Altbach (2013) and Mohrman et al. (2008) put that for realizing the missions of research universities, these universities must have libraries with access to international databases, research centers and well-equipped laboratories. Regarding intellectual environment, these universities also need intellectual property, technicians, administrative and scientific support teams. It is important to establish interdisciplinary collaboration among the staff, provide continued training and financial supports to organize them all as well.

Furthermore, for research universities, student research assistantships should also be supported and enforced accordingly to develop research culture and increase total research production (Hanover Research, 2014; Hladchenko et al., 2016; Youn, & Price, 2009). Moreover, research universities should allocate funds directly to research, adopt a generous sabbatical policy to enable frequent and/or extended research time (Furco, 2001; Hanover Research, 2014).

THE ESTABLISHMENT PROCESS OF RESEARCH UNIVERSITIES IN TURKEY

In Turkey, establishment journey of research universities started in 2017. These universities were chosen among the existing public universities. In this regard, The Council of Higher Education (CoHE) invited all existing universities to apply to be a research university. In response to this invitation, 58 universities applied to become a research university. Out of them, 10 universities were chosen as major research universities, and five were chosen as candidate ones (YÖK, 2020; 2017).

As far as the Turkish higher education system is concerned, research universities are supposed to play vital roles. For this reason, specifying their mission, current leadership practices, funding, autonomy and physical and academic infrastructure become highly important requirements for these universities. In order for them to be successful, they should have good technological infrastructure which will provide data available for students and researchers, equipped science laboratories and free intellectual atmosphere, funds to support research and academics scientific participations (YÖK, 2020). However, although the government explained its support repeatedly, their legal base has not been established yet. They are treated the same as all other universities except for providing a bit higher academic staff source. Their budgets,

physical and academic infrastructures are the same, and their leaders are chosen with the same way other rectors are chosen. It is considered that this leads to some challenges for the Turkish research universities in practice.

PURPOSE OF THE RESEARCH

For this purpose, this research aims to analyze the establishment and challenges of research universities in Turkey. In order to reach this aim, the answers of the following were researched:

- How are the missions of research universities specified?
- How are research universities funded?
- What kind of leadership is the current leader doing?
- To what extent are research universities autonomous?
- How are physical and academic infrastructures of research universities?

The research universities were established with a quick decision without preparing a legal base and function with the current law, which does not specify research universities separately. As their necessities are not specified adequately, it is considered that these institutions face many challenges. Moreover, this research may provide an awareness about research universities in Turkey. In this regard, the research results may provide insights into research university process and may help solve problems these institutions encounter. In the long term, the research results may contribute to the higher education field as well.

METHOD

This research was carried out with a phenomenological research design. This research design is also known as qualitative research. According to Creswell (2007), through these kinds of research, it is aimed to discover how a concept or a phenomenon is experienced and understood by participants. These kinds of research are usually employed in order to obtain in-depth knowledge in a research (Denzin & Lincoln, 2005; Marshall & Rossman, 2006). This research aimed to determine how academicians experience establishment and challenges of research universities in Turkey. In addition, this research design proposes that participants should be accepted as individuals who create their own meanings in their social environments they live or work in. They also constitute the relations they have created, and they are re-creators of their social worlds with their own subjectivity (Balcı, 2015; Kümbetoğlu, 2005; Punch, 2005).

STUDY GROUP

The research participants consisted of 20 academicians chosen from 10 research and five candidate research universities. The participants were determined with maximum variation sampling technique. This technique is more of a research purpose than methodological requirement, and allows the researcher to select suitable participants for the aim of the study (Creswell, 2007; Marvasti, 2004). This technique is frequently used by qualitative researchers as they do not purpose to work in large groups. It also facilitates them to prefer rich situations for gathering knowledge on broad research and critical concerns (Creswell, 2007; Patton, 2002). For maximizing variability, a research group of 5 to 25 participants for phenomenological research is enough in order to handle a research (Polkinghorne, 1989; Maxwell, 1996). To this end, it was purposed to choose participants from different genders, age groups, position, and experience in balance. The participants' demographics were presented in Table 1.

In Table 1, the participants' demographics were presented. As can be seen, while 10 participants were male, 10 were female. When their age is considered, 4 participants were between 31-35 years old, 4 were between 36-40 years old, 4 were between 41-45 years old, 4 were between 46-50 years old and 4 participants was 51 years old and over. While 8 participants were professors, 7 were associate professor and 6 were assistant professor. Regarding their experience, 2 participants had between 6-10 years' experience, 5 had between 11-15 years, 4 had between 16-20 years, 4 had between 21-25 years and 5 had 26 years and over experience.

Table 1. The participants' demographics

Gender	f	Age	f	Academic	f	Experience	f
Male	10	25-30	-	Professor	7	1-5 years	-
Female	10	31-35	4			6-10 years	2
		36-40	4	Associate Professor	7	11-15 years	5
		41-45	4	Assistant Professor	6	16-20 years	4
		46-50	4			21-25 years	4
		51 and over	4			26 years and above	5
Total			20		20		20

DATA COLLECTION

The data were collected with a semi-structured interview technique. In this regard, the responses to the following questions were explored. How are the missions of research universities specified? How are research universities funded? What kind of leadership is the current leader doing? To what extent are research universities autonomous? How are physical and academic infrastructures of research universities? During the interviews, some other questions were directed in order to get in-depth answers to some questions. The interviews were conducted face-to face in agreed upon places. These places were chosen in order for the participants not to be influenced by some power relations. By using this method, participants can illustrate their thoughts freely on a specific issue. In this research, in order to obtain the data, the participants were informed about the study purpose with an e-mail sent prior. They were asked whether they could take part in the research voluntarily or not. Finally, 20 academicians accepted to take part in the research voluntarily.

In the following step, the volunteer academicians were comforted about the confidentiality of the data to be gathered from them. At this stage, the researcher promised to keep their identities in secret. The researchers also warranted that they would never share their identities with anyone else or in any part of the research. After that, the interviews were organized on agreed-upon days, and conducted accordingly. Each interview was recorded with the participants' permission, and took approximately 30-40 minutes.

DATA ANALYSIS

The data were analyzed with content analysis technique which usually targets to analyze related data, and comment about it (Mayring, 2000). In this process, to start with, the data were organized. Here, the researcher revisited each interview record, and listened to each audiotape. The researcher also analyzed the transcripts to raise the accuracy of the data. Then, each academician's interview transcript was also reviewed in line with the data analysis procedures indicated by Bogdan and Biklen (2007). These procedures are described as development of coding categories, sorting the data mechanically, and analyzing the data below each coding category. In this regard, each academician's interview was coded separately as stated around the topic. Through this research, emerging and repeated themes were assembled below coding categories in three steps as category definition, exemplification, and codification regulation. In the same manner, first, the replies to each question were separated into meaningful categories, and then they are named, and coded. Second, the conceptualized comments were collected. Third, it was targeted to abstain from repetition. At the final phase, the described conclusions were conveyed and related to each other. It was also planned to base a cause-effect relationship among the existing parts. The participant academicians were coded as A1, A2, A3, and A4...

While organizing and analyzing the data, constant comparative approach was employed. This approach results in the saturation of categories and the emergence of theory. In this phase, theory may rise through continual analysis and doubling back for more data gathering and coding (Bogdan & Biklen, 2007; Glaser, 1992). By using this method, each set of data were re-analyzed regarding key topics, recurrent events, or activities. Here, each participant's data were reviewed several times to assure and contradicting statements until the data were organized into desired categories and sub-codes in compatible with the research question.

TRUSTWORTHINESS AND RIGOR

In order to provide trustworthiness and rigor of this study, some precautions were taken. In the first place, during the interviews, the interviewer's role was the facilitator and listener. The interviewer just asked the questions and recorded the replies without leading the participants. In the second place, for ensuring the content validity, the interview questions were reviewed by six experts who were expert in qualitative researches. With these experts' feedback, the research questions were finalized. In the third place, the academicians were warranted that the confidentiality of the research would be provided. This made the participants share their opinions freely without having any hesitations. The interview places were chosen outside the participants' own institutions to avoid being influenced by some power relations. Also, as for enhancing the internal validity, while preparing the interview form, the related literature was analyzed deeply in order to establish a rich contextual frame. In this process, member checking was also done. Moreover, the research process was instructed step by step to increase external validity. In this regard, the design, participants, data collection, and data analysis processes were explained in detail. For providing internal reliability, the data were transcribed without making any interpretation. Two researchers coded the data. Regarding consistency of the data, the coded data were compared and the similarity of that data was calculated as 88% (Miles & Huberman, 1994). The raw data and coded data were saved for the other researchers' further research demands.

LIMITATIONS

There are some limitations of this research. First, the participants were chosen voluntarily. For this reason, they cannot exemplify other academicians in all research universities in Turkey. Therefore, the results obtained through this research are limited to this sample of academicians and universities. While inferring some results out of this research, it is essential to be more careful. Second, the researcher was the main instrument of the data collection and analysis process. The analyses and conclusions inferred here are a product of the researcher's interpretations. This may mean that a different researcher can infer different deductions with the same data sets (Bogdan & Biklen, 2007; Creswell, 2002).

RESULTS

This study purposed to determine the establishment and challenges of research universities in Turkey. In this regard, specifying missions, funding, leadership needs, autonomy, physical and academic infrastructures of research universities were researched. The results are presented below each main theme, and then commented around it.

SPECIFYING MISSIONS OF RESERACH UNIVERSITIES

In this part, the participants' views on specifying the missions of research universities are presented in Table 2.

Table 2. Specifying Missions of Research Universities

Main Theme	Sub Themes	f
Missions of research universities	Producing top-quality research, especially in the sciences	16
	Producing scientific knowledge and patents	15
	Establishing corporate research centers and university–community partnerships	15
	Providing formal training for the future researchers and scholars	14
	Developing technology	11
	Providing interdisciplinary collaboration insights	6

*A participant indicated in more than one view.

Most academicians stated that basic missions of research universities are to produce top-quality researches, scientific knowledge, and patents, establish corporate research centers and university–community partnerships provide formal training for researchers and scholar and develop technology. Few participants underlined providing interdisciplinary collaboration insights mission. In this regard, a male associate professor indicated, “*Research quality should provide deep insights as pioneer institutions regarding development. However, in our university interdisciplinary projects are not welcomed. They do not have such a mission currently (A3).*” Most participants of this sample express that research universities should produce knowledge and develop patents in many fields. In this context, a female assistant professor stated,

“By producing patents, these universities may contribute to economic development, but currently it seems that their sole function is educate and train human resources (A13).”

In addition, some participants remarked that establishing corporate research centers and cooperating with the industry is an important mission of research universities. Here, a male professor mentioned, *“These universities should have research centers, well-equipped laboratories and techno parks to cooperate with business partners. Nevertheless, our university does not have highly equipped science labs. Therefore, I do not think they carry on their real missions effectively (A9).”* Educating future researchers and scholars is also underlined as another mission by many participants, but they claimed that they cannot find enough time to carry out this role. In this context, a female professor stressed, *“My workload is heavy. I supervise 20 masters’ and 5 PhD students. Therefore, I cannot allocate enough time for all of them (A1).”* A male associate professor uttered, *“Developing technology sounds well. However, it is not our priority now as we are expected to train students and produce publications to get promoted (A18).”*

When evaluated in general, most participants are aware of the missions of research universities, but they underline some challenges. In this regard, it is understood that there is an uncertainty about the missions of these universities. The participants emphasized that they are conducting their formal duties by struggling with high number of students and heavy workload. Because of this heavy workload, academicians claim that they cannot find enough time to conduct research, train young scholars and establish school-industry collaborations, which is put as a challenge for these universities. Also, they underlined that interdisciplinary projects are not encouraged.

FUNDING RESEARCH UNIVERSITIES

In this part, the participants’ views on funding research universities are presented below:

Table 3. Funding at Research Universities

Main Theme	Sub Themes	f
Funding	Public funds	16
	Revolving funds	5
	Research grants	8
	Income from intellectual property	4
	Donations from individuals and foundations	0

*A participant indicated in more than one view.

Most participants underlined that research universities are publicly funded except for limited revolving funds, research grants and intellectual property incomes. Research universities have no donations from other sources. Here, a female assistant professor affirmed, *“After becoming a research university, nothing has changed at our university. We do not have extra funding. (A17)”* A male associate professor expressed, *“As a result of the economic crisis happening now, the government limited our budget. Therefore, our university stopped supporting research facilities (A5).”* Similarly, a female assistant professor said, *“They started to build a lab five years ago, but they have not finished it yet because of financial cuts (A11).”* A female professor emphasized, *“Currently, because of the financial constraints, research universities cannot operate effectively (A6).”* A male associate professor emphasized, *“Nothing changed after becoming a research university. We have the same budget, infrastructures, and staff. In addition, our rector has no clear understanding of what a research university is (A7).”* A female associate professor said, *“Financially we get worse and worse every day. I proposed a project to our university, but they rejected it (A2).”*

Currently, in the Turkish higher education administration system, all research universities are funded by the government except for some revolving funds, research grants and incomes coming from intellectual property. Therefore, they have difficulty to meet expectations of academic staff, which is a challenge for these institutions. In fact, Altbach (2009) and Geiger (2004) underline that research universities are inevitably expensive investments to operate and they require more funds than other academic institutions due to their differentiated missions. It is necessary to separate them from other universities, provide strong funding, and legitimize the idea that these institutions are indeed special and serve a crucial role in a society. In the United States, it is clear that on an individual institutional basis, high rates of dependency on federal funds is evident (McCoy, Krakower & Makowski, 1982).

LEADERSHIP AT RESEARCH UNIVERSITIES

In this part, the participants’ views on leadership at research universities are presented in Table 4.

Table 4. Leadership at Research Universities

Main Theme	Sub Themes	f
What kind of leadership is the current leader doing	Research oriented	4
	Visionary leaders	4
	Participative leader	4
	Bureaucrats	15

*A participant indicated in more than one view.

Capable leaders are basic elements of research universities. Only, competent leaders can set clear research goals and communicate them to all staff effectively. Most participants of this sample consider that although leaders at research universities are supposed to be research oriented, visionary and participative, current leaders mostly behave as bureaucrats who are busy with meetings, paperwork and some protocol visits. Here, a female professor claimed, *“Our rector spends most of his time on managerial activities. Indeed, they need to focus on research here. I think the CoHE should choose research oriented and visionary rectors for research universities (A4).”* A male assistant professor emphasized, *“Research university leaders should prioritize research first, but our rector does not have such a vision (A19).”* Furthermore, leaders at these universities are supposed to be participative ones. Hence, a male assistant professor noted, *“They do not let academic staff participate in decisions. They have a small group who decide everything here (A20).”*

When evaluated in general, the participants have the opinion that most leaders at research universities do not have adequate leadership qualities suitable for research university idea. They are expected to be research oriented, visionary and participative, but they are claimed to behave as bureaucrats who are busy with paperwork, routine meetings and protocol visits. Indeed, initiating a successful research culture requires effective leadership, so research university leaders should have strong leadership skills (Hanover Research, 2014). These universities also require good management practices to promote the evolving research agenda.

AUTONOMY AT RESEARCH UNIVERSITIES

In this part, the participants’ views on autonomy of research universities are presented in Table 5.

Table 5. Autonomy at Research Universities

Main Theme	Sub Themes	f
Autonomy	Academically free	4
	Financially free	1
	Administratively free	2
	Centrally-controlled	15

*A participant indicated in more than one view.

Autonomy involves the ability to make their own decisions about essential academic matters, and shape their own destiny, which requires a flexibility in managerial activities. The participants of this sample have the opinion that universities are centrally controlled and they are not free. Regarding academic freedom, a male professor stressed, *“Academic freedom is an important source of strength at a research university, but it is still problematic in practice. For example, an academician was fired from his post since he shared his research results which the government did not want (A8).”* A female professor considered, *“Universities are not academically, financially and administratively free (A1). They ask everything from the government. How can research develop here?”* Research universities also have problems with managing their own academic community. They cannot employ their own academic and administrative staff. A female associate professor said, *“Nowadays, the central government limited the number of staff because of economic crisis, and universities are helpless. They cannot even produce their basic services effectively (A2).”*

In general, the participants have the opinion that universities are not free and centrally controlled. It can also be understood that especially there are some problems with the use of autonomy at research universities in Turkey, which is considered as a further challenge for research universities. Especially, there are problems with academic freedom. As some academicians faced negative results after some publications, other academicians cannot feel free to write and share their ideas with the public. In fact, research universities require steady funding commitments and need autonomy to develop and maintain their strengths (OECD, 2007).

PHYSICAL AND ACADEMIC INFRASTRUCTURES OF RESEARCH UNIVERSITIES

In this part, the participants' views on physical and academic infrastructures of research universities are presented in Table 6.

Table 6. Physical and Academic Infrastructure

Main Theme	Sub Themes	f
Physical and academic Infrastructure	Surviving with existing physical and academic infrastructure	16
	Common practices of inbreeding and nepotism	15
	Having scientific support teams	4
	Having well-established research centers and laboratories	2

*A participant participated in more than one view.

For a research university, having a strong physical infrastructure and academic staff is highly important. When the participants' views are evaluated, these universities continue their new journey with existing physical infrastructure and academic staff. In this regard, a female professor highlighted, *"Our university became a research university, but we still have just one research laboratory. We are hoping to have better one (A1)."* An assistant professor expressed, *"Our university has too many good researchers, but they are not supported"*. In fact, it is important to invest and develop human capital at these universities. In this manner, a female assistant professor emphasized, *"We have a team which consists of 4 staff. They work hard, but they cannot meet all the demands with limited members (A12)."* An associate professor stressed, *"Our university did not have enough physical infrastructure and academic staff to be a research university. It was a political decision rather than scientific one"*. A male professor explained, *"There is a problem of inbreeding and nepotism at universities as well at research universities. Good researchers cannot find a place here (A16)."*

As the Turkish research universities were chosen among the existing ones, they function with their current physical infrastructure and academic staff. It is considered that they do not have well-established research centers and laboratories, which is highly important for these institutions. This leads to some challenges in practice. In fact, the missions of existing universities were different from research universities. Existing universities were established to train human resources, and they became a research university with their current structures. Therefore, it is considered that they need more time, better physical infrastructures, talented researchers and investment to become real research universities. Hence, as Huenneke, Stearns, Martinez and Laurila (2017) underlined in established research institutions, expansion of research is often attempted by adding faculty members to existing units and research centers to maximize individual success. The participants also underlined problems of inbreeding and nepotism practices happening commonly at universities. They claim that under the current political influence and pressures, universities cannot be free to employ talented researchers and students. As a result, although research universities are established, quality researches cannot be conducted there.

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

This qualitative study aimed to analyze the establishment and challenges of research universities in Turkey. In this regard, 20 academicians were interviewed. The results obtained here can be limited to the views of this academician group. To that end, number of results were obtained. According to a result, there is an uncertainty about the missions of research universities. These universities were chosen among the existing ones without preparing their legal base, and they function with their existing structures, high number of students and heavy workload. Because of this heavy workload, academicians claimed that they cannot find time to conduct research, train future researchers and establish school-industry collaborations, which is a challenge for these universities. When missions of research universities are listed all over the world, interdisciplinary studies are given priority. However, in the Turkish research universities interdisciplinary research are not encouraged. When such research are proposed, they are generally claimed to be rejected. It is considered that in the long term, their missions should be redefined in order to focus solely on research as Tatık (2017) proposed.

Another result shows that all the Turkish research universities are mainly funded by the government except for limited revolving funds, research grants and intellectual property incomes. It is considered that it brings

some drawbacks to these institutions. Firstly, when they are funded by the government, they cannot have administrative, academic and financial autonomy, which is essential for these institutions. Moreover, they can be affected by economical fluctuations at crises times. For example, nowadays, as there are some financial constraints in Turkey, these universities face financial challenges ranging from cutting financial support for participation to scientific activities to office supplies, which influences their functions negatively. In addition, academicians at these universities cannot feel free to publicize research results, which are not approved by the government. When they publicize the results of their studies, academicians may face some pressures ranging from getting fired from their posts to getting sustained their promotions. Altbach (2009) and Chirikov (2013) found that as research universities generally constitute part of a differentiated academic system with varied roles in society, they should have different funding and academic patterns. Tatık (2017), Mohrman, Ma and Baker (2008), and Altbach (2011) suggested these institutions should be financially and academically free. They should have extra financial supports.

A further result revealed that research university leaders behave as bureaucrats rather than visionary leaders, which is not considered suitable for the mission of a research university. It was claimed that as rectors are always busy with paperwork, routine meetings and protocol visits and therefore they cannot focus on research facilities at university. This may stem from their roles, choice and appointment procedure in Turkey. With the current law, any person who has a professorship title can be appointed as a rector to a university as well as a research university and they deal with every detail at university. Rectors are very powerful in the current higher education management system and want to control everything there. In addition, being a successful professor in their own field cannot guarantee to administer a university successfully. Indeed, their administrative qualities, qualifications and experience should be asked especially at research universities. Judith (1993) discovered that an effective leader at a research university should be research oriented, cultural representative, communicator, manager and planner/analyst to support the values of the disciplines. Also, Goodall (2006) suggests that the best-performing institutions have leaders who combine good managerial skills and a successful research career. For a research university, a research oriented leadership quality is crucial in order to set a clear research vision and communicate it effectively. According to another result, the Turkish research universities are not academically, financially and administratively free at all. They are claimed to be centrally managed institutions, which leads to some challenges. For example, as universities do not have administrative freedom, they cannot employ qualified researchers easily. Also, the norms of academic freedom are not fully entrenched, and there are still problems when academicians share their research results with the public. They have a fear of getting fired from their posts, so it is not easy to produce new ideas freely. In fact, university autonomy is an inevitable value for research universities to take good decisions and conduct research freely. Hence, research reveals a strong correlation between the degree of autonomy and performance and the best publications are produced at academically free research universities, published at respectable h-journals and cited heavily (Aghion, Dewatripont, Hoxby, Mas-Colell & Sapir, 2010; Slippers, Vogel, & Fioramonti, 2015).

A final result showed that since research universities were chosen among existing universities, they function with their existing physical infrastructures and academic staff. In this regard, most research universities are considered as lacking physical infrastructures and academic staff suitable for a research university. Also, they do not have well-established research centers and laboratories, which are highly important for these institutions. This leads to some challenges in practice as well. In fact, the missions of research universities different. Only one advantage research universities in Turkey is to have 25% more academic staff allocation. It is put that the Turkish research universities were established with a quick decision without preparing a legal base and they found themselves in a struggle (Türk Araştırma Üniversiteleri Güçbirliği, 2016). Hence, they need technologically equipped laboratories, libraries with books, periodicals and strong databases. They also require technologically well-equipped research centers and talented scholars. Yong (2006) found that successful Chinese research universities have 90% of labs, engineering and technology centers. Altbach (2009) stresses that what makes a research university qualified is human resources, because they educate the new generation of the personnel needed for technological and intellectual leadership, develop new knowledge so necessary for modern science and scholarship in an academically appropriate environment. According to Altbach (2011), these universities should employ the most successful researchers. The Turkish research universities became a research university with their existing structures and academic staff. Therefore, it is considered that they need more time, investment to become real research

universities. As Huenneke, Stearns, Martinez and Laurila (2017) underlined in established research institutions, expansion of research is often attempted by adding faculty members to existing units and research centers to maximize individual success. It also requires good management practices to promote the evolving research agenda. However, the participants underlined the problems of inbreeding and nepotism practices happening commonly at universities. They claim that under the current political influence and pressures, universities cannot be free to employ talented researchers and students.

There are many debates going on in the research universities today and many proposals for educational change. However, it can be concluded from this research that research universities have some challenges regarding specifying their missions, employing talented leaders, providing autonomy, funding and providing strong physical infrastructures and quality academic staff. Even though most countries want to have research universities, it is essential to establish them after preparing their legal base and providing all requirements they need. As a result of this study, it is recommended that research universities should be established after preparing their legal base. It is also suggested that the mission of research universities should be specified more clearly and the workload of academic staff should be reduced to leave them time for research activities. In addition, extra funding should be provided, and funding types should be diversified. These institutions should have administrative, financial and academic freedom, and research university leaders should be chosen among candidates who have administrative competency and experience. Moreover, some recommendations can be made for other researchers. As this research was conducted with a qualitative method, a similar study can be carried out with a survey method to reach a larger population. In addition, a similar research can be done with a mixed method to compare the results.

REFERENCES

- Aghion, Philippe, Dewatripont Mathias, Hoxby Caroline, Mas-Colell Andreu & Sapir Andre. "The governance and performance of universities: Evidence from Europe and the US." *Economic Policy*, 25 (61) (2010): 7-59.
- Alberts, Barry. *Engaging in a worldwide transformation: our responsibility as scientists for the provision of global public goods*. President's address to the Fellows of the National Academy of Sciences, USA, Washington D.C, 2002.
- Altbach, Philip. G. "Advancing the national and global knowledge economy: The role of research universities in developing countries." *Studies in Higher Education*, 38 (3) (2013): 316-330.
- Altbach, Philip. G. "The past, present, and future of the research university." *Economic & Political Weekly*, 16 (2011): 65-73.
- Altbach, Philip. G. "Peripheries and centers: research universities in developing countries," *Asia Pacific Education Review*, 10 (2009), 15-27. Retrieved 19 April 2021 from <https://doi.org/10.1007/s12564-009-9000-9>.
- Altbach, Philip. G. "The costs and benefits of world-class universities." *Academe*, 90 (1) (2004): 20-23.
- Athans, Micheal. *Portuguese research universities: why not the best?* Working paper, Lisbon, Instituto Superior Te'cnico, 2001.
- Babalola, Joel B., Jaiyeoba, Adebola O. & Okediran, A. *University autonomy and financial reforms in Nigeria: Historical background, issues and recommendations from experience*. In J.B. Babalola and B. O. Emunemu, Eds. *Issues in Higher Education: Research evidence from sub-saharan Africa*. Lagos; Bolabay publications (pp: 277-303), 2007.
- Balcı, Ali. *Sosyal bilimlerde araştırma*. Ankara: Pegem Yayınevi, 2015.
- Bailey, Kenneth, D. *Methods of social research*. A division of Macmillan. New York: The Free Press, 1994.
- Bogdan, Robert, & Biklen, Sari, Knopp. *Qualitative research for education: An introduction to theory and practice*. Needham Heights, MA: Allyn and Bacon, 2007.
- Ben-David, Joseph. *Centers of learning: Britain, France, Germany, United States*. New York: McGraw-Hill, 1977.
- Bland, Carole J. Bruce A. Center, Deborah A. Finstad, Kelly R. Risbey, Justin G. Staples. "A theoretical, practical, predictive model of faculty and department research productivity". *Academic Medicine*, 80(3) (2005): 225-237.
- Bloom, Quinn, Curran, Michaela & Brint, Steven. "Interdisciplinary cluster hiring initiatives in U.S. research universities: More straw than bricks?" *The Journal of Higher Education*, 91(5) (2020): 755-780. Retrieved 20 March 2020 from <https://doi.org/10.1080/00221546.2019.1688615>
- Bienenstock, Arthur. *Essential characteristics of research universities*. Brill Publishing, 2008. Retrieved 10.01.2020 from https://doi.org/10.1163/9789087904807_004
- Cheetham, Andrew. (2007). "Growing a research culture. Address to the academic senate." *University of Western Sydney*, 2007, 1-33. Retrieved 20 March 2020 from http://www.uws.edu.au/_data/assets/pdf_file/0018/7119/Item_3.6_Building_a_Research_Culture__Tabled_Doc.pdf
- Chirikov, Igor. "Research universities as knowledge networks: The role of institutional research." *Studies in Higher Education*, 38(3) (2013): 456-469.
- Checkoway, Barry. "Renewing the civic mission of the American research university." *The Journal of Higher Education*,

- 72(2) (2001): 125-147.
- Creswell, John. W. *Qualitative inquiry ve research design: Choosing among five approaches*. Thousand Oaks: Sage, 2007.
- Deem, Rosemary, Ka, Ho Mokb, & Lucas, Lisa. "Transforming higher education in whose Image? Exploring the concept of the 'world-class' university in Europe and Asia." *Higher Education Policy*, 21(2007): 83-98.
- Denzin, Norman, K., & Lincoln, Yvonna, S. *The sage handbook of qualitative research*, 3rd Edition. Thousand Oaks, CA: Sage, 2005.
- Erdoğan, Nihat. "Araştırma üniversitesi yapılanması: İmkânlar ve zorluklar." *İlke Politika Notu*, 7(2018): 1-37.
- Engwall, Lars. The governance and missions of universities. In: Engwall L. (eds) *Missions of Universities. Higher Education Dynamics*. Springer, Cham, 2020.
- Furco, Andrew. *Advancing service-learning at research universities: New directions for higher education*. Paper No: 114, John Wiley & Sons, Inc. 67, 2001.
- Geiger, Roger. L. *Money and knowledge: Research universities and the paradox of the marketplace*. Stanford, CA: Stanford University Press, 2004.
- Glaser, Barney, G. *Basics of grounded theory analysis*. Mill Valley, Ca.: Sociology Press, 1992.
- Goodall, Amanda. "The leaders of the world's top 100 universities. International higher education." *Center for International Higher Education*. 42 (2006): 3-4.
- Huenneke, Laura, F, Stearns, Diane, M., Martinez, Jesse. D., & Laurila, Kelly. "Key strategies for building research capacity of university faculty members." *Innovation at Higher Education*, 42(2017): 421-435, Retrieved 10 September 2019 from <https://doi.org/10.1007/s10755-017-9394-y>
- Hanover Research. *Building a culture of research: Recommended practices* (pp. 1-33). Washington: Academy Administration Practice, 2014.
- Hladchenko, Myroslave, de Boer, Harry. F., & Westerheijden, Donald F. "Establishing research universities in Ukrainian higher education: the incomplete journey of a structural reform." *Journal of Higher Education Policy and Management*, 38(2016), 111-125. Retrieved 9 November 2020 from <https://doi.org/10.1080/1360080X.2016.1150232>
- Judith, L. Martin. *Academic deans: An analysis of effective academic leadership at research universities*. Paper presented at the Annual Meeting of the American Educational Research Association (Atlanta, GA, April, 1993). ED 362 079, 1-43, 1993.
- Liu, Nian. Cai, Qi, Wang & Ying, Chenh. *Paths to a world-class university: Lessons from practices and experiences*. Rotterdam, Netherlands: Sense, 2011.
- Kearney, Mary-Louise & Lincoln, Daniel. "Research universities: Networking the knowledge economy." *Editorial. Studies in Higher Education*, 38(3) (2013): 313-315.
- Kok, Seng Kiat & McDonald, Claire. "Underpinning excellence in higher education—an investigation into the leadership, governance and management behaviours of high-performing academic departments." *Studies in Higher Education*, 42(2) (2017): 210-231.
- Kümbetoğlu, Belkıs. *Sosyolojide ve antropolojide niteliksel yöntem ve araştırma*. İstanbul: Bağlam, 2005.
- Laredo, Phillippe. "Revisiting the third mission of universities: Toward a renewed categorization of university activities?" *Higher Education Policy*, 20(2007): 441-456,
- Lepori, Benedetto & Kyvik, Svein. The research mission of universities of applied sciences and the future configuration of higher education systems in Europe. *Higher Education Policy*, 23(2010): 295-316.
- Lertputtarak, Sarunya. *An investigation of factors related to research productivity in a public university in Thailand: A case study*. (Masters Dissertation). Victoria University. Melbourne, Australia, 2008
- Mohrman, Kathym., Ma, Wanhua & Baker, David. "The research university in transition: The emerging global model." *Higher Education Policy*, 21(1) (2008): 5-27.
- Miller, Peter & Marchant, Teresa (Ed.). *Professional doctorate research in Australia: commentary and case studies from business, education and indigenous studies*. Lismore: Southern Cross University Press, 2009.
- Marshall, Catherine & Rossman, Gretchen, B. *Designing qualitative research (4 th ed.)*. Thousand Oaks, CA: Sage, 2006.
- Marvasti, B. Amir. *Qualitative research in sociology*. SAGE Publications: London, 2004.
- Masataka, Murasawa, Watanabe, Satoshi. P. & Hata, Takashi. "Self-image and missions of universities: An empirical analysis of Japanese university executives." *Humanities*, 3(2014): 210-231.
- Mayring, Philipp. "Qualitative content analysis." *Forum: Online Journal Qualitative Social Research*, 1(2000): 1-10.
- Maxwell, Joseph. Alex. *Applied social research methods series. Qualitative research design: An interactive approach*. Thousand Oaks, CA, US: Sage Publications, Inc, 1996.
- McCoy, Marilyn, Krakower, Jack & Makowski, David. Financing at the leading 100 research universities: A study of financial dependency, concentration, and related institutional characteristics. *Research in Higher Education*, 16(1982): 323-352.
- Milbrath, Lester, Walter. *The Washington lobbyists*. Chicago: Rand McNally, 1963.
- Miles, Matthew B. & Huberman, A. Michael. *Qualitative data analysis: A Sourcebook of New Methods*. Beverly Hills: Sage, 1994.
- Mugabi, Henry. *Institutionalisation of the 'third mission' of the university. The case of Makerere university*. (Unpublished doctoral thesis). School of Management of the University of Tampere, 2014.
- OECD. "Higher education management and policy". *Journal of the Program on Institutional Management in Higher Education*, 19(2) (2007): 1-160.
- Patton, Micheal, Quinn. *Qualitative research & evaluation methods. 3rd edition*. Thousand Oaks, CA: Sage Publications, 2002.

- Polkinghorne, Donald, E. *Phenomenological Research Methods*. In: Valle R.S., Halling S.(eds) *Existential-Phenomenological Perspectives in Psychology*. Springer, Boston, MA, 1989.
- Pratt, Micheal, Margaritis, Dimitri & Coy, David. Developing a research culture in a university faculty. *Journal of Higher Education Policy and Management*, 21(1) (1999): 43-55.
- Punch, Keith, F. *Introduction to social research—quantitative & qualitative approaches*. London: Sage, 2005.
- Salmi, Jamil. *The challenge of establishing world-class universities*. Washington, DC: World Bank, 2009.
- Shils, Edward. *The academic ethos under strain” in the order of learning: Essays on the contemporary university*. New Brunswick, NJ: Transaction, 1997a.
- Schoen, Antoine, Laredo, Philippe, Bellon, Bertrand & Sanchez, Paloma. *Observatory of European university: Prime Position*, 2006. Retrieved 18 March 2020 from <http://www.primenoe.org/Local/prime/dir/Projects/OEU/OEU%20position%20paper%20march2007.pdf>
- Scott, John C “The mission of the university: Medieval to postmodern transformations.” *The Journal of Higher Education*, 77(1) (2006): 1-39.
- Slippers, Bernard, Vogel, Coleen & Fiaromonti, Lioramonti. “Global trends and opportunities for development of African research universities.” *South African Journal of Science*. 111(1/2) (2015): 1-4.
- The World Bank. *Constructing Knowledge Societies: New Challenges for Tertiary Education*. Washington, DC: The World Bank, 2002.
- The League of European Research Universities (LERU). *HEFEI Statement on the ten characteristics of contemporary research universities*, 2013.
- The Lima Declaration on Academic Freedom and Autonomy of Institutions of Higher Education, 1988. Retrieved 18 April 2021. Retrieved 01 May 2021 from <https://www.hrw.org/legacy/reports98/indonesia2/Borneote-13.htm>
- Tatık, R. Şamil. *Araştırma üniversitelerinin yapılandırılmasına ilişkin öğretim elemanlarının görüşleri: Eğitim fakülteleri örneği*. (Yayımlanmamış Doktora Tezi). Marmara Üniversitesi Eğitim Bilimleri Enstitüsü Eğitim Bilimleri Ana Bilim Dalı, 2017.
- Tural Kurul, Nejla. “Universities and academic life in Turkey: Changes and challenges.” *International Journal of Educational Policies*, 1(1) (2007): 63-78.
- Türk Araştırma Üniversiteleri Güçbirliği. *ODTÜ Proje Destek Ofisi METU*, (2016): 1-22.
- Yong, Xuan (2006). “Missions of research university and choice of its organizational framework.” *Frontiers of Education in China*, 3(2006): 417-425.
- Youn, Ted I. K. & Price, Tanya. M. “Learning from the experience of others: The evolution of faculty tenure and promotion rules in comprehensive institutions.” *Journal of Higher Education*, 80(2009): 205-225.
- YÖK. *Araştırma üniversiteleri*. 2017. Retrieved 18 April 2021, <https://www.yok.gov.tr/Documents/Yayinlar/Yayinlarimiz/2020/misyon-faklilasmasi-ve-ihstiaslasma-arastirma-universiteleri.pdf>
- YÖK. *Yükseköğretimde ihtisaslaşma ve misyon farklılaşması araştırma üniversiteleri*. 2020.
- Videka, Lynn, Blackburn, James, A. & Moran, James, R. *Building research infrastructure in schools of social work: A university perspective*. 2019. Retrieved 01 May 2020 from <https://academic.oup.com/swr/article-abstract/32/4/294>.

VIDEO GAME ADDICTION IN TURKEY: DOES IT CORRELATE BETWEEN BASIC PSYCHOLOGICAL NEEDS AND PERCEIVED SOCIAL SUPPORT?³

Abstract: Even though video games are generally appealing to adolescents, sometimes this can be an issue. In this study, the correlation between video game addiction of adolescents and gender, game genres, types of schools attended to and grade levels, basic psychological needs, and the social support perceived are researched. In this study, conducted in the Bağcılar district of Istanbul province in Turkey, 262 female and 271 male students, making a total of 533 participants from various types of high school. The data was collected using the Basic Psychological Needs Scale, the Perceived Social Support Scale, and the Gaming Addiction Scale for Adolescents. For independent samples t-test, a one-way analysis of variance and Pearson correlation coefficient was used for the analysis of the data. According to the results of the study, the levels of game addiction were significantly higher in males than in females, in vocational high schools than in Anatolian or Imam Hatip high schools, and featured online games rather than offline games. It was observed that game addiction affects basic psychological needs and perceived social support significantly negatively.

Keywords: Video game addiction, perceived social support, basic psychological needs, adolescents, online game.

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³ This study was produced from the master thesis prepared by the first author under the supervision of the second author. Part of the study was presented as an oral presentation at USBIK International Social Sciences Congress.

INTRODUCTION

The use of games is not only an important tool to meet the basic need of fun in childhood, but also in adulthood (Ögel, 2012). In the past, games which were played with friends in playgrounds and streets are nowadays evolved into online events which take place in Internet cafes, or at home, via smartphones, game consoles and computers in every aspect of life (Yeşilyurt & Erdoğan, 2018). The word game is used for free and individualistic exploratory activities, while the game describes rule-driven events (Groh, 2012). It can be said that digital games have become a daily routine that consumes a serious amount of time (Çeken & Çiçekli, 2018). It can be observed that the generation which grew up with these kinds of games will continue to play and follow the developments into their puberty or even into their adulthood.

The online games which require Internet connection that can be played simultaneously or which are turn based are more preferable due to their social qualities, such as friendship, initiating communication, building relationships, creating groups and joining groups (Griffith, Davies, & Chappell, 2004). Based on these preferences the game industry develops games open to new experiences, boundaries rather extensible, and which are able to test skills and opportunities of online interactions and communications (Przybylski et al., 2012). It has been stated that, during game sessions, a short term well-being is experienced (Rigby & Ryan, 2016). In addicted individuals, this specific condition can obstruct other components of life. In one study, players with a lower satisfaction of basic needs show more inclined demeanor towards game obsessed behavior. Digital games, appearing as the only source of individuals' filialness, are a problem and this shows that we need a better understanding of games.

According to research made by the NewZoo company, 30.8 million people in Turkey play digital games; a share of 30% belongs to the 10-20 years age group, while the biggest share of 46% belongs to 21-35 years age group (NewZoo, 2018). In other research, it is shown that there are over 24 million mobile game players, and that 90.1% of the 15-19 years age group plays mobile games (Adcolony, 2018). With regard to the most time spent playing games, after Russia and Poland, Turkey ranks third (Kartal, 2019).

Video game addiction is defined as excessive and problematic use of video games and computers to such an extreme extent that it causes social and emotional problems (Lemmens, Valkenburg, & Peter, 2009, p.78). It is understood that video game addiction in Turkey varies between 2.1% (Yalçın-Irmak & Erdoğan, 2015), 3.7% (Arıca et al., 2019), 11.6% (Baysak et al., 2016), and 15% (Yiğit & Günüş, 2020). In Weinstein's study (2010), long term changes in the reward circuitry can be caused by playing computer games and it can show effects resembling those of substance dependence.

In the early research papers regarding digital games, it can be seen that the first studies concerned the relationship of personality types with the playing of video games (Gibb et al., 1983) and motivation in playing games (Braun & Giroux, 1989; Braun et al., 1986; Griffiths, 1991; Morlock et al., 1985). In another study, much like other addictions, the physical and mental symptoms of excessive and obsessive video game playing are described (Soper & Miller, 1983), while other researchers also report cases that came for treatment (Keepers, 1990; Klein, 1984; Kuczmierczyk, 1987). In the 1990s, when home computers and game consoles just started becoming widespread, even though the effects of video games were not entirely known, this was still becoming a social phenomenon (Colwell et al., 1995; Griffiths, 1997; Griffiths & Hunt, 1995). When examined from a socio-demographic standpoint, with males playing more games than females (Buchman & Funk, 1996; Griffiths, 1997) and with violent games becoming more popular, it is understood that ideas involving families being informed about this subject (Funk, 1993) have since emerged.

With the Internet integrating with daily life in the 2000's, multi-massive online role-playing games (MMORPG) started to become popular. These games are three dimensional games which simultaneously allow a large number of online participants to create, develop, battle and take part in interactions with their online characters in a digital universe. (Pontes & Griffiths, 2014; Steinkuehler & Williams, 2006). In one study, it was found that 15% of high school students were addicted to video games, had low academic success, had more arguments with their friends and teachers, got involved in more physical fights and displayed more aggressive behavior than in the previous year (Hauge & Gentile, 2003). In similar studies, the academic success of students who were addicted to video games was lower (Gentile, 2009; Wang et al., 2014). In another study, social competence, self-esteem and loneliness were found to be important predictors of pathological video gameplaying (Lemmens, Valkenburg, & Peter, 2011). This was found to be the case because of the emergence of video game addiction depression, anxiety, social phobia, and low

school performance (Gentile et al., 2011). Video game addiction and depressive moods, loneliness, and social anxiety are correlated, especially in male adolescents, whose use of nicotine, marijuana and alcohol are twice as great as those who do not play video games (Van Rooij et al., 2014). It has also been found that stress, living in a family with divorced parents, and bullying at school are related to video game addiction (Taechoyotin, Tongro, & Piyaraj, 2018). According to studies conducted in Turkey, there is a correlation between video game addiction and shyness (Ayas, 2012), social anxiety (Karaca et al., 2016), aggressive behavior (Balıkçı, 2018), as well as negative demeanor while expressing anger (Çakıcı, 2018).

In another study, quite to the contrary, playing video games is listed as a meaningful and purposeful activity (Shi, Renwick, Turner, & Kirsh, 2019). Video games could be a viable option for adolescents to satisfy their psychological needs. Basic psychological needs are necessary requirements for psychological development, integrity, and well-being (Deci & Ryan, 2000). According to the self-determination theory, there are three basic psychological needs; autonomy, competence, and relatedness. These needs are innate, basic, and universal (Ryan & Deci, 2000; Sheldon, Elliot, & Kasser, 2001). If an individual cannot fulfill their basic needs, or cannot achieve real satisfaction of needs, then that individual could become engrossed in an activity that offers the best at that current moment (Deci & Ryan, 2011). Online games with activities such as communication with others, building relationships, establishing small groups, and those that depend on group work, such as clans, groups, squads and teams, could satisfy psychological needs. It is also noteworthy that these games offer players a good challenge enabling them to satiate their need for competence (Allen & Anderson, 2018). Mankind has a natural tendency to seek new challenges to experience a sense of competence, even when there is no external reward (such as cash or other remuneration) to be won.

Every element of the educational process has a dynamic structure, which also includes students' needs (Gündoğdu, Dursun, & Saracaloğlu, 2020). Satisfaction of basic psychological needs is closely related to daily activities (Oliver et al., 2015; Tamborini et al., 2010). In this context it is possible to find studies that claim that digital games are tools for the satisfaction of basic psychological needs (Oliver et al., 2015). In addition, it has been found that when the satisfaction of basic psychological needs in real life is plentiful, game addiction scores decrease (Allen & Anderson, 2018; Scerri et al., 2018) and that basic psychological needs have a intermediary role (Li et al., 2016) in the relationship between stressful life events and Internet addiction in adolescents. According to recent studies in Turkey, it has been found that there is a negative correlation between extreme use of the Internet and the satisfaction of basic psychological needs (Candemir Karaburç & Tunç, 2020), and that Internet addiction and basic psychological needs directly and negatively affect each other (Can & Zeren, 2019).

In another study, different game design elements are configured and analysed based on their satisfaction of the basic psychological needs. The results of that particular study show that performance based rewards, such as rankings, tiers, badges, leaderboards and so on, positively correlate with a need for competence, while teammates, avatars, and meaningful stories correlate with social relatedness (Sailer, Hense, Mayr, & Mandl, 2017). There has been no research found on the video game addiction levels of adolescents in the context of perceived social support and basic psychological needs.

The game addiction of adolescents could be related to perceived social support. Social support can be defined as developing a sense of commitment with the thought that the person is loved, cared for, accepted and valued by others and receives their help when it is necessary (Cobb, 1976; Lepore, Evans, & Schneider, 1991; Sarason, Levine, Basham, & Sarason, 1983). The most important sources of social support for adolescents are friends, family members and teachers (Yıldırım, 1997). In particular, with the desire and need for autonomy emerging, compared to other developmental periods, in this period, the importance of received social support from families decreases while the importance of social support from friends increases (Zimet et al., 1990). It can be seen that as the perceived social support received from family and friends increases, self-esteem also increases (Kahriman & Polat, 2003), while decreasing risky behaviour and cyberbullying (Elkady, 2019; İskender, 2018; Sever, 2015). While Colwell and Payne (2000), judging from the fact that adolescents often meet up with their friends away from the school environment, claim that video games do not cause isolation, in various research studies conducted in Turkey regarding social support proves that there is a negative correlation between perceived social support and Internet addiction (Baysak et al., 2018; Karaer & Akdemir, 2019; Öztosun, 2018; Tanrıverdi, 2014; Taşdemir, 2016; Varol-Afo & Mortan Sevi, 2019).

Students from three different types of high schools participated in this study. In Turkey, Anatolian High School students are admitted through an examination procedure, and the success of these schools are generally higher than average compared to other types. Vocational high schools train those for blue-collar occupations, while Imam Hatip high schools are religious schools. In this research the answers to the following questions were sought: (1) 'Do adolescents' video game addiction levels differ amongst gender, game genres, types of schools attended, and parents' proficiency in Internet usage?'; and (2) 'Is there a correlation between video game addiction levels and perceived social support, as well as basic social needs?'.

METHOD

PARTICIPANTS

The study population of the research consists of 16,958 high school students studying in the ninth, tenth and eleventh grades in the Bağcılar district, Istanbul, in Turkey. The data was collected using the cluster-sampling method at a population of 650 students between the ages 14-17 whose education at different high schools continues. Missing data was removed from the data set and, thus, the research was conducted with a total of 533 students of whom 262 (49.2%) were females and 271 (50.8%) were males.

INSTRUMENTS

GAME ADDICTION SCALE FOR ADOLESCENCE

The Game Addiction Scale for Adolescence was developed by Lemmens, Valkenburg and Peter (2009) and the Turkish adaptation was undertaken by Ilgaz (2015). The scale consists of twenty-one items and seven factors. The total score of the scale has an internal consistency coefficient of .92 (Ilgaz, 2015). In this research, the internal consistency coefficient regarding the scale was recalculated and the Cronbach Alpha coefficient was found to be .93.

PERCEIVED SOCIAL SUPPORT SCALE- R (PSSC-R)

The Perceived Social Support Scale was developed by Yıldırım (1997) and revised in 2004. The PSSC-R has subscales consisting of family members, friends, and teacher support. The lowest score that can be obtained from the scale is 50, and the highest score is 150. Items of the PSSC-R are rated using the three-point Likert-type rating. The internal consistency coefficient for the whole scale was found to be .93 (Yıldırım, 2004). In this study, the internal consistency coefficient of the scale was recalculated, and the Cronbach Alpha coefficient was found to be .84 for the family subscale, .87 for the friend subscale, .94 for the teacher subscale, and .94 for the entire scale.

BASIC PSYCHOLOGICAL NEEDS SCALE - HIGH SCHOOL FORM (BPNS-H)

The Basic Psychological Needs Scale was developed by Ryan and Deci (2000) and the Turkish adaptation of the scale was made by Kesici and others (2003). Studies for the high school form of the scale were made by Şahin (2007). The scale was reduced to seventeen items by removing four of the thoughts that showed low correlation. The scale, which was a five-point Likert-type, consists of three sub-dimensions. For the BPNS-H, the Cronbach Alpha reliability relatedness need subscale was found to be .77, the need for competence subscale was found to be .64 and the need for autonomy subscale was found to be .69. The scales' total reliability coefficient was calculated to be .82 (Şahin & Korkut-Owen, 2009). High scores on the scale indicate that basic psychological needs are satisfied. In this study, the internal consistency coefficient of the scale was recalculated, and the Cronbach Alpha coefficient was found to be .74 for the relatedness need subscale, .47 for the need for competence subscale, .57 for the need for autonomy subscale, and .79 for the entire scale.

PROCESS

For this research, initially the necessary legal permission was obtained from the Turkish Ministry of Education. The purpose of the research was disclosed to the students and data collecting tools were only applied during classes, to students who had volunteered, with all of the questions answered, and written consent being taken. The data was collected in the Istanbul province, Bağcılar district, in 2018.

DATA ANALYSIS

The data was analyzed through the independent samples t-test, a one-way analysis of variance (ANOVA), and the Pearson correlation coefficient. The data obtained during the research was analysed using IBM SPSS 23.0 and the margin of error was taken to be .05. It was noted that the data showed normal distribution and the variances were homogeneous.

RESULTS

In this research, in order to determine whether there was a difference according to the adolescents' gender, preferred video game genre and levels of video game addiction for the independent samples t-test were used, and the result of the analysis is shown in Table 1.

Table 1. Differences of video game addiction according to gender and video game genres

Gender	<i>n</i>	<i>M</i>	<i>SD</i>	<i>df</i>	<i>t</i>	<i>p</i>	<i>Cohen d</i>
Female	262	39.48	16.72	531	-10.62	.000*	-0.92
Male	271	54.93	16.87				
Video game genre							
Online	303	53.55	16.72	461	7.91	.000*	0.765
Offline	160	40.69	16.87				

* $p < .01$

As can be seen in Table 1, the average video game addiction points of males are significantly higher than those of females ($t = -10.62$, $p < .01$), and the effect size is large ($d = .919$). Video game addiction levels are significantly higher in individuals who play online games compared to those who play offline games ($t = 7.91$, $p < .01$), with the effect size being large ($d = .765$).

The video game addiction level of adolescents is compared using ANOVA, and the results are given in Table 2.

Table 2. Differences of video game addiction according to school type

School type	<i>n</i>	<i>M</i>	<i>SD</i>		Sum of squares	<i>df</i>	Mean square	<i>F</i>	<i>p</i>	η^2
Anatolian	174	42.51	18.14	Between groups	9300.45	2	4650.23	14.30	.000*	0.05
Vocational	230	51.94	18.21	Within groups	172411.35	530	325.30			
Imam-Hatip	129	45.63	17.56	Total	181711.81	532				

* $p < .01$

In Table 2, there is a significant difference between the video game addiction levels of different types of high school students ($F = 14.30$, $p < .01$), with the effect size being medium ($\eta^2 = .051$). The Tukey HSD test was conducted to understand which groups this difference was in, and it was found that the game addiction levels of the vocational high school students were higher than those of the Anatolian and Imam Hatip schools. In addition, there is no significant difference between the adolescents' game addiction by grade level ($F = 2.66$, $p > .05$), mother's Internet usage competence ($F = 2.21$, $p > .05$), or father's Internet usage competence ($F = .83$, $p > .05$).

The relationship between satisfaction of basic psychological needs, perceived social support and video game addiction levels was analysed using the Pearson correlation coefficient and is shown in Table 3.

Table 3. The relationship between satisfaction of basic psychological needs, perceived social support and video game addiction level

Variables	GA	BPN	PSS (family)	PSS (friends)	PSS (teachers)
Game addiction (GA)	1				
Basic psychological needs (BPN)	-.196*	1			
Perceived social support (PSS) (family)	-.210*	.487*	1		
Perceived social support (friends)	-.211*	.466*	.505*	1	
Perceived social support (teachers)	-.151*	.267*	.446*	.418*	1

* $p < .01$

As can be seen in Table 3, there is a negative, low and significant correlation between video game addiction, basic psychological needs ($r = -.196$, $p < .01$) and perceived social support ($r_{\text{family}} = -.210$, $p < .01$; $r_{\text{friends}} =$

- .211, $p < .01$; $r_{\text{teachers}} = -.151$, $p < .01$). In addition, it can be seen that there are positive relationships between basic psychological needs and perceived support.

CONCLUSION AND DISCUSSION

In this study, the relationships between video game addiction, satisfaction of basic psychological needs and perceived social support were examined. According to the findings of this study, there is a negative, low correlation between video game addiction and satisfaction of basic psychological needs and perceived social support. It is understood that the basic psychological needs of adolescents with high video game addiction level are not satisfied and they have insufficient social support. It is also found that video game addiction levels of male adolescents were higher than girls, online video games are more preferred than offline games and vocational high school students are more addicted to video games than those of the Anatolian and Imam Hatip schools.

As a result of this research, it was found that male adolescents' level of game addiction is significantly higher than that of females. There are many research results similar to this finding which are available in the literature (Aksoy, 2018; Colwell & Payne, 2000; Colwell, Grady, & Rhaiti, 1995; Çakır, Ayas, & Horzum, 2011; Dönmez, 2018; Eni, 2017; Fisher, 1994; Gentile et al., 2011; Griffiths & Hunt, 1998; Hauge & Gentile, 2003; Kaya & Şahin Altun, 2015; Odabaşı, 2016; Taechoyotin, Tongro, & Piyaraj, 2018; Toker & Baturay, 2016; Van Rooij et al., 2014; Wang et al., 2014; Yu & Cho, 2016). However, there has also been research in the literature that states that gender differentiation is non-existent (Demirtaş-Madran & Ferligül-Çakılcı, 2014; Gibb et al., 1983; Taş, Eker, & Anlı, 2014), with studies showing that social media addiction is more common in females (Griffiths, Kuss, & Demetrovics, 2014), while conversely, males are more addicted to video games (Kuss & Griffiths, 2012).

The fact that the parts of the brain regarding the reward and punishment system of males is far more active than females can be a valid reason explaining why males are far more vulnerable to video game addiction than females (Griffiths & Hunt, 1998; Hoeft et al., 2008; Ko et al., 2009). In addition females are more likely to get addicted to their mobile phones due to social usage (Adamczyk, Adamczyk & Tłuściak-Deliowska, 2018). The games, and especially online games, that are built upon competition with others, and which contain both socially rewarding, appreciative content, such as ranking up in leagues, leveling up, ranking up, gaining titles and offering virtual material rewards, such as gold, credits, weapons, clothes and suchlike, can easily affect the cognitive processes of the individual. It can be seen that the recently popular looting mechanics of games affect players to a degree that is similar to gambling addiction (Abarbanel, 2018; King & Delfabbro, 2019; Zendle & Cairns, 2019). In addition, males are less neurologically affected than females while playing video games (Wang et al., 2018).

Results show that adolescents' levels of game addiction differ according to type of school attended, and this differentiation is due to the fact that vocational high school students' game addiction levels are higher than those of Anatolian and Imam Hatip high school students. This finding aligns with the findings of Aksoy (2018), although there are few studies comparing school types in the literature. Taş, Eker, and Anlı (2014) could not find any significant difference in the game addiction levels of adolescents in terms of school type. In one study, it is stated that the school type with the highest time efficiency for leisure activities among high schools is the vocational high school (Yetiş, 2008). Among the activities that students in these schools engage in when making use of their spare time, there are mostly activities such as listening to music, watching TV, doing homework, and spending time on the Internet (Okay, 2012). Considering the education and training program of vocational high school students, due to them having less academic expectations, and their future targets being more specific and limited, may have caused them to turn towards digital games as activities where they can spend their free time.

In this study, the average game addiction score of the individuals who preferred mostly online games was found to be significantly higher than that of those who preferred offline games. Griffiths, Kuss and King (2012) and Toker and Baturay (2016) also point out that online games are more addictive. Lemmens and Hendriks (2016) state that the time spent playing games in both game types is closely related to game addiction, but this situation is certainly more noticeable in online games. Social interaction in online games can be easier and more satisfying than face-to-face interaction for some, suggesting that people also prefer online games in order to seek social interaction (Ng & Wiemer-Hastings, 2005). Individuals who cannot

build social relationships and individuals who are alone, searching for friendship, turn towards online games and, thereby, increase the likelihood of video game addiction (Akkaş, 2020). However, Kuss, Griffiths, and Pontes (2017) state that games can be addictive regardless of whether they are online or offline, because, in qualifying the behavior as addiction, it is necessary to have certain clinical deterioration with overuse. In the studies, it is observed that addictive behavior is involved in both online and offline game types (Griffiths, Kuss, & King, 2012).

As a result of this research, it is found that there is a low-level negative correlation between video game addiction and perceived social support, as well as basic psychological needs. Adolescents whose basic psychological needs are not met sufficiently have high game addiction rates. There are a number of research results similar to this finding available in the literature (Allen & Anderson, 2018; Candemir Karaburç, 2020; Li et al., 2016; Scerri et al., 2018; Tamborini et al., 2010).

Griffiths, Davies and Chappell (2004) state that sociability is the most attractive aspect of online games. In cases where basic needs are not met or prevented, individuals may apply different methods to meet these needs (Deci & Vansteenkiste, 2004). It can be thought that adolescents develop addiction by turning to online games where they can find the opportunity to socialize. Online video games provide a way for players to build lasting relationships and to preserve existing ones (Siitonen, 2007). Digital games can have a great effect on meeting basic psychological needs if not used problematically or in an addictive way (Ryan, Rigby, & Przybylski, 2006). The fact that online games affect social life negatively and may lead to loneliness can lead to the prevention of real relationships that could sufficiently meet the need for relatedness (Gentile et al., 2011; Jeong & Kim, 2011).

The region where this research was conducted is one of the most populous districts of Istanbul, Turkey, where families with low socio-economic levels live. Families in this district can sometimes be concerned about their childrens' safety outside their houses. With this concern, parents can prevent their children from participating in out-of-home activities from an early age. In this area, houses are very close to each other and there are few safe environments such as parks where children and young people can spend time. Adolescents who cannot spend time and socialize with their peers on the streets or on a park, try to meet their needs at home. At the same time, video game addiction correlates with shyness, loneliness, low self esteem, anxious-indecisive attachment and low empathic tendency (Akkaş, 2020; Ayas, 2012; Lemmens, Valkenburg, & Peter, 2011; Tas, 2019), individuals not being comfortable in real relationships, and not being able to build healthy relationships. The motivation to play video games by players is found to be a progression in the game, game mechanics, competition, and socialization (Dindar & Akbulut, 2014; Ko et al., 2009; Sussman et al., 2014). In addition, the fact that games provide a kind of simulated environment for behavior that is not possible to experience in real life helps individuals to discover new skills in themselves and to realize their interests (Ryan, Rigby & Przybylski, 2006; Wan & Chiou, 2006). Games being open to new experiences allow individuals to test their skills and, thereby, to meet their basic psychological needs. According to the findings of this study, as the perceived social support of adolescents decreases, online game addiction increases. This finding is supported by similar studies in the literature (Ayas & Horzum, 2013; Baysak et al., 2018; Bonnaire & Phan, 2017; Durak-Batıgün & Kılıç, 2011; Günüş & Doğan, 2013; Karaer & Akdemir, 2019; Özmen, 2019; Öztosun, 2018; Varol-Afo, & Mortan Sevi, 2019; Yeh et al., 2008; Yiğit & Günüş, 2020). With low family support and neglect of children in particular, (Sussman et al., 2014; Beyazıt & Bütün Ayhan, 2019), conflicts and problems in family relationships (Boannaire & Phan, 2017; Çalışkan & Özbay, 2015; Yiğit & Günüş, 2020) and the absence of one of the parents (Taechoyotin, Tongro, & Piyaraj, 2018) significantly correlate with video game addiction.

In adolescence, although interest in the family decreases and relationships with peers become more important for the individual, emotional support of the family is still extremely important. In this study, perceived social support from family and perceived social support from friends are found to be negatively related to video game addiction at a similar level. The support the adolescent receives from his family and friends, especially the social support he feels while dealing with the problems that an individual faces, can help him overcome problems and stressful events in a healthy way (Deniz, 2006). A lack of social support and appropriate problem solving skills in adolescents, and the fact that games become a tool used to escape from problems, makes it easier for them to develop addiction to video games after a while. (Griffiths, 2010). According to a study that was conducted in South Korea with 600 student participants, composed of a

mixture of middle and high school students, game addiction is negatively correlated with social activities with parents (Jeong, & Kim, 2011).

In another study, it was found that 72% of young people between the ages of 13-17 play online games with their friends every day and 52% make friends with the people they play with, but the relationships they establish in daily life are weak (Lenhart, 2015). Adolescents who have trouble building relationships, and who are exposed to bullying, due to having insufficient friendships and having social anxiety, leads to online games being seen as an alternative social space correlating with video game addiction (Griffiths, 2010; Karaca et al., 2016; Taechoyotin, Tongro, & Piyaraj, 2018). During the adolescence period it is important to be accepted as a part of a group and to feel included as a part of that group. Adolescents can cope more easily with the problems they encounter by getting strength from their peers. Cohen and Wills (1985) state that social support has a facilitating effect on coping with stressful life events. In this period, peers are an important source of social support for adolescents (Yıldırım, 1997). Adolescents who do not have sufficient social support from their peers may turn to online games, both to seek support and to avoid their problems (Papacharissi & Rubin, 2000).

In the study, no relationship is found between perceived social support from teachers and video game addiction. Due to their seasonal characteristics, the importance of teachers for high school students can be expected to be lower than for primary and secondary school students. This may be interpreted as teachers not being an important source of social support in the lives of adolescents.

In this study, since the internal consistency coefficients calculated for the sub-dimensions of the Basic Psychological Needs Scale are low, the use of the total score in the analyzes is preferred. In this sense, it can be suggested to work on scales in new studies. According to the results of this study, as well as similar studies in the literature, males, and especially adolescent males, have higher levels of online video game addiction. Considering male adolescents as a risk group in this sense may be considered in preventative studies.

According to the results of the study, game addiction levels of vocational high school students are found to be higher. At the same time, the fact that this group is more at risk, the teachers, students and parents at these schools need to be informed accurately about game addiction and awareness needs to be raised about possible dangers. In addition to informing, peer groups can be formed and group work can be used to support the correct use of games. Similarly, physical and social activities for students in the risk group can be diversified and students can be directed to these.

The online game addiction levels of adolescents who cannot find sufficient social support from their families and friends are higher than the research results. In this sense, families can be educated regarding ways to communicate with adolescents and provide appropriate social support. Correct parenting skills, monitoring the adolescent and supervision provided to the adolescent (Toker & Baturay, 2016) prove their worth as the families' social support. In addition to this, families' knowledge of digital parenting should be increased in order to enable children to maintain a healthier relationship with technology. In this way, the family should be able to provide sufficient digital support to the child and adolescent. Conducting activities together in the family with the close attention of parents, especially the mother's attention to the child (Yiğit & Güntüç, 2020), are stated as protective factors.

The computer as well as computer assisted instruction plays an important role in development of children and could be used as an assistive tool in academic purposes (Mohammed, 2013). Thus, the students' addiction towards digital games can be used in their education. We should learn more about children's passion for video games.

REFERENCES

- Abarbanel, Brett. "Gambling vs. gaming: A commentary on the role of regulatory, industry, and community stakeholders in the loot box debate." *Gaming Law Review* 22 (4) (2018): 231-234.
- Adamczyk, Małgorzata, Andrzej Adamczyk, and Aleksandra Thuściak-Deliowska. "Using Mobile Phones by Young People: The Trends and Risk of Addiction." *Psycho-Educational Research Reviews* (2018): 29-41.
- Adcolony. *Mobile gaming in Turkey Under the microscope*. (2018) Retrieved from: <https://www.adcolony.com/blog/2017/07/18/mobile-gaming-turkey-microscope/>
- Akkaş, İbrahim. "Study on digital game addiction as a global problem area: The case of Erzincan." *Modern Leisure Studies*, 2 (1) (2020): 11-23

- Aksoy, Zahide. "Adölesanlarda oyun bağımlılığı, yaşam biçimi davranışları ve etkileyen faktörler." Master's Thesis. Marmara University, 2018.
- Allen, Johnie J., and Craig A. Anderson. "Satisfaction and frustration of basic psychological needs in the real world and in video games predict internet gaming disorder scores and well-being." *Computers in Human Behavior* 84 (2018): 220-229.
- Arıcak, Osman Tolga, et al. "Adapting the short form of the Internet Gaming Disorder Scale into Turkish: Validity and reliability." *Addicta: The Turkish Journal on Addictions* 5.4 (2018): 615-636.
- Ayas, Tuncay. "The relationship between Internet and computer game addiction level and shyness among high school students." *Educational Sciences: Theory and Practice* 12.(2) (2012): 632-636.
- Ayas, Tuncay, and Mehmet Barış Horzum. "Internet addiction and internet parental style of primary school students." *Türk Psikolojik Danışma ve Rehberlik Dergisi* 4.(39) (2013): 46-57.
- Balıkçı, Rafi. *Çocuklarda ve ergenlerde çevrimiçi oyun bağımlılığı ve agresif davranışlar arasındaki ilişkinin incelenmesi*. Master's Thesis. Fatih Sultan Mehmet Vakıf Üniversitesi, Sosyal Bilimler Enstitüsü, 2018.
- Baysak, Erkan, et al. "Online game addiction in a sample from Turkey: Development and validation of the Turkish version of game addiction scale." *Klinik Psikofarmakoloji Bülteni-Bulletin of Clinical Psychopharmacology* 26.(1) (2016): 21-31.
- Baysak, Erkan, et al. "How game addiction rates and related psychosocial risk factors change within 2-years: A follow-up study." *Psychiatry investigation* 15.(10) (2018): 984.
- Beyazıt, Utku, and Aynur Bütün Ayhan. "The relationship between digital game addiction and being neglected by parents in adolescence." *Ankara Sağlık Bilimleri Dergisi* 8.(2) (2019): 86-95.
- Bonnaire, Céline, and Olivier Phan. "Relationships between parental attitudes, family functioning and Internet gaming disorder in adolescents attending school." *Psychiatry Research* 255 (2017): 104-110.
- Braun, Claude MJ, and Josette Giroux. "Arcade video games: Proxemic, cognitive and content analyses." *Journal of Leisure Research* 21.2 (1989): 92-105.
- Braun, Claude MJ, et al. "Adolescents and microcomputers: Sex differences, proxemics, task and stimulus variables." *The Journal of psychology* 120.6 (1986): 529-542.
- Buchman, Debra D., and Jeanne B. Funk. "Video and computer games in the'90s: Children's time commitment and game preference." *Children today* 24.1 (1996): 12.
- Can, Sermin, and Şerife Gonca Zeren. "The Role of Internet Addiction and Basic Psychological Needs in Explaining the Academic Procrastination Behavior of Adolescents." *Cukurova University Faculty of Education Journal* 48.2 (2019).
- Candemir Karaburç, Gülşah, and Erhan Tunç. "Problematic Internet use, marital adjustment, couple burnout and basic psychological need satisfaction levels of married individuals." *Journal of Social and Humanities Sciences Research* 7.55 (2020): 1695-1721.
- Cobb, Sidney. "Social support as a moderator of life stress." *Psychosomatic medicine* 38(5) (1976): 300-314.
- Cohen, Sheldon, and Thomas A. Wills. "Stress, social support, and the buffering hypothesis." *Psychological bulletin* 98.2 (1985): 310.
- Colwell, John, Clare Grady, and Sarah Rhaiti. "Computer games, self-esteem and gratification of needs in adolescents." *Journal of Community & Applied Social Psychology* 5.3 (1995): 195-206.
- Colwell, John, and Jo Payne. "Negative correlates of computer game play in adolescents." *British Journal of psychology* 91.3 (2000): 295-310.
- Çalışkan, Ömer, and Fatih Özbay. "12-14 yaş aralığındaki ilköğretim öğrencilerinde teknoloji kullanımı eksenli yabancılaşma ve anne baba tutumları: Düzce ili örneği." *Uluslararası Sosyal Araştırmalar Dergisi* 8.39 (2015): 441-458.
- Çakıcı, Gizem. *Ergenlerde dijital oyun bağımlılığı ve öfkeyi ifade etme biçimleri arasındaki ilişkinin incelenmesi*. Master's Thesis Haliç Üniversitesi, Sosyal Bilimler Enstitüsü, 2018.
- Çakir, Özlem, Tuncay Ayas, and Mehmet Barış Horzum. "An investigation of university students' internet and game addiction with respect to several variables." *Ankara Üniversitesi Eğitim Bilimleri Fakültesi Dergisi* 44.2 (2011): 95-118.
- Çeken, Birsan, and Kübra Çiçekli. "FRP Kutu Oyunlarından Grafiğe, Sıra Tabanlı (Digital Turn Based) Dijital Oyunlardaki Tasarım Trendleri" *Uluslararası Afro-Avrasya Araştırmaları Dergisi*, 3(5) (2018): 35-43.
- Deci, Edward L., and Richard M. Ryan. "The 'what' and 'why' of goal pursuits: Human needs and the self-determination of behavior." *Psychological inquiry* 11.4 (2000): 227-268.
- Deci, Edward L., and Richard M. Ryan. "Levels of analysis, regnant causes of behavior and well-being: The role of psychological needs." *Psychological Inquiry* 22.1 (2011): 17-22.
- Deci, Edward L., and Maarten Vansteenkiste. "Self-determination theory and basic need satisfaction: Understanding human development in positive psychology." *Ricerche Di Psicologia*, 27(1) (2003): 23-40.
- Madran, Demirtaş, and Ferligül Çakıcı. "Çok oyunculu çevrimiçi video oyunu oynayan bireylerde video oyunu bağımlılığı ve saldırganlık." *Anadolu Psikiyatri Dergisi* 15.2 (2014): 99-107.
- Deniz, Mehmet. "The relationships among coping with stress, life satisfaction, decision-making styles and decision self-esteem: An investigation with Turkish university students." *Social Behavior and Personality: an international journal* 34.9 (2006): 1161-1170.
- Dindar, Muhterem, and Yavuz Akbulut. "Why do pre-service teachers quit Facebook? An investigation on 'quitters forever' and 'quitters for a while'." *Computers in Human Behavior* 39 (2014): 170-176.
- Dönmez, Şeymanur. *Çevrimiçi oyun bağımlılığının bilinçli farkındalık ve yaşam doyumu ile ilişkisi*. Unpublished Master's Thesis. Fatih Sultan Mehmet Vakıf Üniversitesi, İstanbul, 2018.
- Batıgün, Ayşegül Durak, and Nevin Kılıç. "İnternet Bağımlılığı ile Kişilik Özellikleri, Sosyal Destek, Psikolojik Belirtiler ve Bazı Sosyo-Demografik Değişkenler Arasındaki İlişkiler." *Türk Psikoloji Dergisi* 26.67 (2011): 1-10.

- Elkady, Ayman Abdelgalil M. "The Mediating Role of Emotional Intelligence in the Relationship between Perceived Social Support and Cyberbullying Victimization among Adolescents in Egypt." *International Journal of Psycho-Educational Sciences* 8 (2019): 6-13.
- Eni, Beyzanur. "Lise öğrencilerinin dijital oyun bağımlılığı ve algıladıkları ebeveyn tutumlarının değerlendirilmesi." Master's Thesis. Haliç Üniversitesi, Sosyal Bilimler Enstitüsü, 2017.
- Fisher, Sue. "Identifying video game addiction in children and adolescents." *Addictive behaviors* 19.5 (1994): 545-553.
- Funk, Jeanne B. "Reevaluating the impact of video games." *Clinical pediatrics* 32.2 (1993): 86-90.
- Gentile, Douglas. "Pathological video-game use among youth ages 8 to 18: A national study." *Psychological science* 20.5 (2009): 594-602.
- Gentile, Douglas A., et al. "Pathological video game use among youths: a two-year longitudinal study." *Pediatrics* 127.2 (2011): e319-e329.
- Gibb, Gerald D., et al. "Personality differences between high and low electronic video game users." *The Journal of psychology* 114.2 (1983): 159-165.
- Griffiths, Mark D. "Amusement machine playing in childhood and adolescence: A comparative analysis of video games and fruit machines." *Journal of adolescence* 14.1 (1991): 53-73.
- Griffiths, Mark D. "Computer game playing in early adolescence." *Youth & Society* 29.2 (1997): 223-237.
- Griffiths, Mark D. "The role of context in online gaming excess and addiction: Some case study evidence." *International Journal of Mental Health Addiction*, 8(1) (2010): 119-125.
- Griffiths, Mark D., Mark NO Davies, and Darren Chappell. "Demographic factors and playing variables in online computer gaming." *CyberPsychology & behavior* 7.4 (2004): 479-487.
- Griffiths, Mark D., and Nigel Hunt. "Computer game playing in adolescence: Prevalence and demographic indicators." *Journal of Community & Applied Social Psychology* 5.3 (1995): 189-193.
- Griffiths, Mark D., and Nigel Hunt. "Dependence on computer games by adolescents." *Psychological reports* 82.2 (1998): 475-480.
- Griffiths, Mark D., Daria J. Kuss, and Zsolt Demetrovics. "Social networking addiction: An overview of preliminary findings." *Behavioral addictions* (2014): 119-141.
- Griffiths, Mark D., Daria J Kuss, and Daniel L King. "Video game addiction: Past, present and future." *Current Psychiatry Reviews* 8.4 (2012): 308-318.
- Groh, Fabian. "Gamification: State of the art definition and utilization." *Institute of Media Informatics Ulm University* 39 (2012): 31.
- Gunuc, Selim, and Ayten Dogan. "The relationships between Turkish adolescents' Internet addiction, their perceived social support and family activities." *Computers in Human Behavior* 29.6 (2013): 2197-2207.
- Gündoğdu, Kerim, Fevzi Dursun, and Asuman Seda Saracaloğlu. "Investigation of Educational Philosophies and General Self-Efficacy Perceptions of Graduate Students in Educational Sciences Programs." *Psycho-Educational Research Reviews* 9.1 (2020): 21-32.
- Hauge, Marny R., and Douglas A. Gentile. "Video game addiction among adolescents: Associations with academic performance and aggression." *Society for Research in Child Development Conference*. (2003).
- Hoelt, Fumiko, et al. "Gender differences in the mesocorticolimbic system during computer game-play." *Journal of psychiatric research* 42.4 (2008): 253-258.
- İlgaz, Hale. "Ergenler için oyun bağımlılığı ölçeğinin Türkçeye uyarlama çalışması." *Elementary Education Online* 14.3 (2015): 873-884.
- İskender, Ali. "Boş zamanda sıkılma algısı ile üniversite öğrencilerinin riskli davranışları arasındaki ilişkinin belirlenmesinde çok boyutlu algılanan sosyal destek araçlarının rolü." Doctoral Thesis. Gazi Üniversitesi, Sosyal Bilimler Enstitüsü, 2018.
- Jeong, Eui Jun, and Doo Hwan Kim. "Social activities, self-efficacy, game attitudes, and game addiction." *Cyberpsychology, Behavior, and Social Networking* 14.4 (2011): 213-221.
- Karaca, Semra, et al. "Ortaokul öğrencilerinde bilgisayar oyun bağımlılığı ve sosyal anksiyetenin incelenmesi." *Clinical and Experimental Health Sciences* 6.1 (2016): 14-19.
- Kahriman, İlknur, and Sevinç Polat. "Adölesanlarda Aile ve Arkadaşlardan Algılanan Sosyal Destek İle Benlik Saygısı Arasındaki İlişki." *Atatürk Üniversitesi Hemşirelik Yüksekokulu Dergisi*, 6(2) (2003): 13-24.
- Karaer, Yusuf, and Devrim Akdemir. "Parenting styles, perceived social support and emotion regulation in adolescents with internet addiction." *Comprehensive psychiatry* 92 (2019): 22-27.
- Kartal, Beyazıt. *Oyun Başında En Fazla Vakit Geçiren 3. Ülkeyiz*. (2019). Retrieved from: <https://www.webtekno.com/carpici-istatistik-oyun-basinda-en-fazla-vakit-geciren-3-ulkeyiz-h60910.html>
- Kaya, Hava, & Özlem Şahin-Altun. "Hemşirelerin temel psikolojik ihtiyaçları ve etkileyen faktörler." *Sağlık Bilimleri ve Meslekleri Dergisi*, 5(3) (2015): 295-305.
- Keepers, George A. "Pathological preoccupation with video games." *Journal of the american academy of child & adolescent psychiatry* 29.1 (1990): 49-50.
- Kesici, Şahin, et al. (2003, July 9-11). Temel Psikolojik İhtiyaçlar Ölçeğinin Geçerlik ve Güvenirliği [Paper presentation]. VII. Ulusal PDR Congress İnönü University, Malatya, Turkey.
- Klein, Martin H. "The bite of Pac-man." *The Journal of Psychohistory* 11.3 (1984): 395.
- King, Daniel L., and Paul H. Delfabbro. "Video game monetization (eg, 'loot boxes'): a blueprint for practical social responsibility measures." *International Journal of Mental Health and Addiction* 17.1 (2019): 166-179.

- Ko, Chih-Hung, et al. "Brain activities associated with gaming urge of online gaming addiction." *Journal of psychiatric research* 43.7 (2009): 739-747.
- Kuss, Daria Joanna, and Mark D. Griffiths. "Internet gaming addiction: A systematic review of empirical research." *International journal of mental health and addiction* 10.2 (2012): 278-296.
- Kuss, Daria J., Mark D. Griffiths, and Halley M. Pontes. "Chaos and confusion in DSM-5 diagnosis of Internet Gaming Disorder: Issues, concerns, and recommendations for clarity in the field." *Journal of behavioral addictions* 6.2 (2017): 103-109.
- Kuss, Daria J., Jorik Louws, and Reinout W. Wiers. "Online gaming addiction? Motives predict addictive play behavior in massively multiplayer online role-playing games." *Cyberpsychology, Behavior, and Social Networking* 15.9 (2012): 480-485.
- Kuczmierczyk, Andrzej R., Page B. Walley, and Karen S. Calhoun. "Relaxation training, in vivo exposure and response-prevention in the treatment of compulsive video-game playing." *Cognitive Behaviour Therapy* 16.4 (1987): 185-190.
- Lemmens, Jeroen S., and Stefan JF Hendriks. "Addictive online games: Examining the relationship between game genres and Internet Gaming Disorder." *Cyberpsychology, Behavior, and Social Networking* 19.4 (2016): 270-276.
- Lemmens, Jeroen S., Patti M. Valkenburg, and Jochen Peter. "Development and validation of a game addiction scale for adolescents." *Media psychology* 12.1 (2009): 77-95.
- Lemmens, Jeroen S., Patti M. Valkenburg, and Jochen Peter. "Psychosocial causes and consequences of pathological gaming." *Computers in human behavior* 27.1 (2011): 144-152.
- Lenhart, Amanda, et al. *Teens, technology & friendship*. Vol. 10. Washington, DC: Pew Research Center, 2015.
- Lepore, Stephen J., Gary W. Evans, and Margaret L. Schneider. "Dynamic role of social support in the link between chronic stress and psychological distress." *Journal of personality and social psychology* 61.6 (1991): 899.
- Li, Dongping, et al. "Stressful life events and adolescent Internet addiction: The mediating role of psychological needs satisfaction and the moderating role of coping style." *Computers in Human Behavior* 63 (2016): 408-415.
- Morlock, Henry, Todd Yando, and Karen Nigolean. "Motivation of video game players." *Psychological reports* 57.1 (1985): 247-250.
- Mohammed, Adel Abdulla. "Using computerized games as a computer-assisted instruction format to enhance helping behaviour in kindergarteners at-risk for learning disabilities." *Psycho-Educational Research Reviews* (2013): 3-14.
- NewZoo. "The Turkish gamer (2017). Retrieved from: <https://newzoo.com/insights/infographics/the-turkish-gamer-2017/>
- Ng, Brian D., and Peter Wiemer-Hastings. "Addiction to the internet and online gaming." *Cyberpsychology & behavior* 8.2 (2005): 110-113.
- Odabaşı, Şule. "Üniversite Öğrencilerinin Online Oyun Bağımlılığı Düzeylerinin Öznel Mutluluk Düzeyleriyle İlişkisi." Master's Thesis. Sakarya Üniversitesi, 2016
- Okay, Seçil. "Meslek lisesi öğrencilerinin okul dışı zamanlarını değerlendirme şekilleri ve değerlendirme şekillerini etkileyen faktörler." Master's Thesis. Sakarya Üniversitesi, 2012.
- Oliver, Mary Beth, et al. "Video games as meaningful entertainment experiences." *Psychology of Popular Media Culture* 5.4 (2016): 390-405.
- Ögel, Kültegin. *İnternet bağımlılığı: İnternetin psikolojisini anlamak ve bağımlılıkla başa çıkmak*. İstanbul: Türkiye İş Bankası Kültür Yayınları, 2012.
- Özmen, Mehmet. "Ortaokul öğrencilerinde dijital oyun bağımlılığı düzeyinin yordanması." Master's Thesis. Pamukkale Üniversitesi Eğitim Bilimleri Enstitüsü, 2019.
- Öztosun, Ali. "Ergenlerde algılanan sosyal destek ve sosyal dışlanma deneyimlerinin internet bağımlılığını yordayıcılığı." Master's Thesis. İstanbul Sabahattin Zaim Üniversitesi, Sosyal Bilimler Enstitüsü, Eğitim Bilimleri Anabilim Dalı, 2018.
- Papacharissi, Zizi, and Alan M. Rubin. "Predictors of Internet use." *Journal of broadcasting & electronic media* 44.2 (2000): 175-196.
- Pontes, Halley M., and Mark D. Griffiths. "Assessment of internet gaming disorder in clinical research: Past and present perspectives." *Clinical Research and Regulatory Affairs* 31.2-4 (2014): 35-48.
- Przybylski, Andrew K., et al. "The ideal self at play: The appeal of video games that let you be all you can be." *Psychological science* 23.1 (2012): 69-76.
- Przybylski, Andrew K., et al. "Having to versus wanting to play: Background and consequences of harmonious versus obsessive engagement in video games." *CyberPsychology & Behavior* 12.5 (2009): 485-492.
- Reinecke, Leonard, and Mary Beth Oliver. "Media use and well-being: Status quo and open questions" *The Routledge handbook of media use and well-being: International perspectives on theory and research on positive media effects*. Ed. Leonard, Reinecke, and Mary Beth Oliver. New York: Routledge. 2016. 3-13
- Sailer, Michael, et al. "How gamification motivates: An experimental study of the effects of specific game design elements on psychological need satisfaction." *Computers in Human Behavior* 69 (2017): 371-380.
- Sarason, Irwin G., et al. "Assessing social support: the social support questionnaire." *Journal of personality and social psychology* 44.1 (1983): 127.
- Scerri, Matthew, et al. "Need fulfilment and internet gaming disorder: A preliminary integrative model." *Addictive behaviors reports* 9 (2019): 100144.
- Sever, Gökcan. "Lise öğrencilerinin madde kullanma eğilimlerinin algılanan sosyal destek ve riskli davranışlarla ilişkisinin incelenmesi." Unpublished Master's Thesis. Gaziantep Üniversitesi Eğitim Bilimleri Enstitüsü, 2015.
- Sheldon, Kennon M., et al. "What is satisfying about satisfying events? Testing 10 candidate psychological needs." *Journal of personality and social psychology* 80.2 (2001): 325.

- Shi, Jing, et al. "Understanding the lives of problem gamers: The meaning, purpose, and influences of video gaming." *Computers in Human Behavior* 97 (2019): 291-303.
- Soper, W. Barlow, and Mark J. Miller. "Junk-time junkies: An emerging addiction among students." *The School Counselor* 31.1 (1983): 40-43.
- Steinkuehler, Constance A., and Dmitri Williams. "Where everybody knows your (screen) name: Online games as "third places"." *Journal of computer-mediated communication* 11.4 (2006): 885-909.
- Siitonen, Marko. "Social interaction in online multiplayer communities." No. 74. University of Jyväskylä, 2007.
- Şahin, Ekrem. S. 2007. *Psikolojik İhtiyaçları Farklı Lise Öğrencilerinin Saldırganlık Düzeyleri*. Master's Thesis, Hacettepe Üniversitesi, Eğitim Bilimleri Enstitüsü, 2007.
- Şahin, Ekrem, and Fidan Owen. "Psikolojik ihtiyaçları farklı lise öğrencilerinin saldırganlık düzeyleri." *Türk Psikolojik Danışma ve Rehberlik Dergisi* 4.32 (2009): 64-74..
- Tachoyotin, Pawan, et al. "Prevalence and associated factors of internet gaming disorder among secondary school students in rural community, Thailand: A cross-sectional study." *BMC research notes* 13.1 (2020): 1-7.
- Tamborini, Ron, et al. "Defining media enjoyment as the satisfaction of intrinsic needs." *Journal of communication* 60.4 (2010): 758-777.
- Tanrıverdi, Selami. "Ortaöğretim öğrencilerinde internet bağımlılığı ile algılanan sosyal destek arasındaki ilişkinin incelenmesi." *Online Journal of Technology Addiction & Cyberbullying*, 1 (2014): 1-27.
- Taş, İbrahim. "The pattern of relationship between attachment styles, gaming addiction and empathetic tendency among adolescents." *Eurasian Journal of Educational Research* 19.83 (2019): 125-144.
- Taş, İbrahim, Halime Eker, and Gazanfer Anlı. "Orta öğretim öğrencilerinin internet ve oyun bağımlılık düzeylerinin incelenmesi." *Online Journal of Technology Addiction & Cyberbullying*. 1(2) (2014): 37-57.
- Taşdemir, Nüzhet Özlem. "Gençlerde algılanan sosyal destek ve yalnızlık duygusunun internet kullanımına etkisinin incelenmesi." Master's Thesis, Haliç Üniversitesi Sosyal Bilimler Enstitüsü, 2016.
- Toker, Sacip, and Meltem Huri Baturay. "Antecedents and consequences of game addiction." *Computers in Human Behavior* 55 (2016): 668-679.
- Varol-Afo, Larissa, and Oya Mortan Sevi. *Yalnızlık, utangaçlık, algılanan sosyal destek ve yaşam doyumunun problematik internet kullanımı ile ilişkisi*. Uluslararası Ruh Sağlığında Toplumsal Farkındalık Kongresi, (2019). Retrieved from: https://www.researchgate.net/profile/Fatih_Bal2/publication/332080035_COCUKLUKTAN_YASLILIGA_DEGISEN_ZAMAN_ALGISI/links/5c9e3596299bf11169500413/COCUKLUKTAN-YASLILIGA-DEGISEN-ZAMAN-ALGISI.pdf#page=76
- Van Rooij, Antonius J., et al. "The (co-) occurrence of problematic video gaming, substance use, and psychosocial problems in adolescents." *Journal of behavioral addictions* 3.3 (2014): 157-165.
- Wan, Chin-Sheng, and Wen-Bin Chiou. "Why are adolescents addicted to online gaming? An interview study in Taiwan." *Cyberpsychology & behavior* 9.6 (2006): 762-766.
- Wang, Chong-Wen, et al. "Prevalence and correlates of video and Internet gaming addiction among Hong Kong adolescents: A pilot study." *The Scientific World Journal* (2014): 1-9
- Wang, Ziliang, et al. "Females are more vulnerable to Internet gaming disorder than males: Evidence from cortical thickness abnormalities." *Psychiatry Research: Neuroimaging* 283 (2019): 145-153.
- Weinstein, Aviv Malkiel. "Computer and video game addiction—a comparison between game users and non-game users." *The American journal of drug and alcohol abuse* 36.5 (2010): 268-276.
- Yalçın Irmak, Aylin, and Semra Erdoğan. "Dijital Oyun Bağımlılığı Ölçeği Türkçe formunun geçerliliği ve güvenilirliği." *Anatolian Journal of Psychiatry/Anadolu Psikiyatri Dergisi* 16 (2015): 10-18.
- Yeh, Yu-Chun, et al. "Gender differences in relationships of actual and virtual social support to Internet addiction mediated through depressive symptoms among college students in Taiwan." *Cyberpsychology & behavior* 11.4 (2008): 485-487.
- Yeşilyurt, Ferahim, and İrfan Erdoğan. "Ergenlerin Oynadıkları Çevrim İçi Oyunların Cinsiyet, Sınıf Düzeyi ve Ders Başarısına Göre İncelenmesi." *HAYEF Journal of Education* 15.2 (2018): 100-121.
- Yetiş, Ümit. "Orta Öğretim Öğrencilerinin Boş Zaman Değerlendirme Eğilimlerinin Farklı Değişkenlere Göre Belirlenmesi." *Beden Eğitimi ve Spor Bilimleri Dergisi* 2.3 (2008): 193-205.
- Yıldırım, İbrahim. "Algılanan sosyal destek ölçeğinin geliştirilmesi güvenilirliği ve geçerliği." *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*, 13 (13) (1997): 81-87.
- Yıldırım, İbrahim. "Algılanan sosyal destek ölçeğinin revizyonu." *Eğitim Araştırmaları-Eurasian Journal of Educational Research*, 17 (2004): 221-236.
- Yiğit, Emrullah, and Selim Güneç. "Çocukların dijital oyun bağımlılığına göre aile profillerinin belirlenmesi." *Yüzüncü Yıl Üniversitesi Eğitim Fakültesi Dergisi* 17.1 (2020): 144-174.
- Yu, Hongsik, and Jaehee Cho. "Prevalence of internet gaming disorder among Korean adolescents and associations with non-psychotic psychological symptoms, and physical aggression." *American journal of health behavior* 40.6 (2016): 705-716.
- Zendle, David, and Paul Cairns. "Correction: Video game loot boxes are linked to problem gambling: Results of a large-scale survey." *Plos one* 14.3 (2019): e0214167.
- Zimet, Gregory D., et al. "Psychometric characteristics of the multidimensional scale of perceived social support." *Journal of personality assessment* 55.3-4 (1990): 610-61

INVESTIGATION OF BODY PERCEPTION AND PERSONALITY TRAITS OF INDIVIDUALS ACCORDING TO THEIR SPORTING STATUS*

Abstract: This study aims to examine the body perception and personality traits of individuals who regularly do sports and those who do not. The research was conducted with 222 people who were reached by a convenient sampling method. Participants were provided with a personal information form prepared to obtain demographic information, Body Image Scale to measure body perception, and Adjective Based Personality Test to measure personality traits via Google Forms. The data obtained were analyzed using the SPSS 22.0 program. To measure whether the body perception and personality traits differ according to the regular exercise variable, an independent t-test was applied. According to the analysis result; body perception, extraversion, conscientiousness, and openness to experience differ significantly between individuals who do regular sports and those who do not. While body perception differs in favor of individuals who do not practice sports; Extraversion, conscientiousness, and openness to experience differ in favor of individuals who do sports regularly. Agreeableness and neuroticism do not differ significantly. The findings were discussed based on the literature, and suggestions for further research were presented.

Keywords: Sports, body perception, big-five personality traits

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INTRODUCTION

Individuals do not exist only with their physical characteristics in the society they live in. Their judgments about who they are and how they look reflect their social and psychological existence in social life. While their identity expresses their personality traits, their perception of how they look includes their judgments about their bodies. Body perception is an unthinkable whole that forms a part of the individual and can be associated with all factors affecting the individual.

Body perception, which is also included as body image in some studies in the literature, can be expressed as individuals' assessment of their feelings about the parts of their bodies and the functions of these parts. Schilder (1950), who first used the concept, said it "is a picture of our own body formed in our minds; is how our body looks to us ". He stated that body perception has three dimensions: physiological, social, and psychological. Physiological dimensions of body perception are assessed on perception through senses and the function of the nervous system; social dimension refers to the social stance of individuals that has the potential to develop throughout their life and enables them to convey their feelings in the social environment. The psychological dimension, on the other hand, is the self that is formed by the influence of personality traits and habits in addition to the attitudes and behaviors of individuals regarding their bodies. Attitudes towards their bodies begin to form from a young age when individuals become aware of their selves (Croll, 2005). The comments coming from the environment about the body of individuals can have an effect on their perceptions over time. Winnicott stated that even mother-child contact, especially in infancy, can create a judgment about the bodily value of the baby and affect self-worth (Vamos, 1993). Oktan and Şahin (2010) found in their study on female adolescents that body image has an effect on self-esteem, and that adolescents with high body image have high self-esteem. When approaching adulthood, social and cultural expectations of the society also gain importance as factors affecting the body perception of individuals. Physical criteria imposed on individuals through social media and various channels can lead them to evaluate their bodies, and these evaluations may increase negative perceptions about the body (Kuzu, 2019). As the difference between the bodily appearance of individuals and social expectations becomes wider, the tendency to perceive the body more negatively than it is may increase. As a result, body perception cannot always be in harmony with reality, and it may change continuously depending on various factors that are affected throughout life (Nernekli, 2017; Tezcan, 2009).

Body perception includes self-evaluation of who the individual is, it forms a part of the individual's personality. Therefore, it is open to change in parallel with personality development. The complex and multifaceted nature of personality, which is defined as the personal characteristics that distinguish individuals from each other in its most general definition, and its reference to many dimensions of human behavior, enabled it to be defined in different ways. Common points of definitions in the literature; It can be expressed as a set of structured traits with many dimensions that allow personality to be organized holistically, express the consistent aspect of behaviors, represent the evolutionary process that includes biological and social conditions (Yazgan-İnanç and Yerlikaya, 2014 p.3).

As a result of studies examining the basic dimensions of personality, McCrea and Costa (2003) stated that personality has a two-pronged, continuous structure and can be explained based on five basic characteristics. These are openness to experience, adaptability, extraversion, neuroticism, and self-discipline. Openness to experience; It expresses the tendency of the individual to one of the two extremes, such as being open to innovations, having a sense of curiosity, or tending to preserve traditional habits. The general characteristics of individuals with a high level of openness to experience are being interested and curious, creativity and independence. These individuals are also adventurous and artistic individuals who like to produce and innovate. Individuals with a low level of openness to experience generally have the opposite of these characteristics. Although they are closed to innovation, they tend to maintain their ideas steadily (Benet-Martinez and John, 1998). Agreeableness; indicates that the individual is closer to one of the two extremes, such as docile, trustworthy, or skeptical, critic. Individuals with compatible personality traits can be characterized by traits such as outspoken, humble, and altruistic. Less adaptable individuals, on the other hand, may show a competitive attitude. They can be associated with traits such as hostility, stubbornness, and unreliable (Bono, Boles, Judge and Lauver, 2002; Graziano, Jensen-Campbell and Hair, 1996). Another dimension is extraversion; They vary between loving, social, or asocial, low-energy personality traits. According to Hurtz and Donovan (2000), extraverted individuals can show high performance in their work. However, excessive observation of extraversion in the individual may also be

associated with some exaggerated characteristics such as excessive ambition, passion, and dominance (Trouba, 2009). Individuals with low extraversion may prefer to be withdrawn, quiet, and alone. Neuroticism; is associated with anxiety, insecurity, or predisposition to one of the traits such as calm and relaxation. Individuals with high neurotic levels may be associated with negative features such as depression, introversion, and vulnerability. Contrary to these characteristics, it can be said that people who are calm, confident, and relaxed have a low neurotic level (McCrea and Costa, 2003). The self-discipline dimension is; it is evaluated according to being more prone to one of the personality traits such as hardworking, determined, or disorganized, careless. It is associated with traits such as having high conscientiousness, motivation, and hard work. It has been demonstrated that high conscientiousness is an important predictor of job performance (Barrick, Mount, and Judge, 2001). Individuals with low conscientiousness may display characteristics such as impulsive, disorganized, and difficulty in self-control. In addition to these structures that make up the personality, the concept of self is among the determinants of personality and actions through individuals' attitudes and evaluations towards themselves. After it is stated that the place of body perception and personality in the life of the individual, adaptation of personality and the individual's self-evaluation may be related, it becomes important to examine the factors affecting both concepts. One of these factors can be considered the extent to which individuals engage in sports in their lives. Considering the positive effect of sports on physical health and appearance, it can also be associated with body perception. Also, studies are showing that sports are related to the development of individuals' character structures (Şahan, 2007). Salar, Hekim, and Tokgöz (2012) observed in their study with individuals aged 15-18 years that individuals engaged in individual or team sports developed positive psychological and social characteristics. Good communication, willpower, and self-confidence are among the characteristics of these individuals. Considering the supportive findings, this study aimed to examine the body perception and personality traits of individuals who do sports regularly and those who do not. Hypotheses created in line with the purpose of the research can be expressed as follows:

1. Body perception of individuals significantly differentiates according to their sporting status.
2. Individuals' extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience differ significantly according to their sports status.

METHOD

DESIGN

This research, in which the body perception and personality traits of individuals who do sports and do not do sports will be examined, was carried out based on the descriptive survey model, one of the quantitative research approaches. The purpose of the descriptive survey model is to examine and reveal the characteristics of a particular group or groups (Büyüköztürk, 2015).

SAMPLE

The sample group of the study consists of 222 people who were accessed by convenient sampling, which is one of the non-random sampling methods. Convenient sampling method; it is based on forming the sample, starting with the most accessible respondent until the agreed number of people is reached (Demir, 2017). The research group is distributed according to gender as 69 men (%31.1), 152 women (%68.5), and 1 other (%0.5). Participants' ages range from 17 to 43, with an average age of 23.89. More than half of the participants (%56.8) are undergraduate degrees, according to their education level. When the distribution according to professions is examined; 26 people reported not working (%11.7), 142 students (%64), 33 civil servants (%14.9), 13 workers (%5.9), and 8 self-employed (%3.6). The socioeconomic income level of the majority of the participants is at an average level (%64.9). Regarding smoking and alcohol use; %76.1 of the participants stated that they did not smoke and %79.7 did not use alcohol.

In addition to demographic characteristics, some data regarding sports were collected from the participants. The descriptive findings regarding regular exercise, the type of sports, the frequency of doing sports, and the reasons for doing sports are summarized in Table 1.

Table 1. Descriptive Findings of the Participants About Doing Sports

		f	%
Regular exercise	Yes	99	44.6
	No	123	55.4
Type of sport	Individual	75	33.8
	Team	26	11.7
Frequency of doing sports	Once a week	18	8.1
	2 days in a week	26	11.7
	3 days in a week	31	14
	More	26	11.7
The reason to do sports	Healthy lifestyle	26	11.7
	Physical appearance	23	10.4
	Entertainment/Hobby	20	9
	Keep fit	15	6.8
	Other	17	7.7

DATA COLLECTION

Demographic information form, Body Perception Scale, and Adjectives Based Personality Test were combined and the measurement tool was finalized and presented to the participants electronically through Google Forms.

PERSONAL INFORMATION FORM

The demographic information form created by the researcher was used to collect information about the participants' gender, age, educational status, profession, socioeconomic income level, smoking-alcohol use, regular sports-not doing sports, the type and frequency of sports, and the reasons for doing sports.

BODY PERCEPTION SCALE

Body Perception Scale was used to measure the body perception of the participants in the study. The scale, originally named Body Cathexis Scale (BCS), was developed by Secord and Jourard (1953). The reliability and validity studies of the scale in the Turkish version was carried out by Hovardaoğlu (1992). As a result of the validity and reliability studies, item test correlations were found between .45 and .89, and the Cronbach Alpha coefficient was calculated as .91. Body Perception Scale is a 5-point Likert-type scale consisting of 40 items (1- I like it very much, 2- I quite like it, 3- I am indecisive, 4- I don't like it very much, 5- I don't like it at all). The lowest score that can be obtained from the scale is 40 and the highest score is 200. Higher scores indicate that individuals are less satisfied with their body parts and their functions, and their body perception is low. The decrease in the score is interpreted as the individuals have a high body perception.

ADJECTIVES-BASED PERSONALITY TEST

Adjective-Based Personality Test was used in the study to measure personality traits. Adjective-Based Personality Test is a measurement tool for measuring non-pathological personality traits developed by Bacanlı, İlhan, and Aslan (2009) based on the Big Five Personality Theory. It is a 40-item 7-point Likert-type scale that includes pairs of opposite adjectives. Between both pairs of adjectives, 1-Very suitable, 2-Quite suitable, 3-Somewhat appropriate, 4-Neither suitable nor not suitable, 5-Somewhat suitable, 6-Quite suitable, and 7-Very suitable options, and these are represents being closer. It has five sub-dimensions: neuroticism, extraversion, openness to experience, agreeableness, conscientiousness. The higher the scores obtained from the items indicate that the dimension is at the upper level and the lower the scores the lower level. As a result of the validity and reliability study of the scale, it was observed that the Cronbach Alpha internal consistency coefficients of each dimension ranged from .73 to .89. The item analysis performed to calculate the construct validity revealed that it explained %52.63 of the dimensions of personality. Also, Pearson Moments Multiplication Correlation results for concordance validity were found to be significant.

DATA ANALYSIS

After the data were collected, the suitability of the distribution to the parameter was evaluated to decide on the statistical techniques to be used. According to Bachman (2004), the kurtosis and skewness coefficients between -2 and +2 are sufficient for the normality of the distribution. When the kurtosis and skewness coefficients of the data obtained in this study were examined, it was seen that it was suitable for normal

distribution (See Table 2.). Based on this, parametric analysis techniques were used in the analysis of the data. Analyses were carried out in SPSS 22.0 package program.

Table 2. Mean scores, Standard deviations and Test Results for Conformity to the Parameter

	N	\bar{X}	sd	Skewness	Kurtosis
Body perception	222	146.50	24.05	-.16	-.32
Extraversion	222	46.21	10.08	-.67	.55
Agreeableness	222	48.05	9.44	-.92	1.69
Conscientiousness	222	38.45	8.00	-1.02	1.55
Neuroticism	222	26.32	6.20	.19	.28
Openness to experience	222	43.70	7.51	-1.17	.32

FINDINGS/RESULTS

To examine whether body perception, extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience differ according to regular exercise and not doing sports, an independent t-test was applied, and the results are shown in Table 3.

Table 3. Findings Regarding Body Perception and Personality Traits According to Regular Sports

Regular exercise		N	\bar{X}	sd	t	p	d
Body perception	Yes	99	152.00	24.19	3.11	.002*	.41
	No	123	142.08	23.10			
Extraversion	Yes	99	49.21	9.18	4.11	.01*	.55
	No	123	43.80	10.17			
Agreeableness	Yes	99	48.92	9.67	1.24	.21	
	No	123	47.34	9.23			
Conscientiousness	Yes	99	39.95	7.84	2.53	.01*	.34
	No	123	37.25	7.95			
Neuroticism	Yes	99	25.68	6.48	-1.38	.16	
	No	123	26.84	5.93			
Openness to experience	Yes	99	45.08	7.54	2.47	.01*	.33
	No	123	42.60	7.34			

* $p < .05$

When the table is examined, it can be seen that body perception, extraversion, conscientiousness, and openness to experience differ statistically significantly according to the status of regular sports and not doing sports. Body perception scale mean scores of individuals who do regular sports ($\bar{X}=152.00 \pm 24.19$) were found higher than those who do not exercise regularly ($\bar{X}=142.08 \pm 23.10$). The effect size of the difference (Cohen $d=.41$) was calculated as a medium level (Cohen, 1988). This shows that individuals who do sports regularly feel less satisfied with their bodies than those who do not. When we look at the extraversion dimension from personality traits, it is found that individuals who do regular sports ($\bar{X}=49.21 \pm 9.18$) are more extraverted than those who do not ($\bar{X}=43.80 \pm 10.17$). Considering the dimension of conscientiousness, those who do regular sports ($\bar{X}=39.95 \pm 7.84$) have higher averages than those who do not ($\bar{X}=37.25 \pm 7.95$), and similarly, those who do regular sports ($\bar{X}=45.08 \pm 7.54$) and those who do not do sports ($\bar{X}=42.60 \pm 7.34$), it is seen to have higher mean scores. The effect sizes calculated for the dimensions of extraversion ($d=.55$), conscientiousness ($d=.34$), and openness to experience ($d=.33$) are medium. Other dimensions of personality, agreeableness, and neuroticism, do not differ significantly in terms of doing regular exercise.

DISCUSSION AND CONCLUSION

In this study, it was aimed to examine the relationships between body perception and personality traits of individuals who regularly do sports and those who do not, consisting of extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience. The findings of the study illustrate that body perception differs significantly according to individuals who do sports regularly and those who do not. This difference is in favor of those who do not practice sports. Considering the literature, it was seen that doing

sportive exercises gives the individual a sense of self-confidence (Kasatura, 1998), positively affects having positive feelings about physical appearance, and provides less anxiety about physical appearance (Mülazımoğlu, Kirazcı, and Aşçı, 2006). For this reason, it is expected that there is a difference in body perception in favor of individuals who do sports regularly. Findings in this direction have largely been reached in previous studies (Baştuğ and Kuru, 2009; Deryahanoğlu et al., 2016; Phillips and Drummond, 2001; Robinson and Ferraro, 2004; Vedul-Kjelsas and Augestad, 2004). However, some studies have found that doing sports or various exercise programs do not make a significant difference on body perception (Çiçek, İmamoğlu, Yamaner and Türk, 2017; Pickett, Lewis and Cash, 2005; Yegül, 1999). The findings obtained in this study are similar to the studies that found that exercising does not make a significant difference in body perception. This can be explained by the fact that the research group has different life experiences due to being heterogeneous in terms of age, education level, and profession and that there may be different factors affecting their perceptions of their bodies.

According to another finding obtained in the study, the sub-dimensions of personality, extraversion, conscientiousness, and openness to experience differ according to the state of doing sports and not doing sports. It has been found that individuals who do regular sports have more extraverted personality traits than those who do not. Similar to the result of this study, İkizler (1994) stated in his book that the feature of extraversion is observed in individuals who do sports. The study of Bayar-Koruç (2003) also revealed that extraversion significantly differentiated between women who do sports and those who do not. Extraversion; covers features such as sociability, assertiveness, friendliness, talkativeness, adaptability, leadership, and activeness. Optimism, strong humor, and flexibility are among the characteristics of extraverts (Yazgan-İnanç and Yerlikaya, 2014). These features are similar to the benefits of doing sports to the personality development of the individual. Studies have shown that individuals who take part in sports in their lives receive significant positive feedback from their environment and this situation is effective in showing their extraverted characteristics (Epwright et al., 1997).

Openness to experience was observed as another variable that showed a significant difference according to regular exercise or not. It was found that individuals who do regular sports have personality traits that are more open to the experience. Bayar-Koruç's (2003) study, in line with the findings obtained in this study, revealed that the adventurous personality trait, which is a feature of openness to experience, is higher in individuals who do sports. Openness to experience implies that individuals have a higher innovative tendency from both ends, traditional and innovative. These individuals are sensitive to innovations, far from rigidity, concerned, and have a rich imagination. Their level of intellectual development and openness to diversity and new experiences are high. The opposite is that individuals tend to be conservative and conservative (Çivitçi and Arıcıoğlu, 2012). It can be said that the personality and character development provided by sports is effective in making individuals open to new experiences.

According to the results of the research, conscientiousness, which is one of the sub-dimensions of personality, shows a significant difference according to the status of doing regular sports and not doing it. In the study of Saygılı et al. (2015), in line with the results of this study, the conscientiousness personality traits of individuals who regularly do sports were found to be at a better level than those who do not exercise regularly. Conscientiousness is also expressed as self-control in the literature and indicates the degree of the individual's characteristics such as planned and concentrated, self-control. It is seen that individuals with self-control are hardworking, systematic, and determined people. Individuals with low self-control may be more impulsive and prone to procrastination (Costa and McCrea, 1995). It can be said that the understanding of a discipline that sports will bring will positively affect self-regulation, that is, the personality trait of conscientiousness.

In this study, it was found that neuroticism and agreeableness did not differ significantly according to the status of regular sports. There are studies in which there is a relationship between neuroticism and doing sports. These studies reveal that neuroticism may develop differently depending on the type of sport. It is stated that high emotional balance will provide some advantages especially in individuals who do team sports (Courneya and Hellsten, 1998; Egloff and Gruhn, 1996; Piedmont, Hill and Blanco, 1999). Agreeableness, on the other hand, includes traits that can establish good relationships with others and are open to cooperation, social, sincere, and reliable. In this respect, it can be said that doing sports is one of the personality traits that can have a positive effect. According to the literature, it was expected that doing sports regularly would make a significant difference in agreeableness. When the expected difference cannot

be observed in terms of those who do not do sports, it can be said that it may be an advantage for these individuals. The results showed that neuroticism did not show a significant difference compared to regular sports, that is, individuals who do not exercise regularly may show low neurotic characteristics as those who do. Individuals who do not exercise regularly may also have emotional balance, which is an indicator of low neuroticism. Although there were no findings compatible with the literature in terms of neuroticism and agreeableness, compared to doing sports, it was observed that extraversion, openness to experience, and conscientiousness were significantly different in sports practitioners. Based on this result, it can be said that regular sports are important for individuals to develop positive personality traits and individuals should give more place to sports in their lives. The development of these traits may allow individuals to show more social, productive, and motivated traits.

The fact that some findings yielded different results than expected according to the literature may be related to the limitations of the study. It is a limitation of the study that the data were collected according to the statements of individuals who stated that they do sports regularly, rather than directly from environments that are interested in sports. The findings can be re-examined by using purposeful sampling methods and by making new studies with larger samples. Besides, it may be suggested to be cautious in generalizations to be made to other sample groups according to the results of this study. Another suggestion may be to examine the effect of regular sports on body perception and personality traits with longitudinal studies.

REFERENCES

- Bacanlı, Hasan, İlhan, Tahsin and Aslan, Sevda. Beş faktör kuramına dayalı bir kişilik ölçeğinin geliştirilmesi: Sıfatlara dayalı kişilik testi (SDKT). *Türk Eğitim Bilimleri Dergisi*, 7(2) (2009): 261-279.
- Bachman, Liyle F. *Statistical analyses for language assessment book*. Cambridge: Cambridge University, 2004.
- Barrick, Murray R., Mount, Michael K., and Judge Timothy. A. Personality and performance at the beginning of the new millennium: What do we know and where do we go next? *International Journal of Selection and Assessment*, 9(1&2) (2001): 9–30. doi:10.1111/1468-2389.00160.
- Baştuğ, Gülsüm and Kuru, Emin. Bayan sporcuların bedenlerini algılama düzeyleri ve cinsiyet rolleri üzerine bir araştırma. *Gazi Eğitim Fakültesi Dergisi*, 29(2) (2009): 533-555.
- Bayar-Koruç, Perican. Spor yapan ve yapmayan bayanların kişilik özelliklerinin karşılaştırılması. *Hacettepe Spor Bilimleri Dergisi*, 14(3) (2003): 133-143.
- Benet-Martínez, Veronica and John, Oliver P. Los Cinco Grandes across cultures and ethnic groups: Multitrait-multimethod analyses of the Big Five in Spanish and English. *Journal of Personality and Social Psychology*, 75(3) (1998): 729–750. doi:10.1037/0022-3514.75.3.729.
- Piedmont, Ralph L., Hill, David C. and Blanco, Susana. Predicting athletic performance using the five-factor model of personality. *Personality and Individual Differences*, 27, (1999): 769-777.
- Bono, Joyce E., Boles, Terry L., Judge, Timothy A., and Lauver, Kristy J. The role of personality in task and relationship conflict. *Journal of Personality*, 70(3) (2002): 1311-1344.
- Büyüköztürk, Şener, Kılıç-Çakmak, Ebru, Akgün, Özcan Erkan, Karadeniz, Şirin. and Demirel, Funda. *Bilimsel araştırma yöntemleri*. Ankara: Pegem Yayıncılık, 2015.
- Cohen, Jacob. *Statistical power analysis for the behavioral sciences*. New York: Lawrence Erlbaum, 1988.
- Costa, Paul and McCrea, Robert R. Domains and facets: hierarchical personality assessment using the revised neo personality inventory. *Journal of Personality Assessment*, 64(1) (1995): 21-50.
- Courneya, Kerry S. and Hellsten, Laurie-Ann M. Personality correlates of exercise behavior, motives, barriers, and preferences: an application of the five-factor model. *Personality and Individual Differences*, 24(5) (1998): 625-633.
- Croll, Jillian. Body image and adolescents. J.Stang and M. Story, (Ed.), In *Guidelines for Adolescent Nutrition Services* (155-165). Minnesota: Center for Leadership, Education and Training in Maternal and Child Nutrition, 2005.
- Çiçek, Güner, İmamoğlu, Osman, Yamaner, Faruk, and Türk, Nilüfer. Kardiyo bosu egzersizinin setander kadınlarda psikolojik etkileri. *Uluslararası Spor, Egzersiz ve Antrenman Bilimi Dergisi*, 3(3) (2017): 69-75.
- Çivitçi, Nazmiye and Arıcıoğlu, Ahu. Beş faktör kuramına dayalı kişilik özellikleri. *Mehmet Akif Ersoy Üniversitesi Eğitim Fakültesi Dergisi*, 12(23) (2012): 78–96.
- Demir, Selçuk Beşir. (Ed.). *Araştırma deseni: Nitel, nicel ve karma yöntem yaklaşımları*. Ankara: Eğiten Kitap Yayıncılık, 2017.
- Deryahanoğlu, Gamze, İmamoğlu, Osman, Yamaner, Faruk and Uzun, Meliha. Sedanter kadınların antropometrik özellikleri ve psikolojik durumlarının karşılaştırılması. *Journal of Human Sciences*, 13(3) (2016): 5257-5268.
- Egloff, Boris and Gruhn, A. Jan. Personality and endurance sports. *Personality and Individual Differences*, 21(2) (1996): 223-229.
- Eppright, Thomas D, Sanfacon, Julia A., Beck, Niels C, and Bradley, J. Shane. Sport psychiatry in childhood and adolescence: an overview. *Child Psychiatry and Human Development*, 28(2) (1997): 71-88.
- Graziano, William G., Jensen-Campbell, Lauri A. and Hair, Elizabeth C. Perceiving interpersonal conflict and reacting to it: The case for agreeableness. *Journal of Personality and Social Psychology*, 70(4) (1996): 820–835. doi:10.1037/0022-3514.70.4.820.
- Hovardaoğlu, Selim. Vücut Algısı Ölçeği. *Psikiyatri, Psikoloji, Psikofarmakoloji Dergisi (3P)*. Testler Özel Eki, 1992.

- Hurtz, Gregory M and Donovan, John J. Personality and job performance: The Big Five revisited. *Journal of Applied Psychology*, 85(6) (2000): 869–879. doi:10.1037/0021-9010.85.6.869.
- İkizler, Can H. *Sporda başarının psikolojisi*. İstanbul: Alfa Yayınevi, 1994.
- Yazgan-İnanç, Banu, and Yerlikaya, Eşef Ercüment. *Kişilik Kuramları*. Ankara: Pegem Yayınları, 2014.
- Kasatura, İlkey. *Kişilik ve Özgüven*. İstanbul: Evrim Yayınevi, 1998.
- Vedul-Kjelsas, Einar and Augestad, Liv Berit. Gender, Eating behavior, and personality characteristics in physically active students. *Scandinavian Journal of Medicine & Science in Sports*, 14 (2004): 258-268.
- Kuzu, Ayça. *Genç yetişkinlerde sosyal medya kullanımı ile beden algısı ve depresyon arasındaki ilişkinin incelenmesi (Unpublished Master's Thesis)*. Haliç Üniversitesi, Sosyal Bilimler Enstitüsü, İstanbul, 2019.
- McCrea, Robert R. and Costa, Paul. *Personality in adulthood*. New York: Guilford Press, 2003.
- Mülazımoğlu-Ballı, Özgür, Kirazcı, Sadettin and Aşçı, F. Hülya. Sporcu ve sporcu olmayan bayanların sosyal fizik kaygı ve beden imgesinden hoşnut olma düzeyleri. *Gazi Beden Eğitimi Ve Spor Bilimleri Dergisi*, 11(1) (2006): 9-16 .
- Nernekli, Merve. *Üniversite öğrencilerinde psikolojik dayanıklılık, beden imajı ve emosyonel yeme arasındaki ilişki (Unpublished Master's Thesis)*. İstanbul Gelişim Üniversitesi, Sosyal Bilimler Enstitüsü, İstanbul, 2017.
- Oktan, Vesile and Şahin, Mustafa. Kız ergenlerde beden imajı ile benlik saygısı arasındaki ilişkinin incelenmesi. *Uluslararası insan bilimleri dergisi*, 7(2) (2010): 543-556.
- Philips, Janine M. and Drummond, Murray J. N. An investigation into the body image perception, body satisfaction, and exercise expectations of male fitness leaders: implications for professional practice. *Leisure Studies*. 20 (2001): 95-105.
- Pickett, Traven C., Lewis, R. J. and Cash, Thomas. Men, muscles, and body image: comparisons of competitive bodybuilders, weight trainers, and athletically active controls. *British Journal of Sports Medicine*, 39(4) (2005): 217–222. doi:10.1136/bjism.2004.012013.
- Robinson, Kirsten and Ferraro, F. Richard. The relationship between types of female athletic participation and female body type. *Journal of Psychology*, 138(2) (2004): 115-128.
- Salar, Burcu, Hekim, Mesut and Tokgöz, Mehmet. 15-18 yaş grubu bireysel ve ferdi spor yapan bireylerin duygusal durumlarının karşılaştırılması. *Mehmet Akif Ersoy Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 4(6) (2012): 123-135.
- Secord, Paul F. and Jourard, Sidney M. The appraisal of body-cathexis: Body cathexis of the self. *Journal of Consulting Psychology*, 17(3) (1953): 343-347.
- Schilder, Paul. *The image and appearance of the human body: Studies in the constructive energies of the psyche*. International Universities Press (Science editions), 1950. Retrieved from: <https://books.google.com.tr/books?id=HulbcDMNXOkC>.
- Şahan, Hasan. *Üniversite öğrencilerinin sosyalleşme sürecinde spor aktivitelerinin rolü (Unpublished Master's Thesis)*. Selçuk Üniversitesi Sosyal Bilimler Enstitüsü, Konya, 2007.
- Tezcan, Bahar. *Obez bireylerde benlik saygısı, beden algısı ve travmatik geçmiş yaşantılar (Unpublished Master's Thesis)*. TC Sağlık Bakanlığı Bakırköy Prof. Dr. Mazhar Osman Ruh Sağlığı ve Sinir Hastalıkları Eğitim ve Araştırma Hastanesi, İstanbul, 2009.
- Trouba, Edwin John. A person-organization fit study of the big five personality model and attraction to organizations with varying compensation system characteristics. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, 69(7-B), 4470 (2009).
- Vamos, Marina. Body Image in chronic illness-a reconceptualization. *Int J Psychiatry Med*. 23(2) (1993): 163-178. doi: 10.2190/bll4-eval-49y3-4g66.
- Yegül, İtir Beril. *Liseli erkek sporcular ile sporcu olmayan bireylerin benlik saygısı ve atletik yeterlik puanlarının karşılaştırılması (Unpublished Master's Thesis)*. Hacettepe Üniversitesi, Sağlık Bilimleri Enstitüsü, Ankara, 1999.

TEACHERS' APPROACHES TO THE PRINCIPLES OF CRITICAL PEDAGOGY: A MIXED-METHOD STUDY

Abstract: Critical pedagogy is a pluralistic approach that emphasizes the individual and his/her creative potential (Freire, 2010). Today's schools are seen far from this process and the need for a renewal process becomes highly evident. The purpose of the current study is to investigate teachers' opinions at different levels of education about the principles of critical pedagogy in terms of other variables. To this end, the study employed the "explanatory sequential mixed design," one of the mixed-method approaches. In the quantitative dimension of the study, the participating teachers' opinions were elicited by using the "Principles of Critical Pedagogy Scale" developed by Yılmaz (2009). In the qualitative dimension, a semi-structured interview form was used to collect data. While 378 teachers participated in the quantitative dimension of the study, 16 teachers participated in the qualitative dimension. According to the findings of the study, it was found that the participating teachers' level of agreement with the principles of critical pedagogy is low in general. The findings obtained in the qualitative dimension of the current study have revealed that even the teachers positively evaluating the education system in different respects stated that rather than liberating individuals, the education system is an obstacle to their liberation.

Keywords: Critical pedagogy, teacher opinions, mixed-method

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INTRODUCTION

An advocate of radical education and a society without school, Illich (2009) and an opponent of compulsory education, Baker (2006) argue that schools are a tool that shapes the moral and social beliefs of the public in line with the interests of a dominant and elite class. According to libertarian educators, schools and curriculums under the control of the state train submissive, docile, and stereotype individuals obeying the ruling powers through education systems (Chomsky, 2007; Spring, 2010). Theorists of liberation pedagogy, in general, see education as a means of humanization because, in this conception, education should be a liberating tool, not a shaping tool. One of the movements classified as liberation pedagogy is critical pedagogy. Pedagogy, in its most basic sense is a branch of science that examines student-teacher relations in education, the position of schools as educational institutions in society, its relationship with education, and its models in the cultural domain. The ability of individuals to learn to see themselves in interaction with the world is at the root of pedagogy (Walker, 2010). Education should be to eliminate inequalities in society and bring freedom to the oppressed (Kincheloe, 2004; Freire, 2010; McLaren, 2011).

Most of the influential claims of critical pedagogy are made by contemporary critical educators. Critical educators such as Apple (2004), Giroux (2007), McLaren (2011) establish the relationship of education with the infrastructure (economic structure) under the influence of Marxism and the Frankfurt School, Gramsci (1999) and Althusser (2003) and state that education does not only takes place at school (İnal, 2010). For them, pedagogy is an essential tool for the establishment of political power and its legitimation. However, this practice focuses on the ideas of ruling classes and does not represent the existence of the oppressed classes (worker, women, disabled, ethnic groups, etc.) in educational materials (curriculums, textbooks, etc.) and ignores them and the representation of these classes in education is not considered possible in the existing education system (McLaren, 2011). Many of the critical pedagogues, especially Freire (2010), think that the new form of education, which the change of its system will form, will only be possible with an educational practice (praxis) that will be formed over the problems and languages of the oppressed class.

Critical pedagogy barrows the idea of the creative potential of man and the necessity of valuing this from Marxism and claims that the individual's potential can be revealed as long as he/she can socialize (Giroux, 2007) and sees education as dependent on society (Apple, 2017). Thus, the main conception to be adopted is that education should be "social". Pedagogy in "social" education which is based on the dialogic approach and critical thinking and where student and teachers' roles can change, believes that democratic education can be achieved to the extent to which the educated can get out of the subordinate role (Freire, 2010). The main goal in critical pedagogy is to create a social society and to use education to this end (Kantopol, 1999; Kessing-Styles, 2003; Kincheloe, 2004). Therefore, Kincheloe (2008) explains the basic assumptions of critical pedagogy as establishing the relationship between teacher and student on the grounds of liberation and positive change, the politics of education, the observance of justice and equality at every moment of education, and the recognition of power sources.

According to Althusser (2003), education is the most effective ideological tool and conveys the desired ideological forms to the student through teachers and books. Education is an area where power and ideology are integrated, an arena of struggle and reconciliation (Apple, 2004). Globalization and neoliberal policies have commodified education, making it an expensive and for sale commodity. In this direction, educational institutions are structured like businesses (İnal, 2010). Education focuses on the need for individuals to acquire knowledge and skills that can help them adapt to the information society, the learning society, and economic and technological developments. This situation leads to an increase in the importance given to education, and makes education a new investment area for capital and a profitable sector (Ercan, 1998). Freire (2010) defines this education style as "banking model of education". According to this system, education is positioned as "savings investment", students as "investment objects" and teachers as "investors".

In summary, critical pedagogy can be thought of as a conception of education and a way of life that cares about and advocates the liberation of the individual, believes that knowledge must be constructed through

the process of dialogue and questioning, and adopts the principle of raising a critical consciousness (Kincheloe, 2004; Ayhan, 2009; Freire 2010; İnal, 2010; Yıldırım, 2013).

When the studies conducted with critical pedagogy are examined; Yılmaz (2009) concluded in his study that teachers agree with the principles of critical pedagogy at a moderate level. In addition, it was stated that there was no significant difference between the participants according to gender. Yılmaz and Altınkurt (2011) concluded that there is a significant difference in favor of male participants in terms of gender. Aslan and Kozikoğlu (2015) concluded that pre-service teachers moderately agree with the principles of critical pedagogy and that male pre-service teachers agree more with these principles. Sarıgöz and Özkara (2015) found that pre-service teachers have little information about the principles of critical pedagogy. Terzi, Şahan, Çelik and Zöğ (2015) found a significant correlation between pre-service teachers' epistemological beliefs and the principles of critical pedagogy. Kesik and Bayram (2015) stated that teachers' critical pedagogy views vary depending on their state of membership to a union. Balcı (2016) found that only in the dimension of liberation, participants displayed strong agreement. Büyükgöze and Fındık (2018) reported that female teacher's more than male teachers and teachers having a graduate degree more than teachers having a bachelor's degree agree with the principles of critical pedagogy. Knight and Pearl (2000) revealed the difference between the concepts of democracy and critical pedagogy. Moss and Lee (2010) investigated teacher behaviours according to the philosophies of education. Golden (2010) sought an answer to the question "Is critical pedagogy possible?" Breuning (2011) investigated the definitions, basic objectives and goals of critical pedagogy proposed by 17 prominent pedagogues. Preece and Mencke (2013) examined Freire's problem-posing practices and critical pedagogy and democracy experiences by bringing praxis experiences to the fore. Halx (2014) examined whether the critical pedagogy approach in Latin America had positive results for the students who couldn't finish high school. Aliakbari and Allahmoradi (2012) and Mahmoodarabi and Khodabakhsh (2015) examined teachers' approach to critical pedagogy in Iran. Ro (2016) examined the drama approach and the critical pedagogy approach. Kennedy (2017) conducted research on low-income students and teachers who have just started the profession by establishing a critical dialogue circle between teachers at the school. In summary, when international studies are examined, it has been noticed that critical pedagogy, which was discussed more theoretically in the early 2000s, has been supported by practical studies more recently.

Critical pedagogy eliminates the hierarchical structure between teacher and student and advocates that both perform learning processes in education (Freire, 2010). Schools are seen as an environment where teachers and students can effectively question and criticize theory and practice (Giroux, 2007); it is stated that in classrooms that adopt critical pedagogy, authority and responsibility should be shared between teachers and students (Moreno-Lopez, 2005). Critical pedagogy requires cooperation, and it is not easy to achieve this in schools (Riasati and Mollaei, 2012). In the traditional conception of education, the definition and application of education are largely based on behavioural approach, and thus, it is seen as a process of behaviour changing at the desired direction (Ertürk, 1979). An education in which the oppressive and hierarchical communication between teacher and student is eliminated and individuals are liberated (İnal, 2010b) seems possible with a pluralist approach, that is, with critical pedagogy. Today's schools are anti-democratic; they are based on the views of dominant groups and the need for a renewal process becomes more evident as it is in the service of some authoritarian and anti-democratic groups such as neo-liberal administrations and companies (İnal, 2010). This renewal will be achieved through teachers, who have a substantial influence in shaping the education system, and students who are based on this system in the desired way. Therefore, it seems to be of great importance to determine teachers' opinions about and approaches towards critical pedagogy.

Moreover, in the literature review, it was found that there is limited research on critical pedagogy in Turkey and thus, it can be argued that more research is needed on the subject. As a result, the determination of teachers' approaches towards the principles of critical pedagogy is thought to be important in terms of its contributions to the literature and its educational and social effects. In this regard, the purpose of the current study is to investigate the opinions of teachers working at different levels of education on critical pedagogy in terms of other variables. To this end, answers to the following questions were sought:

1. Do the teachers' approaches to critical pedagogy vary significantly depending on;

- 1.1. Gender,
 - 1.2. Seniority,
 - 1.3. The residential area where they are working (place of work),
 - 1.4. Faculty graduated,
 - 1.5. Level of education at which they are teaching,
 - 1.6. Their education levels?
2. What are the teachers' views of critical pedagogy?

METHOD

DESIGN

In the current study, the explanatory sequential mixed design, was used. This design starts with quantitative research and continues with qualitative research and here the main goal is to conduct an in-depth analysis and elaboration of the data collected with quantitative research by using quantitative research techniques (Creswell and Plano Clarck, 2014). In the quantitative dimension of the study, the teachers' opinions were examined with the help of a scale considering different variables. In the qualitative dimension of the study, a semi-structured interview form was developed based on the findings obtained through the scale in the quantitative dimension.

PARTICIPANTS

In the quantitative dimension of the study, the participants were selected via the convenience sampling method (Cohen, Manion, and Morrison, 2007). The participants in the quantitative dimension are 378 teachers working in the central and surrounding districts of the city of Antalya. Some demographic information about the participants is given in Table 1.

Table 1. Demographic information about the participants

Variable	Category	Frequency (f)	Percentage (%)
Gender	Female	207	54.8
	Male	171	45.2
Level of teaching	Primary school	120	31.7
	Middle school	141	37.3
	High school	117	31
Education level	Associate degree	18	4.8
	Bachelor's degree	319	84.4
	Graduate degree	41	10.8
Place of work	Surrounding district	141	37.3
	Central district	237	62.7
Faculty graduated	Education faculty	258	68.3
	Science-Letters faculty	68	18
	Others	52	13.8
Seniority	1-10 years	78	20.6
	11-20 years	185	48.9
	21 and more	115	30.4

In the qualitative dimension of the study, the criterion sampling method, one of the purposive sampling methods, was used. In the criterion sampling method, criterion and criteria can be developed by the researcher (Yıldırım and Şimşek, 2016. p. 122). The main criterion adopted in the selection of the participants in the current study was to include the teachers that could represent the variables (gender, place of work, graduated faculty) for which significant differences were found in the quantitative dimension of the study. As the purpose of the explanatory design is to explain quantitative findings, the participants of

the qualitative dimension should also be the participants of the quantitative dimension (Creswel and Clark, 2014). In the construction of the sample to be used in the qualitative dimension of the study, participants were selected from among the participants involved in the quantitative dimension of the study according to some pre-determined criteria and on a volunteer basis. For convenience in data analysis, the participants were coded as follows:

Table 2. Participants of the qualitative dimension

Participant	Gender	Faculty Graduated	Place of Work
T1	Female	Others	Central
T2	Female	Since and Letters	Surrounding
T3	Male	Education	Surrounding
T4	Male	Others	Central
T5	Male	Others	Central
T6	Female	Science and Letters	Central
T7	Male	Others	Surrounding
T8	Male	Education	Central
T9	Male	Science and Letters	Surrounding
T10	Female	Education	Central
T11	Female	Science and Letters	Central
T12	Female	Education	Surrounding
T13	Male	Education	Central
T14	Male	Science and Letters	Central
T15	Female	Science and Letters	Surrounding
T16	Female	Education	Surrounding

DATA COLLECTION TOOLS

QUANTITATIVE DATA COLLECTION TOOL: To determine the participating teachers' views of critical pedagogy, the "Principles of Critical Pedagogy Scale" developed by Yılmaz (2009) was used. The five-point Likert scale consists of 31 items and three dimensions called education system, functions of school and libertarian school. There 15 items in the dimension of education system, 11 in the dimension of functions of school and 5 items in the dimension of libertarian school. Each item is responded to on a scale ranging from (strongly disagree; 1 point) to (strongly agree; 5 points). In the scale, 12 items are reverse coded. Higher scores taken from the scale indicate increasing scores of agreements with the principles of critical pedagogy while the opposite is true for low scores. The Cronbach Alpha internal consistency coefficient calculated to determine reliability was found to be 0.75. It was found to be 0.88 for the dimension of the education system, 0.78 for the dimension of functions of the school, 0.61 for the dimension of the libertarian school. The total variance explained by the scale is 40% (Yılmaz, 2009). In the current study, the Cronbach Alpha internal consistency coefficient for the whole scale was calculated to be 0.82 and 0.89 for the dimension of education system, 0.73 for the dimension of functions of school and 0.73 for the dimension of libertarian school.

QUALITATIVE DATA COLLECTION TOOL: A semi-structured interview form was used to collect quantitative data. An interview is a method developed to cover all the questions related to research and it allows changing the sequence and sentence structure of questions and detailed analysis of some topics (Yıldırım and Şimşek, 2016). The semi-structured interview form was developed considering the dimensions and items of the scale used in the quantitative dimension by the researchers. In the development process of the interview form, first, a draft form consisted of 11 items was developed. After expert review, piloting of the form was performed through the interviews conducted with two teachers. Then it was controlled by two experts in the field of educational programs and a Turkish teacher; thus, the final form was obtained.

DATA COLLECTION

The quantitative data were collected by the researchers in the spring term of the 2019-2020 school year. The participation was on a volunteer basis. The completion of the data collection tool lasted for 10-15 minutes. A total of 500 scales were administered, yet 415 scales were returned and 378 of them were found to be suitable for analysis. In order to collect quantitative data, face-to-face interviews were conducted in the same academic year. The interviews were conducted on a volunteer basis. The interviews lasting about 30-45 minutes were tape-recorded. The interviews were transcribed in the computer environment and then presented to the review of the participants to gain their consent on the correctness of the data. In the research process, the opinions of an expert specialized on qualitative research were sought in relation to the collection of the data, analysis of the data and reporting of the findings.

DATA ANALYSIS

QUANTITATIVE DATA ANALYSIS: In the analysis of the data, SPSS 22.0 program package was used. Arithmetic means and standard deviations were calculated to determine the teachers' views of the principles of critical pedagogy. In the interpretation of the values, the following intervals were used; very low "1-1.79", low "1.8-2.59", medium 2.6-3.39, high "3.4-4.19", very high "4.2-5.00". In the analysis of the data, the Levene test was first conducted to test the homogeneity of the groups and skewness and Kurtosis values were calculated to test the normality of the distribution. The groups whose skewness and Kurtosis values were found to be between +3 and -3 were accepted to show a normal distribution (Kalaycı, 2010). Non-parametric tests were used for the groups not showing normal distribution.

T-test was conducted to determine whether the teachers' opinions vary significantly depending on gender and place of work. In cases when group means were found to differ significantly in the t-test, effect size was calculated by using Cohen's d formula (Cohen, 1988). When the value calculated with this formula is 0.2 and lower, then the effect size is low, between 0.2 and 0.5, it is medium, between 0.5 and 0.8, it is high and between 0.8 and 1.3, it is very high. ANOVA was used to determine whether the teachers' opinions vary significantly depending on the variables of seniority, faculty graduation, level of teaching, and education level. When a significant difference was found, Tukey HSD test was used to determine the source of the difference.

QUALITATIVE DATA ANALYSIS: The data collected with the semi-structured interview form were subjected to descriptive analysis. In descriptive analysis, the data obtained can be organized according to themes or presented considering the questions asked during the interview process and direct quotations are frequently given to strikingly reflect participants' opinions (Yıldırım and Şimşek, 2016). Moreover, while analysing the data, the researchers were consistent in their coding and two randomly selected interview forms were coded by the second researcher, who is experienced in qualitative research, and thus the inter-coder consistency was calculated. In the calculation of the inter-coder coefficient, the formula $P = [Na / (Na + Nd)] \times 100$ (Miles and Huberman, 1994) was used and the inter-coder consistency was found to be 81.81% for the first interview and 69.56% for the second.

In the qualitative dimension of the study, direct quotations from the opinions of the participants were presented in the findings section of the study to establish the reliability and validity of the study and the data were described in detail to ensure the transferability of the results. In order to prevent misunderstandings that could occur during the interviews, the participants' statements were presented to them in summary. In order to keep the names of the participants, the teachers were given codes as T1, T2... . In the research process, the opinions of an expert specialized on qualitative research were sought in relation to the collection of the data, analysis of the data and reporting of the findings.

FINDINGS/RESULTS

WHAT ARE THE TEACHERS' APPROACHES TO CRITICAL PEDAGOGY IN TERMS OF VARIOUS VARIABLES?

In this section, the participants' level of agreement with the principles of critical pedagogy in the dimensions and in general was analysed. The results of the analysis are shown in Table 3.

Table 3. Participants' approaches to critical pedagogy

Variable	n	\bar{x}	Ss
Critical Pedagogy (General)	378	2.94	.52
Education System	378	3.05	.66
Functions of School	378	3.03	.58
Libertarian School	378	2.73	.63

As can be seen, the participants' level of agreement with the principles of critical pedagogy is "low" in general ($\bar{x}=2.94$). The lowest level of agreement was found for the dimension of libertarian school ($\bar{x}=2.73$), followed by the dimension of functions of school ($\bar{x}=3.03$) and education system ($\bar{x}=3.05$). When the results for the individual items were examined, the highest level of agreement was found for the item "schools should work to establish social justice" ($\bar{x}=3.98$) while the lowest level of agreement was found for the item "discipline is an indispensable part of schools" ($\bar{x}=1.84$). When the results for the individual items in the dimensions were examined, the highest levels of agreement were found for the items "the results of the centralized exams in the education system are not an indicator of student success" ($\bar{x}=3.70$) and "power relations in the society are influential on education" ($\bar{x}=3.52$) in the dimension of education system while the lowest levels of agreement were found for the items "school destroys the individual and society" ($\bar{x}=2.34$) and "schools are places where inequality is reproduced" ($\bar{x}=2.66$). In the dimension of functions of school, the highest levels of agreement were found for the items "school should work to establish social justice" ($\bar{x}=3.98$) and "when criticized by students, the teacher should question himself/herself" ($\bar{x}=3.84$) while the lowest levels of agreement were found for the items "discipline is an indispensable part of schools" ($\bar{x}=1.84$) and "school is an essential institution" ($\bar{x}=1.81$). In the dimension of libertarian school, the highest levels of agreement were found for the items "teachers should share authority and responsibilities in class with students" ($\bar{x}=3.68$) and "school should be a place for the liberation of students" ($\bar{x}=3.57$) while the lowest levels of agreement were found for the items "education is a must to have a good standing in the society" ($\bar{x}=2.09$) and "people should work hard to have a good standing in the society" ($\bar{x}=2.13$).

Independent samples t-test was conducted to determine whether the teachers' views of critical pedagogy vary significantly depending on gender and the results are presented in Table 4.

Table 4. Gender-based comparison of the teachers' views of critical pedagogy

Variable	Groups	n	\bar{x}	Ss	sd	t	p
Critical Pedagogy (General)	Female	207	3.00	.47	376	2.64	.040*
	Male	171	2.86	.57			
Education System	Female	207	3.10	.61	376	1.59	.049*
	Male	171	2.99	.71			
Functions of School	Female	207	3.11	.52	376	2.85	.058
	Male	171	2.94	.63			
Libertarian School	Female	207	2.80	.62	376	2.23	.219
	Male	171	2.65	.65			

* $p<.05$

As can be seen in Table 4, the teachers' views of critical pedagogy vary significantly depending on gender in general and in the dimension of education system ($p<0.05$). Yet, no such significant difference was found

for the dimensions of functions of school and libertarian school ($p>0.05$). The mean level of agreement of the female teachers with the scale items ($\bar{x}=3.00$) is higher than the mean level of the male teachers ($\bar{x}=2.86$). When the groups in which significant differences were found because of t-test were examined in terms of effect size, the Cohen's d value showing the variation of agreement by gender in general was found to be 0.27, which corresponds to a medium effect size [$r=0.13$, (13%)]. The effect size values calculated for the dimensions are as follows: ($\delta= 0.16$) for the dimension of education system, ($\delta= 0.29$) for the dimension of functions of school and ($\delta= 0.23$) for the dimension of libertarian school. These values show that gender has a small effect size in the dimension of education system [$r=0.08$, (8%)] and medium effect sizes in the dimensions of functions of school [$r=0.14$, (14%)] and libertarian school [$r=0.11$, (11%)]. ANOVA test was used to determine whether the teachers' views of critical pedagogy vary significantly depending on seniority and the results are presented in Table 5.

Table 5. Seniority-based comparison of the teachers' views of critical pedagogy

Variable	Groups	Source of the Variance	Sum of Squares	sd	Mean Square	F	p	Difference
Critical Pedagogy (General)	0-10 Years	Between-groups	.601	2	.306	1.113	.330	
	11-20 Years	Within-groups	102.964	375	.275			
	21 Years & Longer	Total	103.575	377				
Education System	0-10 Years	Between-groups	.328		.164	.375	.688	
	11-20 Years	Within-groups	164.130		.438			
	21 Years & Longer	Total	164.458					
Functions of School	0-10 Years	Between-groups	.453		.227	.662	.516	
	11-20 Years	Within-groups	128.348		.342			
	21 Years & Longer	Total	128.801					
Libertarian School	0-10 Years	Between-groups	3.124		1.562	3.875	.022*	0-10 Years/21 Years & Longer
	11-20 Years	Within-groups	151.141		.403			
	21 Years & Longer	Total	154.265					

* $p<.05$

As can be seen in Table 5, the teacher's level of agreement with the scale items does not vary significantly depending on seniority [$F(2 - 377) = 1.113$, $p>0.05$]. This is also true for the dimensions of education system and functions of school. When the teachers' mean agreement scores are examined, it is seen that mean score of the teachers with 1-10 years of teaching experience is ($\bar{x}=2.99$), that of the teachers with 11-20 years of teaching experience is ($\bar{x}=2.95$), and that of the teachers with 21 or more years of teaching experience is ($\bar{x}=2.88$). But the teachers' level of agreement with the items in the dimension of libertarian school was found to be varying significantly depending on seniority [$F(2 - 377) = 3.875$, $p<0.05$]. Tukey test was run to determine the source of this difference. The reason for this significant difference was found to be the difference between the mean agreement score of the teachers with 1-10 years of teaching experience ($\bar{x}=2.89$) and that of the teachers with 21 or more years of teaching experience ($\bar{x}=2.63$).

T-test was conducted to determine whether the teachers' views of the principles of critical pedagogy vary significantly depending on place of work (Table 6). The teachers' level of agreement with the principles of critical pedagogy was found to be varying significantly depending on place of work ($p<0.05$). The teachers working in the schools located in the central districts of the city were found to have a more positive perception ($\bar{x}=2.97$) than the teachers working in the surrounding districts ($\bar{x}=2.88$). In the dimensions of education system and functions of school, a significant difference was found in favour of the teachers working in the central districts. In the dimension of libertarian school, although the mean score of the teachers working in the central districts ($\bar{x}=2.97$) was found to be higher than that of the teachers working in the surrounding districts ($\bar{x}=2.88$), this difference is not statistically significant ($p>0.05$).

Table 6. Results of the t-test conducted to determine whether the teachers' views of the principles of critical pedagogy vary significantly depending on place of work

Variable	Groups	n	\bar{x}	Ss	sd	t	p
Critical Pedagogy (General)	Surrounding	141	2.88	.59	376	-1.66	.009*
	Central	237	2.97	.47			
Education System	Surrounding	141	3.00	.73	376	-1.29	.011*
	Central	237	3.08	.61			
Functions of School	Surrounding	141	2.94	.65	376	-2.42	.037*
	Central	237	3.09	.53			
Libertarian School	Surrounding	141	2.70	.66	376	-.81	.165
	Central	237	2.75	.62			

*p<.05

When the groups in which significant results were found in the t-test were examined in terms of effect size, the Cohen's d value for the level of agreement with the principles of critical pedagogy in general was found to be 0.17, which corresponds to a small effect size [$r=0.08$, (8%)]. The effect sizes for the dimensions are as follows: ($\delta=0.10$) for the dimension of education system, ($\delta=0.25$) for the dimension of functions of school and ($\delta=0.08$) for the dimension of libertarian school. These results show that the variable of place of work has small effects sizes on the dimensions of education system [$r=0.05$, (5%)] and libertarian school [$r=0.04$, (4%)] and a medium effect size on the dimension of functions of school [$r=0.12$, (12%)].

ANOVA test was run to determine whether the teachers' views of the principles of critical pedagogy vary significantly depending on faculty graduated and the results are presented in Table 7.

Table 7. Investigation of the teachers' views of the principles of critical pedagogy according to faculty graduated

Variable	Faculty	Source of the Variance	Sum of Squares	sd	Mean Square	F	p	Difference
Critical Pedagogy (General)	Education	Between-Groups	2.284	2	1.142	4.227	.015*	Education Faculty/Others
	Science and Letters	Within-Groups	101.292	375	.270			
	Others	Total	103.575	377				
Education System	Education	Between-Groups	2.093		1.046	2.417	.091	
	Science and Letters	Within-Groups	162.365		.433			
	Others	Total	164.458					
Functions of School	Education	Between-Groups	2.685		1.242	3.992	.019*	Education Faculty/Others
	Science and Letters	Within-Groups	126.116		.336			
	Others	Total	128.801					
Libertarian School	Education	Between-Groups	2.438		1.219	3.011	.050	Education Faculty/Others
	Science and Letters	Within-Groups	151.847		.405			
	Others	Total	154.265					

*p < .05

As can be seen in Table 7, the teachers' views of the principles of critical pedagogy vary significantly depending on faculty graduated [$F(2-377)=4.227$, $p<.05$]. Tukey HSD analysis was conducted to determine the source of the difference. As a result of the analysis, the mean agreement scores of the teachers having graduated from an education faculty ($\bar{x}=2.97$) is higher than that of the teachers having graduated from other faculties ($\bar{x}=2.74$). In the dimension of functions of school, the mean score of the teachers having graduated from an education faculty ($\bar{x}=3.06$) was also found to be higher than that of the teachers having graduated from other faculties ($\bar{x}=2.82$). In the dimension of libertarian school, the mean score of the teachers having graduated from an education faculty ($\bar{x}=2.78$) was also found to be higher than that of the teachers having graduated from other faculties ($\bar{x}=2.54$).

ANOVA test was run to determine whether the teachers' views of the principles of critical pedagogy vary significantly depending on level of teaching and the results are given in Table 8.

Table 8. Investigation of the teachers' views of the principles of critical pedagogy in terms of level of teaching

Variable	Level	Source of the Variance	Sum of Squares	sd	Mean Square	F	p	Difference
Critical Pedagogy (General)	Primary school	Between-Groups	.842	2	.421	1.536	.217	
	Middle school	Within-Groups	102.734	375	.274			
	High school	Total	103.575	377				
Education System	Primary school	Between-Groups	.853		.426	.977	.377	
	Middle school	Within-Groups	163.605		.436			
	High school	Total	164.458					
Functions of School	Primary school	Between-Groups	.431		.216	.630	.533	
	Middle school	Within-Groups	128.369		.342			
	High school	Total	128.801					
Libertarian School	Primary school	Between-Groups	2.610		1.305	3.227	.041*	Primary/Middle
	Middle school	Within-Groups	151.655		.404			
	High school	Total	154.265					

*p<.05

As can be seen in Table 8, the teachers' views of the principles of critical pedagogy do not vary significantly depending on their level of teaching [$F(2 - 377) = 1.536, p > .05$]. This is also true for the dimensions of education system and functions of school. Yet, a significant difference was found in the dimension of libertarian school [$F(2 - 377) = 3.227, p < .05$]. Tukey HSD test was run to determine the source of this difference and the mean score of the teachers teaching at the middle school level ($\bar{x} = 2.81$) was found to be higher than that of the teachers teaching at the primary level ($\bar{x} = 2.62$).

ANOVA test was run to determine whether the teachers' views of the principles of critical pedagogy vary significantly depending on their education degrees and the results are given in Table 9.

Table 9. Investigation of the teachers' views of the principles of critical pedagogy in terms of their education degree

Variable	Degree	Source of the Variance	Sum of Squares	sd	Mean Square	F	p
Critical Pedagogy (General)	Associate's degree	Between-Groups	.842	2	.421	1.557	.212
	Bachelor's degree	Within-Groups	102.734	375	.274		
	Graduate degree	Total	103.575	377			
Education System	Associate degree	Between-Groups	.853		.426	1.578	.208
	Bachelor's degree	Within-Groups	163.605		.436		
	Graduate degree	Total	164.458				
Functions of School	Associate degree	Between-Groups	.431		.216	.857	.425
	Bachelor's degree	Within-Groups	128.369		.342		
	Graduate degree	Total	128.801				
Libertarian School	Associate degree	Between-Groups	2.610		1.305	2.091	.125
	Bachelor's degree	Within-Groups	151.655		.404		
	Graduate degree	Total	154.265				

The teachers' views of the principles of critical pedagogy were found to be not varying significantly depending on their education level [$F(2 - 377) = 1.557, p > .05$]. Although statistically not significant, the mean score of the teachers having a graduate degree ($\bar{x} = 3.02$) was found to be higher than that of the teachers having a bachelor's degree ($\bar{x} = 2.94$) and an associate degree ($\bar{x} = 2.76$).

WHAT ARE THE TEACHERS' VIEWS OF CRITICAL PEDAGOGY?

The findings in the qualitative dimension were obtained through the analysis of the participants' responses given to the interview questions prepared on the basis of the quantitative findings. In the selection of the participants, a great care was taken for the inclusion of teachers from the groups for which significant differences were found in the quantitative dimension. In this connection, in-depth analysis of the data

obtained in the quantitative dimension of the study in relation to the variables of gender, work of place, faculty graduated was conducted. Then, to elaborate the opinions of the participants involved in the qualitative dimension of the study on these issues considering the sub-dimensions of the scale, a semi-structured interview form was developed and used in the qualitative dimension of the study. The findings obtained in the qualitative dimension were analysed under three themes called “education system”, “functions of the school” and “libertarian school”.

The participating teachers evaluated the education system from different perspectives in general. First of them is the evaluation of education system as an element ensuring the continuity of the society and the established order. In this regard, some teacher perspectives are given below; *“The education system is a structure that keeps the structures in society stable.”* (T1). *“The education system is designed to prepare individuals for society and to preserve and develop the social structure.”* (T7). *“The education system and schools are important tools for the state to spread its policies and direct the society.”* (T16). *“We include activities based on reasoning in education, although it is constantly changing, the last program is more contemporary.”* (T15). In another perspective, education system is evaluated as an obstacle to the development of the individual and society: *“The individual is constantly guided through schools and education systems, and robot-like and uniform social reactions and behaviours are created with a constant intervention in their subconscious”* (T10). *“The education system makes individuals so like each other that when they leave educational institutions, they can reduce the adversities they may experience because they are the same as others in the society. This is not a positive thing, but it has such a benefit. It makes the kid feel normal inside the abnormal.”* (T8). *“Although today's education system puts emphasis on training free, creative individuals, we see that this is not done properly.”* (T9). *“The current system is completely aimed at pacifying people, young people and children.”* (T2). *“The education system is actually grounded on rote learning. Students don't know anything about daily life.”* (T5). *“Today's education system seems to try to make students memorize some things rather than making them learn. In terms of society, it is far from meeting the requirements of the age.”* (T6). Participating teachers state that the views of the existing government are generally effective in shaping the education system. In this regard, some teacher opinions are as follows: *“It is our politicians who determine the education system and policies.”* (T13). *“Policies that direct the education system are the reflections of the mind of the state. Politicians and governments vary all the time, but the state mentality is basically clear, and this mentality enters the education system”* (T10). *“The views that direct the education system may be the political views of the government”* (T14). A participant teacher criticizing the adoption of approaches developed outside our country in shaping the education system also expresses his/her opinion as follows: *“We take the west as an example in education life, now it is thought that we should not imitate the west, Finland is very important in education, they do this and they are successful in education; when we turn to ourselves, it is thought that we should not imitate them, and we should do it this way, then they tried to apply their own education policies in their own way. We admire the west. We want to be like them, which directs us.”* (T1). Some participants stated that the basic feature of the education system should be related to how it disciplines the individual and develops students in moral aspects. *“The student should be disciplined and ethical and this can be achieved only through education”* (T4). *“Our education system cannot be a good system unless it improves the individual morally, but I think moral education has become a part of the system in our country over time.”* (T12). When the opinions of the teachers expressed in the dimension of functions of school are examined, it is seen that the school's functions of “training good individuals” and “preparing students for life” are emphasized more strongly. In this regard, some teachers expressed their opinions as follows: *“The function of schools is to prepare the individual for life. They should help individuals to find ways of contributing to their own development and the development of the society”* (T2). *“School is responsible for preparing individuals for life”* (T15). *“The function of the school is primarily to make students realize their self-efficacy and to support their development”* (T13). However, some teachers look at the school's function of preparing individuals for life critically and argue that it restricts the freedom of individuals and that it produces uncritical and stereotype individuals. Some teacher opinions in this regard are as follows: *“The function of the school is to shape students as required. This function is directed by the cultural and religious values of the country, the dominant perception of raising children and gender roles”* (T8). *“The main function of the*

school in today's world is to train passive but seemingly free individuals who are obedient, not questioning and whose behaviours and reactions have been conditioned" (T10). Another perspective on the function of schools argues that the main function of school is thought to help students gain a status in life and thus to bring some professions to the fore while ignoring others. In this way, school encourages people just to have a job, not to know this job very well. Some teachers expressed their opinions in this regard as follows: *"The society doesn't just need teachers, doctors, judges, lawyers; we also need people to work in industry"* (T1). *"That is, there is no direct correlation between school success and success in life. A student who is successful at school may not be in his/her business life. Many children do not think whether the profession they would like is suitable for them"* (T3).

The main opinions expressed in the dimension of libertarian school are that school have negative effects in terms of liberating individuals and making them individuals critically approaching to life. These opinions are expressed by some teachers as follows: *"It is as if you are trying to put students into a mould, ignoring the individual differences and personal development of students. Achievement is always evaluated over the exam success"* (T2). *"The ideal student for society is someone who does not question, answers test correctly, never opposes the teacher and has memorized the subjects in the textbooks well"* (T8). *"Personal development of students is largely ignored. Achievement is evaluated over the exam success. We do not have a system to measure the real-life competences of students"* (T16). *"For teachers, school is a means of earning their living. They see it as a means of ensuring their life. But in fact, it should be a place where teachers can feel freer"* (T8). *"Parents are too much involved in education. They intervene in everything. This makes teachers afraid of doing as they wish. We are caregivers rather than teachers in that children spend time, and we take care of them."* (T4). Here, it is also emphasized that the teachers who cannot think critically cannot train students thinking critically: *"The teacher should be questioning, active, free and sensitive so that he/she can be a good role model to students"* (T10). *"In a school environment where teachers don't feel comfortable, it seems to be difficult to train qualified students"* (T11).

DISCUSSION AND CONCLUSION

The current study investigated the opinions of the teachers working in the city of Antalya in the 2019-2020 school year about the principles of critical pedagogy. It was also investigated whether their opinions vary significantly depending on gender, seniority, place of work, faculty graduation, level of teaching and education level.

The participating teacher's level of agreement with the principles of critical pedagogy was found to be "low" ($\bar{X}=2.94$) in general. This finding is supported by Kesik and Bayram (2015) and Yılmaz (2009). Yet, in some research (Yılmaz and Altinkurt, 2011; Terzi et al., 2015; Aslan and Kozikoğlu, 2015; Taşgın and Küçükoglu, 2017; Büyükgöze and Fındık, 2018), the level of agreement was found to be "medium". In the current study, the lowest levels of agreement were found for the dimensions of libertarian school, functions of school, and education system, respectively. Terzi et al. (2015), Aslan and Kozikoğlu (2015), Yılmaz (2009), Büyükgöze and Fındık (2018) also found the lowest level agreement for the dimension of libertarian school. In some research (Şahin, Demir and Arcagök, 2016; Yılmaz and Altinkurt, 2011), different results have been reported but low-level agreement with this dimension of the principles of critical pedagogy may indicate that teachers are not for changing the existing structure of schools or that they don't think that schools are an obstacle to the liberation of individuals and society. On the other hand, the findings obtained from the qualitative dimension of the study show that the teachers are of the opinion that the education system constitutes an obstacle to the liberation of individuals and society.

When it was investigated whether the teachers' views of the principles of critical pedagogy vary significantly depending on gender, it was found that the mean level of agreement of the female teachers is higher than that of the male teachers, yet this difference is not significant in the dimensions of the education system and libertarian school. Similar results have been reported by Terzi et al. (2015) and Büyükgöze and Fındık (2018). Yet, Yılmaz and Altinkurt (2011) and Balcı (2016) found a higher level of agreement for male teachers while no gender-based significant difference was found in some other research (Yılmaz, 2009; Sarıgöz and Özkara, 2015; Şahin et al., 2016). In the qualitative dimension of the study, the female

teachers emphasized the affective characteristics of students, made suggestions for changing the negative aspects of the education system and stated that the function of the school is to make students accustomed to different life situations and all these can indicate that female teachers are in a greater agreement with the principles of critical pedagogy. As women are considered among the disadvantaged groups of the society (Çakır, 2008; Gündüz, 2010; Alptekin, 2014; Özaydınlık, 2014; Nayır and Taneri, 2015), their feeling closer to critical pedagogy which presents a liberating perspective for the education of the oppressed and disadvantaged seems normal.

The participants' opinions about the principles of critical pedagogy were found to be not varying significantly depending on professional seniority. However, while the mean scores taken from the sub-dimensions of "education system" and "functions of the school" were found to be not varying significantly depending on professional seniority, a significant difference was found in the sub-dimension of "libertarian school" between the teachers having 1-10 years of professional experience and the teachers having 20 or more years of professional experience in favor of the teachers with 1-10 years of professional experience. This finding concurs with the findings reported in the studies by Yılmaz (2009) and Büyükgöze and Fındık (2018). According to Farr (1997), young teachers have a more "idealistic" approach. Accordingly, the fact that the time spent in teaching is inversely proportional to the rate of agreement with the items in the libertarian school dimension can indicate that teachers may get convinced over time that too much liberation is not good.

The teachers' level of agreement with the principles of critical pedagogy was found to be varying depending on place of work. The teachers working in the central districts have more positive views than the teachers working in the surrounding districts. In the dimensions of the education system and functions of the school, there is a significant difference in favour of the teachers working in the central districts. This might indicate that rather than having a potential to transform the society, teachers are affected by the environment in which they work. One of the teachers stated that "feeling normal inside the abnormal", indicating the importance of environment on the adaptation of the philosophy of critical pedagogy. The teachers working in the central districts seem to more prone to adopt the approach suggesting that schools can contribute to the liberation of the individual. Thus, it can be argued that some opportunities brought about by urbanization have had positive effects on both the lives of individuals and societies and the quality of schools.

The teachers' views of the principles of critical pedagogy were found to be varying significantly depending on faculty graduated in favour of the graduates of education faculties. Thus, it can be concluded that education faculties are more effective in imparting a critical perspective of education to their students. In the qualitative findings of the study, some expressions show that the teachers having graduated from education faculties are more inclined to adopt the approach of critical pedagogy. It is also remarkable that the teachers who graduated from education faculties stated that there are important shortcomings of schools in imparting self-expression, questioning, and gaining a critical perspective to students. This might be because the teachers who graduated from education faculties see themselves more competent and responsible for criticising the existing education system.

The teachers' views of the principles of critical pedagogy were found to be not varying significantly depending on the level of education at which they are teaching. This result concurs with the study by Büyükgöze and Fındık (2018). No significant difference was also found in the dimensions of education system and functions of school. Yet, a significant difference was found in the dimension of libertarian school in favour of the teachers working in middle schools. Critical pedagogy is more freedom-oriented and aims to train individuals who can question and criticize the process and student and teacher roles. This contradicts with the effort put to discipline students in our education system. Therefore, class teachers in primary level who more focus on the adaption of new beginners to the school culture and inculcation of certain behaviours to children can be more distant to critical pedagogy.

The teachers' views of the principles of critical pedagogy were found to be not varying significantly depending on their education level. This contradicts with the study by Yılmaz (2009). Although not statistically significant, the mean score of the teachers having a graduate degree ($\bar{x}=3.02$) is higher than that of the teachers having a bachelor's degree ($\bar{x}=2.94$) and associate degree ($\bar{x}=2.76$). This indicates that with increasing education level, the level of agreement with the principles of critical pedagogy also increases.

As more sophisticated skills are involved in graduate education, the teachers having taken this education can be taught to have relatively more critical, liberal, and equalitarian perspectives. Moreover, getting involved in graduate education makes individuals more familiar with different theories and approaches of education.

When the current study results are evaluated in terms of characteristic features of critical pedagogy, it is seen that although critical pedagogy advocates social and educational equality and justice (Kincheloe, 2004) in the current study, the teachers ignored this feature of schools. Critical pedagogy argues that education is much affected by political decisions (Kincheloe, 2004). The participating teachers seem to be aware of this fact because they frequently emphasized the effect of the policies of governments on education. On the other hand, critical pedagogy sees education as a means of eliminating such external pressures by focusing on disadvantaged groups and individuals.

As an educational tool that accepts differences, critical pedagogy can produce solutions to social and some economic problems of society. In this respect, it can be a guide in solving important problems in today's education system. Teachers can develop their own original ideas independent of the ideological nature of the system. Teachers who adopt a critical pedagogical approach can promote the potential of education to transform individuals and therefore society through curriculum and other devices. Teachers' making students a part of the process through a process of dialogue as proposed by critical pedagogy can play a transformative role in society. In addition, as Apple (2004) stated, schools and teachers, as elements of the production devices of the society, can both help the production of subjects for the economic sector of the society and produce the cultural forms required by the economic sector. In the production process, schools play a fundamental role in the accumulation of cultural capital by reproducing knowledge as a form of capital.

As a result, it is seen that teachers, who have the role of practitioner about education and its functions, which concern almost the whole of the society, are not open to different perspectives. Even for those who express that they believe that education has a structure that provides social dynamism, it can be said that they do not produce alternatives other than the existing structure or they remain hesitant about approaching the alternatives produced. Considering the principles of critical pedagogy, it is possible for teachers to reach a positive perspective in opening free spaces for the individual and democratizing society, conducting in-school and out-of-school activities, and creating important gains for the society.

Considering the results of the current study, some suggestions can be made for further research and practices:

- The views of teachers working in private education institutions, who were not included in the current study as a participant, about critical pedagogy can be examined.
- Research can be conducted to foster a better understanding and discussion of the basic concepts of critical pedagogy.
- Critical pedagogy practices in the world can be examined and blended with the unique conditions in Turkey.
- Critical pedagogy lessons can be given in faculties that train teachers at universities.
- Further research can be carried out to establish a conception of education that can meet the needs of individuals and society rather than the needs of market and economy.
- Concepts can be created taking the principles of critical pedagogy into consideration for school subjects to be taught at different levels of education.

In order to determine the impact of education system on teachers, further research can be conducted to compare pre-service teachers and teachers' approaches towards the principles of critical pedagogy.

REFERENCES

- Aliakbari, Mohammad and Nazal Allahmoradi. "On Iranian school teachers' perceptions of the principles of critical pedagogy". *International Journal of Critical Pedagogy*. 4(1) (2012): 154-171.
- Alptekin, Duygu. "Çelişik duygularda toplumsal cinsiyet ayrımcılığı sorgusu: Üniversite gençliğinin cinsiyet algısına dair bir araştırma". *Selçuk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 32, (2014): 203-211.
- Althusser, Louis. "İdeoloji ve Devletin İdeolojik Aygıtları". (Çev. Alp Temürtekin). İstanbul: İthaki Yayınları, 2003.
- Apple, Michael W. "Neoliberalizm ve Eğitim Politikaları Üzerine Eleştirel Yazılar". (Çev: F. Gök, M. Apak, B. Can, D. Çankaya, F. Keser, H. Ala). Ankara: Eğitim Sen Yayınları, 2004.
- Apple, Michael. W. "Eğitim Toplumu Değiştirebilir Mi?" (Çev. Ed.: Şakir Çinkır). Ankara: Anı Yayıncılık, 2017.
- Aslan, Mecit and İshak Kozikoğlu. "Pedagojik formasyon eğitimi alan öğretmen adaylarının eleştirel pedagojiye ilişkin görüşleri". *Abant İzzet Baysal Üniversitesi Eğitim Fakültesi Dergisi*, 15(1) (2015): 1-14.
- Ayhan, Serap. "Paulo Friere: Yaşamı, eğitim felsefesi ve uygulaması üzerine". Meral Özbek ve Ahmet Yıldız (Ed.), *Yetişkin Eğitimi içinde* (s.193-205). Ankara: Kalkedon Yayınları. 2009.
- Baker, Catherine. "Zorunlu Eğitime Hayır" (Çev. Ayşegül Sönmezay). İstanbul: Ayrıntı Yayınları, 2006.
- Balcı, Ali Tansu. *Eleştirel pedagoji algısının bazı değişkenler açısından değerlendirilmesi. [The evaluation of the perception of critical pedagogy in some variables]*. (Unpublished Master's Thesis). İzmir: Dokuz Eylül University, (2016).
- Breuning, Mary. "Problematising critical pedagogy". *International Journal of Critical Pedagogy*, 3(3) (2011): 3-23.
- Büyükgöze, Hilal and Leyla Yılmaz Fındık. "Eleştirel pedagojinin eğitim sistemindeki görünümü: Öğretmenler üzerine bir çalışma". *İlköğretim Online*, 17(3) (2018): 1336-1352. <http://ilkogretim-online.org.tr/> doi 10.17051/ilkonline.2018.466355
- Chomsky, Noam. "Demokrasi ve Eğitim". (Çev. E. Abaoğlu ve diğ.). İstanbul: BGST Yayınları, 2007.
- Cohen, Jacob. "Statistical Power Analysis For The Behavioral Sciences". New York: Academic Press., 1988.
- Cohen, Louis, Lawrence Manion & Morrison, Keith. "Research Methods In Education (6th ed.)". London: Routledge, 2007.
- Creswell, John. W., and Vicki .L. Plano Clark. "Karma Yöntem Araştırmaları Tasarımı ve Yürütülmesi (2.baskı)" (Çev. Y. Dede ve S.B. Demir). Ankara: Anı Yayıncılık, 2014.
- Çakır, Özlem. "Türkiye'de kadının çalışma yaşamından dışlanması". *Erciyes Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 31 (2008): 25-47.
- Ercan, Fuat. "Eğitim ve Kapitalizm: Neo-Liberal Eğitim Ekonomisinin Eleştirisi". İstanbul: Bilim Yayınları, 1998.
- Ertürk, Selahattin. "Eğitimde Program Geliştirme". Ankara: Yelken Tepe Yayınları, 1979.
- Farr, Jason. New teachers: "Becoming a balanced teacher: Idealist goals, realist expectations". *The English Journal*, 86(6) (1997) 106-109. <https://doi.org/10.2307/820383>
- Freire, Paulo. "Ezilenlerin Pedagojisi" (Çev. Dilek Hattatoğlu ve Ezgi Özbek). İstanbul: Ayrıntı Yayınları, 2010.
- Giroux, Henry. A. "Eleştirel Pedagoji ve Neoliberalizm". İstanbul: Kalkedon Yayınevi, 2007
- Golden, Julia. *Is critical pedagogy possible?: Lessons on the incorporation of critical pedagogy into an english as a second language pre-service teacher education program* (Doctoral dissertation). Canada: Concordia University, 2010. Retrieved from: <https://spectrum.library.concordia.ca/979393/1/MR71023.pdf>
- Gramsci, Antonio. "Selections From The Prison Otebooks". London: The Electric Book Company Ltd., 1999.
- Gündüz, Yüksel. "Öğretmen algılarına göre kadın öğretmenlerin kariyer engellerinin incelenmesi". *Abant İzzet Baysal Üniversitesi Dergisi* 10 (1) (2010): 134-149.
- Halx, Mark D. "A more critical pedagogy: could it reduce non-completer rates of male latino high school students?". *Pedagogy, Culture and Society*, 22(2) (2014): 251-274.
- Illich, Ivan. "Okulsuz Toplum" (Çev. Mehmet Özey). İstanbul: Şule Yayınları, 2009.
- İnal, Kemal. "Eleştirel pedagoji: Eğitim(d)e modern özgürleştirici bir yaklaşım". *Alternatif Eğitim Dergisi*, 1 (2010): 14-23.
- İnal, Kemal. "Eğitim ve İktidar". Ankara: Ütopya Yayınevi, 2010b.
- Kalaycı, Şeref. "SPSS Uygulamalı Çok Değişkenli İstatistik Teknikleri". İstanbul: Asil Yayın Dağıtım Ltd., 2010.
- Kanpol, Barry. "Critical Pedagogy: An Introduction". USA: Greenwood Publishing Group, 1999.
- Kennedy, William. *Nurturing critical dialogic partnerships: a praxis for teacher induction with/in urban school communities* (Doctoral dissertation). Chicago: University of Illinois. 2017.
- Kesik, Fatma and Arslan Bayram. "Eğitim sisteminin eleştirel pedagoji perspektifinden değerlendirilmesi". *Mersin Üniversitesi Eğitim Fakültesi Dergisi*, 11(3) (2015): 900-921.
- Kessing-Styles, Linda. "The relationship between critical pedagogy and assessment in teacher education". *The Journal of Radical Pedagogy*, 5 (1) (2003): 1-19. <https://hdl.handle.net/10652/1931>
- Kincheloe, Joe L. "Critical Pedagogy Primer". New York: Peter Lang Publishing, Inc., 2004.
- Kincheloe, Joe L. "Critical pedagogy and the knowledge wars of the twenty-first century". *International Journal of Critical Pedagogy*, 1(1) (2008): 1-22.
- Knight, Tony and Art Pearl. "Democratic education and critical pedagogy". *The Urban Review*, 32(3) (2000): 197-226. Retrieved from: <https://doi.org/10.1023/A:1005177227794>
- Mahmoodarabi, Mahsa and Mohammad R. Khodabakhs. "Critical pedagogy: EFL teachers' views, experience and academic degrees". *English Language Teaching*, 8(6) (2005): 100-110. Retrieved from: <https://doi.org/10.5539/elt.v8n6p100>
- McLaren, Peter. "Okullarda Yaşam; Eleştirel Pedagojiye Giriş". Çev. Mustafa.Y. Eryaman, Hasan Arslan. Ankara: Anı Yayıncılık, 2011. Moreno-Lopez, Isabel. "Sharing power with students: The critical language classroom". *Radical Pedagogy* 7(2) (2005) Retrieved from: http://radicalpedagogy.icaap.org/content/issue7_2/moreno.html
- Moss, Glenda and Cheu-Jey Lee. "A critical analysis of philosophies of education and INTASC stardats in teacher preparation". *Intertanional Journal of Critical Pedagogy*. 3(2) (2010): 36-46.

- Miles, Matthew, B. and A. Michael Huberman. "Qualitative Data Analysis: An Expanded Sourcebook". (2nd ed). Thousand Oaks, CA: Sage, 1994.
- Nayir, Funda K. and Oya P. Taneri "Sızdıran boru hattı: Akademik sistemde kaybolan kadınlar. Türkiye kanıtı". *International Journal of Psycho-Educational Sciences*, 4 (1) (2015): 16 -23. Retrieved from: <https://www.journals.lapub.co.uk/index.php/perr/article/view/120>.
- Özaydınlık, Kevser. "Toplumsal cinsiyet temelinde Türkiye’de kadın ve eğitim". *Sosyal Politika Çalışmaları Dergisi*, 14(33) (2014): 93-112. Retrieved from: <https://dergipark.org.tr/tr/download/article-file/198262>
- Price, Paula G. and Paul D. Mencke. "Critical pedagogy and praxis with native American youth: Cultivating change through participatory action research". *The Journal of Education Foundations*, 27 (3/4) (2013): 85-102. Retrieved from: <https://files.eric.ed.gov/fulltext/EJ1065661.pdf>
- Riasati, Mohammad J. and Fatemeh Mollaei. "Critical pedagogy and language learning". *International Journal of Humanities and Social Science*, 2(21) (2012): 223-229. Retrieved from: http://www.ijhssnet.com/journals/Vol_2_No_21_November_2012/26.pdf
- Ro, Eunseok. "Examining critical pedagogy with drama in an IEP context". *Journal of Language Teaching and Research*, 7(1) (2016): 1-8. Retrieved from: <http://dx.doi.org/10.17507/jltr.0701.01>
- Sarıöz, Okan and Yasin Özkara. "Öğretmen adaylarının eleştirel pedagoji ve ilkeleri hakkındaki görüşlerinin bazı değişkenler açısından incelenmesi". *Uluslararası Sosyal Araştırmalar Dergisi*, (39) (2015): 709-716. Retrieved from: https://www.sosyalarastirmalar.com/cilt8/sayi39_pdf/5egitim/sarigoz_orhan_yasinozkara.pdf
- Spring, Joel. "Özgür Eğitim". (Çev. Ayşen Ekmekçi). İstanbul: Ayrıntı Yayınları, 2010.
- Şahin, Çavuş, Mehmet K. Demir & Serdar Arcagök. "Öğretmen adaylarının eleştirel pedagoji ilkelerine yönelik yaklaşımlarının çeşitli değişkenler açısından incelenmesi". *Erzincan Üniversitesi Eğitim Fakültesi Dergisi*. 18(2) (2016): 1187-1205. Retrieved from: <http://dx.doi.org/10.17556/jef.46732>
- Taşgın, Adnan, and Adnan Küçüköğlü. "Öğretmen adayı perspektifinden eleştirel pedagoji (Atatürk üniversitesi örneği)". *Uluslararası Türkçe Edebiyat Kültür Eğitim Dergisi*, 6(2) (2017): 1189-1204.
- Terzi, Ali Rıza, H. Hüseyin Şahan, Hande Çelik & Hasan Zöğ. "Öğretmen adaylarının epistemolojik inançları ile eleştirel pedagoji ilkeleri arasındaki ilişki". *Eğitim ve Öğretim Araştırmaları Dergisi*. 4(1) (2015): 344-356.
- Walker, Melanie. "Critical capability pedagogies and university education". *Educational Philosophy and Theory* 42(8) (2010): 898-917. Retrieved from: <https://doi.org/10.1111/j.1469-5812.2007.00379.x>
- Yıldırım, Adem. "Eleştirel Pedagoji: Paulo Freire ve Ivan Illich’in Eğitim Anlayışı Üzerine" (3.Baskı). Ankara: Anı Yayıncılık, 2013.
- Yıldırım, Ali and Hasan Şimşek. "Sosyal Bilimlerde Nitel Araştırma Yöntemleri." Ankara: Seçkin Yayıncılık, 2005.
- Yılmaz, Kürşad. "Elementary school teachers' views about the critical pedagogy". *The Asia-Pacific Education Researcher*. 18(1) (2009): 139-149
- Yılmaz, Kürşad and Yahya Altinkurt. "Öğretmen adaylarının eleştirel pedagoji ile ilgili görüşleri". *Ahi Evran Üniversitesi Eğitim Fakültesi Dergisi*. 12(3) (2011): 195-213. Retrieved from: <https://www.acarindex.com/dosyalar/makale/acarindex-1423907629.pdf>

PROBLEMS FACED IN THE EDUCATION OF SYRIAN IMMIGRANT STUDENTS AND RECOMMENDATIONS: THE TURKEY CASE

Abstract: The purpose of this study is to put forth the current situation of studies examining the problems faced in the education of Syrian students attending schools in Turkey within the scope of formal education through meta-synthesis. In line with the study purpose, studies with qualitative findings and results related to the subject were examined and synthesized, and the results related to the subject were presented with a holistic perspective. The keywords of Syrians, foreign students, immigrants, refugees, asylum seekers, and temporary protection were used during the literature review search conducted to determine the studies to be discussed within the scope of the study. The searches were carried out on online databases and search engines between February 15, 2020 and April 18, 2020. Google Scholar, Sobiad, Dergipark, ULAKBİM, YÖK National Thesis Center, ERIC, Academia, Researchgate, EBSCOhost, and Web of Science were the online search engines used for the searches. The studies found as a result of the literature review were re-examined considering the criteria determined for the study. A total of 80 studies (61 articles and 19 theses) formed the studies from which the study data were collected. The data obtained by paying attention to the main study purpose and study questions were analyzed using the content analysis method. According to the study results, the problems encountered in the education of Syrian students and the recommendations given were examined under six categories, namely classroom management, academic achievement, communication, family, administration, and students' psychosocial status. Recommendations for practitioners, policymakers, and researchers were developed based on the results obtained from the studies examined within the scope of the study.

Keywords: Turkey, Syrian students, problems, meta-synthesis, immigrant students

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INTRODUCTION

The civil war in Syria, which Turkey has the longest land border, started a migration wave towards Turkey. With the deceleration of the migration wave, Turkey became the country with the highest number of Syrian migrants in the world. 55% of the 6.6 million Syrian refugees currently live in Turkey, 15% in Lebanon, and 10% in Jordan (Erdoğan, 2020). At the beginning, the immigrants who arrived were expected to return to their country in a short time, and long-term policies were not determined. However, in later years Syrians living in Turkey were given temporary protection status because of the ongoing civil war in the Syrian Arab Republic and were legally protected. With the policies developed afterwards, the works on Syrian immigrants' adaptation to Turkey began.

According to the Directorate General of Immigration Management's data dated August 27, 2020, 3.610.022 Syrians with temporary protection are living in Turkey. There are 1.187.946 school-aged Syrian children, that is, between the ages of 5 and 18. There are 501.626 children within the 0-4 age range (Directorate General of Immigration Management, 2020). In other words, an increasing number of Syrian students will be participating in the Turkish education system every year. Immigrant children whose numbers are more than the total student number of some European countries have to be enrolled in an education system in which they are foreigners. It is natural that children who are foreigners of an education system because of their characteristics such as language, culture, and habits experience many problems, and lead to many problems. Therefore, teachers working in schools with immigrant students may also encounter various problems.

Immigrants who had to leave their home country and live in the lands of another country in which they are the foreigners face many problems. Ereş (2015) stated that immigrant families have disadvantages such as poverty, lack of social security, low education level, and language and cultural differences, making it difficult for their children to integrate into the host country. Hamadeh (2019) expressed that Syrian immigrants' situation has been getting worse, children start to work at an early age to earn money, and girls have to marry at an early age. According to the report prepared by OECD (2015), the academic achievement of immigrant children is low, and their participation rate in pre-school education is less than others. United Nations High Commissioner for Refugees data showed that one of the common issues of all immigrants is that they have less access to education in the host country (Dryden-Peterson 2015). According to Dryden-Peterson (2017), immigrant education that helps immigrant students prepare for their unknown future needs to be rethought as a long-term effort.

Many studies were conducted on the education process of Syrian immigrant children. In these studies, the problems faced by the countries in the education of Syrian immigrants and immigrant education policies were examined in general. Buckner, Spencer, and Cha (2017) and Hamadeh (2019) analyzed the education policies and practices of Lebanon, the second country with the highest number of Syrian immigrants after Turkey. Campbell III (2017) explored the attitudes towards refugee education and its link to xenophobia in the United States. Madziva and Thondhlana (2017) identified the opportunities and challenges in providing quality education to Syrian immigrant children in the United Kingdom. Wofford and Tibi (2018) examined the results of the literacy education given to Syrian immigrant children, whereas Alkhawaldeh (2018) determined the educational problems of Syrian immigrant children in Jordan and recommendations given. While Streitweiser, Schmidt, Gläsener, and Brück (2018) investigated the needs, limits, and support systems for immigrant students living in Germany, Schneider (2018) investigated Syrian immigrants' experiences of entering higher education in Germany, and Green, King, and Fischer (2019) investigated acculturation, social support and mental health among immigrants in Germany. Stewart, Chaar, McCluskey, and Borgardt (2019) explored the adaptation of Syrian immigrant students living in Canada by focusing on settlement, education, and psychosocial support, whereas Guo, Maitra, and Guo (2019) explored the adaptation of Syrian students to the Canadian school system. Albakri and Shibli (2019) investigated why education is critical for Syrian migrants to survive.

There are also many studies conducted on immigrant children's education in Turkey that has been hosting the highest number of Syrian immigrants in the world (United Nations Refugee Agency, 2020). Tezel-McCarthy (2017) examined the role of faith-based organizations in the education of Syrian refugees in Turkey. Erdem (2017) explored the instructional problems of classroom teachers regarding Syrian students and the recommendations given. Sirin, Plass, Homer, Vatanartiran, and Tsai (2018) determined the impact

of a digital game-based education for Syrian immigrant children. Özcan (2018) examined Turkey's policy towards Syrian immigrant students. Cirit-Karaağaç (2018) investigated the educational problems of Syrian children attending elementary schools. Tezel-McCarthy (2018) also explored the education policies implemented for Syrian refugees in Turkey. Furthermore, Yamamoto (2018) examined the schools managed by Syrian refugees in Turkey in order to research the educational opportunities for children affected by the conflict. Yenilmez and Çöplü (2019) investigated the problems teachers face in the education of immigrant students, whereas Özenç and Saat (2019) and Kara and Özenç (2020) focused on the problems faced by classroom teachers in the education of Syrian students. While Kaya (2020) explored the problems faced by classroom teachers with Syrian students in terms of classroom management, Aydın Gürler (2020) explored the problems faced by classroom teachers while teaching Science to Syrian immigrant students and the recommendations offered. When the studies conducted in Turkey are examined, it is seen that these studies mostly focused on the problems encountered in the education process of Syrian students.

Some of the studies on the education of Syrian immigrant children in both national and international literature are mentioned above. However, researchers' interest in the education of Syrian immigrants continues to increase. In the literature, the number of studies on the problems faced in the formal education of Syrian immigrant students especially in Turkey has been increasing. In terms of methodology, most of these studies are qualitative studies (Şimşir and Dilmaç, 2018; Yenilmez and Çöplü, 2019; Yıldız Yılmaz and Kaplan, 2019). However, these studies are either completely disconnected from each other or focused on similar issues. In this context, there is a need for bringing together the studies conducted on problems faced in the education of Syrian immigrant students living in Turkey and the recommendations given, and a need for the analysis and synthesis of the results obtained from these studies and the recommendations offered. According to Suri and Clarke (2009, 395), research syntheses play an important role in disseminating research information and in shaping further research, policy, practice, and public perception. Gümüş (2018) stated that meta-synthesis, a qualitative systematic review research method, attracted attention especially in health research in the first years of its emergence, but its use in education has remained limited. A meta-synthesis study examining the problems encountered in the formal education of Syrian immigrant students was not found in the related literature. With this study, it is believed that a very important data repository will be provided for other researchers, and their future research will be guided. In addition, it is believed that gathering the results and recommendations of previous studies under certain categories will clearly reveal the problems and recommendations and provide an important data source for policymakers and practitioners.

The main purpose of the present study is to put forth the current situation of studies examining the problems faced in the education of Syrian students attending schools in Turkey within the scope of formal education through meta-synthesis. In order to realize this purpose, the answers to the following questions were sought:

1. How are the results of the studies examining the problems faced in the education of Syrian students shaped?
2. How are the recommendations regarding the results of the studies examining the problems faced in the education of Syrian students shaped?

METHOD

RESEARCH DESIGN

Studies synthesizing research play an important role in the dissemination of research information and in shaping more research, policy, practice, and social perception (Suri and Clarke, 2009, 395). Çalık and Sözbilir (2014, 34) divides research syntheses into three categories, namely meta-analysis, meta-synthesis, and descriptive content analysis. Meta-synthesis is the reinterpretation of the qualitative findings/results of previous studies using certain principles and criteria (Dinçer, 2018, 186). In other words, meta-synthesis is the synthesis and explanation of qualitative research results again with a qualitative understanding (Zimmer, 2006; Thomas and Harden, 2008). Aiming to reinterpret the findings of qualitative studies examining problems faced in the formal education of Syrian students living in Turkey, this study employed the meta-synthesis approach. Ethics committee approval is not required for meta-synthesis studies.

DATA COLLECTION

Before starting to collect the study data, keywords and criteria to include the studies were determined. Without any limitations, all studies that met the criteria for the study were accepted in the study. In order to find the studies in journals publishing in English, the English equivalents of the keywords were also determined. To realize the study purposes and reach all related studies in the literature, key concepts were also examined. For this, a preliminary search was conducted in the literature. As a result of this preliminary search, the concepts in the titles and keywords section of the studies were determined, and the keywords to be used in identifying other studies to be included in this study were determined. The keywords determined were Syrian, foreign student immigrant, refugee, asylum seeker, temporary protection. After the keywords were determined, the search stage started. The searches were carried out on online databases and search engines between February 15, 2020 and April 18, 2020. Both Turkish and English equivalents of the keywords were entered into online databases and search engines, and searches were carried out. Google Scholar, Sobiad, Dergipark, ULAKBİM, YÖK National Thesis Center, ERIC, Academia, Researchgate, EBSCOhost, and Web of Science were the online search engines used for the searches. After the online literature review was completed, many studies were identified according to the keywords. These studies were downloaded to the computer and subjected to preliminary examination according to the determined criteria. Sandelowski, Docherty, and Emden (1997) stated that one of the problems encountered while conducting meta-synthesis studies is determining which of the similar studies will be included in the project. They expressed that determining criteria is also important to overcome this problem. In the present study, scientific articles and theses were included in the study, and papers presented at symposiums and congresses were not included. The reason for this is that the abstracts were generally translated into articles, some of them were presented as an abstract, and the reviewed presentations did not have findings appropriate for the meta-synthesis approach. The following criteria were used in determining the studies to be included in the present study in line with the study purposes:

1. The study must be related to the Syrian immigrant students living in Turkey.
2. The study must include findings regarding the problems faced in the formal education of Syrian immigrant students.
3. The articles must be published in scientific refereed journals. Theses must be registered in YÖK national thesis center.
4. The study must have qualitative findings.
5. The scientific processes followed in the study must be clearly stated.
6. The study must be accessible or the full text must be accessible.

As a result of the examination, 61 articles and 19 Master's theses constituted the studies from which the study data were collected. The studies included in the present study and their codes are presented in appendix 1.

DATA ANALYSIS

After the studies to be included in the study were determined, the analysis process began. Codes were assigned to the studies examined in order to comply with research ethics. Article number 1 was coded as A1, and thesis number 1 as T1. A form in Excel format was developed for the systematic progress of the analysis process and the holistic analysis of the data in the studies. The studies were examined holistically in order, and the data obtained were recorded on the form instantly. The developed form example is given below.

Table 1. The Form in Which the Study Data Were Collected

Code	Year	Language	Study design	Study group	School level	Data collection tools	Analysis methods	Main purpose	Results	Solution recommendations
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The data about the problems faced in the formal education of Syrian immigrant students and the solution recommendations were analyzed with content analysis. As a result of the content analysis, two themes were

determined, namely “Problems” and “Recommendations”. Six different categories were determined under these two themes, and codes were determined under each category.

VALIDITY AND RELIABILITY

In order to ensure the reliability of the study, which data was obtained from which coded study were presented. Annex 1 given at the end of the study shows which code was identified which study. The findings of the content analysis are given in figures in order for them to be more memorable, striking and in order for the relationship between codes-categories-themes to be clearly seen. The analysis of the study data took six months. Before developing a form for collecting the study data, five articles and five theses were examined, and a pilot form was developed. The developed form was sent to two academicians who had conducted meta-synthesis before, and their opinions were asked. The form was finalized in line with the expert opinions. The two researchers examined and recorded the same studies. Then, the data recorded on the forms were compared, and the reliability between each other was examined. The following formula of Miles and Huberman (1994, 64) was used for the reliability calculation.

$$\text{Reliability} = \frac{\text{Number of agreement}}{\text{Total number of agreement} + \text{number of disagreement}}$$

The reliability between the data recorded by the two researchers was found 87%. The keywords of the studies were also recorded on the form where the study data were collected. However, since there were too many keywords and since they were distributed, the keywords of the studies were not included in the study findings. The codes, categories, and themes obtained as a result of the analysis of the data subjected to content analysis were sent to two academicians who had conducted qualitative studies before. After the recommendations of the academicians, the data was finalized, and the study findings were written. The processes performed during the data collection and analysis of the study data are summarized as follows.

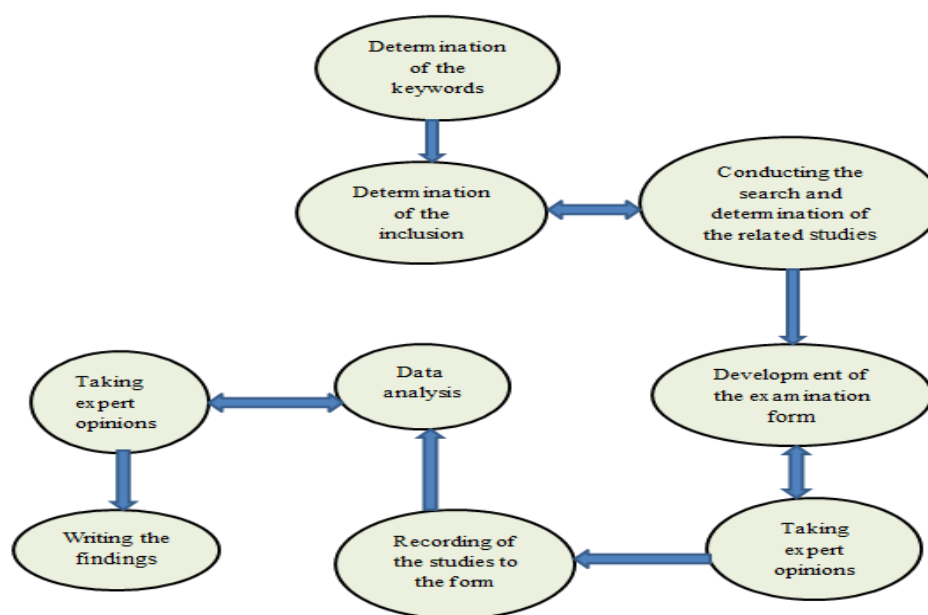


Figure 1. Data Collection and Analysis Process

FINDINGS

The findings resulting from the analysis of the data obtained from research examining the problems faced in the education of Syrian students are presented in figures. The explanations are given at the bottom of the figures. The findings obtained as a result of the content analysis of the studies focusing on the problems encountered in the education of Syrian students are given in Figure 2 and Figure 3.

As seen in Figure 2, the theme of problems faced in the education of Syrian students theme was divided into six categories based on the reviewed studies: Classroom management, academic achievement, communication, family, administration, and students’ psychosocial status. A total of 510 codes were formed

in these six categories. In the Problems theme, most codes were formed in the category of “communication” (115).

In the classroom management category, the codes of participation in lessons and activities (27), compliance with classroom rules (21), teachers’ resource, equipment, textbook problem (16), absenteeism (13), grouping (11), increase in classroom size (6) and not being able to finish the curriculum (5) were formed. In this category, the codes of participation in lessons and activities, compliance with classroom rules, and teachers’ resource, equipment, and textbook problem came to the fore.

In the academic achievement category, the codes of failure (21), academic level difference (10), and not understanding what was read/the lesson (8) were formed. The code of failure came to the fore in this category.

In the category of communication, the codes of not knowing Turkish (59), with other students (15), general (15), understanding-explaining (14), with teachers (10), and with school administrators (2) were formed. In this category, the codes of not knowing Turkish, communication problems with other students, general and understanding-explaining were at the forefront.

In the family category, the codes of low income (19), insufficient family support (18), not being able to communicate with teachers (13), being ostracized by other parents (11), general (4), and broken family (4) were formed. In this category, the codes of low income and insufficient family support came to the fore.

In the administration category, the codes of teachers not getting training-being inadequate (19), grade-age incompatibility (15), inadequate legislation (14), curriculum incompatibility-inadequacy (10), high number of immigrant students (9), deterioration of school structure (9), physical inadequacies (4), and reaction to the Turkish education system (3) were formed. In this category, the codes of teachers not getting training-being inadequate, grade-age incompatibility and inadequate legislation were at the forefront.

In the category of students’ psychological conditions, the codes of adaptation problem-being ostracized (48), using violence-being subjected to violence (22), cultural difference (19), and psychological problems (16) were formed. All codes in this category had high frequencies. The most striking was the code of adaptation problem-being ostracized.

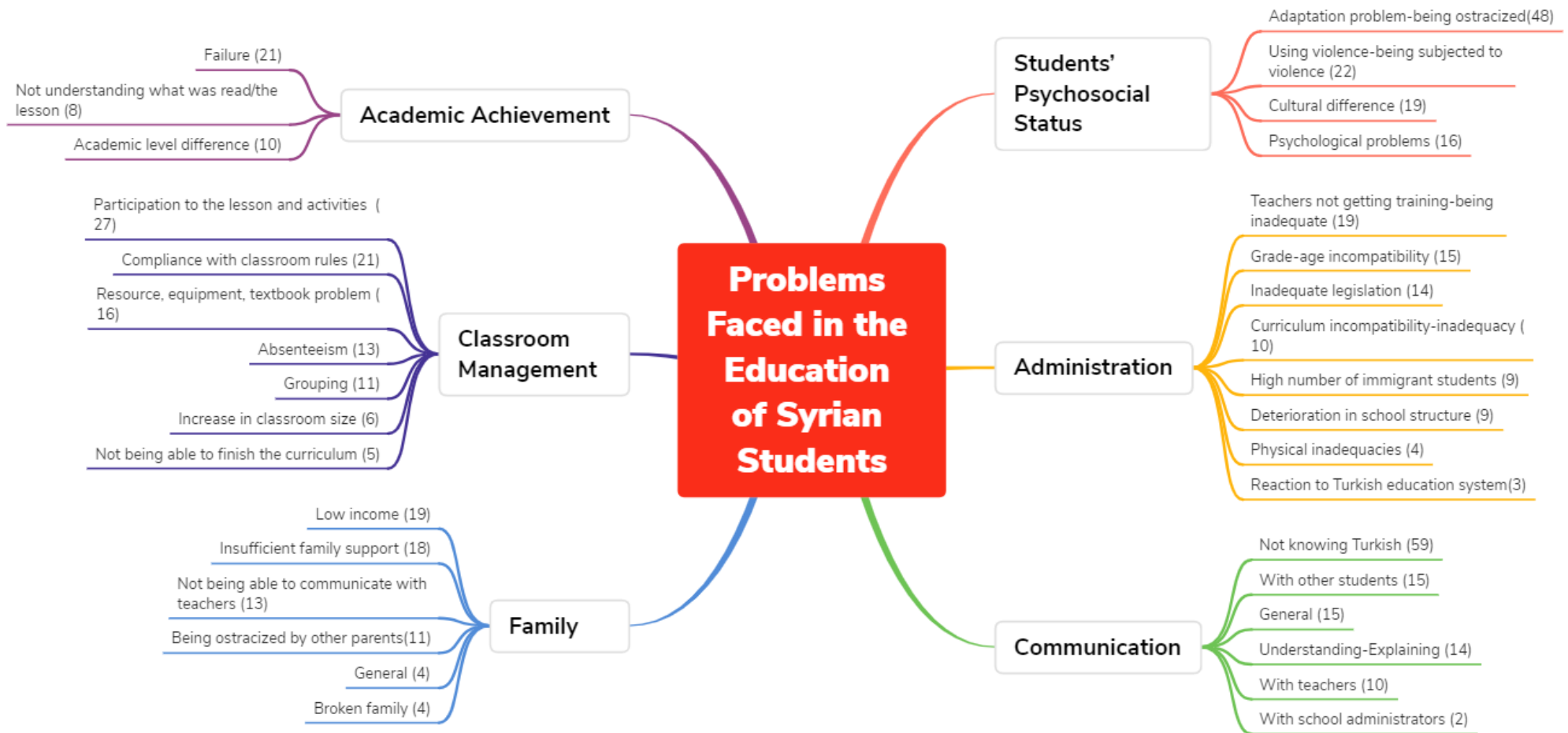


Figure 2. Problems Faced in the Education of Syrian Students

As seen in Figure 3, the theme of recommendations given for the problems faced in the education of Syrian students theme was divided into six categories: Classroom management, academic achievement, communication, family, administration, and students' psychosocial status. A total of 477 codes were formed in these six categories. In the Recommendations theme, the most codes were formed in the category of "administration" (182).

In the classroom management category, the codes of the classroom environment should be improved-a rich learning environment should be provided (18), the lack of textbooks and equipment should be remedied (15), participation in classroom activities should be supported (6), family visits-rules should be imposed (for absenteeism) (5), teachers should know their students (5), they should be given an education appropriate for individual differences (4), they should be able to express themselves easily (2), and they should be made to obey the rules (1) were formed. In this category, the codes of the classroom environment should be improved-a rich learning environment should be provided, and the lack of textbooks and equipment should be remedied came to the fore.

In the academic achievement category, the codes of make-up lessons should be provided (12), and additional courses should continue (4) were formed. In this category, the code of make-up lessons should be provided came to the fore.

In the category of communication, the codes of Turkish courses should continue (open) at the weekend (29), preparatory classes should be opened for Turkish teaching (24), Turkish courses should be opened during the summer break (10), communication should be established (4), their native language should be taught (2), and the hours of Turkish courses should be increased (1) were formed. In this category, the codes of Turkish courses should continue (open) at the weekend and preparatory classes should be opened for Turkish teaching came to the fore.

In the family category, the codes of Turkish should be taught to families (21), social activities for families should be organized (14), parent-teacher cooperation should be increased (12), they should be informed about education opportunities (9), financial support should be provided (7), their views should be asked (2), and mentor Turkish families should be supported (2) were formed. In this category, the codes of Turkish should be taught to the parents of Syrian students and social activities for families should be organized came to the fore.

In the administration category, the codes of teachers should be given in-service training (41), curricula should be developed for social-emotional development-deficiencies (16), long-term-holistic regulations-policies should be developed (16), planning should be done for the increasing classroom sizes and piling up (15), They should be directed towards preschool education (15), trainings should be provided for school administrators (13), teachers should be supported (13), Grammar and readiness should be taken into consideration during registration to the appropriate grade (10), Programs against ostracization-public service announcement-parent briefings should be developed (10), interpreters should be available in schools (9), Courses on multiculturalism should be given at education faculties (8), legal legislation should be passed (7), they should receive education in the same classroom and school (3), information should be shared between teachers and schools (3), Migration centers should be founded at Counseling and Research Centers (2), and teachers should be provided with language education (1) codes were formed. In this category, the codes of teachers should be given in-service training, curricula should be developed for social-emotional development-deficiencies, long-term-holistic regulations-policies should be developed, and planning should be done for the increasing classroom sizes and piling up came to the fore.

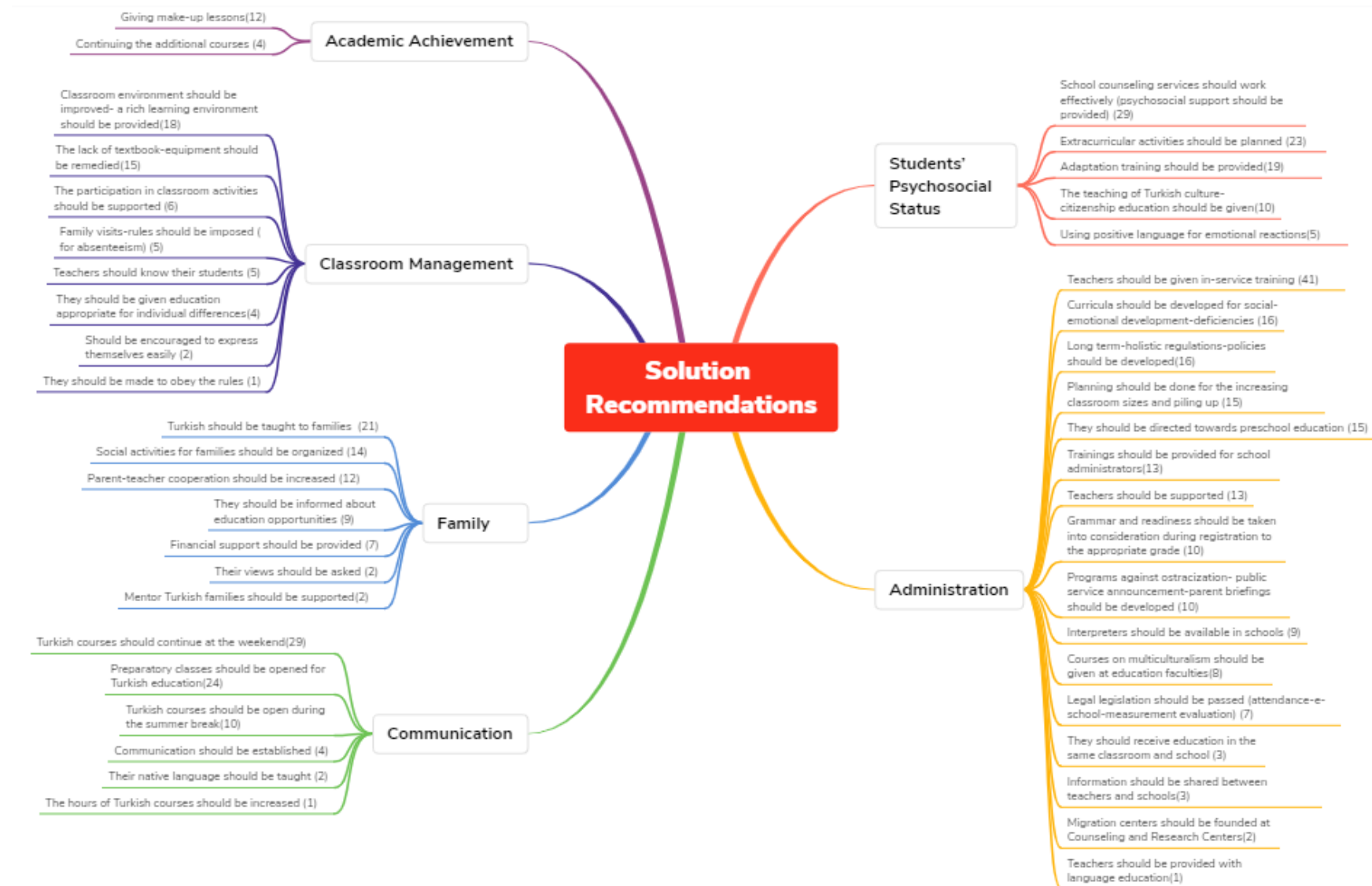


Figure 3. Recommendations Given for the Problems Faced in the Education of Syrian Students

DISCUSSION AND CONCLUSION

In line with the first and second research questions of the present study, problems faced in the education of Syrian students within the scope of formal education and the recommendations given were presented with a holistic perspective using content analysis. As a result of the analysis, the themes of problems encountered in the education of Syrian students and recommendations were formed, and each theme was examined under six categories, namely “classroom management, academic achievement, communication, family, administration and psychosocial status”. Below, the problems experienced in each category are addressed separately, and the study results are discussed by citing studies that would be considered as proofs to the reviewed studies that examined the problems faced.

The present study determined that the most important problem faced by teachers regarding Syrian students in the classroom management process is about participation in lessons and activities (Şahin and Doğan 2018; Aydın and Kaya 2019; Yenilmez and Çöplü 2019). The study conducted by Aydın and Kaya (2017) revealed that Syrian students participated to the class according to their Turkish speaking level. However, it may not be correct to attribute the problem of Syrian students’ participation in classes only to their level of Turkish speaking. As revealed in the reviewed studies, because of reasons like Syrian students being absent from school (Sariahmetoğlu, 2019) and increasing class sizes (Aydın and Kaya 2017; Kaya 2020), there is no continuity in the participation of these students in the classes and teachers cannot spare enough time to them. Due to these reasons, it can be believed that Syrian students cannot participate in classes and activities adequately because teachers cannot pay attention to these students at the desired level and because their education processes do not proceed in a planned manner. In addition, various studies determined that Syrian students have problems in compliance with classroom rules (Özer Aytekin and Sönmez Ektem 2019) and that they group among themselves (Şimşir and Dilmaç 2018; Eren 2019). These findings from different studies showed that teachers face problems about enforcing classroom discipline and time management because of Syrian students. The teachers who have increased class size and who have to devote more time to unwanted student behaviors also face the problem of not being able to finish the curriculum (Cırt Karaağaç and Güvenç 2019). Furthermore, with the participation of Syrian students in their classes, the needs of teachers in terms of equipment in the classroom and in conducting the lessons in a healthy way increased and became varied. A significant number of the reviewed studies put forth that teachers who have Syrian students in their classes face resource, material and textbooks problems (Erdem 2017; Moralı 2018). This result can be interpreted as schools could not make the necessary equipment and physical preparation for the education of children Syrians coming to Turkey with a mass migration. For the classroom management problems, most of the reviewed studies recommended that classroom environment should be improved and a rich learning environment should be provided, the physical and hardware deficiencies (textbook-equipment) should be remedied, and participation in classroom activities should be supported. It is believed that the recommendations given are generally compatible with the problems that arise and can be effective in solving the problems.

Studies examined in the present study (Ciğerci and Güngör 2016; Jafari, Tonga and Kışla 2018; Yıldız Yılmaz and Kaplan 2019) showed that Syrian immigrant students face the most problems about failure in the academic achievement category. Many factors causing immigrant students to academically fail can be mentioned. While the reason for the academic failure of immigrant students was largely attributed to language problems by Ciğerci and Güngör (2016), it was also linked to emotional and personal difficulties in the lives of these students by Hos (2020). The other two findings of the reviewed studies also support these explanations. In the reviewed studies, it was determined that Syrian students read but did not understand the lessons adequately (Aykırı 2017; İçöz 2019). This problem basically stems from language-related problems, as stated by Cigerci and Güngör. Another finding showed that Syrian students had problems academically with other students due to level difference (Ereş 2016; Demir and Aliyev 2019). This problem may be tied to reasons such as students not being able to receive education due to the war, students not being enrolled in classes appropriate to their age, and the academic level gap between them and the other students getting wider every day because of language problems. In the reviewed studies, recommendations were given about offering make-up lessons and continuing the additional courses for the

solution of these problems faced by Syrian students in terms of academic achievement. It can be said that the recommendations given in this category are quite insufficient. More concrete and functional recommendations should be put forward by focusing on the factors that negatively affect the academic achievement of Syrian students and their reasons.

The communication that immigrant students establish is very important in terms of being able to exist in a new culture and to get equal education with other students. However, according to the reviewed studies examined in the present study, the most encountered problems are in the “communication” category. According to Pryor (2001), communication problem constitutes an important obstacle for immigrant students to benefit from educational opportunities equally. The reviewed studies revealed that the main problem the Syrian immigrant students in Turkey experience in terms of communication was not knowing Turkish (Cigerci and Güngör 2016; Tösten, Toprak and Kayan, 2017; Soylu, Kaysılı and Sever 2020). In addition, the students who did not speak Turkish had communication problems with other students (Yurdakul and Tok 2018), teachers (Mercan Uzun and Bütün 2016) and school administrators (Şahin and Şener 2019). Various reviewed studies for the present study (Sinan and Gültekin 2018; Cırtı Karaağaç and Güvenç 2019) showed that Syrian students had problems understanding what was being said and conveying their thoughts because they could not understand and speak Turkish. These problems experienced by immigrant students regarding communication and especially Turkish can be interpreted as the policies implemented on Turkish teaching do not have sufficient effect. It is believed that the reasons such as students’ use of their native language within the family, watching television content in their native language, and mostly making friends with Syrian children outside school are thought to reduce the effect of practices regarding Turkish teaching. According to the present study’s results, reviewed studies mostly recommended the offering of weekend Turkish courses, offering preparatory classes for Turkish education, and offering Turkish courses during the summer break in order to address the problems related to communication. Two reviewed studies (Aykırı 2017) made suggestions about teaching Syrian students their native language. It can be said that the recommendations made about communication in the reviewed studies are generally in the context of school and are superficial, and the effect of outside-school factors is neglected.

A significant number of Syrian children suspended their education due to the civil war in their country and were out of school for a long time. While establishing a new life in the countries they migrated to as a result of the civil war, their most important supporters in terms of social life and education were their families. However, according to the reviewed studies in the present study, Syrian immigrant students faced various problems during their education process related to their families. Among these problems, families’ low income (Avcı 2019) was emphasized the most. It can be said that families having low income causes various negative consequences for students. Since families with economic problems cannot buy all their children’s educational tools and equipment, it can be believed that they do not want to send their children to school. This situation appears as a factor preventing immigrant students from attending school regularly. Furthermore, the reviewed studies showed that Syrian immigrant students did not receive sufficient support from their families during their education (Sinan and Gültekin 2018; Aydin and Kaya 2019). The possible consequences of immigrant students not receiving sufficient support from their families during their education is them having problems in their adaptation to school and having low their academic achievement. However, it should not be forgotten that parents who migrate also face various problems. Families of Syrian immigrant students faced various problems in the countries they migrated to, such as language barrier, cultural problems, loss of culture and not being able to get effective support from teachers (Jun 2020). The fact that Syrian children have broken families due to the civil war in their country (Delen 2018; Alkalay 2020) was identified as another factor that adversely affects their educational processes. These problems experienced by Syrian parents can be considered as factors preventing their children from providing adequate support to their education processes. The studies reviewed revealed that Syrian parents who are faced with language barriers and economic and cultural problems cannot communicate adequately with teachers (Eren 2019; Özenç and Saat 2019) and are also ostracized by other parents (Mercan Uzun and Bütün 2016). It can be said that the problems related to the families of Syrian immigrant students, who are disadvantaged in various aspects during the education process, further deepen this situation. Regarding

the problems experienced by the families of Syrian students, the reviewed studies recommended that Turkish should be taught to families, social activities for families should be organized, parent-teacher cooperation should be increased, they should be informed about education opportunities, financial support should be provided, their views should be asked, and mentor Turkish families should be supported. It can be said that the family factor was also taken into consideration with the students in the recommendations, and functional recommendations were put forward for the problems experienced.

The reviewed studies in the present study revealed that the training that teachers, who are the most important helpers of administrators in the education process, received for Syrian students was insufficient (Ereş 2016; Cirit Karaağaç and Güvenç 2019; Aydın Gurler 2020). The fact that teachers do not receive or receive insufficient training regarding the education of Syrian students makes it difficult for them to find alternative solutions to the problems they experience. The problems that cannot be solved by the teachers are reflected to the administrators who are at the top of the hierarchical structure in the school, and the administrators become also a part of the problems experienced. Another issue that poses a problem for teachers and school administrators is the incompatibility between the ages of Syrian immigrant students and their grades (Tamer 2017; Taskin and Erdemli 2018). Due to this problem, it is possible that various discipline problems will arise inside and outside the classroom. In addition to the discipline problems, the difference between the curriculum used in Syria and curriculum used in Turkey taxed both the students and the teachers (Sahin and Dogan 2018; Aydin and Kaya, 2019). Finding a solution to this problem for school administrators, who have a role to lead the teaching processes in the school, is important in terms of affecting the academic achievement of the school. The high number of Syrian immigrant students (Sinan and Gültekin 2018) and the inadequacy of legislation for these students (Erdem 2017) make it difficult for school administrators to solve the problems. As a result of the large number of Syrian immigrant students, it is expected that many physical needs will arise at school. The reviewed studies showed that physical deficiencies (Çakmak, 2018) arise in schools due to Syrian students. From an administrative point of view, because of the constantly increasing number of Syrian immigrant students due to the ongoing civil war, it is seen that administrators experience problems during decision-making and planning processes and that various needs changed. Therefore, it becomes difficult for schools to maintain their existence in a certain order. The reviewed studies determined that the existing order of schools was damaged due to Syrian students (Şimşir and Dilmaç 2018; Takır and Özerem, 2019). For the solution of these problems, these studies recommended providing in-service training to teachers and school administrators, developing curricula for social deficiencies, developing long-term policies, planning for increasing class sizes and directing towards pre-school education. It is seen that the recommendations for the education of Syrian immigrant children, which cause various administrative problems nationally and school wise, are also discussed in terms of both the school and the Turkish education system. In this respect, it can be said that the recommendations made have a guiding nature in terms of the solution of the emerging problems.

Schools are seen as safe environments in terms of reducing the traumas and effects of these traumas of children exposed to migration. In order to reduce the psychosocial effects of traumas, the attitudes and practices of students, teachers and school administrators in the classroom and school towards immigrant students are of great importance. However, the reviewed studies showed that Syrian immigrant students encounter various psychosocial problems. Many of the reviewed studies revealed that the most important psychosocial problems experienced by Syrian immigrant students were their inability to adapt and the ostracization they experienced (Yüce 2018; Demir and Aliyev, 2019). It is believed that communication problems play an important role on Syrian immigrant students' adaptation and ostracization problems. A study conducted by Human Rights Watch (2015) stated that Syrian children faced problems such as not being able to communicate with their teachers at school and being ostracized by their peers because they do not speak Turkish. Furthermore, the differences between the culture of their home country and the culture of the country they migrated to (Çelik 2019; Dolapcioğlu and Bolat, 2019) also negatively affect socialization and adaptation in the education of Syrian immigrant students. In addition to the problems such as adaptation, ostracization and cultural differences, the psychological problems Syrian students experience due to their past life and the troubles and difficulties they experienced in the country they migrated to prevent the healthy execution of their education process. Some of the reviewed studies (Eren 2019; Ozen

2019) determined that Syrian students are in a constant state of depression and trauma due to war and migration. The Syrian students who have problems in adaptation and communication resorting to violence in order to solve their problems in school and classroom and being subjected to violence (Sariahmetoğlu 2019) is a thought-provoking result that should be further examined. The study conducted by Taskin and Erdemli (2018) tied the violence experienced among Syrian students to the age differences between students, whereas Arar, Örucü and Küçükçayır (2019), tied it to violence being a natural occurrence in Syrian culture. The reviewed studies in the present study recommended that school counseling services should work effectively, extracurricular activities should be planned, adaptation training should be provided, education towards Turkish culture should be given, and positive language should be used for the emotional reactions of Syrian students. It is seen that the recommendations made are mostly for the social adaptation of Syrian students. The reviewed studies believed that the psychological problems experienced by Syrian immigrant students can be reduced with a healthy adaptation process.

RECOMMENDATIONS

The recommendations for practitioners, policymakers, and researchers based on the results of the reviewed studies' findings are presented below.

- The reviewed studies revealed that the most important problem experienced by Syrian students in the education process is related to communication. Before Syrian students are included in formal education, they should be subjected to a preparation process that includes topics such as speaking and understanding Turkish, learning Turkish culture and social adaptation. It is believed that this preparation process will positively affect the social adaptation of students to formal education and their academic achievement in this process.

- It was seen that there is an important need to close the academic level gap between Syrian immigrant students and their peers. For Syrian students who are disadvantaged in this respect, programs and other supporting practices such as remedial education and Remedial Education Programme in Elementary Schools can be implemented.

- Families should be financially supported in order to ensure the regular attendance of Syrian immigrant students to schools. Also, meeting the various needs of students in school can be effective in terms of school attendance.

- Turkish reading, writing, speaking and comprehension courses can be offered in schools, public education centers and municipalities so that the parents of Syrian immigrant students can communicate with other parents and contribute to the education process of their children.

- Teachers who have Syrian students in their classrooms can be given training on multicultural education and classroom management in a multicultural classroom. In addition, giving similar trainings regularly to school administrators may be important in terms of raising awareness.

- Syrian students' concentrating in certain schools should be prevented. If these students can be distributed to schools regularly and fairly, both the emergence of the physical needs of the schools and the excessive increase in class sizes will be prevented. Also, teacher's problem of not being finish the curriculum can be solved in this way.

- The legal gaps in the education of Syrian students should be filled by passing the needed legislation. In this way, school administrators and teachers can make more systematic practices for the benefit of the students in their tasks.

REFERENCES

- Albakri, Tareq Z., and Rabib Shibli. "How to Improve Sustainability: The Critical Role of Education for Syrian Refugees." *Development in Practice* 29 (5) (2019): 662-669.
- *Alkalay, Gizem. *İlkokul Yöneticilerine ve Sınıf Öğretmenlerine Göre Suriyeli Sığınmacı Öğrencilerin Yaşadıkları Sorunlar ve Çözüm Önerileri*. Unpublished Master Thesis. Aydın Adnan Menderes University, 2020.
- Alkhawaldeh, Ahmad. "Syrian Refugees' Children Instructional Challenges and Solutions in Jordan: Teachers' and Parents' Perspectives." *Border Crossing*, 8 (2) (2018): 311-331.
- Arar, Khalid, et. all. "Culturally Relevant School Leadership for Syrian Refugee Students in Challenging Circumstances." *Educational Management Administration & Leadership*, 47 (6) (2019): 960-979.

- *Avcı, Fatma. "Teachers' Opinions on the Problems Faced by the Refugee Students in Preschool Education Institutions." *Language Teaching and Educational Research (LATER)*, 2 (1) (2019): 57-80.
- *Aydın, Hasan, and Yeliz Kaya. "The Educational Needs of and Barriers Faced by Syrian Refugee Students in Turkey: A Qualitative Case Study." *Intercultural Education*, 28 (5) (2017): 456-473.
- *Aydın, Hasan, and Yeliz Kaya. "Education for Syrian Refugees: The New Global Issue Facing Teachers and Principals in Turkey." *Educational Studies*, 55 (1) (2019): 46-71.
- *Aydın Gürler, Sümeyye. "Problems Encountered by Classroom Teachers in Teaching Science to Syrian Students and Suggestions for These Problems." *International Online Journal of Educational Sciences*, 12 (2) (2020): 230-252.
- *Aykırı, Kudret. "Sınıf Öğretmenlerinin Sınıflarındaki Suriyeli Öğrencilerin Eğitim Durumlarına İlişkin Görüşleri." *Turkish Journal of Primary Education*, 2 (2017): 44-56.
- Buckner, Elizabeth, et. al. "Between Policy and Practice: The Education of Syrian Refugees in Lebanon." *Journal of Refugee Studies*, 31 (4) (2018): 444-465.
- Campbell III, James Adam. "Attitudes Towards Refugee Education and Its Link to Xenophobia in the United States." *Intercultural Education*, 28 (5) (2017): 474-479.
- Cırtı-Karaağaç, Fatma. *Educational Problems of Syrian Refugee Students in Elementary Schools*. Unpublished Master Thesis. Yeditepe University, 2020.
- *Cırtı Karaağaç, Fatma, and Hülya Güvenç. "Resmi İlkokullara Devam Eden Suriyeli Mülteci Öğrencilerin Eğitim Sorunları." *OPUS Uluslararası Toplum Araştırmaları Dergisi*, 11 (18) (2019): 530-568.
- *Çiğerci, Fatih Mehmet, and Fisun Güngör. "The Problems Encountered by the Foreign Primary School Students from the Perspectives of Classroom Teachers (Bilecik Sampling)." *Journal of Education and Future*, 10 (2016): 137-164.
- Cun, Aijuan. "Concerns and Expectations: Burmese Refugee Parents' Perspectives on Their Children's Learning in American Schools." *Early Childhood Education Journal*, 48 (2020): 263-272.
- *Çakmak, Özgür. *Okul Yöneticilerinin Gözüyle Suriyeli Öğrencilerin Eğitiminde Yaşanan Sorunlar ve Çözüm Önerileri (Kilis Örneği)*. Unpublished Master Thesis. Gaziantep University, 2018.
- Çalık, Muammer, and Mustafa Sözbilir. "İçerik Analizinin Parametreleri." *Eğitim ve Bilim*, 39 (174) (2014): 33-38.
- *Çelik, Türkan. "The Syrian Students in the Classes of Social Studies Teachers from Their Perspective." *Sakarya University Journal of Education*, 9 (2) (2019): 383-407.
- *Delen, Adnan. *Yabancı Uyruklu Öğrencilerin Bulunduğu İlkokullarda İstenmeyen Öğrenci Davranışlarının İncelenmesi*. Unpublished Master Thesis. Atatürk University, 2018.
- *Demir, Özgür Osman, and Ramin Aliyev. "Resilience Among Syrian University Students in Turkey." *Turkish Journal of Education*, 8 (1) (2019): 33-51.
- Diñer, Serkan. "Content Analysis in for Educational Science Research: Meta-Analysis, Meta-Synthesis, and Descriptive Content." *Bartın University Journal of Faculty of Education*, 7 (1) (2018): 176-190.
- Directorate General of Immigration Management. *Yıllara Göre Geçici Koruma Kapsamındaki Suriyeliler*, 2020. <https://www.goc.gov.tr/gecici-koruma5638>
- *Dolapcioglu, Sevdâ, and Yeliz Bolat. "The education issues of Syrian students under temporary protection status." *Research in Education*, December 4, 2019.
- Dryden-Peterson, Sarah. *The educational experiences of refugee children in countries of first asylum*. Migration Policy Institute, 2015. <https://www.migrationpolicy.org/research/educational-experiences-refugee-children-countries-first-asylum>
- Dryden-Peterson, Sarah. "Refugee Education in Countries of First Asylum: Breaking Open the Black Box of Pre-resettlement Experiences." *Theory and Research in Education*, 14 (2) (2016): 131-148.
- Dryden-Peterson, Sarah. "Refugee education: Education for an unknowable future." *Curriculum Inquiry*, 47 (1) (2017): 14-24.
- *Erdem, Cahit. "Sınıfında Mülteci Öğrenci Bulunan Sınıf Öğretmenlerinin Yaşadıkları Öğretimsel Sorunlar ve Çözüme Dair Önerileri." *Medeniyet Eğitim Araştırmaları Dergisi*, 1 (1) (2017): 26-42.
- Erdoğan, Mehmet Murat. *Syrians Barometer 2019: A Framework for Achieving Social Cohesion with Syrians in Turkey*. Orion Kitabevi, 2020. <https://www.unhcr.org/tr/wp-content/uploads/sites/14/2020/09/SB2019-ENG-04092020.pdf>
- *Eren, Zeynep. "Yönetici ve Öğretmen Görüşlerine Göre Göçmen Çocukların Eğitim Sorunları ve Çözüm Önerileri." *Bolu Abant İzzet Baysal Üniversitesi Eğitim Fakültesi Dergisi*, 19 (1) (2019): 213-234.
- Ereş, Figen. "Problematic of Migrant Education and Diversity Management for Immigrant Education in Turkey." *Cankiri Karatekin University Journal of Institute of Social Sciences*, 6(2), 17-30.
- *Ereş, Figen. "Problems of the Immigrant Students' Teachers: Are They Ready to Teach?." *International Education Studies*, 9 (7), (2016). 64-71.
- Green, Molley, et. all. "Acculturation, Social Support and Mental Health Outcomes Among Syrian Refugees in Germany." *Journal of Refugee Studies*, (2019): 1-13.
- Guo, Yan, et. all. "I Belong to Nowhere": Syrian Refugee Children's Perspectives on School Integration." *Journal of Contemporary Issues in Education*, 14 (1) (2019): 89-105.
- Gümüş, Sedat. "Nitel Araştırmaların Sistemik Derlemesi: Meta-sentez." *Eğitim Yönetiminde Araştırma* K. Beycioğlu, N. Özer and Y. Kondakçı (Eds.), Pegem A Yayıncılık, 2018.
- Hamadeh, Shereen. "A Critical Analysis of the Syrian Refugee Education Policies in Lebanon Using A Policy Analysis Framework." *Journal of Education Policy*, 34 (3) (2019): 374-393.

- Hos, Rabia. "The Lives, Aspirations, and Needs of Refugee and Immigrant Students with Interrupted Formal Education (SIFE) in a Secondary Newcomer Program." *Urban Education*, 55 (7) (2020): 1021-1044.
- *İçöz, Halil. *İlkokullarda Yabancı Uyruklu Öğrencilerle İlgili Karşılaşılan Sorunlar*. Unpublished Master Thesis. Akdeniz University, 2019.
- Human Rights Watch. "Geleceğimi hayal etmeye çalıştığımda hiçbir şey göremiyorum": Türkiye'deki Suriyeli mülteci çocukların eğitime erişiminin önündeki engeller - Kayıp nesil olmalarını önlemek. Human Rights Watch, 2015. https://www.hrw.org/sites/default/files/report_pdf/turkey1115tu_web.pdf
- *Jafari, Kübra Kuzu, et. all. Practice and Opinions of the Teachers Who Work at the Classes Have Syrian Students. *Academy Journal of Educational Sciences*, 2 (2) (2018): 134-146.
- Kara, Mevlut. and Mehmet Ozenc. "A Multidimensional Approach to the Problems Experienced by the Classroom Teachers With Syrian Students in Their Classes." *International Journal of Progressive Education*, 16 (6) (2020): 184-201.
- *Kaya, İbrahim. *Problems Provided by Teachers Who Have Syrian Students in Class Management*. Kırşehir Ahi Evran University, 2020.
- Madziva, Roda, et. all. "Provision of Quality Education in the Context of Syrian Refugee Children in the UK: Opportunities and Challenges." *Compare: A Journal of Comparative and International Education*, 47 (6) (2017): 942-961.
- *Mercan Uzun, Elif, and Eda Bütün. "Okul Öncesi Eğitim Kurumlarındaki Suriyeli Sığınmacı Çocukların Karşılaştıkları Sorunlar Hakkında Öğretmen Görüşleri." *Uluslararası Erken Çocukluk Eğitimi Çalışmaları Dergisi*, 1 (1) (2016): 72-83.
- Miles, Matthew B., and A. Michael Huberman. *Qualitative Data Analysis: An Expanded Source Book* (Second edition). Thousand Oaks : Sage Publications, 1994.
- *Moralı, Gürkan. "Suriyeli Mülteci Çocuklara Türkçenin Yabancı Dil Olarak Öğretiminde Karşılaşılan Sorunlar." *OPUS Uluslararası Toplum Araştırmaları Dergisi*, 8 (15) (2018): 1426-1449.
- OECD. *Immigrant Students at School: Easing the Journey Towards Integration*. OECD Publishing, 2015. <https://www.oecd.org/education/immigrant-students-at-school-9789264249509-en.htm>
- Özcan, Abdullah Said. "Turkey's Education Policy Towards Syrian Students in the Context Multiculturalism." *PESA International Journal of Social Studies*, 4 (1) (2018): 17-29.
- *Ozen, Hamit. "Educational Challenges of Syrian Refugees in Turkey: Through the Lenses of Complex Adaptive Leadership Theory." *Educational Planning*, 26 (4) (2019): 41-56.
- *Özenç, Emine Gül. and Ferhat Saat. "The Problems Classroom Teachers Encounter in the Education of Syrian Students." *International Journal of Active Learning*, 4 (2) (2019): 60-74.
- *Özer Aytekin, Kamile, and Işıl Sönmez Ektem. "Sınıflarında Bulunan Suriyeli Göçmen Çocuklar İle İlgili Okul Öncesi Öğretmenlerin Görüşlerinin İncelenmesi (Hatay İli Örneği)." *Turkish Studies – Educational Sciences*, 14 (5) (2019): 2557-2580.
- Pryor, Carolyn B. "New Immigrants And Refugees In American Schools: Multiple Voices." *Childhood Education*, 77 (5) (2001): 275-283.
- Sandelowski, Margarete, et. all. "Qualitative Meta-Synthesis: Issues and Techniques." *Research in Nursing & Health*, 20 (1997): 365-371.
- *Sarıahmetoğlu, Hasan. *Yabancı Uyruklu Öğrencilerin Eğitim Sistemine Uyumunda Karşılaşılan Sorunlar ve Çözüm Önerileri*. Unpublished Master Thesis. Kastamonu University, 2019.
- Schneider, Lynn. "Access and Aspirations: Syrian Refugees' Experiences of Entering Higher Education in Germany." *Research in Comparative & International Education*, 13 (3) (2018): 457-478.
- *Sinan, Feyza Nur, and Filiz Gültekin. "Application, Views and Problems of Counselors Working With Syrian Elementary School Students." *Universal Journal of Educational Research*, 6 (7) (2018): 1437-1448.
- Sirin, Selcuk, and et. all. "Digital Game-Based Education For Syrian Refugee Children: Project Hope." *Vulnerable Children and Youth Studies*, 13 (1) (2018): 7-18.
- *Soylu, Ayşe, And Et. All. "Refugee Children and Adaptation to School: An Analysis Through Cultural Responsivities of the Teachers." *Education And Science*, 45 (201) (2020): 313-334.
- Stewart, Jan, et. all. "Refugee Student Integration: A Focus on Settlement, Education, and Psychosocial Support." *Journal of Contemporary Issues in Education*, 14 (1) (2019): 55-70.
- Streitweiser, Bernhard Thomas, et. all. "Needs, Barriers and Support Systems for Refugee Students in Germany." *Global Education Review*, 5 (4) (2018): 136-157.
- Suri, Harsh, and David Clarke. "Advancements in Research Synthesis Methods: From A Methodologically Inclusive Perspective." *Review of Educational Research*, 79 (1) (2009): 395-430.
- *Şahin, Muhammed, and Yakup Doğan. "Suriyeli Öğrencilerin Bulunduğu Sınıflarda Fen Bilimleri Öğretiminde Karşılaşılan Sorunlar: Nitel Bir Çalışma." *Uluslararası Eğitim Araştırmaları Dergisi*, 1 (1) (2018): 13-33.
- *Şahin, Furkan, and Özlem Şener. "Geçici Koruma Altındaki Suriyeli Öğrencilerin Eğitim Süreçlerindeki Dil ve İletişim Sorunları: İstanbul Fatih Örneği." *Avrasya Sosyal ve Ekonomi Araştırmaları Dergisi*, 6 (9) (2019): 66-85.
- *Şimşir, Zeynep, and Bülent Dilmaç. "Problems Teachers' Face and Solution Proposals in The Schools Where the Foreign Students Are Educated." *Elementary Education Online*, 17 (3) (2018): 1719-1737.
- *Takır, Aygıl, and Ayşen Özerem. "Göçle Gelen Yabancı Uyruklu Öğrencilerin Okul Ortamında Karşılaştıkları Sorunlar." *Folklor/edebiyat*, 25 (97-1) (2019): 659-678.

- *Tamer, Mine Gözübüyük. "Geçici Koruma Kapsamındaki Suriyeli Çocukların Trabzon Devlet Okullarındaki Durumu." *Göç Dergisi*, 4 (1) (2017): 119-152.
- *Taskin, Pelin, and Ozge Erdemli. "Education for Syrian Refugees: Problems Faced by Teachers in Turkey." *Eurasian Journal of Educational Research*, 75, (2018): 155-177.
- Tezel-Mccarthy, Aslıhan. "Non-state Actors and Education as A Humanitarian Response: Role of Faith-Based Organizations in Education for Syrian Refugees in Turkey." *Journal of International Humanitarian Action*, 2 (13) (2017): 1-9.
- Tezel-McCarthy, Aslıhan. "Politics of Refugee Education: Educational Administration of The Syrian Refugee Crisis in Turkey." *Journal of Educational Administration and History*, 50 (3) (2018): 223-238.
- Thomas, Janes, and Angela Harden. "Methods for the Thematic Synthesis of Qualitative Research in Systematic Reviews." *BMC Medical Research Methodology*, 8 (45) (2008): 1-10.
- *Tösten, Rasim, et. all. "An Investigation of Forcibly Migrated Syrian Refugee Students at Turkish Public Schools." *Universal Journal of Educational Research*, 5 (7) (2017): 1149-1160.
- United Nations Refugee Agency. *Figures at a Glance*, (2020). <https://www.unhcr.org/tr/ilk-bakista-rakamlar-2>
- Wofford, Mary Claire, and San Tibi. "A Human Right to Literacy Education: Implications For Serving Syrian Refugee Children." *International Journal of Speech-Language Pathology*, 20 (1) (2018): 182-190.
- Yamamoto, Kaoru. "Ensuring Educational Opportunities for Children in Conflict-Affected Contexts : A Case Study of Syrian Refugee-Managed Schools in Turkey." *Osaka Human Sciences*, 4, (2018): 135-156.
- *Yenilmez, Kürşat, and Filiz Çöplü. "The Difficulties of the Teachers in the Education of Immigrant Students." *Journal of Research in Education and Teaching*, 8 (3) (2019): 26-36.
- *Yıldız-Yılmaz, Nihal, and Ahmet Kaplan. "Evaluation of Parents' Views on the Education Process of Syrian Students in the Basic Education Stage: Mardin Province Case." *Uluslararası Karamanoğlu Mehmetbey Eğitim Araştırmaları Dergisi*, 1 (1) (2019): 31-38.
- *Yurdakul, Ahmet, and Türkay Nuri Tok. "Öğretmen Gözüyle Göçmen/Mülteci Öğrenci." *Adnan Menderes Üniversitesi Eğitim Fakültesi Eğitim Bilimleri Dergisi*, 9 (2) (2018): 46-58.
- *Yüce, Erdi. *Geçici Koruma Altında Bulunan Suriyeli Öğrencilerin Okula Uyumları*. Unpublished Master Thesis. Hacettepe University, 2018.
- Zimmer, Lela. "Qualitative Meta-Synthesis: A Question of Dialoguing with Texts." *Journal of Advanced Nursing*, 53 (3) (2006): 311-318.

* It shows the studies included in this research and cited in the text.

APPENDIXES

Appendix 1. Studies Included in the Present Study and Their Codes

Study	Code	Study	Code
Ağcadağ Çelik, 2019	M1	Tamer, 2017	M41
Altunay ve Dede, 2019	M2	Mercan Uzun ve Bütün, 2016	M42
Avcı, 2019	M3	Yenilmez ve Çöplü, 2019	M43
Aykırı, 2017	M4	Yıldız Yılmaz ve Kaplan, 2019	M44
Özer Aytekin ve Sönmez Ektem, 2019	M5	Yurdakul ve Tok, 2018	M45
Baloğlu Uğurlu ve Akdovan, 2019	M6	Zayimoğlu Öztürk, 2018	M46
Baltacı, Coşkun ve Ceylan, 2019	M7	Aydin ve Kaya, 2017	M47
Baltacı, Coşkun ve Ceylan, 2019	M8	Cin ve Doğan, 2020	M48
Başar, Akan ve Çiftçi, 2018	M9	Dolapcioglu ve Bolat, 2019	M49
Bulut, Kanat Soysal ve Gülçiçek, 2018	M10	Ergin, 2016	M50
Ciğerci ve Güngör, 2016	M11	Soylu, Kaysılı ve Sever, 2020	M51
Çelik, 2019	M12	Aydin ve Kaya, 2019	M52
Çerçi ve Canalcı, 2019	M13	Bozkırlı, Er ve Alyılmaz, 2018	M53
Demir ve Aliyev, 2019	M14	Ereş, 2016	M54
Demir ve Demir, 2020	M15	Ozen, 2019	M55
Demir ve Okşar, 2018	M16	Sinan ve Gültekin, 2018	M56
Erdem, 2017	M17	Şahin ve Sümer, 2018	M57
Eren, 2019	M18	Taskin ve Erdemli, 2018	M58
Göktuna Yaylacı, Serpil ve Yaylacı, 2017	M19	Toker Gokce ve Acar, 2018	M59
Gün ve Baldık, 2017	M20	Tösten, Toprak ve Kayan, 2017	M60
İmamoğlu ve Çalışkan, 2017	M21	Aydın Gurler, 2020	M61
Jafari, Tonga ve Kışla, 2018	M22	Özdemir, 2016	T1
Cırt Karaağaç ve Güvenç, 2019	M23	Delen, 2018	T2
Karadağ, 2016	M24	Çakmak, 2018	T3
Kardeş ve Akman, 2018	M25	Yüce, 2018	T4
Kaysılı, Soylu ve Sever, 2019	M26	Alpaslan, 2019	T5
Keskinkılıç Kara ve Şentürk Tüysüzer, 2017	M27	Uysal, 2019	T6
Kiremit, Akpınar ve Tüfekci Akcan, 2018	M28	Özgün, 2019	T7
Koçoğlu ve Yanpar Yelken, 2018	M29	Şen, 2019	T8
Levent ve Çayak, 2017	M30	Sarıahmetoğlu, 2019	T9
Moralı, 2018	M31	Savaşkan, 2019	T10
Öngören, Özkan, Yüksel ve Sever, 2017	M32	İçöz, 2019	T11
Özenç ve Saat, 2019	M33	Çakmak, 2019	T12
Yanık Özger ve Akansel, 2019	M34	Erten Özalp, 2019	T13
Sarıtaş, Şahin ve Çatalbaş, 2016	M35	Somuncuoğlu, 2019	T14
Şahin ve Doğan, 2018	M36	Sekin, 2019	T15
Şahin ve Şener, 2019	M37	Anis, 2019	T16
Şimşir ve Dilmaç, 2018	M38	Çopur, 2019	T17
Takır ve Özerem, 2019	M39	Kaya, 2020	T18
Takır ve Özerem, 2020	M40	Alkalay, 2020	T19

Appendix 2. Table That Was the Source for Figure 2 (Problems Faced in the Education of Syrian Students)

Themes	Categories	Codes	Article-Thesis Code	f	%
PROBLEMS	Classroom management	Participation to the lesson and activities	A3, A5, A6, A9, A10, A11, A12, A13, A15, A18, A21, A25, A28, A35, A38, A39, A40, A43, A45, A52, T5, T7, T8, T11, T12, T13, T19	27	5.29
		Compliance with classroom rules	A5, A6, A7, A8, A11, A21, A23, A29, A32, A35, A38, A39, A43, A45, A49, A57, A59, T5, T11, T14, T18	21	4.12
		Resource, equipment, textbook problem	A10, A17, A18, A19, A20, A23, A25, A29, A31, A36, A43, A49, A59, T8, T10, T14	16	3.14
		Absenteeism	A1, A2, A3, A4, A9, A11, A19, A33, A37, A53, A57, T5, T9	13	2.55
		Grouping	A5, A7, A10, A15, A18, A27, A32, A38, A57, T18, T19	11	2.16
		Increase in classroom size	A2, A23, A28, A47, A60, T18	6	1.18
		Not being able to finish the curriculum	A1, A23, A36, A43, A57	5	0.98
	Academic Achievement:	Failure	A1, A11, A12, A16, A19, A22, A31, A35, A37, A44, A45, A49, A51, A52, A54, A57, T1, T3, T7, T9, T13	21	4.12
		Academic level difference	A8, A14, A18, A29, A38, A47, A54, T4, T12, T18	10	1.96
		Not understanding what was read/the lesson	A4, A7, A38, A46, A47, A60, T5, T12	8	1.57
	Communication	Not knowing Turkish	A1, A2, A6, A8, A11, A12, A13, A14, A16, A18, A19, A20, A21, A23, A25, A26, A27, A28, A29, A30, A32, A33, A34, A35, A36, A37, A39, A40, A41, A42, A43, A44, A46, A47, A50, A52, A54, A55, A56, A57, A58, A59, A61, T2, T3, T4, T5, T6, T7, T9, T10, T11, T12, T13, T14, T16, T17, T18, T19	59	11.57
		With other students	A1, A6, A7, A13, A18, A21, A22, A37, A38, A39, A42, A45, A50, T4, T8	15	2.94
		General	A2, A3, A4, A5, A24, A32, A54, A57, A60, T2, T3, T5, T11, T15, T18	15	2.94
		Understanding-Explaining	A1, A9, A10, A13, A16, A18, A23, A25, A29, A38, A39, A43, A49, A56	14	2.75
		With teachers	A1, A7, A10, A18, A23, A28, A29, A37, A42, A57	10	1.96
		With school administrators	A1, A37	2	0.39

Appendix 2. Cont.

Themes	Categories	Codes	Article-Thesis Code	f	%
PROBLEMS	Family	Low income	A1, A2, A3, A11, A14, A18, A20, A22, A26, A35, A42, A48, A51, A54, A59, T2, T3, T4, T9	19	3.73
		Insufficient family support	A1, A3, A4, A5, A19, A28, A32, A34, A35, A45, A49, A51, A52, A54, A56, T2, T8, T19	18	3.53
		Not being able to communicate with other parents	A9, A18, A19, A22, A35, A38, A41, A51, A56, A57, T6, T16, T18	13	2.55
		being ostracized by other parents	A9, A10, A18, A19, A22, A33, A34, A42, A48, T3, T4,	11	2.16
		General	A3, A32, A41, T1	4	0.78
		Broken family	A4, T2, T6, T19	4	0.78
	Administration	teachers not getting training-being inadequate	A4, A8, A10, A17, A18, A23, A25, A43, A51, A52, A54, A55, A57, A60, A61, T3, T4, T8, T14	19	3.73
		grade-age incompatibility	A1, A10, A17, A23, A30, A41, A47, A54, A58, A59, T6, T9, T11, T17, T19	15	2.94
		inadequate legislation	A9, A10, A17, A19, A21, A25, A30, A33, A41, A46, A57, T3, T6, T10	14	2.75
		curriculum incompatibility-inadequacy	A8, A25, A29, A36, A38, A47, A52, A61, T8, T19	10	1.96
		high number of immigrant students	A2, A28, A56, A57, T3, T6, T7, T9, T19	9	1.76
		deterioration of school structure	A7, A26, A38, A39, A53, A57, T3, T4, T9	9	1.76
		physical inadequacies	A2, A52, T3, T8	4	0.78
		reaction to the Turkish education system	A1, A39, A58	3	0.59
	Students' psychological conditions	adaptation problem-being ostracized	A3, A4, A7, A8, A10, A11, A12, A14, A15, A19, A20, A22, A23, A25, A27, A28, A29, A30, A32, A33, A34, A35, A36, A37, A38, A39, A40, A42, A44, A45, A46, A48, A49, A53, A54, A57, A59, A61, T2, T3, T4, T6, T9, T15, T16, T17, T18, T19	48	9.41
		using violence-being subjected to violence	A1, A2, A13, A14, A21, A25, A26, A27, A32, A33, A35, A38, A40, A43, A45, A53, T4, T9, T15, T17, T18, T19	22	4.31
		cultural difference	A12, A14, A22, A28, A32, A36, A39, A40, A42, A45, A49, A51, A57, A58, T2, T4, T6, T8, T16	19	3.73
		psychological problems	A1, A2, A9, A14, A18, A19, A25, A32, A45, A47, A52, A55, A59, A60, T4, T6	16	3.14
		Total		510	100

Appendix 3. Table That Was the Source for Figure 3 (Solution Recommendations for the Problems Faced in the Education of Syrian Students)

Themes	Categories	Codes	Article-Thesis Code	f	%
SOLUTION RECOMMENDATIONS	Classroom Management	Classroom environment should be improved- a rich learning environment should be provided	A8, A12, A15, A17, A22, A23, A27, A29, A46, A53, A58, A61, T1, T4, T5, T7, T17, T18	18	3.70
		The lack of textbook-equipment should be remedied	A18, A28, A29, A32, A36, A41, A43, A53, A58, A61, T2, T8, T12, T13, T17	15	3.09
		remedied, The participation in classroom activities should be supported	A6, A15, A16, A29, A51, A58	6	1.23
		Family visits-rules should be imposed (for absenteeism)	A1, A19, T1, T4, T9	5	1.03
		Teachers should know their students	A7, A39, A45, A58, T1	5	1.03
		They should be given education appropriate for individual differences	A7, A17, A23, A39	4	0.82
		Should be encouraged to express themselves easily	A6, A29	2	0.41
		They should be made to obey the rules	A6	1	0.21
	Academic Achievement	Giving make-up trainings	A7, A18, A20, A22, A23, A38, A47, A54, A57, T6, T7, T11	12	2.47
		Additional courses should continue	A2, A18, T1, T2	4	0.82
	Communication	Turkish courses should continue at the weekend (opened)	A2, A3, A4, A7, A13, A15, A16, A18, A20, A21, A22, A25, A27, A30, A33, A37, A38, A39, A47, A49, A53, A61, T1, T3, T6, T8, T12, T14, T16	29	5.97
		Preparatory classes should be opened for Turkish education	A1, A7, A10, A17, A19, A23, A27, A28, A32, A33, A41, A42, A43, A44, A45, A54, A58, T5, T6, T9, T11, T13, T17, T19	24	4.94
		Turkish courses (students) should be open during the summer break	A1, A9, A23, A29, A35, A41, A47, A50, A51, A52	10	2.06
		Communication should be established	A6, A12, A15, A29	4	0.82
		Their native language should be taught	A4, A15	2	0.41
		language should be taught, The hours of Turkish courses should be increased	T3	1	0.21
	Family	Turkish education	A5, A9, A20, A21, A22, A25, A27, A32, A35, A41, A45, A53, A57, A59, T5, T8, T9, T11, T12, T14, T18	21	4.32
		Social activities for families	A2, A20, A25, A27, A33, A34, A35, A36, A54, A56, T4, T6, T12, T15	14	2.88
		Parent-teacher cooperation should be increased	A1, A8, A38, A39, A44, A54, A56, A57, T1, T6, T9, T12	12	2.47
		They should be informed about education opportunities	A19, A28, A29, A35, A41, A56, T9, T12, T19	9	1.85
		Financial support	A2, A20, A22, A33, A59, T6, T17	7	1.44
		Their views should be asked	A3, A39	2	0.41
		Mentor Turkish families should be supported	A14, A17	2	0.41

Appendix 3. Cont.

Themes	Categories	Codes	Article-Thesis Code	f	%
SOLUTION RECOMMENDATIONS	Administration	In-service training for teachers	A1, A3, A5, A7, A8, A10, A12, A15, A16, A17, A19, A20, A21, A22, A23, A28, A29, A30, A32, A36, A39, A40, A45, A46, A49, A51, A52, A56, A61, T2, T5, T6, T7, T8, T9, T10, T13, T14, T15, T17, T19	41	8.44
		Curricula should be developed for social-emotional development-deficiencies	A8, A17, A25, A27, A28, A29, A32, A40, A41, A46, A52, A58, A59, T6, T8, T13	16	3.29
		Long term-holistic regulations-policies	A1, A10, A15, A30, A39, A42, A49, A52, A56, A57, T1, T6, T11, T14, T15, T19,	16	3.29
		Planning should be done for the increasing classroom sizes and piling up	A2, A29, A30, A33, A41, T1, T2, T3, T4, T6, T7, T9, T16, T18, T19	15	3.09
		They should be directed towards preschool education	A1, A3, A5, A8, A9, A25, A32, A34, A35, A38, A57, A61, T7, T11, T18	15	3.09
		Trainings for school administrators	A2, A15, A19, A30, A41, A45, A52, A56, T6, T9, T15, T17, T19	13	2.67
		Support for teachers	A8, A17, A25, A37, A40, A43, A51, A52, T1, T7, T8, T11, T17	13	2.67
		Grammar and readiness should be taken into consideration during registration to the appropriate grade	A19, A32, A43, A54, T2, T6, T9, T11, T12, T13	10	2.06
		Programs against ostracization-public service announcement-parent briefings	A9, A22, A28, A34, A45, A54, A56, T6, T9, T15	10	2.06
		Interpreters should be available in schools	A3, A4, A30, A32, A33, A34, A58, T8, T16	9	1.85
		Courses on multiculturalism at education faculties	A5, A15, A23, A30, A51, A54, T6, T8	8	1.65
		Legal legislation should be passed (attendance-e-school-measurement evaluation)	A9, A29, T1, T5, T8, T11, T13	7	1.44
		They should receive education in the same classroom and school	A35, A38, T11	3	0.62
		Information should be shared between teachers and schools	A2, A21, T12	3	0.62
		Migration centers should be founded at CRC	A2, A35	2	0.41
		Teachers should be provided with language education (foreign)	T2	1	0.21
	Students' Psychosocial Status	School counseling services should work effectively (psychosocial support should be provided)	A1, A8, A14, A17, A18, A20, A21, A23, A27, A30, A32, A35, A38, A39, A40, A41, A45, A47, A52, A53, A56, T1, T2, T4, T8, T9, T17, T18, T19	29	5.97
		Extracurricular activities should be planned	A6, A13, A15, A27, A32, A33, A34, A38, A39, A45, A50, A54, A56, A58, T1, T2, T4, T5, T6, T8, T9, T13, T19	23	4.73
		Adaptation training	A12, A23, A28, A34, A36, A39, A45, A46, A51, A58, A59, A61, T1, T2, T4, T9, T11, T15, T16	19	3.91
		Teaching of Turkish culture-citizenship education	A5, A12, A15, A27, A32, A45, A50, A52, T9, T11	10	2.06
		Using positive language for emotional reactions	A6, A12, A32, A44, A45	5	1.03
		Total		477	100

RELIGIOSITY/SPIRITUALITY, AFFECTIVE MORAL REASONING, AND GENERATIVE ALTRUISM: A STUDY ON STUDENTS IN MUSLIM SOCIETIES

Abstract: The aim of this study was to comparatively investigate the predictability of religiosity/spirituality and affective moral reasoning levels of Muslim and non-Muslim students in Muslim societies on their generative altruism. The data of the study were based on a sample of 6722 students in 9th, 10th, 11th, and 12th grade in 10 countries for which data collection and data entry were performed in Wave 1 of Advancing Education in Muslim Societies 2018-2019 fieldwork. Religiosity/Spirituality Scale, Affective Moral Reasoning Scale, and Generative Altruism Scale for Muslim and non-Muslim students were utilized for data collection. T-test and effect size were used for comparing sample means while the Multiple Linear Regression Analysis method was utilized in the regression analysis. The research results showed the level of generative altruism of Muslim students was statistically significantly higher than their non-Muslim peers. It was concluded with the regression model that religiosity/spirituality and affective moral reasoning levels explained generative altruism of Muslim students by 21% and non-Muslim students by 30%. What was noteworthy in this study was that the affective moral reasoning is a stronger predictor of the generative altruism of both Muslim and non-Muslim students than religiosity/spirituality. In light of these results, recommendations were provided about activities that can be conducted on students' generative altruism and future research.

Keywords: Religiosity, spirituality, affective moral reasoning, generative altruism, Muslim societies, Muslim students, non-Muslim students

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INTRODUCTION

Through education, it is aimed to provide individuals with knowledge and skills as well as positive attitudes and demeanours. Learning positive attitudes and demeanours contributes to “individuals being compassionate, fair, democratic, tolerant, responsible, and helpful” (Ümmet, Ekşi & Otrar, 2013, 303); supports their “success” immediate environment and “community” (Swank, Robinson & Ohrt, 2012, 69); enables “sharing”, “working (or playing)” together, and “empathy” towards others (Robinson III & Curry, 2005, 68). These qualities are the product of the values that constitute basic human characteristics and at the same time form the perspective of the curriculum. One of these values is altruism.

Altruism is defined as “behaviors intrinsically motivated by internalized values, goals, and self-rewards, rather than by the expectation of a concrete or social reward, or the desire to avoid punishment or sanctions” (Eisenberg et al., 1999, 1360). In addition, generative altruism “focuses on direct encounters with those in need or others asking for help and subsequent reflexive intentions and concrete reactions towards it” (Büssing, Kerksieck, Günther & Baumann, 2013, 347). These reactions can include charitable values such as “concrete helping, consideration of concrete ways to alleviate suffering or relieve their distress, an empathic consideration of others’ needs or giving money” (Büssing, Kerksieck, Günther & Baumann, 2013, 347).

Due to the growing demand for social responsibility in the world, the presence of generative altruism in curriculums as one of the values with the ultimate purpose and spirit of the educational process seems to be compatible with the needs of society. This is predisposed to logic, especially when it is taken into account that the behavior of avoiding helping in case of need turns into serious social problems observed in various societies of the world (Stürmer & Siem, 2017). It can be considered in this context that altruism is one of the root values of teaching programs in primary and secondary schools in Turkey whose population is mostly Muslim. (Republic of Turkey Ministry of National Education, 2018a-e).

Altruism is a “complex construct” that has been treated by different viewpoints (Moura, Filgueiras & Figueiredo, 2020, 127). One of the concepts associated with this complex structure is religiosity/spirituality (Bloom, 2012). While religiosity is defined as “the degree of influence one’s faith has on his/her values, behaviors and everyday life”, spirituality indicates “the ability to be a believer and a spiritual person but not necessarily a religious one” (Nasser, 2020, 15). Interestingly, almost all usual theoreticians and modern evolutionary scholars “underline the positive connection between religiosity/spirituality and altruism, although each approaches this issue from a different theoretical perspective” (Saroglou, 2013, 439). Studies examining altruism in the context of religiosity/spirituality are found in the literature (Az & Acar, 2020; Curry, Smith & Robinson III, 2009; Düzgüner, 2013; Huber & MacDonald, 2012; Sağır, 2020; Swank, Robinson & Ohrt, 2012; Şanlı & Koç, 2019). In the study of Az and Acar (2020), the relationship between the university students’ levels of religiosity and altruism was investigated. In the study conducted with 510 undergraduate students, it was determined that there was a positive significant relationship between religiosity levels and altruism levels.

Another study revealing the relationship between altruism and religiosity/spirituality was carried out by Swank, Robinson and Ohrt (2012) in the UK. Examining the feasibility of a proposed model for the development of altruism perceived by students studying at various universities in the UK, the study found that there was consensus among the study’s participants that both religiosity and spirituality could contribute to participating in altruistic acts. At the same time, participants stated that spirituality had an effect on the manifestation of altruism.

The relationship between altruism and spirituality was investigated in a sample of 186 undergraduate psychology students studying at a Catholic-affiliated university in the USA (Huber & MacDonald, 2012). In the study, altruism was most strongly linked to spiritual experiences and then to spiritual cognitions. Regression analyses revealed that non-religious spiritual cognitions and spiritual experiences are the strongest predictors of altruism.

In another study on the relationship between spirituality and altruism was investigated in Turkish and American cultures (Düzgüner, 2013). A large number of participants in both Turkey and the USA indicated that altruism was related to spirituality.

In a study designed to explore the manifestation and development of altruism in the United States, altruism was investigated as defined by 34 participants over the age of 70 (Curry, Smith & Robinson III, 2009). 29 of them reported that they were "Jewish" (4), Quaker (5), Protestant (17), Unitarian/Universalist (2), ethical culture (1). Some of the participants with different religious beliefs said that altruism may depend on religion while others say religiosity can impose charity as ordered by a doctrine of faith.

In a study conducted to determine the relationship between altruism and religious attitude levels of individuals working in different professions, it was shown that there is a low-level and positively significant relationship between religious attitude and altruism (Sağır, 2020). In other words, it was concluded that altruism increases as religious attitudes increase. However, religious attitude is found to be a variable that significantly predicts altruism.

Another study examining the role of religiosity on altruism found a positive significant correlation between religiosity and altruism (Şanlı & Koç, 2019). In the study, in which 288 university students participated voluntarily, it was found that religiosity is a significant predictor of altruism. The authors have suggested that research on this subject may contribute to the development of curriculums.

Another variable that is thought to lead to a variation in altruism is moral reasoning (Ersanlı & Çabuker, 2015; Underwood & Moore, 1982). Moral reasoning is defined as "the ability to assess moral situations and to justify courses of action" (Villegas de Posada & Vargas-Trujillo, 2015, 409). It may be useful to briefly review the work done on this subject to examine how moral reasoning is associated with altruism. For example, the study of 550 adolescents from Turkey showed a statistically significant positive relationship between moral reasoning and altruism (Kumru, Carlo, & Edwards, 2004). Underwood and Moore's (1982) meta-analysis study found a .27 correlation between moral reasoning and altruism. Villegas de Posada and Vargas-Trujillo's (2015) study, which conducted a similar meta-analysis study, reported a .21 correlation between moral reasoning and altruism.

Students use "different moral reasoning to determine their behaviors" (Chin & Chou, 2013, 11). Although the reasoning is always assumed to be a cognitive process, affective processes are predominant in many reasoning (May & Kumar, 2019). This requires accepting that "knowledge is not absolute" and "the ability to regulate one's emotional responses in choosing a moral course" (Morton, Worthley, Testerman, & Mahoney, 2006, 400). In this study, affective moral reasoning, a variable whose predictability on altruism has not been investigated before, was used to trace the contributions of the "affective factors such as the ability to empathize" that Kohlberg briefly mentioned in his theory (Kohlberg & Hersh, 1977, 57).

Studies in the literature examining altruistic behavior in societies with different religious beliefs, whose results are presented above, associate moral reasoning and religiosity/spirituality with altruism. Similar to the religion of Islam, which is commanded to help neighbours, friends, relatives, and the needy (Köycü, 2018; Özarslan, 2005), some religions such as Judaism and Christianity encourage helping others as well as showing love for God (Scott & Seglow, 2007). Additionally, various religions including Judaism, Christianity, Hinduism, and Confucianism support the "Golden Rule" concept that can be summed up as "do unto others as you would have them do unto you" (Scott & Seglow, 2007, 6). The perception of morality, religiosity, and spirituality exhibits "a structure shaped by the culture in which it is located" (Düzgüner, 2013, 235). Considering generative altruism from the perspective of educational sciences in Muslim societies with different religious beliefs expresses the need to focus on the relationships of students' generative altruism with their level of religiosity/spirituality and affective moral reasoning.

In general, Muslim societies are considered to have a high tendency towards generative altruist behaviors such as charity. However, this does not mean that non-Muslim students in Muslim societies have lower levels of generative altruistic behavior compared to Muslim students. Moreover, the role of the collaborative environment and socialization, which integrated into Muslim societies, and effects of the personal efforts of students could reasonably be expected to increase the motivation of non-Muslim students to act generatively altruistically. In Muslim societies, revealing the possible relationship of altruism with religiosity/spirituality and affective moral reasoning is important in terms of being a situation that concerns different scopes of educational sciences. In determining the root values and acquisitions related to generative altruism in curriculum, the values that foster generative altruism are an issue that should be considered and known. The importance of understanding the predictability of religiosity/spirituality and

affective moral reasoning on generative altruism applies not only to academics working in the scope of the curriculum, but also to teachers who are practitioners of curriculum, decision-makers, and policymakers. In addition, the productive altruism discussed in this study is an extremely important factor for students' academic life and personal development, as it provides a feeling of “conflict-free pleasure in fostering the success and/or welfare of another” (Seelig & Rosof, 2001, 947). Therefore, the fact that the findings obtained when the relationship between generative altruism and students' level of religiosity/spirituality and moral reasoning has been investigated can contribute to the students' academic life, personal and social development of adolescents, and the provision of educational services more effectively increases the importance of the study. The notion that the findings reached by examining the relationship between generative altruism and students' level of religiosity/spirituality and moral reasoning levels can help to understand complex structures such as students' self-actualization and valuing others, and to set more effective educational goals, highlights the importance of this research. On the other hand, although there are researches that reveal the predictors of religiosity/spirituality and moral reasoning on altruism in societies with different religious beliefs, there is no study investigating the predictive value of Muslim and non-Muslim students living in Muslim societies on generative altruism. In this context, it is expected that the results of the current research will contribute to the curriculum to be designed and educational practices in Muslim societies. In this aspect, this study aims to comparatively examine the predictability of religiosity/spirituality and affective moral reasoning levels of Muslim and non-Muslim students in Muslim societies on their generative altruism. To achieve this goal, the following questions are tried to be answered:

1. Is there a statistically significant difference between the generative altruism levels of Muslim and non-Muslim students in Muslim societies?
2. Are the levels of religiosity/spirituality and sensory moral reasoning levels of Muslim students in Muslim societies significant predictors of generative altruism levels?
3. Are the levels of religiosity/spirituality and sensory moral reasoning levels of non-Muslim students in Muslim societies significant predictors of generative altruism levels?

METHOD

RESEARCH MODEL

This study is a relational survey model type quantitative research in which secondary data obtained from Advancing Education in Muslim Societies 2018-2019 (AEMS) are analysed. Secondary data analysis is a research method that “applies the same basic research principles as studies utilizing primary data” (Johnston, 2017, 619). With this method, an existing database is analysed to find answers to “the original research question(s)” with different research methods, or to answer “new questions with old data” (Turner, 1997, 5). The fact that studies using secondary data allow access to new and / or additional findings that aren't included in the original research (Sherif, 2018: 26) and they can be used for comparative research in different contexts, different time periods and between different social groups and cultures (Corti, 2008: 801) is the reason why this method has been preferred in this study.

PARTICIPANTS

The data of the study were obtained from 6722 students, who are in 9th, 10th, 11th and 12th grades, in ten countries participating in the first wave of AEMS fieldwork. In the countries covered by the study, “an effort was made to randomize as much as possible the selection of schools from each region, and the selection of students within each school” (Nasser, 2020, 17). However, due to factors such as “regional differences, financial budget, host-country approvals, samples were restricted to a few selected regions” (<https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/WGCMP9> for further information about the sampling method) (International Institute of Islamic Thought, 2020, 2).

In this study, the data of the students who answered all of the scale items were used. Students who left any item in the scales empty or did not specify their religious beliefs were excluded from the study. As a result, data from four countries with very few students (Azerbaijan, Indonesia, Palestine, and Sudan) were not

used, although 14 countries participated in the first wave of AEMS fieldwork. The distribution and religious beliefs of the students within the scope of the study by country are offered in Table 1.

Table 1. Distribution of the Students Participating in the Study by Country According to Their Beliefs

Countries	Number of Students	Muslim	Non-Muslim
Bangladesh	1258	1179	79
Bosnia	648	558	90
India	751	738	13
Kenya	451	214	237
Kyrgyzstan	695	636	59
Malaysia	1095	860	235
Mauritius	369	178	191
Tanzania	466	427	39
Tatarstan	734	361	373
Uganda	255	227	28
Total	6722	5378	1344
		6722	

The countries given in Table 1 are those located in Europe, Asia, and Africa. Looking at the number of students participating in the study, it is seen that the most students participated from Bangladesh (n=1258) and the least from Uganda (n=255). There are more Muslim students in seven countries, while three countries have more non-Muslim students. Table 2 presents descriptive data about the participants.

Table 2. The Distribution of the Participants by Demographics (N=6722)

Countries	Gender			Age			Grade				
	Female	Male	Empty	Less than 18	18 and over	Empty	9	10	11	12	Empty
Bangladesh	708	537	13	1228	15	15	515	651	36	6	50
Bosnia	346	296	6	318	327	3	1	1	323	316	7
India	362	381	8	679	61	11	153	139	296	154	9
Kenya	247	196	8	310	141	0	36	106	168	79	62
Kyrgyzstan	389	300	6	618	73	4	240	172	213	14	56
Malaysia	732	352	11	1056	32	7	255	353	435	39	13
Mauritius	295	71	3	341	26	2	0	130	150	69	20
Tanzania	272	187	7	406	55	5	7	101	184	143	31
Tatarstan	422	309	3	705	14	15	311	283	96	9	35
Uganda	159	96	0	156	92	7	13	1	2	5	234
Total	3932	2725	65	5817	836	69	1531	1937	1903	834	517

58.5% of the students were female whereas, the remaining 40.5% were male (1% of the students left it empty). 86.5% of the students were less than 18, and 12.5% were 18 and over (1% of the students left it empty). The percentage of students studying in the 9th, 10th, 11th, and 12th grades is 22.8%, 28.8%, 28.3%, and 12.4%, respectively (7.7% of the students left it empty).

MEASURES

RELIGIOSITY/SPIRITUALITY SCALE

The religiosity / spirituality levels of the students were measured using the Centrality of Religiosity Scale (CRS) designed by Huber & Huber (2012). The Centrality of Religiosity Scale gives a measure of the importance and clarity of religiosity in students and consists of 7 items. Students are asked to choose one

of the "not important", "slightly important", "moderately important", "important", or "very important" options for the given statements in 5 Likert-type scale. The items of the scale are given scores between 1 and 5; thus, possible scores range from 7 to 35. To find out the students' religiosity / spirituality scores, a score between 1.0 and 5.0 was calculated for each student by dividing the sum scores through the number of scale items scored. Huber & Huber (2012, 720) propose the following thresholds in their study: "1.0 to 2.0: not-religious, 2.1 to 3.9: religious, 4.0 to 5.0: highly-religious." In this study, Cronbach's Alpha internal consistency coefficients of the scale are presented in Table 3.

Table 3. Cronbach's Alpha Internal Consistency Coefficients of the Centrality of Religiosity Scale

	Cronbach's Alpha
Muslim students	.895
Non-Muslim students	.962
Total	.933

According to the Cronbach's Alpha coefficients presented in Table 3, it can be said that the questions used to measure the religiosity/spirituality levels of the students have a high level of reliability coefficient. (Hajjar, 2018).

AFFECTIVE MORAL REASONING SCALE

Graham, Haidt & Nosek's (2009) Moral Foundations Questionnaire (MFQ) was used to determine the affective moral reasoning levels of the students. 5 items of the first part of the MFQ scale was used for the affective subscale (Nasser, 2020; International Institute of Islamic Thought, 2020). To determine the extent to which statements on a five-point scale are relevant to students' thoughts, students have chosen one of the "moderately agree", or "strongly agree" options. The items of the scale are given scores between 1 and 5; thus, possible scores range from 5 to 25. To find out the students' affective moral reasoning scores, a score between 1.0 and 5.0 was calculated for each student by dividing the sum scores through the number of scored scale items. High scores from the scale indicate a high level of affective moral reasoning. The Cronbach's Alpha internal consistency coefficients of the scale for this study are presented in Table 4.

Table 4. Cronbach's Alpha Internal Consistency Coefficients of Affective Moral Reasoning Scale

	Cronbach's Alpha
Muslim students	.574
Non-Muslim students	.579
Total	.578

Cronbach's Alpha coefficients presented in Table 4 are found to be close to the acceptable limit ($0.6 \leq \alpha < 0.7$) (Hajjar, 2018). There may be several reasons why the reliability coefficient of the affective moral reasoning scale is slightly lower than the acceptable limit. One of these reasons may be that the reliability coefficient produces values below the true reliability because the factor loads (.507, .603, .621, .643, and .679) of the scale items are not equal to each other (congeneric) (Lucke, 2005). In addition, considering that the scale of sensory moral reasoning is generally developed for the participants from North America or Western Europe, the scale may not have performed very well in countries that are "mostly located in Africa, the Middle East, and Central Asia" (Nasser, 2020, 41). The fact that this value, which is .64 for Bosnia, a country in Europe, is within acceptable limits supports this view.

GENERATIVE ALTRUISM SCALE

Büssing, Kerksieck, Günther, and Baumann's (2013) Generative Altruism Scale (GALS) was used to determine the generative altruism levels of students. The 7-item GALS includes both affective and behavioural items. Students responded to the expressions presented to them with one of the "strongly disagree", "moderately disagree", "undecided", "moderately agree", or "strongly agree" options. The items of the scale were given scores between 1 and 5; thus, possible scores ranged from 7 to 35. To find out the students' generative altruism scores, a score between 1.0 and 5.0 was calculated for each student by dividing the sum scores through the number of scored scale items. High scores from the scale indicate a high level

of generative altruism. Within the scope of this study, the Cronbach's Alpha internal consistency coefficients of the Generative Altruism Scale are presented in Table 5.

Table 5. Cronbach's Alpha Internal Consistency Coefficients of the Generative Altruism Scale

	Cronbach's Alpha
Muslim students	.787
Non-Muslim students	.824
Total	.797

DATA ANALYSIS

In this study, firstly, an independent sample t-test has been conducted to analyse whether there is a significant difference between the generative altruism levels of Muslim and non-Muslim students in Muslim societies. In the next step of the research process, multiple linear regression analyses have been conducted using the generative altruism levels of students as dependent variables and the students' levels of religiosity/spirituality and affective moral reasoning as independent variables.

Since the data of 6722 students have been analysed in this study, it can be accepted that the distribution is normal. Lumley, Diehr, Emerson and Chen's (2002, 166) study shows that "the t-test and least-squares linear regression do not require any assumption of normal distribution in sufficiently large samples". However, for large samples, the "Law of Large Numbers" and "Central Limit Theorem" mechanisms both work. Because "the sample mean of the large number of observations will be close to the mean or will have a distribution close to normal, even if the observations themselves do not have normal distribution" (Shatskikh & Melkumova 2016, 767). However, the mean, mode, median, skewness, and kurtosis values of the variables are given in Table 6 to give an idea about whether the data show normal distribution or not.

Table 6. Descriptive Statistics for Variables

Variables	Mean	Mode	Median	Skewness	Curtosis
Religiosity/spirituality	4.15	5.00	4.57	-1.48	1.54
Affective moral reasoning	3.97	4.20	4.00	-.75	.52
Generative altruism	3.77	3.71	3.71	-.51	.56

According to the values in Table 6, the mean, mode, and median values are very close to each other, and therefore the data is distributed symmetrically around the central tendency measures. In cases where these values are not equal, the normality of the series can be found out by interpreting the skewness and kurtosis values. Various opinions regarding kurtosis and skewness values suggest that these values can be accepted in the range of -1 to +1 (Morgan, Leech, Gloeckner & Barrett, 2004) or -2 and +2 (George & Mallery, 2016) to provide normality assumptions. In this study, it can be said that the scores show a normal distribution because of the skewness and kurtosis values within the specified ranges. Besides, the tolerance, variance inflation factor (VIF), and condition indices (CI) values of the predictor variables included in the analysis are given in Table 7.

Table 7. Tolerance, VIF and CI Values of the Predictive Variables

Variables	Tolerance	VIF
Religiosity/spirituality	.923	1.083
Affective moral reasoning	.923	1.083
CI: Dimension 1= 1.00, Dimension 2= 9.25, Dimension 3= 13.45		

When the values in Table 7 are examined, the tolerance value of the independent variables greater than .20, the VIF value below 10 and the CI value below 30 indicate that there is no multicollinearity between the

variables (Petrini et.al. 2012; Robinson & Schumacker, 2009). IBM SPSS Statistic 22 package program has been used in the analysis.

FINDINGS

For the first research question, the results of the t-test analysis conducted to determine whether there is a significant difference between the generative altruism levels of Muslim and non-Muslim students are presented in Table 8.

Table 8. T-Test Results for Comparing Generative Altruism Levels According to Students' Religious Beliefs

Variable	Religionial Belief	N	\bar{X}	Ss	t	Sd	Cohen's d
Generative Altruism	Muslim	5378	3.80	.70	6.449*	1950	.20
	Non-Muslim	1344	3.65	.77			

* $p < .01$.

As a result of the independent groups t-test analysis on the generative altruism levels of the research groups, the mean of the generative altruism levels of Muslim students is 3.80, and that of the non-Muslim students is 3.65. When the generative altruism scores of the students have been examined, a significant difference has been found in favor of Muslim students ($t_{(1950)}=6.449$, $p=.000$). In other words, the generative altruism levels of Muslim students ($\bar{X}=3.80$) are statistically significantly higher than non-Muslim students ($\bar{X}=3.65$). It can be stated that the effect size of the difference (Cohen's $d=.20$) found is low (Cohen, 1988). The second research question aimed to determine the predictions of religiosity/spirituality and affective moral reasoning levels of Muslim students on their generative altruism. Multiple linear regression analysis has been performed to answer this research question. The model summary and regression coefficients of multiple linear regression analysis are given in Table 9.

Table 9. Findings Related to Religiosity/Spirituality and Affective Moral Reasoning to Predict the Generative Altruism of Muslim Students

Predictors	$R = .461$ $R^2 = .212$ $F_{(2,5375)} = 723.958$ $p = .000$				
	Coefficients				
	B	Std. Error	Beta	t	Sig.
Religiosity/Spirituality Level	.145	.011	.162	13.118	.000
Affective Moral Reasoning Level	.388	.012	.399	32.299	.000

In the multiple linear regression analysis conducted to predict the generative altruism levels of Muslim students (Table 9), the religiosity/spirituality and affective moral reasoning variables show a significant relationship ($R=.46$, $R^2=.21$) with the generative altruism levels in the context of their mutual interactions ($F_{(2-5375)}=723.96$, $p<.01$). Together, these variables explain 21.2% of the generative altruism level. According to the standardized regression coefficients, the relative importance order of variables on generative altruism; affective moral reasoning ($\beta=.40$), and religiosity/spirituality ($\beta=.16$). Considering the t-test results regarding the significance of the regression coefficients, it is seen that the religiosity/spirituality level ($t= 13.12$; $p<.01$) and affective moral reasoning level ($t= 32.30$; $p<.01$) are significant predictors of generative altruism. In other words, it can be said that a 1-unit increase in religiosity and reasoning levels will cause an increase of .15 and .39 in the altruism levels of Muslim students, respectively.

The third research question of the study aims to determine the predictors of non-Muslim students' level of religiosity/spirituality and affective moral reasoning on their generative altruism. Multiple linear regression analysis was performed to answer this research question. The model summary and regression coefficients of multiple linear regression analysis are given in Table 10.

Table 10. Findings Related to Religiosity/Spirituality and Affective Moral Reasoning to Predict the Generative Altruism of Non-Muslim Students

Predictors	$R = .552$ $R^2 = .304$ $F_{(2,1341)} = 293.083$ $p = .000$				
	Coefficients				
	B	Std. Error	Beta	T	Sig.
Religiosity/Spirituality Level	.177	.014	.310	12.426	.000
Affective Moral Reasoning Level	.354	.025	.348	13.966	.000

In the multiple linear regression analysis conducted to predict the generative altruism levels of non-Muslim students (Table 10), the religiosity/spirituality and affective moral reasoning variables show a significant relationship ($R = .55$, $R^2 = .30$) with the generative altruism levels in the context of their mutual interactions ($F_{(2-1341)} = 293.08$, $p < .01$). Together, these variables explain 30.4% of the generative altruism level. According to the standardized regression coefficients, the relative importance order of variables on generative altruism; affective moral reasoning ($\beta = .35$), and religiosity/spirituality ($\beta = .31$). Considering the significance tests of the regression coefficients, it is seen that both variables are significant predictors of generative altruism ($p < .01$). Considering the t-test results regarding the significance of the regression coefficients, it is seen that the religiosity/spirituality level ($t = 12.43$; $p < .01$) and affective moral reasoning level ($t = 13.97$; $p < .01$) are significant predictors of generative altruism. In other words, it can be said that a 1-unit increase in religiosity and reasoning levels will cause an increase of .18 and .35 in the altruism levels of non-Muslim students, respectively.

DISCUSSION AND CONCLUSION

This study aims to examine the predictability of religiosity/spirituality and affective moral reasoning levels of Muslim and non-Muslim students on their generative altruism in Muslim societies. For this reason, some questions have been answered.

For the first question of the study, it was tested whether there was a statistically significant difference between the generative altruism levels of Muslim and non-Muslim students in Muslim societies. According to the findings, the level of generative altruism of Muslim students was statistically significantly higher than their non-Muslim peers. Considering that there are significant differences in altruistic behaviors even among the members of the same religion in the same society (Wuthnow, 2012), it may be normal that the generative altruism levels of people with different religious beliefs differ. The results of other studies also support this finding (Bennett & Einolf, 2017; Reitsma, Scheepers, & Grotenhuis, 2006; Wiepking, Bekkers, & Osili, 2014). Bennett & Einolf's (2017) study of 179961 participants from 126 countries showed that Muslims were more likely to exhibit altruist behavior than members of other religions, excluding Jews. It was found that non-Christians in England were more willing to engage in altruistic behaviors compared to Catholics (Reitsma, Scheepers, & Grotenhuis, 2006). In a study involving 21 European countries and the United States, it was reported that people belonging to any type of religious group were more likely to engage in altruistic behaviors compared to people who are not affiliated with religion (Wiepking, Bekkers, & Osili, 2014). There may be some reasons of the high levels of generative altruism of Muslim students in the current study. One of these reasons may be that generative altruism is further encouraged by the religious traditions of Muslims, since the research is conducted in Muslim societies. Worships and institutionalized religious traditions, which are manifestations of generative altruism, such as distributing the meat of sacrificed animals, giving zakat⁴, fitrah⁵, and charity to the poor, have-nots, orphans, solitaires, and those in need (Özcan, 2018), can be more effective for Muslim students. In schools and formal/informal institutions providing religious education in Muslim societies, Muslim students may be more exposed to

⁴ "Literally, zakat means to grow and to increase, while in Shari'ah, zakat is a concept referring to the redistribution of wealth prescribed by God to the deserving category of people" (Nadzri, Rahman, & Omar, 2012, 64).

⁵ Fitrah is "a special form of Islamic alms-charity" (Uzun, 2007, 161).

the doctrine included in the holy book of Muslims that "they prefer their other siblings over themselves, even when they are in need" (Sancaklı, 2006, 34), which can be another reason. Although there is a positive understanding of generative altruism in other religions (Bennett & Einolf, 2017; Özcan, 2018), non-Muslim students may have lower levels of generative altruism due to the difficulties in introducing this positive understanding to students of other religions through education and cultural transmission in a Muslim society. Although there is a statistically significant difference, the reason for the low effect size (Table 8) may be due to the encouragement of altruism in all religions (Saroglou, 2013) and the stronger messages of generative altruism by non-Muslim students in the minority who want to be accepted in the wider society (Bennett & Einolf, 2017).

For the second and third questions of the study, it was tested whether the religiosity/spirituality and affective moral reasoning levels of Muslim and non-Muslim students in Muslim societies predicted their generative altruism levels. According to the findings, the religiosity/spirituality and affective moral reasoning levels of both Muslim and non-Muslim students statistically significantly predicted their generative altruism. It can be said that this result is consistent with the results of studies showing that individuals' level of religiosity/spirituality and affective moral reasoning positively contribute to their altruism (Az & Acar, 2020; Curry, Smith, & Robinson III, 2009; Düzgüner, 2013; Huber & MacDonald, 2012; Kumru, Carlo & Edwards, 2004; Sağır, 2020; Şanlı & Koç, 2019; Swank, Robinson, & Ohrt, 2012; Villegas de Posada & Vargas-Trujillo, 2015; Underwood & Moore, 1982). In both the scientific and religious literature, religiosity and spiritual awareness have been "linked to the expression of positive traits such as altruism" (Huber & MacDonald, 2012, 207). Religiosity might increase one's altruism, and altruism "might be triggered by messages that religions convey or might somehow emerge from the very nature of religious practice and activity" (Bloom, 2012, 185). As Cohen (2003, 811) points out, "people base their attitudes on social meaning", and at this point religious teachings make obvious claims such as generative altruism that religious people can embrace. From this perspective, religiosity/spirituality can be expected to predict students' generative altruism. What is noteworthy here is that the affective moral reasoning is a stronger predictor of the generative altruism of both Muslim and non-Muslim students than religiosity/spirituality (Table 9-10). This result propounds that the generative altruism levels of students whose affective moral reasoning skills are developed through formal education may have increased. As a matter of fact, the detection of "a moderate relationship ($r=.54$)" between moral reasoning and education in the study carried out by Colby et.al. (1983, 71) supports this idea. In addition, although students in both samples are from different countries, they may have acquired sufficient critical reasoning skills that may be necessary for affective moral reasoning that may developmentally influence their generative altruism. Moreover, students with a higher ability to make affective moral reasoning may be more likely to understand, consider, and empathize with the situational and personal factors needed to engage in generative altruistic behavior (Carlo, Hausmann, Christiansen, & Randall, 2003; Eisenberg, Fabes, & Spinrad, 2006).

To sum up, the current findings broaden the current understanding of generative altruism. In studies conducted in some non-Muslim societies, there was evidence that altruism was linked to religiosity/spirituality and moral reasoning. Specifically, in this study, it was shown that religiosity/spirituality and affective moral reasoning were significant predictors of Muslim and non-Muslim students whose generative altruism levels were significantly different from each other. These results mean that generative altruism is a fundamental aspect of spirituality and morality that is not the monopoly of a particular religion. Pessi's (2011) study, which reveals that there is no significant connection between Christian values and exhibiting generative altruistic behaviors such as helping family members and friends, also supports this result.

It can be said that this study has some limitations. In this study, which is cross-sectional research due to the structure of AEMS, causality relationships between dependent and independent variables cannot be revealed. Longitudinal and experimental research can be designed to examine possible causal relationships between predictor and predicted variables. However, due to the limitations of the research sampling and data collection tools, only religiosity/spirituality and affective moral reasoning have been focused on to explain generative altruism. Another limitation is that data collection tools are based on self-reported statements that may indicate students' intentions rather than observation of concrete activities.

Several suggestions can be made based on the results obtained in the research. Generative altruism, especially as an intrinsic motivation tool, can be promoted by curriculums that include spirituality and affective moral reasoning in education. This can also be facilitated by providing peer support to students facing academic difficulties.

School administrators can make the learning, regeneration, and innovation environments at school available to foster students' generative altruism. Particularly, students can be encouraged to participate in social responsibility projects that can develop affective moral reasoning skills, which have high predictive power on generative altruism. In these social responsibility projects, it may be allowed to use environments such as school dining halls, school cafeterias, schoolyards, sports facilities. Such projects allow students to relate the consequences of their affective moral reasoning to their actions, thereby helping to create a mental scheme for generative altruistic intentions and behaviors.

Based on the result that non-Muslim students' levels of generative altruism are relatively lower, intervention programs to improve the generative altruism of non-Muslim students in schools in Muslim societies can be organized to support students' development as benevolent, generous and compassionate individuals.

Developing generative altruism in students can be facilitated by organizing workshops where affective moral reasoning dilemmas are presented and the importance of spirituality in solving social problems is shown to teachers who spend the most time with students, have direct relationships with students, and act as role-models for students. Besides, techniques of group discussion about affective moral judgments can be used to design educational situations. By using teaching techniques such as role-playing, drama, and brainstorming, positive thoughts can be formed in students about the results of their affective moral reasoning. In addition, generative altruism can be internalized as a manifestation of faith with the help of teaching techniques such as six thinking hats, opinion development, speaking circle, Socratic method, which will allow students to discover their personal values regarding their religiosity/spirituality.

Further studies can be carried out to overcome that will overcome the limitations of this study. In addition, this research is limited to 9th, 10th, 11th, and 12th graders in Muslim societies. Therefore, studies can be conducted to cover larger samples by including students from different societies and education levels. Future studies designed to examine whether the correlates of generative altruism in non-Muslim societies are similar may provide some insight into the fundamental structures of generative altruism.

REFERENCES

- Az, Mehmet Sait, and Muhammet Cevat Acar. "The relationship between religiosity and altruism: A research on university students." *Pamukkale University Journal of Divinity Faculty*. 7 (1) (2020): 742-773. <https://doi.org/10.17859/pauifd.731273>
- Bennett, Matthew R., and Christopher J. Einolf. "Religion, altruism, and helping strangers: A multilevel analysis of 126 countries." *Journal for the Scientific Study of Religion*. 56 (2) (2017): 323-341. <https://doi.org/10.1111/jssr.12328>
- Bloom, Bloom, Paul. "Religion, morality, evolution." *Annual review of psychology*. 63 (2012): 179-199. <https://doi.org/10.1146/annurev-psych-120710-100334>
- Büssing, Arndt, et al. "Altruism in adolescents and young adults: Validation of an instrument to measure generative altruism with structural equation modeling." *International Journal of Children's Spirituality*. 18 (4) (2013): 335-350.
- Carlo, Gustavo, et al. "Sociocognitive and behavioral correlates of a measure of prosocial tendencies for adolescents." *The Journal of Early Adolescence*. 23 (1) (2003): 107-134. <https://doi.org/10.1177/0272431602239132>
- Chin, Pei-Hsun, and Shih Yung Chou. "A conceptual analysis of cognitive moral development and altruistic behavior in the work place." *International Journal of Business and Social Science*. 4 (6) (2013): 9-14.
- Cohen, Geoffrey L. "Party over policy: The dominating impact of group influence on political beliefs." *Journal of Personality and Social Psychology*. 85 (5) (2003): 808-822. <https://doi.org/10.1037/0022-3514.85.5.808>
- Cohen, Jacob. *Statistical Power Analysis for the Behavioral Sciences* (2nd ed.). Hillsdale, NJ: Lawrence Earlbaum Associates, 1988.
- Colby, Anne, et al. "A longitudinal study of moral judgment." *Monographs of the Society for Research in Child Development*. 48 (1-2) (1983): 1-124. <https://doi.org/10.2307/1165935>
- Corti, Louise. "Secondary Analysis". *The Sage Encyclopedia of Qualitative Research Methods Volumes 1&2*. Ed. L. M. Given. Thousand Oaks, California: SAGE Publications, Inc., 2008. 801-803.
- Curry, Jennifer R., Heather L. Smith, and Edward H. Robinson III. "The development and manifestation of altruistic caring: A qualitative inquiry." *Counseling and Values*. 54 (1) (2009): 2-16. <https://doi.org/10.1002/j.2161-007X.2009.tb00001.x>

- Düzgüner, Sevde. "The Perceptions Of Spirituality And Its Relationship To Altruism (A Qualitative And Comparative Research On Blood Donation In Turkey And The United States)." Unpublished Doctoral Thesis. Necmettin Erbakan University Institute of Social Sciences, Konya, (2013).
- Eisenberg, Nancy, Richard A. Fabes, and Tracy L. Spinrad. "Prosocial development". Handbook of child psychology, Vol. 3: *Social, emotional, and personality development 6th ed.* Series Ed. William Damon & Richard M. Lerner & Vol. Ed. Nancy Eisenberg. New Jersey: John Wiley & Sons, 2006. 646-718.
- Eisenberg, Nancy, et al. "Consistency and development of prosocial dispositions: A longitudinal study." *Child Development*. 70 (6) (1999): 1360-1372. <https://doi.org/10.1111/1467-8624.00100>
- Ersanlı, Kurtman, and Nurdan Doğru Çabuker. "Psychometric properties of the altruism scale." *Electronic Journal of Social Sciences*. 14 (52) (2015): 43-53. <https://doi.org/10.17755/esosder.70589>
- George, Darren, and Paul Mallery. *IBM SPSS Statistics 23 Step by Step A Simple Guide and Reference (14th ed.)*. New York: Routledge Taylor & Francis, 2016.
- Graham, Jesse, Jonathan Haidt, and Brian A. Nosek. "Liberals and conservatives rely on different sets of moral foundations." *Journal of Personality and Social Psychology*. 96 (5) (2009): 1029-1046. <https://doi.org/10.1037/a0015141>
- Hajjar, Said Taan El. "Statistical analysis: internal-consistency reliability and construct validity." *International Journal of Quantitative and Qualitative Research Methods*. 6 (1) (2018): 46-57.
- Huber, Stefan, and Odilo W. Huber. "The centrality of religiosity scale (CRS)." *Religions*. 3 (3) (2012): 710-724. <https://doi.org/10.3390/rel3030710>
- Huber, John Thomas, and Douglas A. MacDonald. "An investigation of the relations between altruism, empathy, and spirituality." *Journal of Humanistic Psychology*. 52 (2) (2012): 206-221. <https://doi.org/10.1177/0022167811399442>
- International Institute of Islamic Thought. *Mapping the terrain study technical manual 2018–2019*. Herndon, VA: International Institute of Islamic Thought, 2020.
- Johnston, Melissa P. "Secondary data analysis: A method of which the time has come." *Qualitative and quantitative methods in libraries*. 3 (3) (2017): 619-626.
- Kohlberg, Lawrence, and Richard H. Hersh. "Moral development: A review of the theory." *Theory into practice* 16.2 (1977): 53-59.
- Köycü, Erdoğan. "Ahlâkî sorunlara hadislerden bazı çözüm önerileri [Some solutions to moral problems from hadiths]." *International Journal of Cultural and Social Studies (IntJCSS)*. 4 (Special Issue) (2018): 109-127.
- Kumru, Asiye, Gustavo Carlo, and Carolyn P. Edwards. "Relational, cultural, cognitive, and affective predictors of prosocial behaviors." *Türk Psikoloji Dergisi*. 19 (54) (2004): 109-125.
- Lucke, Joseph F. "The α and the ω of congeneric test theory: An extension of reliability and internal consistency to heterogeneous tests." *Applied Psychological Measurement*. 29 (1) (2005): 65-81. <https://doi.org/10.1177/0146621604270882>
- Lumley, Thomas, et al. "The importance of the normality assumption in large public health data sets." *Annual Review of Public Health*. 23 (1) (2002): 151-169. <https://doi.org/10.1146/annurev.publhealth.23.100901.140546>
- May, Joshua, and Victor Kumar. "Moral reasoning and emotion". *The Routledge Handbook of Moral Epistemology*. Eds. Aaron Zimmerman, Karen Jones, & Mark Timmons. New York: Routledge, 2019. 139-156.
- Morgan, George A., et al. *SPSS for introductory statistics: Use and interpretation (2nd ed.)*. Mahwah, NJ: Lawrence Erlbaum Associates, 2004.
- Morton, Kelly R., et al. "Defining features of moral sensitivity and moral motivation: Pathways to moral reasoning in medical students." *Journal of Moral Education*. 35 (3) (2006): 387-406. <https://doi.org/10.1080/03057240600874653>
- Moura, Hysla Magalhães de, Alberto Filgueiras, and Camilla Vieira de Figueiredo. "Translation and content validation of the generative altruism scale-Brazilian version." *Psicologia, Conocimiento y Sociedad*. 10 (1) (2020): 125-141.
- Nadzri, Farah Aida Ahmad, Rashidah Abdur Rahman, and Normah Omar. "Zakat and poverty alleviation: Roles of zakat institutions in Malaysia." *International Journal of Arts and Commerce*. 1 (7) (2012): 61-72.
- Nasser, Ilham. *Advancing education in Muslim societies 2018-2019*. Ann Arbor, MI: Inter-university Consortium for Political and Social Research, 2020. <https://doi.org/10.3886/E117371V1>
- Özarslan, Selim. "The aid of religion to construct social unity in the globalization process." *KADER Kelam Araştırmaları Dergisi*. 3 (2) (2005): 51-64.
- Özcan, Şevket. "The Golden Rule in the World religions: Altruism." *Journal of the Human and Social Sciences Researches*. 7 (1) (2018): 285-308.
- Pessi, Anne Birgitta. "Religiosity and altruism: exploring the link and its relation to happiness." *Journal of Contemporary Religion*. 26 (1) (2011): 1-18. <https://doi.org/10.1080/13537903.2011.539835>
- Petrini, Juliana, et al. "Degree of multicollinearity and variables involved in linear dependence in additive-dominant models." *Pesquisa Agropecuária Brasileira*. 47 (12) (2012): 1743-1750.
- Reitsma, Jan, Peer Scheepers, and Manfred Te Grotenhuis. "Dimensions of individual religiosity and charity: cross-national effect differences in European countries?." *Review of Religious Research*. 47 (4) (2006): 347-362.
- Republic of Turkey Ministry of National Education. *Hayat Bilgisi Dersi Öğretim Programı İlkokul 1, 2 ve 3. Sınıflar [Life Studies Curriculum Primary School 1st, 2nd, and 3th Grades]*. Ankara: Ministry of National Education, 2018a.

- Republic of Turkey Ministry of National Education. *Matematik Dersi Öğretim Programı İlkokul ve Ortaokul 1, 2, 3, 4, 5, 6, 7 ve 8. Sınıflar* [Mathematics Teaching Program Primary and Secondary School 1st, 2nd, 3rd, 4th, 5th, 6th, 7th, and 8th Grades]. Ankara: Ministry of National Education, 2018b.
- Republic of Turkey Ministry of National Education. *Türkçe Dersi Öğretim Programı İlkokul ve Ortaokul 1, 2, 3, 4, 5, 6, 7 ve 8. Sınıflar* [Turkish Education Program Primary and Secondary School 1st, 2nd, 3rd, 4th, 5th, 6th, 7th and 8th Grades]. Ankara: Ministry of National Education, 2018c.
- Republic of Turkey Ministry of National Education. *Fen Bilimleri Dersi Öğretim Programı İlkokul ve Ortaokul 3, 4, 5, 6, 7 ve 8. Sınıflar* [Science Curriculum Primary and Secondary School 3rd, 4th, 5th, 6th, 7th and 8th Grades]. Ankara: Ministry of National Education, 2018d.
- Republic of Turkey Ministry of National Education. *Din Kültürü ve Ahlak Bilgisi Dersi Öğretim Programı İlkokul 4 ve Ortaokul 5, 6, 7 ve 8. Sınıflar* [Religious Culture and Moral Knowledge Curriculum Primary School 4th and Secondary School 5th, 6th, 7th and 8th Grades]. Ankara: Ministry of National Education, 2018e.
- Robinson, Cecil, and Randall E. Schumacker. "Interaction effects: centering, variance inflation factor, and interpretation issues." *Multiple linear regression viewpoints*. 35 (1) (2009): 6-11.
- Robinson III, EH Mike, and Jennifer R. Curry. "Promoting altruism in the classroom." *Childhood Education*. 82 (2) (2005): 68-73.
- Sağır, Zeynep. "Altruism and religious attitude: A quantitative research on different profession groups." *Journal of Eskişehir Osmangazi University Faculty of Theology*. 7 (13) (2020): 285-319. <http://doi.org/10.5281/zenodo.4021459>
- Sancaklı, Saffet. "The importance Prophet Muhammed attributed to the concept of altruism in the context of bringing up virtuous human beings." *Tasavvuf: İlmi ve Akademik Araştırma Dergisi*. 7 (17) (2006), 29-56.
- Saroglou, Vassilis. "Religion, spirituality, and altruism". *APA handbook of psychology, religion, and spirituality (Vol 1): Context, theory, and research*. Eds. K. I. Pargament, J. J. Exline, & J. W. Jones. Washington, DC: American Psychological Association, 2013. 439-457. <https://doi.org/10.1037/14045-024>
- Scott, Niall, and Jonathan Seglow. *Altruism*. New York: Open University Press, 2007.
- Seelig, Beth J., and Lisa S. Rosof. "Normal and pathological altruism." *Journal of the American Psychoanalytic Association*. 49 (3) (2001): 933-959. <https://doi.org/10.1177/00030651010490031901>
- Shatskikh, Sergey Yakovlevich, and Lana Eduardovna Melkumova. "Normality assumption in statistical data analysis." *CEUR Workshop Proceedings*. Vol. 1638. Eds. Nikolay L. Kazanskiy, Denis V. Kudryashov, Sergey B. Popov, Vladislav V. Sergeev, Roman V. Skidanov, Vladimir A. Fursov, & Vladimir A. Sobolev. Aachen: CEUR-Workshop, 2016. 763-768.
- Sharif, Victoria. "Evaluating preexisting qualitative research data for secondary analysis." *Forum qualitative sozialforschung/forum: Qualitative social research*. 19 (2) (2018): 26-42. <https://doi.org/10.17169/fqs-19.2.2821>
- Stürmer, Stefan, and Birte Siem. "A group-level theory of helping and altruism within and across group boundaries." *Intergroup Helping*. Eds. E. Van Leeuwen, & H. Zagefka. New York: Springer International Publishing, 2017. 103-127
- Swank, Jacqueline M., Mike EH Robinson, and Jonathan H. Ohrt. "Manifestation of altruism: Perceptions among counselling students in the United Kingdom." *Counselling and Psychotherapy Research*. 12 (1) (2012): 63-70. <http://dx.doi.org/10.1080/14733145.2011.562981>
- Şanlı, Aysu Gül, and Bozkurt Koç. "Does every altruist individual behave altruist? The role of authenticity and religiosity on altruism." *Middle Black Sea Journal of Communication Studies*. 4 (2) (2019): 104-114.
- Turner, Paul D. *Secondary Analysis of Qualitative Data*. Annual Meeting of the American Educational Research Association, Chicago, IL, USA, (1997, March, 24-28).
- Underwood, Bill, and Bert Moore. "Perspective-taking and altruism." *Psychological Bulletin*. 91 (1) (1982): 143-173. <https://doi.org/10.1037/0033-2909.91.1.143>
- Uzun, Hakan. "Income sources of the Turkish Aeronautical Association: "An artical on "fitre" (a special form of Islamic alms-charity), "zekât" (a special form of Islamic tax) and the donation of sacrificial animal skin." *Journal of Modern Turkish History Studies*. 6 (15): 161-176.
- Ümmet, Durmus, Halil Ekşi, and Mustafa Otrar. "The study of development of altruism scale." *Journal of Values Education*. 11 (26) (2013): 301-321.
- Villegas de Posada, Cristina, and Elvia Vargas-Trujillo. "Moral reasoning and personal behavior: A meta-analytical review." *Review of General Psychology*. 19 (4) (2015): 408-424. <https://doi.org/10.1037/gpr0000053>
- Wiepking, Pamala, René HFP Bekkers, and Una O. Osili. "Examining the association of religious context with giving to non-profit organizations." *European Sociological Review*. 30 (5) (2014): 640-654. <https://doi.org/10.1093/esr/jcu064>
- Wuthnow, Robert. *Acts of compassion: Caring for others and helping ourselves*. Princeton University Press, 1991

PRIMARY SCHOOL ADAPTATION PROBLEMS OF CHILDREN: PARENTAL EXPERIENCES AND PRACTICES ⁶

Abstract: In this study, according to the opinions of the parents whose children have adaptation problems when starting the first grade of primary school; identifying the sources of adaptation problems, the measures taken by parents and the practices they do was aimed. In the study, a semi-structured interview form was applied to 22 parents whose children had adaptation problems while starting primary school in Aşkale, Erzurum. The obtained findings were analyzed by content analysis method. According to the findings obtained, parents stated that they faced social, physical and academic changes with their children starting school, they developed negative attitudes to school and displayed negative behavior in home. Parents stated that they increased their interest towards their children and rewarded them; some parents also stated that they resorted to punishment and violence to solve the children's adjustment problems. Parents gave many advices to other parents whose children will start to primary school.

Keywords: Adjustment, adjustment to school, adjustment problems, family, views of parent

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⁶ This study was produced from a part of the master's thesis titled "The Adaptation Problems Experienced by Children Starting Primary School and the Analysis of Practices to Solve Problems According to Parents' Views".

INTRODUCTION

The transition of the child from home to school environment is an important process for him/her. Because the child encounters an academic environment for the first time. Besides, he/she encounters with his/her peers and tries to meet with teacher's expectations. At the beginning of the primary school, children's ability to form and maintain strategies to cope with the social environment is important for academic and behavioral performance (Hamre and Pianta, 2001). First-year of primary school has critical importance for the education life of the individual. Positive or negative situations experienced in this period will also affect the individual's future education. In order not to encounter a negative situation while adapting to school life, the child should be ready for school in physical, social, psychological, and mental aspects (Polat, 2004). Adaptation to school according to Goldberg (2006) is a versatile concept with dimensions such as liking school, avoiding school, academic success, and leaving school. Spencer (1999) refers adaptation to school as the degree to which the characteristics of the schools and the students come together in harmony in order to achieve an effective learning. In terms of primary school, the child's adaptation to school is seen as the social, behavioral, and academic reactions of the child against the demands of the primary school (Canbulat, 2007).

Adaptation to school is a product of relationships that include child's readiness and demographic characteristics as well as other relevant factors (such as parents, school, teachers, and peers). These relationships are an important factor in creating child's early school success (Pianta, Kraft-Sayre, Rimm-Kaufman, Gercke, and Higgins, 2001; Reynolds and Bezruczko, 1993; Rimm-Kaufman and Pianta, 2000). During the adaptation process in primary school; children's past life and school readiness (Akay and Ceylan, 2009; Arslan, 2016; Bilgili, 2007; Blair, 2002; Denham, 2006; Polat, 2014), whether they have received preschool education (Lokumcu Tozar, 2011; Magnuson, Meyers, Ruhm and Waldfogel, 2004; Ramey & Ramey, 2004; Wesley & Buysee, 2003), peer relationships, and environmental relations (Gülay, 2011; Koçyiğit, 2009; Mercan Uzun, 2015) are important. In addition, as a result of children's individual characteristics and environmental interaction, their reactions while experiencing adaptation problems also affect the course of the adaptation process (Altıntaş, 2015; Ateş, 2016; Özarslan, 2014; Yavuzer, 2001).

Each child shows a distinctive development (Apaydın Demirci and Arslan, 2020). Starting school requires mental, physical, and emotional readiness. Readiness to school, with the maturation of the child, is affected by environmental factors and is shaped by the characteristics of both the child and the environment (Wesley and Buysee, 2003). In the study conducted by Mühlenweg, Blomeyer, Stichnoth, and Laucht (2012), it was shown that children's starting school at an early age doesn't have a negative effect on mental development. However, it showed that it affects other developmental areas. Early childhood is considered to be the most important period in life after birth (El Shahed, 2017). Also, preschool education has an important role in the child's readiness and adaptation to school (Yavuzer, 2000, 2010). Again, according to Akay and Ceylan (2009), child's readiness to school greatly affects his/her adaptation to school and school success. In the studies of Ensar and Keskin (2014), they found that the social-emotional adaptation levels of 66-72 month-old children are higher than 60-66 month-old children. Furthermore, the social-emotional adaptation levels of children who have received preschool education are higher than those who have not; and as the family income increases, social-emotional adaptation increases in favor of the child. In a similar study on the income level of the family, in the findings of Özgülük (2006) it was found that as the income level of the family increases, social-emotional adaptation becomes easier. Ramey and Ramey (2004) showed in their study that preschool education has positive effects on school readiness. Thanks to preschool programs, children's skills such as literacy and mathematics increase and the effect of the disadvantages of the environment-family on the child decreases (Gormley, Philips, and Gayer, 2008).

According to Denham (2006), children who have gone through a good process in kindergarten also have a positive school attitude in their further education life, become successful in social field, love school, and are loved by their friends. Canbulat (2007) found that according to age and preschool attendance variables, there are significant differences in favor of preschool students and older age groups between the levels of school adaptation and school readiness. Sarı (2007) determined that social adaptation and limited social

adaptation scores of the children of 5 and 6 age group do not differ depending on age, while social maladjustment scores differ depending on the age variable.

According to Magnuson, Meyers, Ruhm, and Waldfogel (2004), children should receive preschool education in early childhood to eliminate inequalities when starting school. According to the results obtained in their work; it was observed that children who have received preschool education before starting primary school are more successful in reading and mathematics education, children coming from disadvantaged environments make a great gain with preschool education, and early childhood education is effective not only in the academic field but in the entire education life of the individual. In the study of Obalar (2009), it was stated that there is a correlation between school success and school adaptation. In the study conducted by Günindi (2008), it was also found that adaptation scores increase and maladjustment scores decrease in parallel with the increase in preschool education length.

Studies show that children's success in school and later life is related not only to children's cognitive skills, but also to their physical and mental health, emotional well-being, and their ability to relate to others (Cavanaugh, Lippitt, and Moyo, 2000; Huffman, Mehlinger, and Kerivan, 2000; Raver, 2002). Teacher-child relationship in primary school is important in terms of adaptation to school. In the study of Birch and Ladd (1997); they found that negative relationships between teacher and child are positively associated with avoiding school; and negatively associated with school loving, self-direction, and collaboration in classroom.

School adaptation week and its activities implemented in our country since the 2006-2007 academic year are reviewed and reconstructed every year in relation to environmental factors. In the guidelines published by the Ministry of National Education at the beginning of the 2020-2021 academic year, the Covid-19 process came to the fore and it was emphasized that adaptation to school is not a process that can only be achieved with teachers or families, the contribution of everyone such as school administrators, teachers, families, school service officers, canteen officers, and cleaning staff is needed (MEB, 2020). It is a necessity to update the researches to review the process of adaptation to school, which is affected by individual and environmental factors. Especially as individuals who spend the most time with children, what parents see as adaptation problems, the qualities of their practices, and their suggestions will contribute to the adaptation programs. In this study; according to the views of the parents who have adaptation problems when their children start primary school first grade; it was aimed to determine the sources of adaptation problems, what kind of precautions parents take, and what kind of practices they use to solve these problems. In this context, the following questions were sought:

- What are the parents' views about the adaptation problems that children experience when starting primary school?
- What have parents done to solve the problems of children with adaptation problems?
- What are the suggestions of parents with adaptation problems to the parents of children who will start primary school?

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METHOD

RESEARCH DESIGN

In this study, a case study was conducted as one of the qualitative research designs. Case study was preferred, because it was aimed to investigate the adaptation problems of the children at the beginning of the primary school according to parents and the practices performed in their natural environment in-depth; and the questions of how and why were sought in detail. Case study is the study of a phenomenon based on "how" and "why" questions in cases where there are more than one data source in its natural environment. This research method enables in-depth study of the situation to be investigated. Case study is not a narrow-framed and easy study method, but a research method that requires knowledge and attention (Yıldırım and Şimşek, 2004).

PARTICIPANTS

Participants in the research; consists of 22 parents with children who have adaptation problems during the transition to primary school in the 2018-2019 academic year and created by criterion sampling method, which is one of the purposeful sampling types. Purposeful sampling is the selection of the sample suitable for the purpose of the study in order to conduct in-depth research. In the criterion sampling, which is one of the purposeful sampling types, objects and situations that have the qualities determined in the research problem, form sample (Büyüköztürk et al., 2017). Participants were formed by interviewing the primary school first grade teachers working in Aşkale district centre and obtaining the information of children with adaptation problems and their parents through teachers' observation.

Among the parents participating in the study, 15 are mothers and 7 are fathers. 12 of the parents are housewives, 6 are workers, 1 is self-employed, 2 are tradesmen and 1 is a teacher. Their children's age to start school is between 66-72 months for 15 of them and between 73-78 months for 7. While the ages of the parents' children at the time of the study are between 60 and 72 months, 16 children are between 79 and 85 months. 7 parents who participated in the study stated that they have low socio-economic status and 15 parents stated that they have moderate socio-economic status. One of the mothers of the children became subject to the study is not literate, 12 of them are primary school graduates, 3 of them are secondary school, 2 of them are high school, 3 of them are associate degree and 1 of them is undergraduate. 10 of the fathers are primary school graduates, 5 secondary school, 5 high school, 1 associate degree, and 1 undergraduate. 3 of the children have no siblings, 7 of them have 1 sibling, 8 of them have 2-3 siblings, 4 of them have 4-5 siblings. 13 children received preschool education, 9 children did not receive preschool education. 7 of the children with preschool education received education for 1 year, 5 for 2 years, and 1 for 3 years.

DATA COLLECTION TOOLS

In this study, a semi-structured interview form was used to collect data from the participants. Semi-structured interviews can be both fixed options and can consist of open-ended questions that allow going deeper (Büyüköztürk et al., 2017). In the semi-structured interview, the interview is done with pre-determined topics and questions. During this flexible interview, the format and order of the questions can change and the subject can be added and removed by the researcher (TÜBİTAK, 2019). In the selection of this data collection tool, it was aimed to examine the situation in more detail by asking open-ended questions to make arrangements by being flexible according to the situations that may occur during the research, to help the individuals participating in the study to express themselves easily, and to give clues to better understand the questions when requested.

Personal information in the interview form (type of parent, profession, starting age of the child's schooling and current age, socio-economic status, educational status of the child's parents, number of siblings, and whether the child received preschool education and the duration of this education if he/she was educated) and the questions that could lead to the necessary data in accordance with the subject were determined and then presented to the expert opinion. As a result of the feedbacks given by the experts, it is finalized; and semi-structured interview form consisting of three questions (What are the parents' views in terms of the adaptation problems they experience when children start primary school? What have parents done to solve the problems of children with adaptation problems? What are the suggestions of parents with adaptation problems to the parents of children who will start primary school?) was created.

As a result of the feedbacks given by the experts, it is finalized and semi-structured interview form consisting of three questions (What are the parents' views in terms of the adaptation problems they experience when children start primary school? What have parents done to solve the problems of children with adaptation problems? What are the suggestions of parents with adaptation problems to the parents of children who will start primary school?) was created.

PROCESS

The research was conducted in the centre of Aşkale district, in Erzurum, Turkey, in the 2018-2019 academic year. Official permissions were obtained from Erzurum Provincial Directorate of National Education for the study with the document dated 05/15/2019 and issued 36648235-605.01-E.9621035. In order for the interview process not to be negatively affected during the application, the study was conducted in a healthy

environment, based on the volunteering of the parents and at the time it was planned. In the study, verbal questions were asked to the participants, their verbal responses were recorded in writing, and their approval was obtained by reading them back again. An interview lasted 30 minutes on average. In addition, regarding all processes planned and implemented in the study, the ethics committee approval was obtained with the certificate of Ataturk University Educational Sciences Unit Ethics Committee dated 01/12/2020 and issued 56785782-050.02.04-E.2000300185.

DATA ANALYSIS

Content analysis was used in this study. Content analysis is the conceptualization of the findings and the explanation of the data by organizing these concepts in a way that the readers can easily perceive. In addition, this method aims to reveal the facts hidden in the data (Yıldırım and Şimşek, 2004). Parents interviewed in the study were coded by giving the symbol “A” and numbers (A1, A2.... A22).

VALIDITY AND RELIABILITY

In this study, the suggestions of Yıldırım and Şimşek (2004, 91-97) were taken into consideration to increase the validity and reliability in qualitative studies. Each item belonging to the semi-structured interview form, which is data collection tool, was presented to expert opinion as “appropriate”, “not appropriate”, “your views to correct”. The interview form was finalized according to feedbacks from the experts. The aim of the study was clearly explained to the participants, confidentiality was guaranteed and it was stated that the participation was on a voluntary basis. Research findings were reviewed over and over again to ensure the meaningful unity of the concepts. The data obtained from the interviews were verified by the interviewees. The process of collecting the obtained data was explained in detail. The characteristics of the parents interviewed were explained in detail. While analyzing the data, another expert was also asked to analyze the consistency between the researchers. For the consistency between the analysis of the experts, the reliability formula proposed by Miles and Huberman (1994, p. 64) [$\text{Reliability} = \frac{\text{Consensus}}{\text{Consensus} + \text{Disagreement}}$] was used, and the reliability was determined to be 83% as a result of the calculation. Findings are discussed in relation to the existing literature. While analyzing the obtained data, it was exemplified with direct expressions.

FINDINGS

PARENTAL VIEWS REGARDING THE ADAPTATION PROBLEMS CHILDREN EXPERIENCED WHEN STARTING PRIMARY SCHOOL

In the answers given to the first question addressed to the parents, headings regarding “the changes faced by the children, the observed adaptation problems, the causes of adaptation problems, the changes that occur in children’s lives out of school” emerged. These views are given in Table 1.

Table 1. Views Regarding the Adaptation Problems Children Experienced When Starting Primary School

Category	Subcategory	Concepts
• The changes faced by children	• Social	• Friend. crowded environment. rules. and teacher
	• Physical Environment	• School uniform. school items. and school structure
	• Academic	• Duration of education
• The observed adaptation problems	• Reluctance to school	• Crying and giving difficulty, fear, not being able to leave parents, asking for kindergarten, negative attitude towards teacher, inability to get used to and unhappiness
	• Social	• Inability to form a circle of friends, fighting, not getting along with the opposite sex, asking parents to stay in the classroom, limited communication, and difficulty in self-expression
	• Academic	• Reluctance to learn and to do homework
	• Problematic Behaviors	• Spoiled, aggressive behavior

	<ul style="list-style-type: none"> • Negative attitude towards oneself 	<ul style="list-style-type: none"> • Feeling worthless
<ul style="list-style-type: none"> • The causes of adaptation problems 	<ul style="list-style-type: none"> • Social reasons 	<ul style="list-style-type: none"> • Not being able to socialize sufficiently before school, change in the circle of friends peers, school environment getting crowded, spending a lot of time with sibling before school and having difficulty making friends
	<ul style="list-style-type: none"> • Negative parental attitudes and excessive dependence of the child to their parents 	<ul style="list-style-type: none"> • Excessive pampering of the child, spending little time with the parent before school starts, and excessive attachment to the parent
	<ul style="list-style-type: none"> • Inability to get used to the school atmosphere and school rules 	<ul style="list-style-type: none"> • The formation of a competitive atmosphere in the school, the wrong attitudes of teacher, the difficulty of the child getting used to school, the child misbehaving at school, refraining from school and teacher, change of the school environment, reluctance to learn and being influenced by his/her friends
	<ul style="list-style-type: none"> • Education 	<ul style="list-style-type: none"> • Not getting preschool education and children's not getting out of preschool education atmosphere
	<ul style="list-style-type: none"> • Personal reasons 	<ul style="list-style-type: none"> • Starting school at an early age, being an only child, character and temperament of the child, and learning disorder
	<ul style="list-style-type: none"> • Domestic reasons 	<ul style="list-style-type: none"> • Moving to a different settlement and the death of the child's mother
	<ul style="list-style-type: none"> • Preliminary 	<ul style="list-style-type: none"> • No prior information about primary school
<ul style="list-style-type: none"> • Negativities observed in children's lives out of school 	<ul style="list-style-type: none"> • Disruption in the communication with the environment and developing negative feelings towards the environment 	<ul style="list-style-type: none"> • Disruption in the communication with friends outside of school, fighting with siblings, misbehaving, being disheartened about school, and making imperative sentences and being disrespectful towards their parents
	<ul style="list-style-type: none"> • Changes in emotion and behavior 	<ul style="list-style-type: none"> • Unhappiness, stagnation, irritability, reluctance to play and activity, stress, carelessness-disappointment
	<ul style="list-style-type: none"> • Biological changes 	<ul style="list-style-type: none"> • Sleeplessness and loss of appetite, sores in the body
	<ul style="list-style-type: none"> • Indifference towards lessons and school 	<ul style="list-style-type: none"> • Not being interested in his/her lessons, reluctance to go to school, telling his/her siblings that he/she had difficulties at school at home, and dislike opening up lesson-school-teacher subjects

When Table 1 is examined, changes that the children encountered when starting primary school were examined in the interview with the parents and the views of the parents were collected in three main groups. These are: "social, physical environment, and academic" changes.

Social changes children face in primary school according to parents' views occurred as; "friend (A1, A2, A3, A8, A11, A16, A18, A20), crowded environment (A8, A9, A10, A11, A14, A19, A21), different rules (A5, A7, A16), and teacher (A1, A3, A4, A6, A10, A16, A17, A18)". When the views of parents regarding the physical environment changes children face in primary school are examined it is seen that; "school uniforms (A1, A7), school items (A1, A2, A3, A4, A5, A6, A11, A12, A13, A16, A17, A18), and school structure (A10, A15, A16, A19, A20). Academic changes children face in primary school according to parents' views occurred as; "the transition from the concept of activity to the concept of lesson (A4, A14)".

Examples of the parents' views regarding the changes children face are given below:

“His circle of friends changed. He encountered older children from the upper classes. He started to spend time in a more crowded environment than at home (A8). My child was an aggressive kid. He met with a big environment. This time he became more aggressive (A14). He started eating at the table at school. He started to go to the bathroom himself at school. He would sit on the floor at home playing games on the carpet. He started to sit in a desk at school (A5). He had kindergarten education. However, the school and classroom environment has changed. The circle of friends has changed. He had a new teacher (A1).”

“He started going to school in a school uniform (A1). The education environment has changed. There were more toys in kindergarten. There was a carpet. These materials are not available in the first class (A13). He encountered many social playmates. School environment has changed. His previous school was a single storey. This school has 2 floors and his classroom is on the 2nd floor. He kept saying this (A15).”

“He knew the teacher-school concept because he went to kindergarten. Seating arrangement, the concept of activity-lesson has changed (A14).”

According to Table 1, adaptation problems observed when children start primary school were grouped into five main groups in the interview with parents. These were seen as: “reluctance to school, social negativity, academic problems, problematic behavior, negative attitude towards oneself”.

According to parents’ views, for reluctance to school as one of the adaptation problems that children show when starting primary school; “crying (A1, A3, A4, A5, A9, A10, A11, A12, A13), fear (A1), not being able to leave parents (A2), and asking for kindergarten (A5)”. For social negativities; “negative attitude towards teacher (A6, A8, A14), inability to adapt (A5, A7, A8, A16, A17, A18, A19, A22), unhappiness (A22), inability to form a circle of friends (A2, A3, A4, A6, A7, A8, A13, A17, A18, A20), fighting (A14, A21), not getting along with the opposite sex (A14), asking parents to stay in the classroom (A2, A5, A7, A11, A12), limited communication and difficulty in self-expression (A3, A4, A5, A6, A11, A12)”. For academic problems; “reluctance to learn (A15) and to do homework (A16)”. For problematic behaviors; “spoiled (A21) and aggressive behavior (A14, A21)”. The other adaptation problem that children showed was seen as “negative attitude towards oneself (feeling worthless) (A21)”.

Sample parental views on adaptation problems children face are given below:

“I took him to the school for the first two weeks. We had a big crying problem. Then his brother started to take him (A3). He was crying. He was stubborn with me. He was very quiet at school. He didn’t want to go to school. I constantly had to accompany him (A12). Leaving the family and the new environment felt frightening to him. The big size of the school, I think, triggered this situation. He was reluctant while going to school and cried frequently (A1). He cried a lot when he first started. This lasted for a week or two. He didn’t want to leave me. He wanted me to be by his side (A2). He couldn’t get used to the classroom. We took him to another one. Then we got back to his earlier classroom again. He was crying. He didn’t want to go to school. He wanted to go to kindergarten (A5).” “He couldn’t contact with his teacher. He was taking a stand against his teacher (A6). He couldn’t get used to the classroom. We took him to another one. Then we got back to his earlier classroom again. He was crying. He didn’t want to go to school. He wanted to go to kindergarten. He was saying “be next to me” when I was at school. He was talking to his teacher when he had great difficulty (A5). While education in kindergarten was mostly activity-oriented, no activity and plenty of homework at this school made him hate school. They do exam even in the first grade and their saying, “This is not a playground, this is a school of ambition!” almost stunned us. It prevented my child from feeling like a part of the school. My child was not happy (A22). He wasn’t making friends with his classmates during this period (A2). He asked the teacher to give him a different homework than his friends. He was fighting with his friends. He didn’t want to go to school (A21). He couldn’t get along with the female students (A14). I took him to school and introduced him to his teacher and friends. But he always insisted on wanting me by his side. This situation lasted 2 weeks. He was pulling me when I wanted to leave. It took him a long time to make friends and get used to the class (A7). He wasn’t communicating with his teacher and friends. He didn’t even want to make eye contact. He was introverted (A3). He was very quiet at school. He didn’t want to go to school (A12).”

“He didn’t have any adaptation problems with his friends and teacher. There was a reluctance to learn only at the beginning of the semester. He didn’t attend lessons. He wasn’t asking questions. He avoided answering questions (A15). When his teacher gave him a task, he absolutely didn’t want to do it saying

“This my problem” (A16).”

“He felt worthless. By contrast, he started to be spoiled. He asked the teacher to give him a different homework from his friends (A14). He couldn’t adapt to school due to his aggressiveness. He quarreled with his friends. He had trouble making friends. He started to refrain from his teacher because his teacher warned him. He couldn’t get along with the female students (A14).”

“He felt worthless. By contrast, he started to be spoiled (A21).”

According to Table 1, the sources of adaptation problems that children experience when starting the first grade of primary school are based on eight main sources from the perspective of the parents. These are: “social reasons, negative parental attitudes, and excessive attachment of children to parents, negative school atmosphere, not having preschool education, being unable to get out of preschool education atmosphere, personal reasons, domestic reasons, and preliminary”.

Social causes of adaptation problems experienced by children when starting the first grade of primary school occurred as; “not being able to socialize sufficiently before school (A1, A3, A4), change in the circle of friends (A5, A20), school environment getting crowded (A19), spending a lot of time with siblings before school (A19), and difficulty in making friends (A13, A14, A18, A20). For *negative parental attitudes*; “the excessive pampering of the child (A1, A4, A5, A7), spending little time with the parent before school (A9)”. One of the parents emphasized “the child’s dependence on the parent” (A7), and some of the parents stated that “the excessive attachment of children to their parents causes adaptation problems when they start primary school (A2, A3, A9, A11, A13, A18)”. For *Reasons for children’s inability to get used to school atmosphere and school rules*; the formation of a competitive atmosphere in the school (A22), the wrong attitudes of the teacher (A16, A21, A22), the difficulty of the child getting used to school (A14, A19), the child misbehaving at school (A16), refraining from school and teacher (A10), change of the school environment (A11, A20), reluctance to learn (A12), and being influenced by friends (A12, A16)”. While some of the parents saw “their children’s not having preschool education” (A2, A3, A4, A6, A7, A17) on the basis of the adaptation problem that their children experienced when starting primary school (A2, A3, A4, A6, A7, A17), some parents stated that they saw “their children’s inability to get out of the atmosphere of preschool education” as the reason behind the adaptation problem (A15, A16).

According to parents, *personal reasons* underlying the adaptation problems of their children when starting the first grade are; “starting school at an early age (A6, A21), being an only child (A7), the effect of the child’s character and temperament (A13, A14, A20), learning disorder (A22)”. For *family reasons*; they stated “moving to a different settlement (A8) and the death of the child’s mother (A17)”. Some of the parents stated that “*not giving enough information to their children about primary school* (A3, A10, A11)” has an effect on their children’s adaptation problem in starting primary school.

Examples of parental views on the causes of the children’s adaptation problems are given below:

“The fact that he doesn’t have many friends in the neighborhood and that we coddle him too much because he is sick and constantly try to protect him (A1); the small circle of friends and the inability to socialize before school affected this situation (A3). The change in his circle of friends and not being in the same class with his friends in the neighborhood was also effective (A5). I see the change in the environment on the basis. He moved from a very calm environment to a crowded environment (A19). He also has a twin brother. He always spent time with him before. It may also have an effect (A19). I see his aggressiveness as the main source. He had a hard time making friends because he was aggressive towards them. He had a hard time adapting to school (A14).”

“We raised him freely at home. We spoiled him. The change in his circle of friends and not being in the same class with his friends in the neighborhood was also effective (A5). Since I was working in construction, I was generally out of town. He misses me very much. He has an extreme attachment to me. My work finished by the week the schools started. He didn’t want to leave me and go to school (A9). He is very fond of me. We were always together even while sleeping. That he didn’t have a preschool education also affected (A2). He grew up a little spoiled because he was our only child. We were doing everything he said. He was dependent on us (A7).”

“However, giving fifteen pages of homework at the beginning level and keeping the student in a continuous competitive environment was not correct (A22). He went to kindergarten for 2 years. He

always focused on playing games there. He always said that his hands were tired because they were constantly painting in the 1st grade. The teacher's fait accompli behaviors made him even more reluctant. He had a tendency to physical games already. The school became like a playground for him when he came together in the same classroom with his beloved friends. When he got homework at home he was saying, "I did a lot at school, I don't want it." (A16). I see the environment change on the basis. He moved from a very calm environment to a crowded one (A19). The school became like a playground for him when he came to be in the same classroom with his beloved friends (A16). He was afraid of the teacher. He was afraid of school. He refrained because he didn't know the school environment before (A10). He may also be afraid of the change in the environment (A11). I don't know. Despite having taken a year of preschool education, he had problems in adapting to school. Maybe it's because of reluctance to learn, unattractive school, the influence of friends, etc. (A12). When he came to be in the same class with his beloved friends, the school became like a playground (A16)."

"He didn't go to kindergarten. He met the school for the first time. Having few friends and the inability to socialize before school affected this situation (A3). His small age. Not having preschool education (A6). He grew up a little spoiled because he was our only child. We were doing everything he said. He was dependent on us. We didn't send him to kindergarten. I think it is effective, too (A7). My child had a little difficulty in getting away from the influence of the kindergarten. Education in kindergarten was generally provided with games. However, it changed in primary school. My child couldn't adapt to this situation. His mind was at play. Games attracted his attention more (A15). He went to kindergarten for 2 years. He always focused on playing games there. In the classroom, he always said that his hands were tired because they were constantly painting (A16)."

"His small age. Not having preschool education (A6). He also started school small. He started at the age of five and a half. I think it is also effective (A21). He grew up a little spoiled because he was our only child. We were doing everything he said. He was dependent on us. (A7). He is introvert, he had poor communication with other children and he is very fond of his mother. These reasons caused my child to have adaptation problems when starting school (A13). We thought that the teacher had a lack of communication. But the more he communicated, the worse it got. Mild dyscalculia was detected in the student (A22)."

"We just moved from village to city centre. Both the change in our neighborhood-environment and that he never went to school created the problem of adaptation (A8). The death of his mother was effective (A17)."

"He didn't go to kindergarten. He met the school for the first time (A3). He was afraid of the teacher. He was afraid of school. He was refraining because he didn't know the school environment before. (A10)."

When Table 1 is examined, the negativities observed by the parents in the lives of children out of school who have adaptation problems when starting the first grade of primary school are categorized into four groups. These are; "disruption in the child's communication with his/her environment and his/her development of negative feelings towards his/her environment, changes in emotion and behavior, biological negativities and indifference to the lesson." Some of the parents who participated in the study stated that they did not observe a change in their out-of-school life in the period when their children could not adapt to school (A6, A13, A14, A15, A17).

During the period when their children showed adaptation problems in starting the first grade of primary school, parents observed that their children's communication with the environment was disrupted and that they developed negative feelings towards their environment in their out-of-school life with the following behaviors: "disruption of children's communication with friends outside of school (A1, A8, A20), fighting with their siblings (A12), misbehaving (A12), being disheartened about school (A22), making imperative sentences and disrespectfulness towards their parents (A21, A22)." For the change in emotion and behaviors; "being unhappy (A1, A2, A3, A5, A7, A9, A10, A11, A18, A22), calmness (A11), irritability (A2, A3, A10, A11, A21, A22), reluctance in playing games and doing activities (A7, A20, A22), stress (A16), and carelessness-disappointment (A22)" were observed. The biological changes observed by parents in their children's out-of-school life were stated as: "sleeplessness and loss of appetite (A5, A7) and sores on the body (A16)." The behaviors of indifference towards lessons and school parents observed in their children's lives outside of school were stated as; "not being interested in their lessons (A2, A12), not

wanting to go to school (A1, A3, A4, A8, A9, A11, A16, A18), telling their siblings at home that they have difficulties at school (A19), and dislike opening lesson-school-teacher subjects (A3, A7, A16)."

Somer parental views on the negativities observed in children's out-of-school lives are given below:

She also stopped talking to her friends outside of school. She became introverted (A1). She became very quiet. She became very calm. She became reluctant to play games. She was not talking while eating (A20). She was fighting with her brothers. Her silence at school was replaced by mischief at home (A12). She wasn't interested in her lessons. She preferred playing toys to studying when she came home from school. These behaviors decreased in the following periods (A12). Cases of resentment to life, indifference, disappointment, disheartenment about school and teachers, and hatred from time to time occurred. She didn't even care about the fairy tale listening activity she used to love. She started to hate reading books (A22). She started acting gruff. She was also mean to us. She tried to perform what she was told at school to us. She was making sentences like "sit down, shut up" to us. I had a lot of difficulty for a year (A21). She fought with her mother. She began to be hurtful and occasionally rude towards her parents (A22)."

"She was angry when she got home. She was unhappy. She wasn't interested in her lessons (A2). She seemed unhappy outside of school and in the family. Saying "I don't want to go to school." she was crying (A9). She was dull at home sometimes, too. She didn't want to go to school (A11). She got nervous. She was crying constantly. She said she didn't want to go to school even while we were talking about different things. She displayed violent behavior (A3). She was upset. She got mean. She was damaging her toys and books. She was scribbling her books (A10). When a school-related topic came up, she immediately pulled a long face. She didn't really want to play with her toys. I wanted to wake her up early for school. But she was stubborn not to get up. She was not eating her breakfast (A7). The school felt like a playground to her rather than a school. Because there was a continuous minute system in the school, she wanted lessons to end and have a break as soon as possible. When she came home worried "Is there school again tomorrow?" (A16). There were cases of resentment, indifference, disappointment, disheartenment about school and teachers, and hatred at times (A22)."

"We suffered from unhappiness, loss of appetite, and sleeplessness. She couldn't adapt to her responsibilities at school (A5). Her communication with the environment outside of school is fine. But she was troubled when it came to lessons and the teacher. She even had sores on her body due to stress (A16)."

"She was angry when she got home. She was unhappy. She wasn't interested in her lessons (A2). I didn't observe a big change. She didn't want to go to school. Sometimes I felt she was unhappy (A18). At home, she made us feel she was having difficulty in her school life. She was telling this to her brothers (A19). When a school-related subject came up, she immediately pulled a long face. She didn't really want to play with her toys. I wanted to wake her up early for school. But she was stubborn not to get up. She wasn't having breakfast (A7)."

PARENTS' VIEWS REGARDING THE SOLUTION TO ADAPTATION PROBLEMS CHILDREN EXPERIENCE WHEN STARTING PRIMARY SCHOOL

The solutions followed by parents whose children show adaptation problems when starting primary school were categorized into eleven areas. These are: "showing more attention to their children, ensuring them to go to school with their peers, going to school with their children, using reinforcers, punishing, ensuring that their child is taken care of by their other acquaintances at school, waking up early, collaborating with school, taking psychological and academic support from an expert, changing the school and the parents' doing self-directed work". These views are given in Table 2.

Table 2. Views on the Solution of Adaptation Problems Children Experience When Starting Primary School

Category	Concepts
• Paying more attention	• Increasing attention, being understanding and patient, getting help from the internet, making your child feel that you are there for him/her and giving support
• Determining the child's method of commuting to school	• Ensuring they commute to school with their peers, going to school with their children, coming from school with their children, waiting for their children at school
• Using reinforcements and punishments	• Giving gift and promising gift, putting their favorite food in lunchboxes, cooking their favorite food, taking things that the child likes from their hands, punishments
• Ensuring that their child is taken care of by their siblings and other acquaintances at school	• Ensuring that other siblings take care of their children at school and have other acquaintances at school take care of them
• Preparation for school	• Waking the child early
• Collaborating with school stakeholders	• Monitoring homework-projects, talking to classmates and other parents, collaborating with school staff, providing communication between the school and the psychiatrist
• Getting expert support in psychological and academic fields	• Getting support from psychiatrist, support from pedagogue, ensuring that the child gets private lessons
• Transition to a different school environment	• Changing the school
• Parents' self-directed practices	• Being flexible about the rules outside of school, question your own shortcomings and try to make up for them

According to Table 2, when their children showed adaptation problems while starting primary school parents stated that “by increasing the level of attention towards their child (A1, A4, A5, A7, A10, A18, A20, A22), being understanding and patient (A10, A12, A19), getting help from the internet (A11), making them feel that they are there for their children and supporting them (A16, A20)” they paid more attention and aimed to solve the problem this way. A parent whose child shows an adaptation problem stated as a solution “going to school with his/her peers (A1)”, some parents stated, “going to school with their children (A2, A9, A11, A12, A13, A18) and returning from school together (A9, A11, A12, A13, A18), waiting for their children at school (A2, A3, A6, A11)”. Again, parents stated that they tried to solve this problem by using some reinforcements. As a reinforcer; they practiced “giving and promising gifts (A3, A6, A9), putting the things they love in lunchbox (A3, A4) and cooking their favorite food (A3, A5)”. One parent stated that they “deprived the child of the things he/she liked (A5)” and another parent stated that they were “punishing (A12)”. “Having other siblings take care of their children at school (A6, A17), and ensuring other acquaintances at school take care of their children (A17)” turned up as a solution from parents' views. Parents who have adaptation problems when their children start primary school, to solve this problem they “monitored the homework and projects (A16), talked to classmates and other parents (A8), collaborated with school staff (A7, A8, A9, A14, A15, A16, A19) and provided the communication between the school and the psychiatrist (A22)”.

Examples of parental views on solving children's adaptation problems are given below:

“I paid more attention. I tried to send him to school with his peers (A1). I was patient. I was understanding. I gave him advice. I took care (A10). I tried to find something on the internet. I commuted to school with my child. I waited at school as long as I could (A11). I never lost contact with his teacher. I monitored closely the subjects, homework, and projects given to him. He constantly didn't note down his homework at school. I monitored persistently. Maybe education at school was pressure for him. I was always with him as his mother (A16).”

“I paid more attention. I tried to send him to school with his peers (A1). I was taking him to school and pick up myself. I was patient with my child’s continuation of this request (A12). I met with his teacher. I bought gifts. We spent a lot of time together in the evenings. I took him to school. I picked him up from school in the evenings (A9). I commuted to school with my child. I waited at school as long as I could (A11).”

“His father was buying gifts. We were putting the things he loved in his lunchbox. We were cooking his favorite food (A3). I was with him for the first week at school. His brother joined him during the breaks. I promised him gifts (A6). I put whatever he wanted in his lunchbox. I talked to him about the significance of school (A4). I waked him up early. I cooked his favorite food (A5). I took away his toys because he was not going to school. I took the tablet (A5). I commuted to school with him. I was patient with the continuation of my child’s this request. Sometimes I yelled. I even beat him up (A12).”

“I was with him for the first week at school. His brother was joined him during the breaks. (A6). Because of my job, I couldn’t pay much attention to him in school. His sisters and cousins going to school mostly took care of him (A17).”

“I woke him up early. I cooked his favorite food. We made rules together but he didn’t follow (A5).”

“I never lost contact with his teacher. I monitored closely the subjects, homework, and projects given to him. He constantly didn’t note down his homework at school. I monitored persistently (A16). We had more dialogue with his teacher. We talked to his classmates. We talked to other parents (A8). We negotiated with the counsellor about aggressiveness. Both the counsellor, the classroom teacher, and I tried to instill that fighting is not a good thing, it won’t solve anything. We thought he would adapt to school if we solved the fighting problem (A14). Firstly, I removed my child from that school, his troubled teacher, and parent environment. We made an action plan on how to take care of it by getting psychiatric help. After the teacher and school change, we provided him to receive private lessons. We established communication between the teacher, the child, and the psychiatrist (A22).”

“I took him to psychiatrist three times. He took sessions. Everything was fine outside of school (A16). He was willing for anything. However, I took him to pedagogue because of the problems in his behavior (A21). After the teacher and school change, we provided him to receive private lessons (A22).”

“Firstly, I removed my child from that school, his troubled teacher, and parent environment. (A22).”

“I bent my rules a little but didn’t give up. It was my dream to see my son conforming to classroom as a compliant and obedient person (A16). He was willing for anything. However, I took him to pedagogue because of the problems in his behavior. I also noticed shortcomings in myself. I tried to make up for them (A21).”

SUGGESTIONS OF PARENTS HAVING ADAPTATION PROBLEMS WHEN THEIR CHILDREN START PRIMARY SCHOOL

Parents of children having problems of adaptation when starting primary school suggested other parents who face the same kind of problems: “free their children, provide preschool education, support in social areas, get support from an expert to solve the problem, collaborate with the school, increase their level of showing love, compassion and communication to their children, eliminate the effects of negative teacher behaviors and display a determined attitude”. Before starting primary school, parents who participated in the study stated that; “collaboration with the school and introducing the school, making the right teacher choice, waiting for the right age to start school, getting preschool education, solving problems in a timely manner, parenting education, paying more attention in children and better communication with them and supporting the child in the social field are necessary”. Findings obtained from these views are given in Table 3.

According to Table 3, parents of children who have adaptation problems when starting primary school suggested parents who have similar problems; “set children free (A1, A4, A5, A10, A11, A16, A20, A21) and discover their children (A15), ensure that their children receive preschool education (A2, A3, A4, A5, A6, A7, A8, A11, A12, A13, A14, A15, A17, A18, A20), be in constant communication with the preschool teachers (A22), pay more attention to their children while receiving preschool education (A21), understand that preschool education is not just about play and convey this to their children (A16), ensure that their children receive preschool education in an ideal sized school (A12), discover the characteristics of their children and to take precaution before school starts (A14, A22), support their children socially (A2, A3, A6, A8, A10, A11, A12, A18), get help from experts and don’t hesitate to get help (A2, A14, A22),

collaborate with teachers of their children and monitor their school life (A8, A14, A15, A18, A19), go to school with their children (A5, A6, A12), ensure that their children are not afraid of school and help the child love the school (A4, A13), prepare the child for primary school and give them prior information about school (A1, A6, A7, A8, A9, A10, A11, A15, A16, A21), to take care of their children more, show more love and patience (A3, A4, A5, A6, A7, A11, A12, A16, A17, A18, A19, A21, A22), chat with their children (A4, A5, A11, A14, A16, A20, A21), keep their children away from the tablet and television (A5), empathize with and support their children (A3, A8, A9, A10, A14, A16, A17, A19), enable children to discover themselves (A22), give gifts to their children (A6, A11), don't lie (A4), don't to be angry with their children and not to be violent (A4, A5, A9, A10, A17), follow a determined attitude (A12), make the right teacher choice (A22), wait for the appropriate age to start their children to school (A21) and solve problems on time (A21)".

Table 3. Suggestions of Parents Having Adaptation Problems When Children Start Primary School

Category	Concepts
• Changing the attitude	• Setting children free, discovering their children
• Taking the right educational steps	• Ensuring that children receive preschool education, keeping in touch with the preschool teacher, paying more attention to children while receiving preschool education, understanding that preschool education is not just about play and conveying this to children, ensuring that children receive preschool education in an ideal sized school, knowing the characteristics of children and taking precaution before school starts
• Supporting in social field	• Supporting children in social field
• Getting help from an expert	• Getting help from an expert and not hesitating to get help
• Helping the child love the school and collaborating with the school	• Collaborating with the child's teacher and monitoring the school life, commuting to school with their children, making sure that their children are not afraid of school and helping the child love the school, preparing the child for primary school and giving prior information about school
• Increasing the attention to child and using effective communication	• Paying more attention to children, showing more love and patience, chat with children, keeping children away from tablets and TV, empathize with and support children, helping children discover themselves, buying gifts, not lying, not being angry with their children and being away from violence
• Determined attitude	• Following determined attitude
• Choice and timing	• Choosing the right teacher, waiting for the appropriate age to start school, solving problems on time

Examples of views regarding the parents' suggestions are given below:

"They shouldn't be too protective of their children. Sometimes they have to set them free. They shouldn't coddle them too much (A1). Take care. Chat with them. Give them confidence (A21). Every parent should discover how their child can study and learn better. They should help their lessons that way. They should monitor their school activities and status (A15)."

"I want them to send them to kindergarten. I sent his brother and saw its benefit. Don't keep children at home all the time. Let children see children from different environment (A2). Maintain constant communication with the kindergarten teacher (A22). Don't send them to school at an early age. Give them school awareness. In preschool education, they shouldn't just send their children to school but take care of them. Monitor. Solve their problems on time (A21). We shouldn't see preschool education just as a game. We should also instil this in our children (A16). They should receive preschool education. However, they should take this education in classes with enough students (A12). Preschool education should be taken efficiently. We should get to know our children better and before starting school, we should take precautions according to their character to avoid problems. Because, when the child has difficulty adapting to school, the family also have difficulties. The academic success of the child is also

affected (A14).”

“They shouldn’t keep children at home all the time. Let them see children from different environments (A2). Let them spend time with their friends (A11). Let their children with adaptation problems spend more time with the friends they love (A18).”

“They should also get help from an expert (A2).”

“During this period, children should be supported more. During this period, children shouldn’t feel alone. More dialogue with teachers should be established (A8). They should go to school with their children. They shouldn’t push them too hard. (A5). Let them do things that will make them like the school. They shouldn’t insist too much. Don’t threaten (A4). Especially, ensure that they are not afraid of the school and their teachers. When they do mischief, they shouldn’t make sentences like “I’ll tell you to your teacher.” Help the child love the school, teachers, and friends (A13). Families should introduce the school to their children. Meet the teacher before school. Buy their school stuff together. Before schools start, they should inform them about the importance of the school (A11).”

“In case of a problem, they should show their love and care more. Treat softer (A3). Love should never be missing. It opens every door. We shouldn’t forget that our future is entrusted to them (A16). Take care. Chat with them. Give them confidence (A21). Keep them away from the tablet and TV. Communicate positively with the children (A5). During this period, children should be supported more. During this period, children shouldn’t feel alone (A8). Try to understand why the children don’t want to go to school. Understand that the problem won’t be solved by yelling at the child (A9). I would suggest that it is more important for the child to realize himself rather than his academic achievement, and that they shouldn’t submit to their teachers’ ambitions (A22). They don’t bore their kids too much. Buy gifts (A11). Don’t fool children. Spend more time with them (A4). Don’t be angry with them during this period. Parents should be careful not to break their heart. Increase attention (A17).”

“Firstly, I want them to be very patient. I recommend that they accompany the children until they get used to school but do so in a way that does not disturb other children. Even if children don’t want to go to school, they shouldn’t step back. They should insist on taking their children to school (A12).”

“It shouldn’t be forgotten that the teacher plays a vital role in primary school. And there should be teachers who can take care of children individually. Not the teachers who see them like a racehorse (A22). Don’t send them to school at an early age. Give school awareness (A21). In preschool education, they shouldn’t just send their children to school but take care of them. Monitor. Solve their problems on time (A21).”

DISCUSSION AND CONCLUSION

According to the findings obtained in this study; it has been observed that the changes children experience when starting primary school occurred in three areas: social, physical, and academic. For the changes in the social sphere; change in the environment of friends, encounter with a crowded environment, change of teacher, encounter with the concept of teacher were stated. For the changes in the physical sphere; encounter with school equipment and educational materials, encounter with the concept of school uniforms, the physical structure and physical order of the school were stated. For the change in the academic sphere, parents of children who received preschool education stated that their children were educated with the concept of activity in the kindergarten and now they encounter the concept of lesson.

For the views of the parents about what kind of adaptation problems they observed when their children started primary school; it has been observed that their children do not want to go to school, they cry, they are stubborn, the school is scary for them, they do not want to leave their parents, they want to go to kindergarten again, they take a stand against the teacher, they refrain from the teacher, they are unhappy at school, they have difficulty in establishing a circle of friends at school, they are spoiled and aggressive.

Parents regarding the sources of these adaptation problems stated that; having few friends, not being able to socialize enough before school, change in the circle of friends, excessive pampering of the child, excessive fondness and dependence on parents, not getting used to the school environment, encountering negative school environment, wrong attitudes of teachers, misbehavior at school, staying under the influence of friends at school, not having preschool education, not being able to get out of preschool education, not being given sufficient prior information about school, starting school early, being an only

child, character and temperament features, learning disorder, wrong parent attitudes, death of one of the parents and moving to a different settlement are effective for this situation. Parents stated that while their children had adaptation problems in primary school, their children developed negative feelings against the environment in their life outside of school, did not want to have breakfast and had skin rash.

School motivation is affected by; early childhood learning, early childhood educational origins, peer group influence, family participation in activities, children's characteristics, family attitudes, mental competence of the child (Blair, 2002). When starting school, children may experience adaptation problems. Failure to take measures to avoid these adaptation problems or not solving the adaptation problem correctly affects the entire education life of the individual (Ruffolo and Fischer, 2009).

Primary school first grade has critical importance for the educational life of the individual. While children are happy about starting school, some problems arise because they stay away from their families. Teachers have a great role in overcoming such problems. The physical and mental maturity level of the child is also important to overcome this period successfully. Because, children who are mature enough to start primary school adapt more quickly to school. And the positive or negative situations experienced in this period will also affect the individual's further education life. Starting school is a big step for the child. The child starts to communicate more with the outside world by starting school. In order not to encounter a negative situation in adapting to school life, the child should be ready for school physically, socially, psychologically, and mentally (Polat, 2014). In the study, it was observed that starting school at an early age, not being socially ready for school, not being given enough prior information about the school cause negativity for the child in adapting to school.

In order to solve the adaptation problem of their children, parents stated that they paid more attention to their children, were understanding and patient, support their children, did research and got help on adaptation problems on the internet, sent them to school with their peers, commuted to school together, bought gifts, put children's favorite food in lunchboxes, they collaborated with the school, received support from psychiatrist and pedagogue, had their children take private lessons, changed the school of the child, bent the rules outside the school, questioned their deficiencies as a parent and tried to make up for them.

Raimundo et al. (2012) stated in their study that the level of social competence is important for the child's adaptation to school and success in school. In this study, like Raimundo et al. (2012), parents stated that children's not being able to socialize sufficiently before the beginning of the school causes problems in adaptation to school. In addition, parents emphasized the importance of preschool education. They stated that with preschool education, their children will be better prepared for school in social, physical, cognitive, and emotional terms. As a matter of fact, Polat (2014) stated that preschool education contributes positively to school readiness; children who have received preschool education have higher social adaptation skills, cope with stress better, and have better communication skills than children who have not received preschool education and they can start and finish their own work.

Another important factor in school adaptation is school maturity. School maturity is the presence of knowledge and skill required for school life in the child. In addition, the child is expected to have a successful communication process in the new environment. Besides, the child is expected to get used to the new environment and obey the rules (Üstündağ, 2014). In the study, the parents of children who went through this process negatively; they stated that their children showed behavioral disorders, felt worthless and were spoiled as an opposing attitude, performed aggressive behavior, fought with their friends, started to refrain from their teachers because they constantly warned them, and they could not get used to their opposite-sex peers.

Parents who have participated in the study, recommended parents who have similar problems to ensure that their children receive preschool education, to discover their children, to set them free, to give confidence, to work for their children to socialize, to get help from an expert and not to hesitate to get help, collaborate with the school, prevent the child from being afraid of teachers and school. They recommended that they help the child love the school, monitor the school life of the children, take more care of their children and show patience. Parents who participated in the study stated that, in order to avoid adaptation problems when starting primary school, children should be introduced to the school before the primary school starts, they should be given prior information about the school, be prepared for school, and the right teacher should be

chosen. Parents should not send their children to school at an early age, they should solve problems on time and on the spot. It is important that children receive preschool education and it should be at least two years. They stated that parents should be in constant contact with preschool teachers, mothers should be educated. Parents should support children's socialization, and they should not raise them dependent on parents. In the study of Bilgili (2007), it is stated that introducing the school, school personnel, teachers to the child beforehand will have positive results in adapting to the school. Another important issue in school adaptation is to collaborate with the school and the schools to provide counselling service to children. In the study of Bilgin (2019), it is stated that teachers' providing counselling service beforehand will have positive results in adapting children to school. Büyükişık (2009) stated that school counselling service is an important factor in school adaptation. Parents who participated in this study also used expressions that support the study of Büyükişık (2009) and stated that their collaboration with the school counselling service was effective in their children's adaptation to school and their success.

These views of the parents are in line with the literature that indicates that the environmental factors together with the individual characteristics of the child are also effective in school adaptation. Adaptation to school is a product of relationships that include the child's readiness and demographic characteristics, as well as other related factors (such as parents, school, teacher, and peer) and these relationships are an important factor in creating the child's early school success (Pianta, Kraft-Sayre, Rimm-Kaufman, Gercke and Higgins, 2000; Reynolds and Bezruczko, 1993; Rimm-Kaufman and Pianta, 1999).

The following suggestions can be made in line with the results obtained in this study:

Families should support children's social, physical, emotional, cognitive, psychomotor, and psychological readiness for school. They should provide enough opportunities for children to socialize and support them in building social skills. They must ensure that children receive at least two years of preschool education. During this process, their children should be well monitored and discovered. In case the situations that will negatively affect educational activities occur, they should take precautions beforehand. They should strive to solve problems on time. If there is a negative situation in children, they should not be ignored and they should follow the right way to solve the problem. They should not send children to school at an early or late age. The school building, the school administration, staff, teachers, and school rules should be introduced to the child beforehand. They should collaborate with the school and be in constant communication. In case of adaptation problems, they should get support from the school counselling service and other experts and should not hesitate to receive this support. They should follow the advice given by the experts.

REFERENCES

- Akay, Dicle and Remziye, Ceylan. "Birinci sınıfa başlamak için okula başlama yaşı mı okula hazır oluş mu?". *Milli Eğitim Dergisi*. 48. (224) (2009): 7-31.
- Altıntaş, Ercan. 1. Sınıflarda Uygulanan Uyum ve Hazırlık Çalışmalarının Öğretmen Görüşlerine Göre Değerlendirilmesi. Yüksek Lisans Tezi. Recep Tayyip Erdoğan Üniversitesi, Rize 2015.
- Apaydin Demirci, Zeynep and Emel, Arslan. "Teacher adaptation of child development assessment scale (CDAS) into Turkish and evaluation of development of 5-years-old children". *Psycho-Educational Research Reviews*. 9. (2) (2020): 48-66.
- Arslan, Adem. İlkokul Birinci Sınıf Öğrencilerinin Sosyal Becerilerinin İncelenmesi. Yüksek Lisans Tezi. Giresun Üniversitesi, Giresun 2016.
- Ateş, Ebru Şule. Sınıf Öğretmenlerinin İlkokul 1. Sınıfa Devam Eden Öğrencilerin Okula Uyumlarına İlişkin Görüşleri (Ankara İli Çubuk İlçesi Örneği). Yüksek Lisans Tezi. Gazi Üniversitesi, Ankara 2016.
- Bilgili, Fatma. İlköğretim 1. Sınıfa Yeni Başlayan Öğrencilere Uygulanan Eğitim-Öğretime Hazırlık Çalışmalarının Öğrenci, Öğretmen Ve Veli Görüşlerine Göre Değerlendirilmesi. Yüksek Lisans Tezi. Çukurova Üniversitesi, Adana 2007.
- Bilgin, Hülya. "Okul öncesi öğretmenlerinin rehberlik yeterlilikleri ile sınıf yönetimi becerileri arasındaki ilişkinin incelenmesi". *Erken Çocukluk Çalışmaları Dergisi*. 3. (2) (2019): 478-492.
- Birch, Sondra and Gary, Ladd. "The teacher-child relationship and children's early school adjustment". *Journal of School Psychology*. 35. (1) (1997): 61-79.
- Blair, Clancy. "Integrating cognition and emotion in a neurobiological conceptualization of children's functioning at school entry". *American Psychologist*. 57. (2) (2002): 111-127. Doi: 10.1037//0003-066X.57.2.111
- Büyükişık, Gülgün. Alabayır İlköğretim Okulu birinci sınıf öğrencilerinin sosyal gelişimlerinde sınıf rehberliğinin etkisi: Van Alabayır Köyü örneği. Yüksek Lisans Tezi. Balıkesir Üniversitesi, Balıkesir 2009.

- Büyüköztürk, Şener., Ebru, Kılıç Çakmak, E., Özcan Erkan, Akgün., Şirin, Karadeniz & Funda, Demirel. Bilimsel araştırma yöntemleri. Ankara: Pegem Akademi, 2017.
- Canbulat, Tuncay. "Kesintili zorunlu eğitimden etkilenen ilkököl birinci sınıf öğrencilerinin okula uyum ve okula hazır bulunuşluk düzeylerinin değerlendirilmesi". Kastamonu Eğitim Dergisi. 24. (4) (2007): 1573-1586.
- Cavanaugh, Doreen A., John, Lippitt & Otrude, Moyo. Resource guide to selected federal policies affecting children's emotional and social development and their readiness for school. In Off to a good start: Research on the risk factors for early school problems and selected federal policies affecting children's social and emotional development and their readiness for school. Chapel Hill: University of North Carolina, FPG Child Development Center, 2000.
- Denham, Susanne. "Social-emotional competence as support for school readiness: What is it and how do we assess it?". Early Education and Development. 17. (1) (2006): 57-89. Doi: 10.1207/s15566935eed1701_4
- El Shahed, Ahmed M. "Democratic education in kindergartens as perceived by teachers in public and private schools". Psycho-Educational Research Reviews. 6. (3) (2017): 117-123.
- Ensar, Ferhat and Uygur, Keskin. "İlkököl birinci sınıf öğrencilerinin okula uyumları üzerine bir inceleme". Eğitimde Kuram ve Uygulama. 10. (2) (2014): 459-477.
- Goldberg, Corrie. Transitioning to preschool: The role of withdrawn behavioral subtypes and the teacher-child relationship in early school adjustment. Doctoral Dissertation. Northern Illinois University, Illinois 2006.
- Gomley, William., Deborah, Phillips & Ted, Gayer. "Preschool programs can boost school readiness". Science. 320. (5884) (2008): 1723-1724. Doi: 10.1126/science.1156019
- Gülay, Hülya. "5-6 yaş grubu çocuklarda okula uyum ve akran ilişkileri". Elektronik Sosyal Bilimler Dergisi. 10. (36) (2011): 1-10.
- Günindi, Nilgöl. Okul öncesi eğitim kurumlarına devam eden altı yaş çocuklarının sosyal uyum becerileri ile anne-babalarının empatik becerileri arasındaki ilişkinin incelenmesi. Yayınlanmamış Yüksek Lisans Tezi. Gazi Üniversitesi, Ankara 2008.
- Hamre, Bridget and Robert, Pianta. "Early teacher-child relationships and the trajectory of children's school outcomes through eighth grade". Child Development. 72. (2) (2001): 625-638.
- Huffman, Lynne C., Sarah L., Mehlinger. & Amy S., Kerivan. Risk factors for academic and behavioral problems at the beginning of school. In Off to a good start: Research on the risk factors for early school problems and selected federal policies affecting children's social and emotional development and their readiness for school. Chapel Hill: University of North Carolina, FPG Child Development Center, 2000.
- Koçyiğit, Sezai. İlköğretim birinci sınıf öğretmenlerinin ve ebeveynlerin görüşleri ışığında okula hazır bulunuşluk olgusu ve okul öncesi eğitime ilişkin sonuçları. Doktora Tezi. Selçuk Üniversitesi, Konya 2009.
- Lokumcu Tozar, Saadet Berrak. Okul öncesi eğitim alan ve almayan ilköğretim 1. sınıf öğrencilerinin okula hazır bulunuşluklarındaki farklılıklar ve çözüm önerileri. Yüksek Lisans Tezi. Beykent Üniversitesi, İstanbul 2011.
- Magnuson, Katherine., Marcia, Meyers., Christopher, Ruhm & Jane, Waldfogel. "Inequality in preschool education and school readiness". American Educational Research Journal. 41. (1) (2004): 115-157.
- MEB. "Okul öncesi eğitim ve ilkököl 1. sınıflarda uyum eğitiminde dikkat edilecek hususlar". https://tegm.meb.gov.tr/meb_iys_dosyalar/2020_09/15174803_okula_uyum_uygulama_esaslarY_imzalanmYY_yazY_eki.pdf. (2020)
- Mercan Uzun, Elif. Okul öncesi döneminde uygulanan "okula hazırız" eğitim programının ilkököl birinci sınıf öğrencilerinin okula uyum ve hazır bulunuşluk düzeylerine etkisi. Doktora Tezi. Ondokuzmayıs Üniversitesi, Samsun 2015.
- Miles, Matthew and Michael Huberman. Qualitative data analysis: An expanded sourcebook. London: Sage Publications, 1994.
- Mühlenweg, Andrea., Dorothea, Blomeyer., Holger, Stichnoth & Manfred, Laucht. "Effects of age at school entry (ASE) on the development of non-cognitive skills: Evidence from psychometric data". Economics of Education Review. 31. (3) (2012): 68-76.
- Obalar, Selda. İlköğretim birinci sınıf öğrencilerinin ilk okuma yazma becerileri ile sosyal duygusal uyum ve zeka düzeyleri arasındaki ilişkinin incelenmesi. Doktora Tezi. Marmara Üniversitesi, İstanbul 2009.
- Özarslan, Nesrin. Birinci sınıfta öğrenim görmekte olan (60-71 ve 72-84 aylık) öğrencilerin okul olgunluğu düzeyleri ve bu öğrencileri okutmakta olan öğretmenlerin gözlediği okula uyum ve sınıf yönetimi sorunları. Yüksek Lisans Tezi. Okan Üniversitesi, İstanbul 2014.
- Özgölük, Gülben. Okul öncesi eğitim kurumlarında uygulanan tam ve yarım günlük eğitim programlarına göre 5-6 yaş grubu çocukların sosyal ve duygusal gelişimlerinin incelenmesi. Yayınlanmamış Yüksek Lisans Tezi. Marmara Üniversitesi, İstanbul 2006.
- Pianta, Robert., Marcia, Kraft-Sayrea., Sara, Rimm-Kaufman., Nancy, Gercke & Terri, Higgins. "Collaboration in building partnerships between families and schools: The national center for early development and learning's kindergarten transition intervention". Early Childhood Research Quarterly. 16. (1) (2001): 117-132. Doi: 10.1016/S0885-2006(01)00089-8
- Polat, Emine. 12 yıllık zorunlu ve kademeli eğitim sisteminde ilkököl birinci sınıflarda yaşanan sorunların öğretmen görüşlerine göre değerlendirilmesi. Yüksek Lisans Tezi. Atatürk Üniversitesi, Erzurum 2014.
- Raimundo, Raquel., Elsa, Carapito., Ana Isabel, Pereira., Alexandra Marques, Pinto., Maria Luisa, Lima & Maria Teresa, Ribeiro. "School social behavior scales: an adaptation study of the Portuguese version of the social competence scale from SSBS-2". The Spanish Journal of Psychology. 15. (3) (2012): 1473-1484. Doi: 10.5209/rev_SJOP.2012.v15.n3.39431

- Ramey, Craig and Sharon, Ramey. "Early learning and school readiness: can early intervention make a difference?". *Merrill-Palmer Quarterly*. 50. (4) (2004): 471-491. Doi: 10.1353/mpq.2004.0034
- Raver, Cybele. "Emotions matter: Making the case for the role of young children's emotional development for early school readiness". Ann Arbor, MI: Society for Research in Child Development.
- Reynolds, Arthur and Nikolaus, Bezruczko. "School adjustment of children at risk through fourth grade". *Merrill-Palmer Quarterly*. 39. (4) (1993): 457-480.
- Rimm-Kaufman, Sara and Robert, Pianta. "An ecological perspective on the transition to kindergarten: A theoretical framework to guide empirical research". *Journal of Applied Developmental Psychology*. 21. (5) (2000): 491-511.
- Ruffolo, Mary and Daniel, Fischer. "Using an evidence-based CBT group intervention model for adolescents with depressive symptoms: lessons learned from a school-based adaptation". *Child & Family Social Work*. 14. (2) (2009): 189-197. Doi: 10.1111/j1365-2206.2009.00623.x
- Sarı, Elif. Anasınıfına devam eden 5-6 yaş grubu çocukların, annelerinin çocuk yetiştirme tutumlarının, çocuğun sosyal uyum ve becerilerine etkisinin incelenmesi. Yayımlanmamış Yüksek Lisans Tezi. Gazi Üniversitesi, Ankara 2007.
- Spencer, Margaret Beale. "Social and cultural influences on school adjustment: The application of an identity-focused cultural ecological perspective". *Educational Psychologist*. 34. (1) (2009): 43-57.
- TÜBİTAK. "Türk Sanayi Sevk ve İdare Enstitüsü". <http://tusside.tubitak.gov.tr/tr/yontemlerimiz/Derinlemesine-Gorusme>. (2019)
- Üstündağ, Nurtaç. İlkokul birinci sınıf uyum ve hazırlık programının öğretmen görüşlerine göre değerlendirilmesi. Yüksek Lisans Tezi. Adnan Menderes Üniversitesi, Aydın 2014.
- Wesley, Patricia and Virginia, Buysse. "Making meaning of school readiness in schools and communities". *Early Childhood Research Quarterly*. 18. (3) (2003): 351-375. Doi: 10.1016/S0885-2006(03)00044-9
- Yavuzer, Haluk. Ana-baba okulu. İstanbul: Remzi Kitapevi, 2001.
- Yavuzer, Haluk. Ana-baba ve çocuk. İstanbul: Remzi Kitapevi, 2010.
- Yavuzer, Haluk. Eğitim ve gelişim özellikleriyle okul çağı çocuğu. İstanbul: Remzi Kitapevi, 2000.
- Yıldırım, Ali and Hasan, Şimşek. Sosyal bilimlerde nitel araştırma yöntemleri. Ankara: Seçkin Yayıncılık, 2004.

ANALYZING THE RELATIONSHIP BETWEEN SOCIAL STUDIES TEACHER CANDIDATES' MOTIVATION FOR TEACHING PROFESSION AND SELF-EFFICACY⁷

Abstract: This study aims to determine the relationship between the self-efficacy perceptions of social studies teacher candidates and the motivation. This study is a descriptive study in relational survey model. This study was carried out with 2193 social studies prospective teachers at twelve universities. According to findings of the research, there is a moderate, positive significant relationship between social studies prospective teachers' motivation and social studies prospective teachers' sense of efficacy. In the results of regression analysis, it is seen that the motivation for teaching profession is a significant predictor of teachers' sense of efficacy. In conclusion, these research findings are thought to be important for the education faculties that have the responsibility of raising qualified teachers. Taking a qualified education of social studies prospective teachers will affect their professional self-efficacy and their motivation for the teaching profession. It is therefore important to increase the effectiveness of the teacher training process and to encourage prospective teachers to develop opportunities in their own willness and interests.

Keywords: Social studies, prospective teachers, self-efficacy, motivation, teaching profession

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INTRODUCTION

Teachers are from the most important factors of education systems due to their contribution to shaping and transforming the future of society. Therefore, teachers have to have high personal, professional competencies and motivation to achieve success in gaining students' desired behavior. The quality of education will increase with the teachers with high self-efficacy and motivation, who can communicate with the students, make the lesson fun by using alternative teaching methods in the courses, enjoy learning and teaching, and create a fun class atmosphere.

Self-efficacy is from the basic concepts emphasized in Bandura's Social Learning Theory (Bandura, 1999). Bandura defines self-efficacy as an effective feature in the occurrence of behaviors and self-judgment about the capability of the individual to organize and do the activities to show a specific performance (Bandura, 1999). In another definition, the individual's belief in the future about what can be done in certain situations (Woolfolk Hoy, 1990). Teachers' self-efficacy is defined as the beliefs of teachers about their self-confidence in giving an efficient education to their students (Guskey and Passaro, 1994). Teachers direct the learning-teaching process and influence the student's academic and social development. Therefore, the high level of self-efficacy perceptions of teachers who affect the society is directly proportional to their success in their fields. Teachers with higher self-efficacy perception; who are open to different opinions, are eager to use different teaching methods, are more understanding towards students who make mistakes, are enthusiastic about teaching, are able to create a warm learning environment, are able to create a more learner-oriented, student-oriented course in the face of learning difficulties of students. Teachers with low self-efficacy perception; have negative opinions about student motivation, strict classroom rules, in favor of punishment, and teacher-oriented course (Tschannen-Moran and Hoy, 2001).

The studies performed by Bandura reveal that the perceptions of one's skills affect not only their behavior but also their motivation and success. Therefore, in the education of prospective teachers, their motivation to the teaching profession is an important issue. The prospective teachers who aim to be successful, effective and efficient performers find their profession of interest, to be satisfied with being doing that job, to be willing to learn and to teach, to be enthusiastic in the same group, to see the value and status of the profession, increases energy, helps to resolve conflicts, and increases motivation for the teaching profession. Motivation is defined as a general concept that stimulates the organism, continues its movement, and includes the impulses and interests (Aydın, 2008; Cüceloğlu, 2005). Schunk, Meece and Pintrich (2013) defined motivation as the process of promoting and continuing behavior through purposeful activities. Ormrod (2013) emphasizes that motivation is the inner power that allows the individual to lead an action as well as to continue to do an action.

In studies on teacher self-efficacy, it has been found that there is a relationship between variables such as job satisfaction power, school climate and achievement (Goddart, Hoy and Woolfolk Hoy, 2000; Tschannen-Moran and Hoy, 2001; Caprara, Barbaranelli, Steca and Malone, 2006), student control (Celep, 2000); self-efficacy beliefs and attitudes towards the teaching profession (Demirtas, Cömert and Özer, 2011; Tatlı Dalioğlu, 2016); the impact of classroom management course self efficacy levels (Yüksel, 2014). There are also studies in the literature on the self-efficacy levels of teacher candidates in different branches (Akkoyunlu and Kurbanoglu, 2003; Akkoyunlu and Orhan, 2003; Can, Günhan and Erdal, 2005; Aşkar and Umay, 2001; Savran and Çakıroğlu, 2001; Morgil, Seçken and Yücel, 2004; Özdemir, 2008; Özenoğlu Kiremit, 2006; Usluel, 2006; Akkuzu and Akçay, 2012; Akbulut, 2006; Altuncelik, Yaman and Koray, 2005; Ekinci, Yildirim, Bindak, Öter, Özdas and Akın, 2014; Cakıroğlu and Boone, 2005; Zayimoğlu-Öztürk, 2013; Mutlu Bozkurt, 2013; Uslu, 2014).

There are studies on the motivation levels of prospective teachers in the literature (Gençay and Gençay, 2007; Ural and Efe, 2007; Saracaloğlu and Dinçer, 2009; Yaraş, 2010; Dereli and Acat, 2010; Ozan and Bektas, 2011; Öztürk Akar, 2012; 2014; Ayık and Ataş, 2014; Alemdağ, Öncü, Yilmaz, 2014; Eymur and Geban, 2011; Erdem and Gözel, 2014; Dereli and Acat, 2010; Demir Gündül, 2015; Gömleksiz and Serhatlioğlu, 2013; Ulutaş, 2016; Kim and Cho, 2014; Thoonen, Slegers, Peetsma and Oort, 2011; BrBruinsma and Jansen, 2010; Brouse, Basch, LeBlanc, McKnight, Lei, 2010; Carreira, 2011; Pan, 2014. Goodman, Jaffer, Keresztesi, Mamdani, Mokgatle, Musariri and Schlechter, 2011; Özdemir and Karanfil,

2017; Gün and Turabik, 2019; Çelik and Gezer, 2020). According to this it is understood that it is significant to examine the motivation levels and self-efficacy of social studies prospective teachers for the teaching profession. An important part of the knowledge and skills necessary for students to be a good citizen is acquired through Social Studies. In the context, Social Studies is one of the most necessary lessons for children to learn about society and its problems and to learn their responsibilities as a citizen. In this respect, it is important to determine the relationship between self-efficacy and motivation of social studies prospective teachers, who have undertaken the task of raising good and responsible citizens in the future. With this study, it is thought that developing suggestions for taking measures to increase the quality of the learning and teaching process, and contributing to the development of positive attitudes towards the profession by prospective teachers and the phenomenon of training qualified teachers. This study aims to determine the relationship between the self-efficacy perceptions of social studies prospective teachers and the motivation for teaching profession. For this, the following questions were sought.

- 1-What are social studies prospective teachers' self-efficacy perceptions and their motivation towards teaching profession?
- 2- Is there a relationship between the perceptions of social studies prospective teachers' sense of efficacy and their motivation for the teaching profession?
- 3- Are social studies prospective teachers' sense of efficacy perceptions a significant predictor of motivation for the teaching profession?

METHOD

This study is a descriptive study in relational model. Relational method is generally used to determine the current situation between two or more variables relationally or to predict the possible results due to these current situations (Fraenkel, Wallen, & Hyun, 2012).

SAMPLE

The participants of the study are 2193 social studies teacher candidates in Kastamonu, Marmara, Trakya, Pamukkale, Gazi, Abant İzzet Baysal, Mehmet Akif Ersoy, Ahi Evran, Kastamonu, Karadeniz Technical, Fırat, Erzincan, Adıyaman Universities in the 2014-2015 academic years. Accordingly, this research was carried out at twelve universities determined according to NUTS 1. NUTS 1 (Nomenclature of Territorial Units for Statistics) is known as a general name given to statistical regional units accepted by the European Union. During the sampling process carried out on NUTS 1, 1 province and 1 university were selected from each region by taking the criteria such as accessibility, economics and ease of implementation within the 12 regions constituting NUTS 1. Convenience is a type of nonprobability or nonrandom sampling where members of the target population that meet certain practical criteria, such as easy accessibility, geographical proximity, availability at a given time or the willingness to participate are included for the purpose of the study (Dörnyei, 2007). Of the 2193 social studies teacher candidates participating in the study, 1202 were female (54.8%) and 991 (45.2%) were male. 543 of the social sciences prospective teachers were 1st grade (24.8%), 589 were 2nd grade (26.9%), 556 were 3rd grade (25.4%) and 505 (23.0%) were 4th grade. Social studies teacher candidates 215 (9.8%), Kastamonu University, 189 (8.6%) Karadeniz Teknik University, 167 (7.6%) Mehmet Akif Ersoy University, 128 (5.8%) Marmara University, 219 (% 10.0) Ahi Evran University, 275 (% 12.5) Gazi University, 115 (% 5.2) Fırat University, 229 (% 10.4) Erzincan University, 190 (% 8.7) Abant İzzet Baysal University, 145 (% 6.6), Trakya University, 199 (% 9.1), Pamukkale University, 122 (% 5.6) from Adıyaman University.

DATA COLLECTION

The quantitative data were collected through the use of “Teachers’ Self-efficacy Scale” and “Motivation Levels of Prospective Teachers for the Teaching Profession Scale”.

TEACHERS’ SENSE OF EFFICACY SCALE

The original form of the teachers’ Sense of Efficacy Scale was developed by Tschannen-Moran and Hoy (2001) and the Turkish adaptation, validity and reliability study was conducted by Çapa, Çakıroğlu and Sarıkaya (2005). Teachers’ sense of efficacy scale consists of 24 items and three sub-dimensions. The self-

efficacy dimension for student engagement, the self-efficacy dimension for instructional strategies is in the form of self-efficacy dimension for classroom management. In the factor analysis results made to determine the validity of the scale, it was found that the scale explained 65% of the total variance. In the adaptation study conducted by Çapa, Çakıroğlu, and Sarıkaya (2005), Cronbach's Alpha value calculated for each dimension as a result of the analyzes performed to determine the reliability of the scale are as follows: .82 for self-efficacy for student engagement, .86 for self-efficacy for instructional strategies, and .84 for self-efficacy for classroom management. As a result of the reliability analyzes conducted in this study, the internal consistency coefficient for the entire scale was found to be .95. In addition, the internal consistency coefficients calculated separately for each dimension were .86 for self-efficacy for student engagement, .87 for self-efficacy for instructional strategies, and .86 for self-efficacy for classroom management.

MOTIVATION LEVELS OF TEACHER CANDIDATES SCALE

In this research, "Motivation Levels of Teacher Candidates Scale" which was formed by Acat and Yenilmez (2004) was used. It consists of 23 items and 5 options in likert type. The scale was one-dimensional. Factor analysis was conducted to determine the validity of the scale and it was determined that the factors explained 54% of the variance. Accordingly, it was accepted that the scale is valid. The internal consistency coefficient of the "Motivation Levels of Teacher Candidates" scale, which was created by Acat and Yenilmez (2004), was found to be 0.92. As a result of the reliability analyzed in this study, the internal consistency coefficient was found to be .85. for the whole scale.

DATA ANALYSIS

Statistical package for the social sciences (SPSS 16) program pack was used for the statistical analysis of the data collected with accurately and completely filled questionnaires according to the general purposes of the study. The frequency, percentage, arithmetical mean and standard deviation of the answers were calculated for data analysis. Pearson correlation method was used to investigate the relationship between the motivations of social studies teacher candidates and their sense of efficacy. Simple Linear Regression analysis was used to determine whether teacher candidates' motivation predicted their' sense of efficacy.

RESULTS

In this part of the research, statistical analyzes performed for the purpose of the research and the findings obtained as a result of these analyzes are given.

The correlations between variables and the arithmetic mean and standard deviation values of the variables of the study are given in Table 1.

Table 1. Mean and Standard Deviation Values and Correlations Between Variables

Variables	\bar{X}	S	1	2	3	4	5
1. Motivation for the Teaching Profession	3.71	0.61	-	.48**	.46**	.47**	.50**
2. Efficacy for Student Engagement	6.69	1.18		-	.83**	.81**	.94**
3. Efficacy for Instructional Strategies	6.75	1.21			-	.82**	.94**
4. Efficacy for Class Management	6.80	1.22					.93**
5. Teacher Self-efficacy (Total)	6.75	1.13					-

* $p < .05$, ** $p < .01$

When Table 1 is examined, it was determined that the perceptions of social studies prospective teachers related to motivation were high and agree ($\bar{X}=3.71$). In general, when the self-efficacy perceptions of social studies prospective teachers are examined, it is seen that the average of the 6.75 level corresponds to 'quite sufficient' level of the likert-type scale. When the self-efficacy perceptions of social studies prospective teachers are examined within the scope of three dimensions, the highest dimension of efficacy for classroom management ($\bar{X}=6.80$); Efficacy for student engagement was found to have the lowest value ($\bar{X}=6.69$). However, the self-efficacy perceptions of social studies prospective teachers for the three dimensions were quite sufficient.

When the results of correlation analysis conducted to determine the relationship between social studies teacher candidates' motivation and their sense of efficacy are examined, there is a moderate, positive significant relationship ($r = .50$, $p < .05$) between social studies prospective teachers' motivation and social studies prospective teachers' sense of efficacy.

In addition, it is seen that significant relationships between two variables occur in all dimensions. According to this, there is a moderate, positive significant relationship ($r = .48$, $p < .05$) between the motivation and efficacy for student engagement. There is a moderate, positive significant relationship ($r = .46$, $p < .05$) between the motivation for teaching profession and efficacy for instructional strategies. There is a moderate, positive significant relationship ($r = .47$, $p < .05$) between the motivation and efficacy for class management. In addition, the correlation results indicate that there is a high level, positive and significant relationship between the dimensions of the scale that measures the self-efficacy perceptions of social studies teacher candidates. According to this, the highest relationship efficacy for student engagement and efficacy for instructional strategies ($r = .83$, $p < .05$) was found. There was a high level, positive and significant correlation between efficacy for class management and efficacy for instructional strategies ($r = .82$, $p < .05$). There was a high level, positive and significant correlation between efficacy for student engagement and efficacy for class management ($r = .81$, $p < .05$).

The results of regression analysis for teachers' sense of efficacy according to motivation for teaching profession are given in Table 2.

Tablo 2. The Results of Regression Analysis for Teachers' Sense of Efficacy According to Motivation for Teaching Profession

R	R ²	ΔR^2		B	Standart Error	β	t
.50	.25	.24.9	Constant	3.31	.129		25.58
			Motivation for teaching profession	.93	.034	.499	26.98

When the results of regression analysis are examined, it is seen that the motivation for teaching profession is a significant predictor of teachers' sense of efficacy ($R = .50$, $R^2 = .25$; $F = 727.69$; $p < .01$). It can be said that 25% of the total variance related to teachers' sense of efficacy is explained by social studies prospective teachers' motivations for the teaching profession.

DISCUSSION AND CONCLUSION

According to the results of correlation analysis conducted to determine the relationship between social studies prospective teachers' motivation and social studies prospective teachers' sense of efficacy, there is a moderate, positive significant relationship between social studies prospective teachers' motivation and social studies prospective teachers' sense of efficacy. According to the results of regression analysis, it is seen that the motivation for teaching profession is a significant predictor of teachers' sense of efficacy. Self-efficacy is expressed as the most important factor determining student motivation and movements in Bandura's self-efficacy theory. Students are not motivated to perform a goal if they do not have self-efficacy. Many studies have revealed that students' perception of their abilities is related to their motivation and success performance (Pintrich and Schunk, 1996). Saracaloğlu and Dinçer (2009) were found to be moderately related to the self-efficacy and motivation levels of pre-service teachers. Alemdağ, Öncü, Yılmaz (2014) show that there are positive correlations between academic motivation levels and self-efficacy of physical education teacher candidates. Husain (2014) and Özdemir and Karanfil (2017) found in his study that there is a positive relationship between self-efficacy belief and motivation. On the other hand, Buch, Säfvenbom and Boe (2015) concluded that self-efficacy belief significantly affects students' intrinsic motivation levels.

When the research findings are evaluated, it was determined that the perceptions of social studies prospective teachers related to motivation were high and agree. Social studies prospective teachers who have high motivation will be able to contribute more towards willingness to work more voluntarily, develop themselves and thus improve the quality of teaching profession and improve the quality of education. The motivation of the prospective teachers for the teaching profession will affect the profession and the style of doing the duties required by the profession. As long as the teacher candidates' motivation regarding the

teaching profession is high, the prospective teachers will tend to do the teaching profession better and improve their self-efficacy. Also, the prospective teacher will be more enthusiastic and willing to internalize the teaching profession and fulfill the requirements of the profession. In the opposite case, in other words, when the motivation of teacher candidates regarding the teaching profession is low, they will not be able to adopt and internalize the teaching profession, they will not benefit from the education they will receive in educational institutions, they will increase their self-efficacy and they will not find the motivation to improve themselves. Acat and Yenilmez (2004) stated that motivation has an important place in learning, and that the source of some problems in the learning process lies here, and that a significant proportion of success and failure can be explained by motivation. In the study conducted by Emiroglu, Guneyli, and Burgul (2017) on teachers' perceptions of motivation sources, it was revealed that both intrinsic and extrinsic motivation is very important for teachers. Gün and Turabik (2019) and Çelik and Gezer (2020) stated that the intrinsic motivation scores of social studies teacher candidates are higher than their extrinsic motivation scores.

According to research findings, in general, when the self-efficacy perceptions of social studies prospective teachers are examined, it is seen that it corresponds to 'quite sufficient' level of the likert-type scale. Research findings (Mutlu Bozkurt, 2013; Kan, 2007; Yeşilyurt, 2013; Gerçek, Yılmaz, Köseoğlu and Soran, 2006; Harurluoğlu and Kaya, 2009; Yılmaz and Gürçay, 2011) show similarities with the findings of the studies. When the self-efficacy perceptions of social studies prospective teachers are examined within the scope of three dimensions, the highest dimension of efficacy for classroom management; Efficacy for student engagement was found to have the lowest value. In the research findings conducted by Ayra and Kösterelioğlu (2016), it was determined that teachers considered themselves less adequate than other fields in the areas of efficacy for student engagement in areas such as encouraging, motivating and believing that students would be successful.

In conclusion, these research findings are thought to be important for the education faculties that have the responsibility of raising qualified teachers. Taking a qualified education of social studies prospective teachers will affect their professional self-efficacy and their motivation for the teaching profession. It is therefore important to increase the effectiveness of the teacher training process and to encourage prospective teachers to develop opportunities in their own willness and interests.

RECOMMENDATIONS

Having a qualified education of social studies teacher candidates will affect their perceptions of professional self-efficacy and their motivation towards the teaching profession. For this reason, it is important to increase the effectiveness of the teacher training process and to encourage prospective teachers to develop opportunities in their own desires and interests. Activities that will increase the motivation of teacher candidates towards the teaching profession can be organized during the training process. It should be avoided from practices to reduce the motivation of prospective teachers studying in the faculties of education, which are teacher training institutions. As a result, it was determined that they were less adequate than the classroom management in providing student participation and teaching strategies. Therefore, the content and conduct of the courses aiming to make candidates more adequate in this respect can be reviewed by the instructors. A study can be conducted that examines the factors affecting social studies teacher candidates' perceptions of self-efficacy and their motivation towards teaching profession. A qualitative study can be conducted that examines the relationship between social studies teacher candidates' self-efficacy perceptions and their motivation for teaching profession.

THE LIMITATIONS OF THIS RESEARCH

This research is limited to social studies teacher candidates who are the participants of this study. This research is limited to twelve universities determined according to NUTS 1. NUTS 1 (Nomenclature of Territorial Units for Statistics) is known as a general name given to statistical regional units accepted by the European Union. During the sampling process carried out on NUTS 1, 1 province and 1 university were selected from each region by taking the criteria such as accessibility, economics and ease of implementation within the 12 regions constituting NUTS 1.

REFERENCES

- Acat, M. Bahattin & Yenilmez, Kürşat. "Eğitim fakültesi öğrencilerinin öğretmenlik mesleğine ilişkin motivasyon düzeyleri". *Manas Üniversitesi Sosyal Bilimler Dergisi* 6 (2004): 125-139
- Akkoyunlu, Buket & Kurbanoglu, Serap. Öğretmen adaylarının bilgi okuryazarlığı ve bilgisayar öz-yeterlik algıları". *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*, 24, (2003):1-10.
- Akkoyunlu, Buket, et. al. "Bilgisayar öğretmenleri için bilgisayar öğretmenliği özyeterlik ölçeği geliştirme çalışması". *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*, 29, (2005):1-8.
- Akbulut, Efe. "Müzik öğretmeni adaylarının mesleklerine ilişkin özyeterlik inançları". *Yüzüncü Yıl Üniversitesi Eğitim Fakültesi Dergisi*, 3(2) (2006): 24-33.
- Akkuzu, Nalan & Akçay, Hüsamettin. "Kimya öğretmen adaylarının öz yeterlik inançlarının farklı değişkenler açısından incelenmesi (Dokuz Eylül Üniversitesi örneği)". *Educational Sciences: Theory and Practice*, 12(3) (2012): 2195-2216.
- Alemdağ, Ceyhan, et. al. "Beden Eğitimi Öğretmeni Adaylarının Akademik Motivasyon ve Akademik özyeterlikleri". *Spor Bilimleri Dergisi* 25(1) (2014):23-35.
- Altunçekiç, Alper, et. al. "Öğretmen adaylarının özyeterlik inanç düzeyleri ve problem çözme becerileri üzerine bir araştırma (Kastamonu ili örneği)". *Kastamonu Eğitim Dergisi*, 13(1) (2005): 93-102.
- Aşkar, Petek. & Umay, Aysun. "İlköğretim matematik öğretmenliği öğretmen adaylarının bilgisayarla ilgili öz-yeterlik inancı". *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*, 21, (2001): 1-8.
- Aydın, Ayhan. *Eğitim Psikolojisi*. PegemA Yayıncılık, 2008.
- Ayık, Ahmet. & Atas, Öznur. "Öğretmen adaylarının öğretmenlik mesleğine yönelik tutumları ile öğretim motivasyonları arasındaki ilişki". *Eğitim Bilimleri Araştırma Dergisi* 4(1) (2014): 26-43.
- Ayra, M. & Kösterelioglu, İlker. "Öğretmenlerin mesleki özyeterlik inançlarının çeşitli değişkenler açısından incelenmesi". *Gümüşhane Üniversitesi Sosyal Bilimler Elektronik Dergisi*, 7(17) (2016).
- BrBruinsma, Marjon. & Jansen, Ellen .P.W.A.. "Is the motivation to become a teacher related to pre-service teachers' intentions to remain in the profession?" *European Journal of Teacher Education*, 33(2) (2010):185-200.
- Brouse, Corey.H., et. al. "College students' academic motivation: Differences by gender, class, and source of payment". *College Quarterly*, 13(1) (2010): 1-10.
- Buch, Robert, et. al. "The relationships between academic selfefficacy, intrinsic motivation, and perceived competence". *Journal of Military Studies*, 6(1) (2015): 19-35.
- Can, Bilge Taşkın, et. al. "Fen bilgisi öğretmen adaylarının fen derslerinde matematiğin kullanımına yönelik öz yeterlik inançlarının incelenmesi". *Dokuz Eylül Üniversitesi Buca Eğitim Fakültesi Dergisi*, 18 (2005):38-46.
- Caprara, Gian, et. al. "Teachers' self-efficacy beliefs as determinants of job satisfaction and students' academic achievement: A study at the school level". *Journal of School Psychology*, 44, (2006): 473- 490.
- Carreira, Junko Matsuzaki. "Relationship between motivation for learning EFL and intrinsic motivation for learning in general among Japanese elementary school students". *System*, 39(1) (2011):90-102.
- Cüceloğlu, Doğan. *İnsan ve Davranışı: Psikolojinin Temel Kavramları*. Remzi Kitabevi, 2005.
- Celep, Cevat. "The correlation of the factors: The prospective teacher' sence of efficacy, beliefs and attitudes about student control". *National Forum of Educational Administration and Supervision Journal*, 4, (2000): 99-112.
- Çakiroglu, Erdinç & Boone, William. J. "Pre-service teacher self-efficacy beliefs regarding science teaching: a comparison of pre-service teachers in Turkey and the USA". *Science Educator*, 14(1) (2005): 31-40.
- Çapa, Yeşim, et. al. "The development and validation of a Turkish version of teachers' sense of efficacy scale". *Eğitim ve Bilim (Education and Science)*, 30(137) (2005): 74-81.
- Çelik, Ayşegül & Gezer, Uğur. "Sosyal bilgiler öğretmen adaylarının öğretmeye ilişkin motivasyonlarının incelenmesi". *Gelecek Vizyonlar Dergisi (Future Visions Journal)*, 10, (2020):1-9.
- Çoban, Abdülkadir & Sanalan, Aytekin. "Fen bilgisi öğretimi dersinde özgün deney tasarım sürecinin öğretmen adayının özyeterlilik algısına etkisi". *Erzincan Eğitim Fakültesi Dergisi*, 4(2) (2002): 1-10.
- Demir Güdül, Meryem. "Üniversite öğrencilerinin akademik motivasyon profillerinin psikolojik ihtiyaç doyumu, akademik erteleme ve yaşam doyumu ile ilişkisi". Unpublished Doctoral Thesis. Anadolu University Institute of Educational Sciences, 2015.
- Demirtaş, Hasan, et. al. "Öğretmen adaylarının özyeterlik inançları ve öğretmenlik mesleğine ilişkin tutumları". *Education and Science*, 36, (2011):96-111.
- Dereli, Esra & Acat, Bahaddin. "Okul öncesi eğitim öğretmenliği bölümü öğrencilerinin motivasyon kaynakları ve sorunları". *Selçuk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 24, (2010):173-187.
- Dörnyei, Zoltan. *Research methods in applied linguistics*. New York: Oxford University Press. 2007.
- Ekinci, Abdurrahman, et. al. "Öğretmen adaylarının öğretmenlik mesleğine ilişkin özyeterlik algılarının çeşitli değişkenler açısından incelenmesi investigating candidate teachers' self-efficacy perceptions in terms of different variables". *Gaziantep University Journal of Social Sciences* 13(3) (2014): 723-734.
- Emiroglu, Osman, et. al. "Motivational sources of teachers in a developing country". *Revista de Cercetare si Interventie Sociala*, 57 (2017): 51-66.

- Erdem, Ali Rıza & Gözel, Emine. "Sınıf öğretmeni adaylarının öğretmenlik mesleğine ilişkin motivasyon düzeyleri [Motivation levels of classroom teacher candidates towards teaching profession]". *Akademik Sosyal Arastirmalar Dergisi (The Journal of Academic Social Science)*, 2(1) (2014): 49-60.
- Fraenkel, Jack, et. al. *How to design and evaluate research in education* (8th ed.). Boston: McGraw Hill. 2012.
- Gençay, Ökkeş Alpaslan & Gençay, Selçuk. "Beden eğitimi ve spor yüksekokulu öğrencilerinin öğretmenlik mesleğine ilişkin motivasyon düzeylerinin bazı değişkenler açısından incelenmesi". *Selçuk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 17, (2007): 241-255.
- Gerçek, Cem, et. al. "Biyoloji eğitimi öğretmen adaylarının öğretiminde öz-yeterlik inançları". *Ankara Üniversitesi Eğitim Bilimleri Fakültesi Dergisi*, 39(1) (2006): 57-73.
- Goddard, Roger, et. al. "Collective teacher efficacy: Its meaning, measure, and impact on student Achievement". *American Educational Research Journal*, 37(2) (2000): 479-507.
- Goodman, Suki, et. al. "An investigation of the relationship between students' motivation and academic performance as mediated by effort". *South African Journal of Psychology*, 41(3) (2011): 373-385.
- Gömlüksiz, Mehmet & Serhatlıoğlu, Birsan. "Okulöncesi öğretmenlerinin özyeterlik inançlarına ilişkin görüşleri". *Turkish Studies* 8(7) (2013): 201-221.
- Guskey, Thomas R. & Passaro, Perry D. "Teacher efficacy: A study construct dimensions. *American Educational Research Journal*, 31, (1994): 627-643.
- Gün, Feyza & Turabik, Tuğba. "Öğretmen adaylarının olası benliklerinin öğretme motivasyonları üzerindeki etkisi". *Cumhuriyet International Journal of Education*, 8(1) (2019): 214-234.
- Harurluoğlu, Yasemin & Kaya, Ercan. "Biyoloji öğretmen adaylarının biyoloji öğretimine yönelik öz-yeterlik inançları." *Uludağ Üniv. Eğitim Fakültesi Dergisi*, XXII (2), (2009): 481-496.
- Husain, Urfi. Khalid. "Relationship between self-efficacy and academic motivation". In International Conference on Economics, Education and Humanities (ICEEH'14), 10-11 (2014).
- Kan, Adnan. "Öğretmen adaylarının eğitime-öğretme özyeterliklerine yönelik ölçek geliştirme ve eğitime-öğretme özyeterlikleri açısından değerlendirilmesi (Mersin Üniversitesi Örneği)". *Mersin Üniversitesi Eğitim Fakültesi Dergisi*, 3(1) (2007): 35-50.
- Kim, Hyunjin. & Cho, Yoon. "Pre-service teachers' motivation, sense of teaching efficacy, and expectation of reality shock". *Asia-Pacific Journal of Teacher Education*, 42(1) (2014): 67-81.
- Morgil, İnci, et. al. "Kimya öğretmen adaylarının öz-yeterlik inançlarının bazı değişkenler açısından incelenmesi". *Balıkesir Üniversitesi Fen Bilimleri Enstitüsü Dergisi*, 6(1) (2004): 62-72.
- Mutlu Bozkurt, Tuğba. "Beden eğitimi öğretmen adaylarının öğretmenlik özyeterliklerinin incelenmesi". Master thesis, Gazi University, Institute of Educational Sciences, 2013.
- Omrod, Jeanne Ellis. *Öğrenme psikolojisi* (Edt. M. Baloğlu) Nobel Yayıncılık, Ankara. 2013.
- Ozan, Ceyhan & Bektaş, Fatih. "Eğitim fakültesi öğrencilerinin öğretmenlik mesleğine ilişkin motivasyon düzeyleri". *Türkiye Sosyal Araştırmalar Dergisi*, 1, (2011): 1-20.
- Özdemir, Soner Mehmet. "Sınıf öğretmeni adaylarının öğretim sürecine ilişkin özyeterlik inançlarının çeşitli değişkenler açısından incelenmesi". *Kuram ve Uygulamada Eğitim Yönetimi*, 54, (2008): 277-306.
- Özdemir, Osman & Karafil, Burcu. "Üniversite öğrencilerinin dil öğrenme motivasyon düzeyleri ile genel öz yeterlik inancı düzeyleri arasındaki ilişkinin incelenmesi". *Kesit Akademi Dergisi*, (11) (2017): 596-606
- Özenoğlu Kiremit, Hatice. "Fen bilgisi öğretmenliği öğrencilerinin biyoloji ile ilgili öz-yeterlik inançlarının karşılaştırılması". Unpublished Doctoral Thesis., Dokuz Eylül University, 2006.
- Öztürk Akar, Ebru. "Motivations of turkish pre-service teachers to choose teaching as a career". *Australian Journal of Teacher Education*, 37(10) (2012).
- Pan, Yi-Hsiang. "Relationships among teachers' self-efficacy and students' motivation, atmosphere, and satisfaction in physical education". *Journal of Teaching in Physical Education*, 33, (2014): 68-92.
- Pintrich, Paul.R. & Schunk, Dale.H. *Motivation in education: Theory, research, and applications*. Englewood Cliffs, NJ: Prentice Hall Berlin, 1996.
- Saracaloğlu, A.Seda & Dinçer, Beste. "A study on correlation between self-efficacy and academic motivation of prospective teachers". *Procedia - Social and Behavioral Sciences*, 1(1) (2009): 320-325.
- Savran, Ayşe. & Çakıroğlu, Jale. "Biyoloji öğretmen adaylarının biyoloji öğretimine ilişkin özyeterlilik inançları". *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*, 21, (2001): 105-112.
- Schunk, Dale, et. al. *Motivation in education*. USA: Pearson. 2013.
- Tatlı Dalioğlu, Seray. "Öğretmen adaylarının meslekteki ilk yıllarına yönelik olası benlikleri ile öz-yeterlik inançları ve öğretmenliğe ilişkin tutumları arasındaki ilişki". Unpublished Doctoral Thesis. Anadolu University Institute of Educational Sciences, 2016.
- Thoonen, Erik. et. al. "Can teachers motivate students to learn?" *Educational Studies*, 37(3)(2011): 345-360.
- Tschannen-Moran, Megan. & Woolfolk Hoy, Anita. "Teacher efficacy: capturing an elusive construct". *Teaching and Teacher Education*, 17, (2001): 783-805.
- Ulutaş, Burcu. "Özdüzenlemeli öğrenme ortamında kimya öğretmen adaylarının motivasyonlarının değişiminin incelenmesi". Unpublished Doctoral Thesis, Gazi University, Institute of Educational Sciences, 2016.

- Ural, Ozana. & Efe, Kadriye. “Okulöncesi Eğitimi Alanında Çalışan Öğretmen ve Öğretmen Adaylarının Mesleki Motivasyon Düzeyleri”. 11st National Primary Education Congress Paper Index. Hacettepe University (2007).
- Uslu, Salih. “Sosyal bilgiler öğretmen adaylarının özel alan yeterliliğine ilişkin öz-yeterlik inançlarının incelenmesi”. Unpublished Doctoral Thesis, Gazi University, Institute of Educational Sciences, 2014.
- Usluel, Yasemin. “Öğretmen adayları ve öğretmenlerin bilgi okuryazarlığı özyeterliklerinin karşılaştırılması”. *Eğitim Araştırmaları*, 6 (22) (2006): 233–243.
- Woolfolk, Anita.E. & Hoy, Wayne.K. “Prospective teachers’ sense of efficacy and beliefs about control”. *Journal of Educational Psychology*, 82 (1990): 81–91.
- Yaraş, Zübeyde. “Sınıf öğretmenliği öğrencilerinin öğretmenlik mesleğine ilişkin motivasyon düzeylerine kamu personeli seçme sınavı’nın etkisi”. 9th National Classroom Teaching Symposium Proceedings Book 1065-1069, Fırat Univesity, (2010).
- Yeşilyurt, Etem. “Öğretmen adaylarının öğretmen özyeterlik algıları”. *Elektronik Sosyal Bilimler Dergisi*, 12 (45) (2013):88-104.
- Yılmaz, Miraç. & Gürçay, Deniz. “Biyoloji ve fizik öğretmen adaylarının öğretmen özyeterliklerini yordayan değişkenlerin belirlenmesi”. *Çukurova Ünv. Eğitim Fakültesi Dergisi*, 1(40) (2011): 53-56
- Zayimoğlu-Öztürk, Filiz. “Sosyal Bilgiler öğretmen adaylarının sosyal bilgiler öğretim programındaki öğrenme alanlarına ilişkin özyeterlik düzeylerinin incelenmesi”. *Gaziantep University Journal of Social Sciences - JSS*, 12 (3) (2013): 545-565.
- Zimbicki, Dana. “Examining the effects of alternative assessment on student motivation and self-efficacy”. (2007).Retrieved from ProQuest Dissertations and Theses. (UMI No. 304761711) .

THE ROLE OF TEACHER AUTONOMY AND SCHOOL CLIMATE ON GOAL ORIENTATIONS FOR TEACHING

Abstract: Goal orientations of teachers for teaching are significant in shaping educational settings such that they are linked to some school concepts. The curriculum and teaching autonomy of teachers is related to the teachers' goal orientation. Further, school climate that is shaped by behaviors of teachers, students, and administrators affects the goal orientations for teaching. The aim of this study is to reveal the role of teachers' autonomy behavior and perceptions of school climate on their goal orientations for teaching. The study was designed as correlational study. The participants consisted of 284 teachers in public and private schools. Instruments were "goal orientation scale for teaching", "school climate scale", and "teacher autonomy scale". Multiple Hierarchical Regression Analysis method was used to analyze data. The results indicated that school climate was more powerful of and significant predictor of goal orientation than teacher autonomy. Further, teacher autonomy and school climate predicted dimensions of goal orientation for teaching, which were mastery, performance-approach, work-avoidance, and student relations. The study made a contribution to teacher education and school effectiveness literature by revealing factors related to teachers' goal orientations for teaching.

Keywords: Goal orientation, teacher autonomy, school climate, school effectiveness, teacher education

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INTRODUCTION

The curricula of primary and middle schools have been frequently changing in Turkey due to educational reforms, and so schools are addressing updating approaches, methods, and techniques. To name a few, student-centered methods, consideration of student differences, focus on nature of the course, meaningful learning, integration of content with daily life, connection of new knowledge to preexisting knowledge, and usage of information and communication technologies are core points of new approaches (Ministry of National Education, 2017).

Üzüm and Karşlı (2013) stated the current situation and desired situation of teachers. The current situation is based on implementation of instruction by curriculum and course books. However, the desired situation should be based on constructivist approaches which necessitate extra motivation, resource allocation, appropriate knowledge and skills, and power for teachers. All of these underlines the importance of teacher autonomy. Teacher autonomy consists of freedom of teachers in their decision-making process related to class activities. In addition to law providing autonomy for teachers, there could also be climate supporting this autonomy (Çolak, 2016). For this reason, climate in schools and autonomy for teachers are interrelated concepts in a healthy school environment.

Educational settings are influenced by teachers' goal orientation such that teachers organize classroom environment by achieving their goals. Leonardi and Giamalas (2002) related motivation of teachers to their goal orientation. Further, why the individuals determine a goal, how they reach to that, and how the performance is evaluated are key factors in goal orientation (Yıldız, Saban, & Baştuğ, 2006). In a classroom, both students and teachers may have goal orientation. Students perform goal orientation for learning while the teachers perform goal orientation for teaching. Throndsen and Turma (2013) declared that success-based goal orientations of students may trigger teachers' goal orientation for teaching. In conclusion, goal orientations for teaching gain significance for healthy learning environments. In this respect, the current study focused on the relationship of goal orientations for teaching with autonomy and school climate.

LITERATURE REVIEW

Teacher autonomy may be defined basically as perception about whether teachers may control themselves and their educational activities (Pearson & Hall, 1993). In other words, teacher autonomy is a phenomenon related to teachers' own selections and decisions in teaching and related education activities such that it depends on structure of learning environment. Great amount of educational activities is organized in classroom in which teachers are the only authorized person for the whole class time with some exceptions. Although the class has strict and autocratic rules, there is a freedom in the class for teachers (Öztürk, 2011) since the teachers are the primary decision-makers on teaching activities, classroom management, and design of the class. According to Anderson (1987), the studies conducted in all over the world showed that the teachers have a factual or informal autonomy due to class environment which has self-enclosed structure. This situation means most of teacher autonomy is based on in-class activities.

Organization for Economic Cooperation and Development (OECD) gives a special emphasis on teacher autonomy. By the way, it is evaluated in Program for International Student Achievement (PISA) as an indicator for educational quality. PISA results showed that level of autonomy was positively correlated to student achievement (Ayril et al., 2014; Salhberg, 2013). Further, Öztürk (2011) analyzed the studies related to teacher autonomy and concluded that countries having teacher autonomy for curriculum implementation and student assessment showed more achievement than other countries. On the other hand, Çolak, Altinkurt, and Yılmaz (2017) investigated the relationship between job satisfaction and teacher autonomy and found a positive relationship. As a result, teacher autonomy is linked to positive school outcomes.

Like the people represent, the organizations have also specific characteristics, which represents organizational climate. Organizational climate is a kind of perception of subordinates about work atmosphere (Hoy & Miskel, 1991). Schools as organizations have also a special atmosphere which is called as school climate. Basically, school climate is related to school environment's quality (Lunenburg & Ornstein, 2011). Halpin and Croft (1963) developed Organizational Climate Description Questionnaire (OCDQ) to assess climate of schools. Hoy and Tarter (1997) revised OCDQ and named it as OCDQ-RS

which included disengaged, collegial, and intimate teacher behaviors and restrictive, directive, and supportive principal behaviors.

School climate influences behaviors of educators and environment in school through leadership style of school principal (Şentürk & Sığınak, 2012). School principals make contribution to job satisfaction and motivation of teachers in order to form healthy school climate and school culture (Çelik, 2000). According to Bursalı (2005), two important figures on formation of an open climate are school teachers and principals. Organizational commitment (Tsiu & Cheng, 1999) and job satisfaction (Taylor & Tashakkori, 1995) are frequently studied topics for teachers while school effectiveness is the frequently studied topic for principals. On the other hand, school climate is investigated in terms of perceptions of parents (Ertem & Gökalp, 2020) and students (Bektaş & Nalçacı, 2013). To summarize, school climate is related to quality of schools and is affected by many stakeholders.

Goal orientation is frequently discussed in the literature. Historical development of goal orientation is based on educational and pedagogical psychology (VandeWalle, Cron, & Slocum Jr., 2001). Atkinson's theory of achievement motivation (1964) and Eison's learning orientation conceptualization (1979) were classroom perspectives of goal orientation (as cited in Payne, Youngcourt, & Beaubien, 2007). Further, roots of goal orientation could be felt in the study of Dweck (1986) who considered individuals' personality and preferences on achievement in order to conceptualize goal orientation. Therefore, goal orientation can be defined as situated orientations for action in an achievement task (Dweck, 1986). According to Anderman and Maehr (1994), goal orientation seeks an answer for why and how people have a desire to achieve rather than what people attempt to achieve.

There are different constructs related to goal orientation in the literature. Dweck (1986) constructed learning goal orientation and performance goal orientation. Further, VandeWalle et al. (2001) also proposed a model based on learning goal orientation, proving goal orientation, avoiding goal orientation, and ability. Butler (2007) revealed out dimensions of mastery, ability-approach, ability-avoidance, and work-avoidance. Also, Butler (2012) revised goal orientation model that showed five-factor construct by adding relational goal. Yıldızlı, Saban, and Baştuğ adapted Butler's (2012) construct into Turkish context and concluded that four-factor of the construct was validated in Turkish. Further, the authors called dimensions as mastery, performance-approach, work-avoidance, and student relations.

Goal orientation assessments put forward important results. Butler (2007) found that teachers having more ability-approach goal orientation perceived help-seeking positive while teachers having more work-avoidance goal orientation perceived help-seeking negative. Niche, Dickhauser, Fasching, and Dresel (2011) conducted a study to investigate self-efficacy beliefs of teachers and found that learning goal orientations and performance approach goals positively predicted self-efficacy beliefs on teaching whereas performance avoidance goals negatively predicted self-efficacy. Skaalvik and Skaalvik (2013) concluded that goal orientations were effective in the improvement of job satisfaction of the teachers. To summarize, goal orientations for teaching are closely related to positive educational outcomes.

SIGNIFICANCE AND PURPOSE OF THE STUDY

The current study is significant in terms of research, theory, and practice. Considering research, factors related to goal orientation were revealed out so that it made a contribution to literature. Theoretical significance of the study is based on validation of goal orientation theories in the context of Turkey. In this aspect, the current study examined valuable knowledge on goal orientation for teaching. Finally, educational practitioners, administrators, and policy-makers could determine strategies and action plans to make school climate positive and to provide teacher autonomy. In return, teachers' goal orientations for teaching could be improved.

The purpose of this study is to examine the effect of school climate, teacher autonomy on goal orientation for teaching. As a result, research questions of the study are as follows:

Main RQ: How well do perceptions of school climate and teacher autonomy predict teachers' goal orientations for teaching after controlling for gender, school type, school level, and professional seniority?

RQ1: How well do dimensions of school climate and teacher autonomy predict mastery orientation after controlling for gender, school type, school level, and professional seniority?

RQ2: How well do dimensions of school climate and teacher autonomy predict performance-approach after controlling for gender, school type, school level, and professional seniority?

RQ3: How well do dimensions of school climate and teacher autonomy predict work-avoidance after controlling for gender, school type, school level, and professional seniority?

RQ4: How well do dimensions of school climate and teacher autonomy predict student relations after controlling for gender, school type, school level, and professional seniority?

METHOD

RESEARCH DESIGN

The current study was performed as a correlational study which examines relationships between variables (Gall, Gall, & Borg, 2003). Predictor variables of the study are dimensions of teacher autonomy and dimensions of school climate while criterion variable is dimensions of goal orientation. Dimensions of teacher autonomy are teaching, professional development, curriculum, and communication. School climate dimensions are disengaged, collegial, and intimate teacher behaviors and restrictive, directive, and supportive principal behaviors. Lastly, goal orientation has dimensions of mastery, performance-approach, work-avoidance, and student relations.

SAMPLE

Participants were selected from the schools in urban side of an Anatolian city in Turkey and consisted of teachers from 14 schools with different levels in year 2019. This district had 87 schools, which means about 16% of the schools were included in the current study. Sample was selected within clustered sampling. After 14 schools were chosen randomly, all teachers in those schools were invited to be participated in the study. However, 284 of them involved in the study voluntarily. Table 1 represented the demographics of the participants in terms of gender, school type, school level, and seniority.

Table 1. Demographics of Participants

Variable		Frequency	Percentage
Gender	Female	181	63.7
	Male	103	36.3
	Total	284	100
School type	Public	278	97.9
	Private	6	2.1
	Total	284	100
School level	Primary school	101	35.6
	Middle school	87	30.6
	High school	96	33.8
	Total	284	100
Seniority	≤ 5 years	63	22.2
	6-15 years	74	26.0
	16-20 years	73	25.7
	≥21 years	74	26.1
	Total	284	100

DATA COLLECTION

The current study had mainly four instruments. The first one is descriptive part including demographic questions. The second one is teacher autonomy scale assessing autonomy behaviors of teachers. The third one is school climate scale assessing perceptions about teacher and principal behaviors. Lastly, goal orientation scale assessed teachers' goal orientations for teaching. Within institutional approvals and individual willingness, instrument including questionnaires below were administered to participants. For each implementation, informed consent form was read in order to inform participants.

DESCRIPTIVE PART

Questions related to gender, professional seniority, school level, and school types were asked. All of the questions are categorical with alternatives. Impact of these variables was cut off in the analysis.

TEACHER AUTONOMY SCALE

Çolak (2016) developed this scale in Master's thesis. The original scale had 17 items with 5-Likert type. There are four dimensions which are teaching, professional development, curriculum, and communication. Factor loadings changed between .51 and .77 while item-total correlations were between .52 and .88. Cronbach's Alfa coefficients changed between .78 and .85. For the current study, Cronbach's Alpha coefficient of applied scale was found .79. "I can choose teaching methods and techniques in myself", "I can do supplementation to teaching curriculum", and "I can give homework to students what ever I want" are some examples to items.

SCHOOL CLIMATE SCALE

Hoy and Tarter (1997) developed the scale which was adapted to Turkish by Yılmaz and Altinkurt (2013). The adapted scale had 39 items with 4-Likert type in six dimensions which are disengaged, collegial, and intimate teacher behaviors and restrictive, directive, and supportive principal behaviors. Factor loadings of the items were between .46 and .82 while item-total correlations changed between .35 and .77. Cronbach's Alfa coefficients changed between .70 and .89. For the current study, Cronbach's Alpha coefficient of applied scale was found .71. "The school principal always wants to help teachers", "The teachers take pride in school", and "Understanding school principal is easy" are some examples to items.

GOAL ORIENTATION SCALE

Butler (2012) and Butler and Shibaz (2008) developed the scale. That was adapted to Turkish by Yıldız et al. (2016). Turkish version of the scale had 15 items with 5-Likert type in four dimensions which are mastery, performance-approach, work-avoidance, and student relations. Factor loadings changed between .54 and .86 while item-total correlations were between .38 and .82. Cronbach's Alfa coefficients changed between .60 and .78. For the current study, Cronbach's Alpha coefficient of applied scale was found .69. "As a teacher, my main purpose is to set rapport with each student", "When I learnt a new thing related to me as a teacher, I feel that my day is fine", and "If some lectures are cancelled, then I feel fine" are some examples to items.

DATA ANALYSIS

Data gathered from 284 teachers were firstly presented descriptively. Descriptive statistics were given with mean and standard deviation values. Afterward, assumptions of Hierarchical Multiple Regression Analysis were controlled in a licensed software. The reason why Hierarchical Multiple Regression Analysis was performed was cutting off impacts of gender, school type, school level, and seniority on the criterion variables. These demographics or personal attributes are confounding variables since participants can not determine these issues. In these analyses, significance level of alpha was adjusted as .05.

FINDINGS/RESULTS

Perceptions of teacher autonomy ($M = 3.64$ $SD = .75$) were seen higher respectively than goal orientation perceptions ($M = 3.49$, $SD = .86$) and school climate perceptions ($M = 2.61$, $SD = .62$). Assumptions of type of variable through dummy-coding categorical variables, independent observations through preventing interaction in data collection procedures, normality of residuals through histograms and PP plots, homoscedasticity through scatter plots, independence of errors through Durbin-Watson coefficients, absence of multi-collinearity through Tolerance and VIF values, and influential observations through Cook's distance were checked and confirmed. Within the meeting of all assumptions, main analysis was conducted.

MAIN RESEARCH QUESTION

Hierarchical Multiple Regression Analysis was performed in order to response main research question. The model was fit on goal orientation. In the first model, independent variables were gender, school type, school level, and seniority while goal orientation was dependent variable. Result was significant $F(9, 274) = 3.70$, $p < .05$; $R^2 = .11$. The model explained 11% of the variance in goal orientation. The first dummy of school level ($\beta = -.16$, $p < .05$) and the third dummy of school level ($\beta = -.18$, $p < .05$) significantly predicted goal orientation. Independent variables were teacher autonomy and school climate in the second model. Result

was significant, $F(2, 272) = 22.90, p < .05, R^2 = .24$. Twenty-four percent of the variance in goal orientation was explained by teacher autonomy and school climate. An additional 13% of the variance in goal orientation was explained by teacher autonomy and school climate after controlling of gender, school type, school level, and seniority. School climate ($\beta = .35, p < .05$) was more strong predictor of goal orientation than teacher autonomy ($\beta = .25, p < .05$). Table 2 presents the results of goal orientation for teaching.

Table 2. Results of Goal Orientation for Teaching in Hierarchical Regression Analysis

Model	B	SE	β	t	R	R ²	ΔR^2	ΔF
Model 1					.33	.11	.11	3.70*
Gender dummy	.03	.07	.02	.39				
School type dummy	.16	.15	.06	1.04				
School level dummy 1	-.32	.13	-.16	-2.49*				
School level dummy 2	.17	.09	.14	1.97				
School level dummy 3	-.20	.09	-.18	-2.32*				
Seniority dummy 1	-.05	.10	-.04	-.53				
Seniority dummy 2	.03	.10	.02	.28				
Seniority dummy 3	-.18	.11	-.11	-1.56				
Seniority dummy 4	-.06	.08	-.05	-.68				
Model 2					.49	.24	.13	22.90*
Teacher autonomy	.34	.08	.25	4.10*				
School climate	.46	.08	.35	6.29*				

* $p < .05$

THE FIRST RESEARCH QUESTION

In order to response the first sub research question, model was fit on mastery. In the first model, independent variables were gender, school type, school level, and seniority while mastery was the dependent variable. Result was significant $F(9, 274) = 2.69, p < .05; R^2 = .08$. The model explained 8% of the variance in mastery goal orientation. The second dummy of school level ($\beta = .26, p < .05$) and the third dummy of professional seniority ($\beta = -.14, p < .05$) significantly predicted mastery. In the second model, teacher autonomy and school climate were independent variables. Result was significant, $F(10, 264) = 8.10, p < .05, R^2 = .30$. Thirty percent of the variance in mastery was explained by dimensions of teacher autonomy and school climate. An additional 22% of the variance in mastery was explained by sub-dimensions of teacher autonomy and school climate after controlling of gender, school type, school level, and seniority. Teaching autonomy ($\beta = .37, p < .05$) was more significant predictor of mastery than curriculum autonomy ($\beta = .18, p < .05$), collegial teacher behavior ($\beta = .17, p < .05$), and directive principal behavior ($\beta = -.16, p < .05$).

THE SECOND RESEARCH QUESTION

In order to response the second sub research question, model was fit on performance-approach. In the first model, independent variables were gender, school type, school level, and seniority while the dependent variable was performance approach. Result was significant $F(9, 274) = 7.50, p < .05; R^2 = .20$. Seventeen percent of the variance in performance-approach was explained by model. The first dummy of school level ($\beta = -.39, p < .05$) significantly predicted performance-approach. In the second model, dimensions of teacher autonomy and school climate were independent variables. Result was significant, $F(10, 264) = 4.68, p < .05, R^2 = .32$. Dimensions of teacher autonomy and school climate explained 32% of the variance in performance-approach. An additional 12% of the variance in performance-approach was explained by sub-dimensions of teacher autonomy and school climate after controlling of gender, school type, school level, and seniority. Communication autonomy ($\beta = -.18, p < .05$) was more strong predictor of performance-approach than directive principal behavior ($\beta = .17, p < .05$).

THE THIRD RESEARCH QUESTION

In order to response the third sub research question, model was fit on work-avoidance. In the first model, independent variables were gender, school type, school level, and seniority while dependent variable was work-avoidance. Result was significant $F(9, 274) = 8.51, p < .05; R^2 = .22$. Twenty-two percent variance

in work-avoidance was explained by the model. The first dummy of school level ($\beta = -.36, p < .05$) and the third dummy of professional seniority ($\beta = -.35, p < .05$) significantly predicted work-avoidance in. In the second model, dimensions of teacher autonomy and school climate were independent variables. Result was significant, $F(10, 264) = 10.43, p < .05, R^2 = .44$. Dimensions of teacher autonomy and school climate explained 44% of the variance in work-avoidance. An additional 22% of the variance in work-avoidance was explained by sub-dimensions of teacher autonomy and school climate after controlling of gender, school type, school level, and seniority. Intimate teacher behaviors ($\beta = .30, p < .05$) was more strong predictor of work-avoidance than disengaged teacher behavior ($\beta = .25, p < .05$) and directive principal behavior ($\beta = .16, p < .05$).

THE FOURTH RESEARCH QUESTION

In order to response the fourth sub research question, model was fit on student relations. In the first model, independent variables were gender, school type, school level, and seniority while student relation was dependent variable. Result was significant $F(9, 274) = 5.04, p < .05; R^2 = .14$. Fourteen percent of the variance in student relation was explained by model. The first dummy of school level ($\beta = .30, p < .05$), the second dummy of school level ($\beta = .29, p < .05$), and the third dummy of professional seniority ($\beta = -.15, p < .05$) significantly predicted student relations. In the second model, independent variables were dimensions of teacher autonomy and school climate. Result was significant, $F(10, 264) = 4.77, p < .05, R^2 = .27$. Dimensions of teacher autonomy and school climate explained 27% of the variance in student relations. An additional 13% of the variance in student relations was explained by sub-dimensions of teacher autonomy and school climate after controlling of gender, school type, school level, and seniority. Teaching autonomy ($\beta = .30, p < .05$) was more strong predictor of student relations than communication autonomy ($\beta = -.19, p < .05$), collegial teacher behavior ($\beta = .18, p < .05$), and supportive principal behavior ($\beta = .16, p < .05$).

DISCUSSION AND CONCLUSION

The current study showed that teachers' goal orientation for teaching was closely related to their perceptions of autonomy and school climate. School climate was found more related with goal orientation than teacher autonomy was. Further, mastery was predicted by teaching autonomy, curriculum autonomy, collegial teacher behavior, and directive principal behavior. Moreover, performance-approach was predicted by communication autonomy and directive principal behavior. In addition, disengaged teacher behavior, intimate teacher behavior, and directive principal behavior predicted work-avoidance. Finally, student relations were found related to teaching autonomy, communication autonomy, collegial teacher behavior, and supportive principal behavior.

The positive relationship found between teacher autonomy, school climate, and goal orientation in the current study is consistent with results of other studies in the literature. Çolak and Altinkurt (2017) examined the relationship between school climate and teacher autonomy behaviors and found that 8% variance in school climate explained by differences in teacher autonomy behaviors. Similarly, study by Garvin (2007) showed that teacher had more autonomy in the schools where the school principals provided environment promoting professional development and corporation of the teachers. Further, supportive principal behaviors were found effective in improving teacher autonomy behaviors of teachers (Sparks, 2012). On the other hand, Buluş (2011) examined goal orientation and found that academic achievement as a part of school climate and focus of control related to teacher autonomy predicted goal orientations.

In the current study, mastery goal orientation was predicted by teaching autonomy, curriculum autonomy, collegial teacher behavior, and directive principal behavior. Teachers having more teaching autonomy, program autonomy, collegial behaviors showed more mastery goal orientation. These findings were parallel to the literature. Arslan (2011) conducted a study on teacher candidates and found there was a significant relationship between mastery goal orientation and constructivist approaches including teaching autonomy and collegial teacher behaviors.

The current study showed that performance-approach was related to directive principal behaviors and communication autonomy. More specifically, increase in directive behaviors of principals and decrease in communication autonomy increased performance-approach. Even if this finding appears to modern ideas, this situation is consistent with the culture in the context. The people show more performance when they meet with commands rather than flexibility. To illustrate, Ayık and Sayir (2014) found significant and positive relationship between directive principal behaviors and supporting teachers, improving teaching process, and evaluating students. Similarly, Diş and Ayık (2016) studied the relationship between power resources of school administrators and school climate and found out the most relevant factor to directive principal behavior was legitimate power. These findings may be evaluated as a reflection of the fact that both school principals and teacher perceive chain of command as a legitimate responsibility or duty. In the current study, those perceptions may have shown directive behaviors as a motivator by limiting communication channels.

Work-avoidance was found positively related to disengaged and intimate teacher behaviors and directive principal behaviors. Finding of positive relationship between work-avoidance and disengaged teacher behavior and directive principal behavior was consistent with the literature since the literature is based on the positive relationships of work avoidance with negative educational outcomes. Study by Özer and Altun (2011) revealed out work-avoidance was positively related to fear of failure, laziness, and procrastination behaviors like dissenting to control and risk-taking such that these relations appeared moderate to high level. On the other hand, finding on positive relationship between work-avoidance and intimate teacher behavior differentiated from the common idea in the literature. The reason of this differentiation may be related to participants. To illustrate, misuse of positive behaviors may be related to work-avoidance. In other words, intimate atmosphere among teachers may have caused work-avoidance by promoting leisure and entertainment. On the other side, work-avoidance may be apparent by ignoring each other's avoidance of work because of close relations among each other.

There was positive relationship between student relations and collegial teacher behavior, supportive principal behavior, and teaching autonomy. Even though the literature has lack of studies focusing on student relations as goal orientation, the literature has studies showing relation between teacher autonomy, school climate, and student relations (Araşkal & Kılınç, 2019; Karababa, Oral ve Dilmaç, 2014; Sökmen, 2018). In this respect, the current study has similar results with the literature. On the other side, negative relationship between student relations and communication autonomy was emerged. This situation may be related to classroom management preferences. Some teachers set a rapport with students through non-authoritarian strategies while others trust more in the rules through authoritarian strategies (Rydell & Henricson, 2004). For the context of the study, authoritarian strategies for classroom management may have limited communication channels between students and teachers and the negative relationship between student relations and communication autonomy may have emerged through this preference.

Considering results of the current study, it can be concluded teachers' goal orientation for teaching was closely related to their perceptions of autonomy and school climate. Improving school climate and autonomy of the teachers would lead to increase in goal orientation of teachers for teaching. In these respects, not only characteristics of teachers but also educational policies and school dynamics determine goal orientations of teachers for teaching. Teacher efforts on autonomy in addition to educational policies based on autonomy and teachers choice for professional development in addition to school support may promote together goal orientations of teachers.

The study has implications by considering the results. In terms of research, the study made a contribution to literature since it attempted to fill a gap in the literature by investigating teachers' goal orientation with teacher autonomy and school climate. In terms of theory, results of the study enriched the theoretical discussion in the field over the relationship of goal orientations, school climate, and teacher autonomy. In terms of practice, since improvement of school climate and teacher autonomy would reinforce teachers' goal orientations for teaching, Ministry of National Education and policy-makers might develop policies to support teachers' autonomy in many dimensions. School administrators may organize academic and social activities to make school climate positive.

The researchers have recommendation to researchers and practitioners. First of all, since the study was conducted with smaller sample and quantitative method, the researchers recommend similar studies with larger samples and qualitative or mixed methods to gather detailed information about the phenomenon. Even though the results of the current study are able to be generalized to population due to random sampling, the study is lack of external and ecological generalizability such that the results are not generalizable for other contexts. Therefore, it is recommended that further researches could conduct studies in different contexts like regions, cities, and school types. Further, researchers could focus on other antecedents of goal orientations with large-scaled contexts. The last recommendations are for policy-makers and practitioners. Policy-makers could carry out legitimate implementations to improve teacher autonomy and school climate. School administrators could both organize school activities for positive school climate and take precautions to provide teacher autonomy in school scale. Further, teachers could canalize professional loyalty, positive attitudes towards teaching, and goal orientation to school effectiveness and school improvement.

REFERENCES

- Aksu, Ali. "Okul müdürlerinin etkililiği ve okul iklimi". Unpublished Doctoral Disseration, İnönü University, Malatya. (1994).
- Anderman, Eric M., & Maehr, Martin L. "Motivation and schooling in the middle grades". *Review of Educational Research*, 64 (1994): 287– 309.
- Araşkal, Seçil, & Kılınç, Ali Çağatay. "Öğretmen liderliğini etkileyen faktörlerin incelenmesi: nitel bir araştırma". *Kuram ve Uygulamada Eğitim Yönetimi Dergisi*, 25(3) (2019): 419-468.
- Arslan, Ali. "Öğretmen adaylarının amaç yönelimleri ile yapılandırmacılığa yönelik görüşlerinin incelenmesi". *Ondokuz Mayıs Üniversitesi Eğitim Fakültesi Dergisi*, 30(1), (2011): 107-122.
- Ayık, Ahmet., & Şayir, Gönül. "Okul müdürlerin öğretimsel liderlik davranışları ile örgüt iklimi arasındaki ilişki". *Elektronik Sosyal Bilimler Dergisi*, 13(49) (2014): 253-279.
- Ayral, Mustafa., etl. al. "Öğretmen özerkliği ile öğrenci başarısı arasındaki ilişki: PISA örneği". *Eğitim Bilimleri Araştırma Dergisi*, 4(1) (2014): 207-218.
- Anderson, Lorin W. "The decline of teacher autonomy: Tears or cheers?". *International Review of Education*, 33(3) (1987):357-373.
- Bektaş, Fatih, & Nalçacı, Ahmet. "Okul iklimi ve öğrenci başarısı arasındaki ilişki". *Uluslararası Avrasya Sosyal Bilimler Dergisi*, 4(13) (2013): 1-13.
- Bursalıoğlu, Ziya. *Okul yönetiminde yeni yapı ve davranış*. Ankara: Pegem A Yayıncılık, (2012).
- Butler, Ruth. "Teachers' achievement goal orientations and associations with teachers' help seeking: Examination of a novel approach to teacher motivation". *Journal of Educational Psychology*, 99(2) (2007): 241-252.
- Butler, Ruth. "Striving to connect: Extending an achievement goal approach to teacher motivation to include relational goals for teaching". *Journal of Educational Psychology*, 104(3) (2012): 726–742
- Butler, Ruth, & Shibaz, Limor. "Achievement goals for teaching as predictors of students' perceptions of instructional practices and students' help seeking and cheating". *Learning and Instruction*, 18(5) (2008): 453–467.
- Buluş, Mustafa. "Öğretmen adaylarında bireysel farklılıklar perspektifinden amaç yönelimleri, denetim odağı ve akademik başarı". *Kuram ve Uygulamada Eğitim Bilimleri*, 11(2) (2011): 529-546.
- Cohen, Jacob. "A power primer". *Psychological Bulletin*, 112(1) (1992): 155.-159.
- Çelik, Vehbi. *Okul kültürü ve yönetim*. Ankara: Pegem A Yayıncılık, (2012).
- Çolak, İbrahim. "Okul iklimi ile öğretmenlerin özerklik davranışları arasındaki ilişki (Muğla ili örneği)". Unpublished Masters Thesis, Muğla Sıtkı Koçman University, Muğla. (2016).
- Çolak, İbrahim., et. al.. "Öğretmenlerin özerklik davranışları ile iş doyumları arasındaki ilişki". *Karadeniz Sosyal Bilimler Dergisi*, 9(2) (2017): 189-208.
- Çolak, İbrahim., & Altinkurt, Yahya. "Okul iklimi ile öğretmenlerin özerklik davranışları arasındaki ilişki". *Kuram ve Uygulamada Eğitim Yönetimi*, 23(1) (2017): 33-71.
- Diş, Okan., & Ayık, Ahmet. "Okul yöneticilerinin kullandıkları güç kaynakları ile örgüt iklimi arasındaki ilişki". *Akademik Bakış Dergisi*, 58(2016) (2016): 499-518.
- Dweck, Carol S. "Motivational processes affecting learning". *American Psychologist*, 41(10) (1986): 1040-1048.
- Ertem, Hasan Yücel, & Gökalep, Gökçe. "Parents' perceptions of school climate and parent involvement in terms of educational levels of parents and grade of their children". *Hacettepe University Journal of Education*, 35(1) (2020) 78-91.
- Gall, Meredith Damien et. al. *Educational research: An introduction (7th ed.)*. Boston, USA: Pearson, (2003).
- Garvin, Nadine M. "Teacher autonomy: distinguishing perceptions by school cultural characteristics". Unpublished Doctoral Dissertation. Available from ProQuest Dissertations and Theses database (UMI No. AAI3255863). (2007).
- Hoy, Wayne K. et al. *Open schools, healthy schools: Measuring organizational climate*. Newbury Park, CA: Sage Publications, (1991).

- Hoy, Wayne K., & Miskel, Cecil G. *Educational administration: Theory, research, and practice*. New York: McGraw-Hill, (1991).
- Hoy, Wayne K. & Tarter C. John. *The road to open and healthy schools: The handbook for change*. CA: Corwin Press, (1997).
- Halpin, Andrew W., & Croft, David B. *The organizational climate of schools* (Vol. 11). Chicago, IL: Midwest Administration Center. (1963).
- Karababa, Ali, et. al. "Ergenlerin başarı amaç yönelimlerini yordayan değişkenlerden biri olarak: İnsani değerler". *Değerler Eğitimi Dergisi*, 12(27) (2014): 165-186.
- Karasar, Niyazi. *Bilimsel araştırma yöntemi: kavramlar ilkeler teknikler*. Ankara: Nobel Akademik Yayıncılık, (2016).
- Leondari, Angeliki, & Gialamas, Vasilios. "Implicit theories, goal orientations, and perceived competence: Impact on students' achievement behavior". *Psychology in the Schools*, 39(3) (2002): 279-291.
- Lunenburg, Fred C., & Ornstein, Allan C. *Educational administration: Concepts and practices*. Belmont, CA: Wadsworth Publishing, (2011).
- Ministry of National Education. "Müfredatta yenileme ve değişiklik çalışmalarımız üzerine". Retrieved from https://ttkb.meb.gov.tr/meb_iys_dosyalar/2017_07/18160003_basin_aciklamasi-program.pdf. (2017).
- Nitsche, Sebastian, et. al. "Rethinking teachers' goal orientations: Conceptual and methodological enhancements". *Learning and Instruction*, 21(4) (2011): 574-586.
- Özer, Arif., & Altun, Esin. "Üniversite öğrencilerinin akademik erteleme nedenleri". *Mehmet Akif Ersoy Üniversitesi Eğitim Fakültesi Dergisi*, 1(21) (2011): 45-72.
- Öztürk, İbrahim Hakkı. "Öğretmen özerkliği üzerine kuramsal bir inceleme". *Elektronik Sosyal Bilimler Dergisi*, 10(35) (2011). 82-99.
- Payne, Stephanie C, et. al.. "A meta-analytic examination of the goal orientation nomological net". *Journal of Applied Psychology*, 92(1) (2007). 128-150.
- Pearson, Carolyn. & Hall, Bruce W. "Initial construct validation of the teaching autonomy scale. *Journal of Educational Research*, 86(3) (1993): 172-177.
- Rydell, Ann Margret., & Henricsson, Lisbeth. "Elementary school teachers' strategies to handle externalizing classroom behavior: A study of relations between perceived control, teacher orientation and strategy preferences". *Scandinavian Journal of Psychology*, 45(2) (2004): 93-102.
- Sahlberg, Pasi. "The PISA 2012 scores show the failure of "market based" education reform". Guardian News and Media, (2013).
- Skaalvik, Einar M., & Skaalvik, Sidsel. "Teachers' perceptions of the school goal structure: Relations with teachers' goal orientations, work engagement, and job satisfaction". *International Journal of Educational Research*, 62(2013) (2013). 199-209.
- Sparks, Dinah., & Malkus, Nat. *Public school teacher autonomy in the classroom across school years 2003-04, 2007-08, and 2011-12* (NCES 2015-089). Statistics in Brief. Washington, DC: U.S. Department of Education, (2015).
- Sökmen, Yeliz. "Sınıf öğretmenlerinin öz-yeterlik, özerklik, iş memnuniyeti, öğretmen katılımı ve tükenmişliği arasındaki ilişki: Bir model geliştirme çalışması". Unpublished Doctoral Dissertation, Atatürk Üniversitesi, Erzurum. Retrieved from tez.yok.gov.tr/UlusalTezMerkezi.(2018).
- Şentürk, Cihad, & Sağnak, Mesut. "İlköğretim okulu müdürlerinin liderlik davranışları ile okul iklimi arasındaki ilişki". *Türk Eğitim Bilimleri Dergisi*, 10(1) (2012): 29-43
- Tabachnick, Barbara G., & Fidell, Linda S. *Using multivariate statistics* (5th ed.). Boston: Pearson Education, (2007).
- Taylor, Dianne L., & Tashakkori, Abbas. "Decision participation and school climate as predictors of job satisfaction and teacher's sense of efficacy". *Journal of Experimental Education*, 63(3) (1995). 217-227.
- Thronsdon, Inger, & Turmo, Are. "Primary mathematics teachers' goal orientations and student achievement". *Instructional Science*, 41(2), (2013): 307-322.
- Tsui, Kwok Tung, & Cheng, Yin Cheong. "School organizational health and teacher commitment: A contingency study with multi-level analysis". *Educational Research and Evaluation*, 5(3) (1999): 249-268.
- Üzüm, Püren, & Karlı Mehmet Durdu. "Sınıf öğretmenlerinin öğretmen özerkliğine ilişkin farkındalık düzeyleri". *İnönü Üniversitesi Eğitim Fakültesi Dergisi*, 14(3) (2013):79-94.
- VandeWalle, Don, et. al. The role of goal orientation following performance feedback. *Journal of Applied Psychology*, 86(4) (2001): 629-640.
- Yıldızlı, Hülya, et. al. "Öğretmeye yönelik hedef yönelimi ölçeği'nin Türkçe'ye uyarlanması". *Elementary Education Online*, 15(4) (2016): 1254-1267.
- Yılmaz, Kürşad, & Altınkurt, Yahya. "Örgütsel iklim ölçeğinin Türkçe'ye uyarlanması: Geçerlik ve güvenilirlik çalışması". *Trakya Üniversitesi Eğitim Fakültesi Dergisi*, 3(1) (2013): 1-11.

THE ADAPTATION OF NEWLY ARRIVED IMMIGRANT STUDENTS TO EDUCATION: EVIDENCE FROM TURKEY

Abstract: In general, it can be said that the problems experienced by immigrant students are due to cultural differences. Language problem arising from cultural differences also raises the problem of adaptation. In the report prepared by the European Commission, there are supports that can be stated as language support, academic support, family participation, intercultural adaptation and peer learning. The research aims to determine the adaptation model implemented by Turkey for newly arrived immigrant students. Within the scope of this research, interviews were held with school administrators and the support provided for newly arrived migrant students was determined, and Turkey-specific adaptation model was tried to be established.

Keywords: Newly arrived migrant student, supporting model, adaptation model, education for immigrants

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INTRODUCTION

Individuals relocate within or between countries and begin to live in another society for various reasons. Children also relocate along with their families. The term used in literature for these relocating children is “newly arrived immigrant student” (the Organization for Economic Co-operation and Development – OECD, 2010). Nilsson and Axelsson (2013) state that despite the use of the term “newly arrived immigrant student” for these students who have arrived in their mandatory education age, there actually has been no temporal definition in the national or international domain. Therefore, every person who has migrated from another country and has not attained the age of 18 is referred to as “newly arrived immigrant student.”

Immigrant students who have relocated with their families are exposed to a new culture. Students who are exposed to a new culture undergo a range of adaptation processes within the education system. During these adaptation processes, both immigrant students and the new education system to which they strive to adapt need some support. This can either be supporting their academic success or facilitating their social adaptation. Supports provided to immigrant students vary by the receiving country to which they have migrated, and each country works differently for their adaptation to the education system.

Migration is a phenomenon where individuals or communities go from one country to another for various reasons (economic, social, political etc.) (Turk Dil Kurumu -TDK, 2019; Oxford Learner’s Dictionary, 2021). Migration can be reviewed in two groups, including within the country or outside country, depending on the causes of migration. Optional migration within the country is called domestic migration, while optional or forced migration out of the country is called emigration (Ozer 2004). Emigration can be grouped according to various factors. In a study, migrants are divided into two groups as voluntary and non-voluntary. Those who are voluntary are divided into immigrants and guests, while those who are not voluntary are divided into refugees and asylees (Sam & Berry, 1995). Turkey has people from all these groups. International exchange students or vacationers who come as guests, immigrants who arrive permanently, refugees or asylees who arrive due to the Syrian war comprise these groups (Sezgin & Yolcu, 2016). At this point, Turkey can be considered a country that has both domestic migration and emigration. Although Turkey has an intrinsic multicultural structure in respect of language, religion and ethnicity, (KONDA, 2006) immigrants arriving from other countries make this structure increasingly diverse. According to the United Nations High Commissioner for Refugees (UNHCR, 2019) data, there are 3.6 million Syrian, 170 thousand Afghan, 142-thousand Iraqi, 39-thousand Iranian, 5-thousand Somalian and 11-thousand and 7-hundred other foreign national immigrants in Turkey. These individuals moved to Turkey from their country for various reasons. When we look at the world in general, according to UNHCR (2019), there are 25.9-million migrants, half of them is under 18 and 7.4-million children are at school age (primary and secondary school).

Such movement of individuals or groups of individuals leads to an interaction between various cultures. This is referred to as acculturation. Acculturation is the psychological and cultural processes or changes people belonging to a particular cultural experience as a result of their interaction with individuals or groups of individuals of another culture (Bilgin, 2003). While individuals experience such changes, all members of a family moving as a group also experience it. Children, as a family member, are exposed to the same psychological and cultural change as immigrants. At this point, the adaptation of foreign national children to the educational environment in this process of change becomes important. The cultural change experienced by a child who begins to live in a new country has an impact on his/her educational process as well as his/her life in the country he/she is moving through. Berry (1999) explains the cultural change of an individual in four different ways. These are the involvement of a person who cannot sustain his/her own culture and fails to interact with the dominant culture in the process of marginalization; the involvement of a person who sustains his/her culture and does not interact with the dominant culture in the process of separation; the involvement of a person who cannot sustain his/her own culture and interacts with the dominant culture in the process of assimilation; and the involvement of a person who sustains his/her own culture and interacts with the dominant culture in the process of integration.

At this point, in terms of the emergence of a multicultural structure and the perception of the resulting diversity as an opportunity, the individual is expected to sustain his/her own culture while interacting with

the dominant culture. Children in the educational process are expected to experience the same as well. Ignoring peoples' traditions, language, mind-set and values, grounded in their culture leads to the concept of lifelong learning's failure, not development (Frackowiak, 2017). There are efforts to ensure that foreign national children interact with the dominant culture while sustaining their own culture. Each country has its own support for managing the integration process of a newly arrived migrant student.

POSSIBLE SUPPORTS IDENTIFIED BY EUROPEAN COMMISSION

In the process that begins with the involvement of students who migrate from their country to another country for various reasons in the education system of the receiving country, students and their families are provided several supports to achieve cultural integration into and adaptation to the education system. These supports are determined by the educational policies of the receiving country. Possible supports are aimed to contribute to both the academic and social development of the student.

The biggest problem a foreign student faces in the receiving country is observed to be language (Nasrin, 2001; Galloway & Jenkins, 2005; Sarıkaya, 2014; Sarıtas, Sahin & Catalbas, 2016; Nayir, 2017; Gungor & Senel, 2018; Taskın & Erdemli, 2018). The research shows that this problem has been experienced in all countries (Nasrin, 2001; Galloway & Jenkins, 2005; Sarıkaya, 2014). The language problems arising from the cultural differences also appear as an adaptation problem. Kultas (2017) showed in his research that the immigrant students were excluded due to the adaptation problem. Academic failure that develops as a result of the language problem also leads to increased adaptation problem (Sarıtas, Sahin & Catalbas, 2016). The language problem also affects the educational process of teachers. Research by Erdem (2017) showed that teachers who had immigrant students in their class had difficulty preparing the course content, determining the appropriate course tools and communicating. In general, these problems can be said to be due to cultural differences. Since students with a different culture use a different language, there are difficulties experienced in the process of adaptation to the local culture, and the students are excluded as they cannot communicate with their teachers and fail academically. This was also revealed by research by Takır and Ozerem (2019). According to the findings in their research, the primary problems experienced by immigrant students are language, cultural differences, failure to show interest in classes and adaptation problems.

The OECD report (2015) prepared on immigrant students also stresses the language problem of these students and shows that there are great differences between students that arrived at an early age and those that arrived at a later age in learning a language. The same report states that the countries provide linguistic support to the students to overcome the language problem along with socio-cultural support. Countries offer various supports for immigrant students not to have any social, cultural and academic differences with their own students. At this point, the European Commission (2013) prepared a report on supports to be provided to newly arrived students. Supports mentioned in this report are summarized below (European Commission, 2013):

Linguistic support: The teaching language used in a school in the receiving country where a student is involved in the process of education is quite important. Poor learning language skills will academically and socially decrease the child's performance. Therefore, before participating in the educational process, or in parallel with the process that begins with the participation in the educational process, it is important to provide linguistic support systematically.

Academic support: Combining the linguistic support and academic support in the country to which the student migrates, determining his/her school level and offering special academic assistance greatly help the students. The student may need different academic support due to the variables, including such as curriculum differences, language problem and the adequacy of past academic knowledge. This support can be offered before participating in the educational process, as a summer school, special education, or in the form of additional study.

Family involvement: Another important way to support immigrant students is to provide support to the family. Communicating with the family, referring them to the courses for the host country's language will both support the immigrant student and motivate the student to stay in school.

Intercultural harmony and peer learning: Cultural harmony in the educational environment is quite important. Various changes such as training teachers on cultural diversity, providing information about other cultures in the school curriculum, students' freedom to wear their own cultural outfit, flexibility in

holiday times would support the intercultural learning. In addition, the interaction between immigrant students and the students of the dominant culture would support the learning of immigrant students. Peer learning can sometimes be more effective than teachers' teaching.

Such supports are those which enable an immigrant student's social and academic development in the receiving country. Such supports, which are described here in a broad sense, have various sub-performance steps. For example, the linguistic support category includes determining the speaking, writing and reading levels of the host country's language. These performance steps are performed in various ways in different countries. This suggests that each country has a different foreign national student policy.

CURRENTLY APPLIED ADAPTATION MODELS IN EUROPE

Supports provided to the newly arrived immigrant students are compiled under various adaptation models. The European Commission (2013) derived some data from the analysis of the educational policies and cases to identify the supports offered by the countries and came up with some adaptation models. These adaptation models show the adaptation of newly arrived immigrant students in the host countries, and are as follows (European Commission 2013):

Comprehensive support model: This model is represented by Denmark and Sweden. According to UNHCR (2019) data, there are 36 thousand immigrants in Denmark and 248 thousand in Sweden. This model includes linguistic support, academic support for newly arrived immigrant students, school-family collaboration, the involvement of immigrant families and support for intercultural learning. The key features of the model are providing ongoing linguistic support in the teaching language, providing education in the mother tongue if there is enough students, providing ongoing linguistic support in the transition to a higher education institution, providing social assistance, seeing inter-cultural education as a thematic field of the local education system and creating a positive school environment.

Non-systematic support model: This model is represented by Italy and Greece. According to UNHCR (2019) data, there are 189 thousand immigrants in Italy and 61 thousand in Greece. This model is characterized by a random approach. This model features the lack of a well-defined policy countrywide or the non-implementation of the defined policy. Therefore, the support provided has multiple parts. There is no language and academic support configured on the national level. In the model, schools take care of their own students and undertake their education.

Compensatory support model: This model is represented by Austria and Belgium. According to UNHCR (2019) data, there are 128 thousand immigrants in Austria and 42 thousand in Belgium. The strengths of the model are providing social assistance and intercultural education. Although these supports seem to be provided, they are not as strong as in the comprehensive support model. There is a collaboration between the families and the school. In the compensatory model, there are accelerated studies to close the gaps in the student before he/she is included in the education system. The model offers compensatory and remedial solutions by focusing on the differences to remedy them.

Integration model: This model is represented by Ireland. According to UNHCR (2019) data, there are 6 thousand immigrants in Ireland. The strengths of the model are academic support, social assistance, collaboration and intercultural education. Newly arrived immigrant students are provided support, which supports, however, stops after a few years. Home-schooling is an important program implemented in this model. Intercultural education is not only included in the curriculum but also encouraged to be used as part of the daily school and life activities.

Centralized entry support model: This model is represented by France and Luxembourg. According to UNHCR (2019) data, there are 368 thousand immigrants in France and 2 thousand in Luxembourg. The strengths of this model are academic support and intercultural education. Academic support is regarded as the driving force and targeted support is offered for under-achieving students. In the model, newly arrived immigrant students are included in the education system early and offered the required supports by monitoring methods.

Models created from this data derived as a result of the analysis of 15 countries in Europe are not stationary and vary based on the practices of the countries. The most efficient and successful one of the models is suggested to be the comprehensive support model. The report also mentions the importance and success of

the local systems adapted to the newly arrived immigrant students (European Commission, 2013). Supports and adaptation models provided by the countries are presented in Table 1:

Table 1 Supports and Adaptation Models Provided by the Countries

	Comprehensive support model	Non-systematic support model	Compensatory support model	Integration model	Centralized entry support model
Linguistic support	X		X		X
Academic support	X		X	X	X
School-family collaboration	X		X	X	
Family Involvement:	X				
Right to equal education	X			X	
Lack of a clear policy		X			
Multi-part support		X			
Random support		X			
Social support			X	X	
Filling the gaps of differences			X		
Intercultural educational practices				X	X
Monitoring and system inclusion					X

Table 1 shows the elements the adaptation models focus on, as well as a comparison between the adaptation models. While based on their policies and practices, it is possible to see which country falls under which model, countries sometimes create their own models.

For Turkey, there has been no study done on the adaptation model for the newly arrived immigrant students. No research has been found which determines the efforts focusing on the newly arrived immigrant students. Therefore, the present research is important in that it contributes to the relevant literature. However, the problem of the present research is that education policies implemented in Turkey and current school practices are not known. As part of the research, interviews were held with the school administrators to determine the implementations aimed at the newly arrived immigrant students as well as the adaptation model implemented by Turkey. Thereunder, the research aims to determine the adaptation model implemented by Turkey for newly arrived immigrant students. For this purpose, answers to the following questions were sought.

1. What are the supports provided by Turkey to the newly arrived immigrant students?
2. Which adaptation model is implemented in Turkey in line with the supports provided to the newly arrived immigrant students?

METHOD

RESEARCH DESIGN

The research was modelled as a case study in qualitative method. Qualitative research is a holistic approach that interprets the natural environment of the subject being researched (Guba & Lincoln, 1994) and combines different disciplines (Merriam & Grenier, 2019). In qualitative research, it is tried to attach importance to understanding and to be understood in relation to the cases (Robson, 2017). In order to determine the adaptation model based on the types of support implemented to the newly arrived immigrant students, school practices and how they are carried out must be known. Therefore, the case study method was preferred as it fits the purpose of the research. The research design is a holistic multiple-case design. This design includes multiple cases, each of which is analysed and compared (Yıldırım & Simsek, 2013). The research analyses the various types of support in themselves to determine the support model implemented for the newly arrived immigrant students. The case focused by the research is the adaptation model implemented for the newly arrived immigrant students.

STUDY GROUP

The study group of the research is 12 school administrators working at schools 2019-2020 academic year in the central districts of Denizli that have newly arrived immigrant students. The characteristic that the participants “having newly arrived immigrant students at their school” was taken as a criterion by the researchers. Therefore, criterion sampling was used in the research. Criterion sampling is the study of all

cases meeting a series of criteria. Criterion can be determined by the researcher, or the criteria list can be created (Mertens, 2010). The number of foreign students in study group varies between 1% and 5%. Information on the participants is presented in Table 2.

Table 2 Participant Information

	Seniority	Position	Educational Level	Type of School
Participant 1	16-20	Assistant Principal	Postgraduate (Cont.)	Primary school
Participant 2	21+	Principal	Graduate	Primary school
Participant 3	21+	Principal	Graduate	Primary school
Participant 4	16-20	Assistant Principal	Graduate	Middle school
Participant 5	16-20	Assistant Principal	Postgraduate (Cont.)	Middle school
Participant 6	16-20	Assistant Principal	Postgraduate (Cont.)	Middle school
Participant 7	11-15	Principal	Postgraduate (Cont.)	Middle school
Participant 8	11-15	Assistant Principal	Graduate	Middle school
Participant 9	16-20	Assistant Principal	Postgraduate (Cont.)	High School
Participant 10	21+	Principal	Postgraduate (Cont.)	High School
Participant 11	11-15	Principal	Postgraduate (Cont.)	High School
Participant 12	16-20	Assistant Principal	Graduate	High School

Table 2 shows that the seniority of the three participants is between 11 and 15 years, that of six between 16 and 20 years and that of three more than 21 years. Five of the participants are principals, seven are assistant principals, and five of them have a graduate degree and seven of them continue their postgraduate study. Three of the participants work at a primary school, five at a middle school and four at a high school. All participants work at different schools.

DATA COLLECTION TOOL

In creating the data collection tool, the literature was first reviewed, and no research was found on adaptation models for newly arrived immigrant students in Turkey. Later, adaptation models determined by the European Commission (2013) were reviewed and analysed in respect of the types of support provided. By preparing at least two questions for each support, a total of 30 questions form was created. In order to identify the availability of the support provided, a section including “Yes”, “No” and “Somewhat” was created in the form. In case of a “Yes” and “Somewhat” response in the response section, an open-ended question is provided to obtain a detailed insight on how the support is provided. The first section of the form includes questions about the demographic variables of the study group (length of service, position, educational level etc.). The prepared form was sent to two language specialists and five subject-matter specialists. In line with the feedback received, one item was excluded, and seven items were revised. This way, the form’s content validity was achieved. The 29-item form so derived was implemented to determine the availability of the supports provided. For example, “Do you provide native language education support to newly arrived migrant students?”, “Do you ensure that the families of newly arrived migrant students participate in the educational process?”, “Can you work to improve the academic achievement of newly arrived migrant students in your school?”.

DATA COLLECTION

Schools in the central districts of Denizli where immigrant students attend, were identified, and the administrators of these schools were contacted and interviewed. The prepared form was administered to the participants who were asked whether the performance indicators were implemented based on the types of support. The participants responded to these questions as “Yes”, “Somewhat” or “No.” For questions responded as “Yes” or “Somewhat”, it was asked how the support was provided to determine the manner of implementation.

DATA ANALYSIS

In the analysis, the participants were first grouped by school type. Responses in the primary school type were first analysed, followed by those in middle school and high school types, respectively. Responses of the participants were analysed to identify the availability of the support. Thus, it was determined using the performance indicators based on type of support whether the support was implemented. Later, the views of the participants who responded as “Yes” or “Somewhat” were descriptively analysed to determine how the support is implemented. Data obtained in a descriptive analysis is summarized and interpreted according to pre-defined themes. Data may be arranged by the themes derived from the questions. In this study, each of the supports mentioned in the form was taken as a theme and the opinions of the participants were interpreted under these themes. In descriptive analysis, participant views are demonstrated by direct quotations in a striking way (Ekiz, 2013). During the descriptive analysis, quoted views were marked and identified. The interpretation of the findings was supported by the participant views to achieve more reliable research.

VALIDITY AND RELIABILITY

In qualitative research, validity and reliability is quite important. A low number of participants may lead to thinking that there might be validity and reliability problems. In qualitative research, differently from quantitative research, it would rather be more accurate to mention about credibility and the accuracy of the results instead of validity and reliability (Baskale 2016). Validity and reliability are fulfilled by credibility, transferability, dependability and confirmability (Shenton, 2004). For the credibility of the research, diversification, participant control and comparison with previous research findings were used. Diversification is the use of data collection tools, methods and comments together (Denzin & Lincoln, 2005). Also, in the present research, in order to determine the supports provided to the newly arrived immigrant students, a case determination form was used followed by open-ended questions asked to determine how the identified supports are provided. The participants' voluntary participation in the research was ensured, and the participants were told that they could withdraw from the research at any time. In addition, the participants could control the data.

The research findings were compared with the previous research findings to determine the similarities and differences. Direct quotations were used for the transferability of the research. For the consistency of the research, the entire research process and participants were defined in detail. Information of the participants were given by keeping their names confidential and assigning each one a number. For the confirmability of the research, all data collected was kept and checked by a different researcher. With all the above, the research validity and reliability was achieved.

THE ROLE AND NEUTRALITY OF THE RESEARCHERS

Prejudices and personal opinions on the research subject were not included in the research. Complete neutrality was maintained during the data collection, and participants' views were collected in writing to ensure that they were not negatively influenced. Questions that would identify the research participants were avoided and the participants' words were directly quoted.

FINDINGS

Responses about types of support implemented were analysed separately by school type (Y=Yes, S=Somewhat, N=No) as the adaptation models implemented to the newly arrived immigrant students may vary by school type.

FINDINGS ON SUPPORTS PROVIDED TO NEWLY ARRIVED IMMIGRANT STUDENTS AT PRIMARY SCHOOL LEVEL

School administrator views on the supports provided to newly arrived immigrant students at primary school level are presented in Table 3.

Table 3 Views on Supports Provided to Newly Arrived Immigrant Students at Primary School Level

Type of Support	P1	P2	P3
<i>Linguistic Support (LS)</i>			
Support in Mother Tongue	Y	N	N
Turkish learning support	S	S	Y
Support for Communicating in Mother Tongue	Y	N	N
<i>Academic Support (AS)</i>			
Determining past academic level	N	N	Y
Placing in a class appropriate for academic skills	N	N	N
Monitoring academic performance	S	Y	Y
<i>School-Family Collaboration (SFC)</i>			
Willing to attend school	Y	N	Y
School introduction support to families	S	N	Y
Support of informing families about school facilities	N	N	Y
<i>Family Involvement (FI)</i>			
Participation of families in the educational process	S	N	Y
Effective communication with families	S	N	N
<i>Right to Equal Education (REE)</i>			
Providing a positive school environment	S	N	Y
Exercising the right to education equally like other students	Y	N	Y
Intercultural educational-professional development support to teachers	Y	N	N
<i>A Clear Policy (CP)</i>			
Existence of an articulated policy by MONE	Y	S	Y
MONE's providing legal support	S	N	Y
MONE's providing financial support	N	N	N
<i>Multiple-Part Support (MPS)</i>			
School's willingness to improve academic success	S	N	Y
Participation in education with no academic support	S	N	Y
<i>Random Support (RS)</i>			
School-specific planning on involvement in education	S	N	Y
Working to prevent any prejudiced behaviour among teachers and students	Y	S	Y
<i>Social Support (SS)</i>			
Ensuring adaptation to the out-of-school environment	N	S	Y
Working to prevent in-class exclusion	Y	S	Y
<i>Filling the Gaps of Differences (FGD)</i>			
Working to determine the differences	N	N	N
Willingness to solve the problems arising from cultural differences	S	N	Y
<i>Intercultural Educational Practices (IEP)</i>			
Working to raise teacher awareness	S	S	N
Working to raise the awareness of other students	N	S	N
Education sensitive to cultural values	N	N	N
<i>Monitoring and System Inclusion (MSI)</i>			
Working to monitor and evaluate the development and progress in the education system	S	N	Y

According to Table 3, the types of support at primary school level are school-family collaboration, right to equal education, a clear policy, multiple-part support, random support, social support, monitoring and system inclusion; the types of support not provided at primary school level are linguistic support, academic support, family involvement, filling the gaps of differences, intercultural educational practices. Participant responses to how the supports are provided are presented below:

“... Our school does not have an orientation class. Participant students receive Turkish language education here...” (P3, LS)

“...Immigrant students and other students participate in the same activities in and out of the class and in the same educational process, having equal rights. Class teachers arrange these...” (P1, REE)

“...We warn during the meetings that newly arrived immigrant students should not be treated with prejudice and should be facilitated, as necessary. We ask class teachers to make inclusive conversations with the immigrant students...” (P2,SS)

According to the above views and responses, practices toward immigrant students depend on the practices of the class teachers (P1), and school-wide practices toward immigrant students are limited to

opening a school orientation class (P3) and a Turkish language course. In addition, works are just limited to providing information (P2).

FINDINGS ON SUPPORTS PROVIDED TO NEWLY ARRIVED IMMIGRANT STUDENTS AT MIDDLE SCHOOL LEVEL

School administrator views on the supports provided to newly arrived immigrant students at the middle school level are presented in Table 4.

Table 4 Views on Supports Provided to Newly Arrived Immigrant Students at Middle School Level

Type of Support	P4	P5	P6	P7	P8
<i>Linguistic Support (LS)</i>					
Support in Mother Tongue	Y	S	N	Y	N
Turkish learning support	S	N	Y	Y	N
Support for Communicating in Mother Tongue	S	N	N	N	N
<i>Academic Support (AS)</i>					
Determining past academic level	S	N	Y	N	N
Placing in a class appropriate for academic skills	N	N	S	N	N
Monitoring academic performance	Y	Y	Y	N	N
<i>School-Family Collaboration (SFC)</i>					
Willing to attend school	Y	N	Y	N	Y
School introduction support to families	Y	N	S	S	N
Support of informing families about school facilities	N	N	Y	N	N
<i>Family Involvement (FI)</i>					
Participation of families in the educational process	N	N	N	N	N
Effective communication with families	S	N	S	N	N
<i>Right to Equal Education (REE)</i>					
Providing a positive school environment	Y	N	Y	Y	N
Exercising the right to education equally like other students	Y	N	Y	N	Y
Intercultural educational-professional development support to teachers	Y	N	S	N	N
<i>A Clear Policy (CP)</i>					
Existence of an articulated policy by MONE	S	N	Y	Y	Y
MONE's providing legal support	Y	N	Y	Y	S
MONE's providing financial support	N	N	N	N	N
<i>Multiple-Part Support (MPS)</i>					
School's willingness to improve academic success	S	N	S	N	N
Participation in education with no academic support	S	N	Y	N	S
<i>Random Support (RS)</i>					
School-specific planning on involvement in education	Y	N	S	N	N
Working to prevent any prejudiced behaviour among teachers and students	Y	N	Y	N	N
<i>Social Support (SS)</i>					
Ensuring adaptation to the out-of-school environment	Y	N	N	N	N
Working to prevent in-class exclusion	Y	N	S	Y	S
<i>Filling the Gaps of Differences (FGD)</i>					
Working to determine the differences	S	N	N	S	N
Willingness to solve the problems arising from cultural differences	S	N	N	Y	S
<i>Intercultural Educational Practices (IEP)</i>					
Working to raise teacher awareness	S	N	S	N	S
Working to raise the awareness of other students	S	N	N	N	S
Education sensitive to cultural values	Y	N	Y	N	N
<i>Monitoring and System Inclusion (MSI)</i>					
Working to monitor and evaluate the development and progress in the education system	Y	N	S	N	N

According to Table 4, the types of support at middle school level are school-family collaboration, right to equal education, a clear policy, filling the gaps of differences, and the types of support not provided at middle school level are academic support, family involvement, multiple-part support, random support, social support, intercultural educational practices, monitoring and system inclusion. Participant responses to how the supports are provided are presented below:

“...We apply a placement test to students enrolling in the school. Students that score below 60 are directed to the orientation class. We also test them there at certain intervals. For students who are directly included in the class, we pay attention that they have someone from their own country...” (P5, LS)

“We provide information to parents coming for registration. For this, we sometimes even look for an interpreter. We recommend them stopping by at school occasionally to take advantage of all the facilities like other students...” (P6, FI)

“... The school’s counselling service and class counsellors are working to ensure that immigrant students do not get prejudiced treatment and feel comfortable in and out of the classroom. Counselling service regularly works to raise student and teacher awareness...” (P7, REE)

“...We try to manage it within the school as the MoNE does not provide the required financial and moral support. We direct teachers to in-service training to integrate the immigrant students into the society. Here, I think that the entire burden is on the teachers teaching the classes ...” (P4, IEP)

“...I don’t think that the students in the orientation class have the right to equal education. Students whose level increases have the right to equal education when they move to the other classes. Schools with fewer students do not open orientation classes...” (P6, REE)

According to the above views and responses, there are again differences of practices between the schools. At middle school level, class counsellors and counselling service generally carry out the relevant work (P7), there are orientation classes and Turkish language courses opened at schools for linguistic support, students are taken to other classes (P5), and efforts are limited to the teacher and counselling service efforts.

FINDINGS ON SUPPORTS PROVIDED TO NEWLY ARRIVED IMMIGRANT STUDENTS AT HIGH SCHOOL LEVEL

School administrator views on the supports provided to newly arrived immigrant students at high school level are presented in Table 5.

According to Table 5, at high school level, the types of support are school-family collaboration, family involvement, equal right to education, social support, and the types of support not provided at high school level are linguistic support, academic support, a clear policy, multiple-part support, random support, filling the gaps of differences, intercultural educational practices, monitoring and system inclusion. Participant responses to how the supports are provided are presented below:

“...Students are placed in a class appropriate for their level after the registration. If they do not speak Turkish, they are placed into the orientation class. We provide information about the school to the parents at their request. We provide information. In case of absenteeism, we talk to the family...” (P9, FI)

“...At the meetings, the immigrant student matter is always discussed. We provide information. We work for their adaptation through the efforts of teachers and class counsellors...” (P11, SS)

*“...All students already have an equal right. Particularly class counsellors and class teachers provide information and guidance to ensure that these students are not excluded. Those who cannot speak Turkish are sent to *** high school...” (P10, REE)*

According to the above views and responses, the orientation classes at schools are considered a ministerial policy and implemented at the schools. Schools without orientation classes send students to other classes (P10). Families are advised about attendance to school and introduced the school, and their involvement is encouraged (P9). Counsellors and class teachers strive to ensure that immigrant students do not have difficulty in their social life (P11).

Table 5 Views on Supports Provided to Newly Arrived Immigrant Students at High School Level

Type of Support	P9	P10	P11	P12
<i>Linguistic Support (LS)</i>				
Support in Mother Tongue	N	N	N	N
Turkish learning support	N	N	N	N
Support for Communicating in Mother Tongue	S	Y	Y	N
<i>Academic Support (AS)</i>				
Determining past academic level	N	N	N	N
Placing in a class appropriate for academic skills	Y	N	Y	N
Monitoring academic performance	N	N	Y	N
<i>School-Family Collaboration (SFC)</i>				
Willing to attend school	S	Y	Y	N
School introduction support to families	Y	Y	Y	N
Support of informing families about school facilities	N	Y	Y	N
<i>Family Involvement (FI)</i>				
Participation of families in the education process	Y	S	Y	N
Effective communication with families	S	N	Y	N
<i>Right to Equal Education (REE)</i>				
Providing a positive school environment	S	S	S	N
Exercising the right to education equally like other students	Y	S	S	S
Intercultural educational-professional development support to teachers	N	N	N	N
<i>A Clear Policy (CP)</i>				
Existence of an articulated policy by MoNE	Y	Y	S	N
MoNE's providing legal support	N	N	S	N
MoNE's providing financial support	N	N	N	N
<i>Multiple-Part Support (MPS)</i>				
School's willingness to improve academic success	N	N	N	N
Participation in education with no academic support	N	N	S	N
<i>Random Support (RS)</i>				
School-specific planning on involvement in education	N	N	S	N
Working to prevent any prejudiced behaviour among teachers and students	S	S	Y	N
<i>Social Support (SS)</i>				
Ensuring adaptation to the out-of-school environment	N	N	S	N
Working to prevent in-class exclusion	Y	S	Y	N
<i>Filling the Gaps of Differences (FGD)</i>				
Working to determine the differences	N	N	Y	N
Willingness to solve the problems arising from cultural differences	S	N	S	N
<i>Intercultural Educational Practices (IEP)</i>				
Working to raise teacher awareness	S	S	Y	N
Working to raise the awareness of other students	S	N	N	N
Education sensitive to cultural values	S	N	S	N
<i>Monitoring and System Inclusion (MSI)</i>				
Working to monitor and evaluate the development and progress in the education system	Y	N	S	N

DISCUSSION

Immigrant students in Turkey participate in education to gain some universal values and face a few challenges while doing so. Supports implemented for immigrant students involved in education are aimed to eliminating these problems faced by the students. Some of these supports vary by school and are provided under the guidance of the ministry. When we generalize these efforts toward immigrant students across the country, an adaptation model is derived for the immigrant students. Although the present research does not intend to make a generalization, it may still describe the implemented adaptation model at a basic level. According to the research data, linguistic support, school-family collaboration support, right to equal education support, random support and social support are provided across all school types. These supports are opening an orientation class, providing Turkish language education, keeping families informed about the school and watching the attendance, ensuring that immigrant students have equal rights to participate in all activities as other students, not excluding immigrant students from the social environment, not treating them with prejudice and ensuring their adaptation to the school environment. In such case, during the process that begins with the enrolment of the immigrants' students with the school, students are placed into the grade-appropriate for their level, they are placed into the orientation class if they do not speak Turkish,

ensuring their adaptation to the social environment and ensuring their social connection with other students in their class. Families of immigrant students are informed about the school and education system and are constantly kept informed about school attendance and problems. Monitoring and control are conducted by counsellors and class teachers for the socialization of immigrant students.

The relevant literature includes a few studies on immigrant students. The research by Boru and Boyacı (2016) on students and teachers showed that students did not have adequate Turkish skills, that families had financial problems, that students were excluded by their friends because they were foreigners, and that they were not provided any guidance while participating in education. The findings derived from teachers were that immigrant students posed risks and should receive Turkish language education and that there was no collaboration with parents. Erdem's (2017) research in Afyonkarahisar found that class teachers considered the language challenges faced by immigrant students a major problem. Supports provided to immigrant students show that linguistic support, students and family information support, family involvement support are provided. Especially, creating orientation classes and providing Turkish language support to immigrant students are the supports provided under the guidance of the ministry. At this point, supports develop and evolve based on the needs of the immigrant students as well as the identified shortcomings over time.

Sakız's (2016) research on school administrators that work in the South Anatolia Region provinces that receive the highest number of immigrants found that there were challenges regarding the socialization of the immigrant students, that there was no family involvement and that there was no school-family collaboration. Supports implemented to overcome these challenges show that support is available to ensure the family involvement and that class counsellor and school counsellors work to ensure their socialization. Similarly, research by Nayir (2019) shows that school administrators need linguistic and specialized support as well as social and financial support during the education of immigrant students.

Saglam and Ilksen-Kanbur (2017) found in their research on class teachers that teachers did not feel competent about immigrant students and had no professional development plan. Supports implemented show that school administrators do not implement any support for teachers' professional development.

Gungor and Senel (2018) found in their research with teachers and students that students had difficulty making friends, were academically unsuccessful and that they had challenges communicating with the families of immigrant students. Supports show that there is no academic support available, that class counsellor is tasked with their integration and that family involvement support is provided for the involvement of the families.

A publication by Eres (2015) drew attention to the challenges had in the education of immigrant students and the management of the educational differences of the immigrant children in Turkey. The publication also mentions the importance of cultural difference-conscious education for the cultural differences emerging from the gathering of different students. The supports show that the schools do not provide a cultural-value conscious education. Regarding the management of the differences, student and teacher awareness is ensured, with which school counsellors and class counsellors are tasked.

The research by Basar, Akan and Ciftci (2018) on teachers working at schools with various socio-economic levels aimed to explore the challenges faced by refugee students in in-class learning found that measures toward refugee students were blocked because of the lack of applicable regulations. The supports show that the Ministry of National Education does not provide any financial and legal support, and however, has a specific policy. The finding of the existence of a specific policy is derived from the fact that there are orientation classes. Similarly, the present research has derived the same findings as the other studies of the language problem, parent communication problem, and inefficient use of school resources. According to the comparison of the implemented supports, there are orientation classes and Turkish language courses opened for the language problem, there is a parent communication problem, and parents and students are informed about the school facilities.

The research by Yurdakul and Tok (2018) on teachers to explore the teachers' metaphoric perception of refugee/immigrant students showed that teachers supported the harmonization education, however that the language problem, orientation training for cultural programs should be given priority, and that in-class activity should be increased. The supports show that in-service training such as inclusive training are

regarded as a ministerial policy and supported. However, the opinion that the ministerial policy is supported only in respect of these activities contradicts with other studies. In the research, teachers expect various supports from the ministry including both curriculum and in-class activities and state that not only students but also their families should be provided language courses.

The research by Buyukdag, Gulper and Celikceken (2019) on immigrant students to measure their emotional distance to the Turkish students found that their emotional distance decreased as they were exposed to Turkish publications, and if their satisfaction with the education increased, and increased if the immigrant population was higher. Accordingly, the research draws attention to the importance of harmonization and the avoidance of exclusion. The supports show that class teachers and class counsellors and school counselling services are tasked with this. The support aimed to reduce the emotional distance of foreign students to Turkish students is conducted by teachers.

In the research by Altunay and Dede (2019) on school administrators to explore the inter-school cooperation in the education of immigrant students, school administrators reported their views as that there was disorganized cooperation between schools, that information on and solutions for the problems experienced by immigrant students were inadequate, and that the only solution offered for the solution of the problems was the language courses. The supports show that there is no specific work performed at the school. School administrators strive to solve the language problem within the school, eliminate the exclusion problem through class counsellors, counselling service or class teachers, and to ensure the adaptation of the foreign students. Similarly, research by Nayir (2019) shows that language support is the primary support needed by school administrators the most in the education of immigrant students

Isiguzel and Baldik (2019) compared the language support provided by various countries and Turkey and concluded that language support should be provided comprehensively. The research, which includes the teacher characteristics, practices and cultural differences as well as language teaching, recommended that all schools should conduct the same practices. It, however, found that the schools implemented the orientation classes and provided Turkish language training.

Similar findings are found in foreign literature. The research by Richter (2015) as part of his graduate thesis on students, teachers and administrators in Germany found that language was an important factor in welcoming immigrant students into classes and ensuring a social integration in the class, which, in turn, improved the student motivation. Nilsson and Axelsson (2013) also derived a similar finding in their research. According to their research findings, immigrant students must feel socially and pedagogically comfortable to achieve academic success. This is possible only by having enough language skills and communication. The graduate thesis prepared by Djabanor (2016) on students and teachers found that language teaching was important for immigrant students to feel emotionally and psychologically well and that immigrant students who could speak the local language were able to socialize more easily. The supports show that for the social integration of immigrant students, those who cannot speak the local language are directed to orientation classes for language learning. At this point the practices in Turkey and those abroad are similar.

The research recommends various supports and what is needed and how the implementation should be. However, the support models provided show which supports are implemented and how these supports are conducted. The research conducted so far has largely drawn attention to the language teaching and the need for immigration students to learn language. They also draw attention to in-class socialization for the adaptation of students. At this point, they recommend raising teacher and student awareness and taking measures to prevent social exclusion. Studies investigating immigrant students together with their families draw attention to school-family collaboration and recommend ensuring the involvement of families. In addition, they recommend educational practices sensitive to cultural values to ensure the involvement of immigrant students in in-classroom education. Other common recommendations are the participation in various in-service trainings such as inclusive training, harmonization training, multiculturalism training or cultural-value conscious training of teachers who have the most effective role in the education of immigrant students.

The support models implemented show that they vary at primary, middle and high school levels. The main reason for this is that the student needs change by age. The reason for not providing linguistic support to

immigrant students at the primary school level is that the language education is easily provided by the class teachers. Due to the importance of school-family collaboration, immigrant students are treated in the same manner at the primary school level and receive an education with the right to equal education with the other students. Immigrant students studying with other students can adapt socially as they participate in in-classroom activities. However, it supports change by class as each class has a different teacher. This brings about the random support. Since it is important for class teachers to ensure that students at primary school level progress well in the education system, immigrant students are provided the monitoring and system inclusion support.

At the middle school level, orientation classes are opened as the Turkish language teachers lack enough training in language teaching and students with poor Turkish language skills are taught Turkish by primary school teachers. At schools that do not have enough number of students to create a class, students are referred to the near-by schools or Public Education Centres. In addition, there is school-family collaboration support provided for student absenteeism and the efficient use of school facilities. As in primary schools, students attend classes together with other students, benefiting from the right to equal education. In order to eliminate student needs arising from various cultural differences, various trainings are provided to retain students within the education system.

As for high school level, students are observed to quit school to participate in the workforce or for other reasons, and those who are academically successful continue their education, and no linguistic support is provided in case of no need. Collaboration with the families of immigrant students is also available at this level, and there are efforts to prevent students from leaving the education system for reasons such as absenteeism, social inadaptability. At this school level, immigration students also participate in the same activities with other students, benefiting from the right to equal education.

The supports in general show that the linguistic support, school-family collaboration, the support for right to equal education and social support are available, while there is no support country-wide due to the lack of a clear policy. According to the data, students in need are directed to a language course, there is a continuous communication between class counsellors and families of immigrant students, immigration students receive education and participate in in-class and out-of-class activities together with other students, thus benefiting from the right to equal education, class counsellors or counselling services are tasked with ensuring that immigrant students are not excluded, teachers and other students are kept aware of the differences of immigrant students, and teachers are supported to attend in-service training such as inclusive training. However, all the above are provided individually by schools and there is no financial and legal support applicable to all from the ministry.

Reports published by various organizations on the supports provided by countries for migrant students' state that other countries provide more comprehensive support than Turkey. The report by the National Institute of Economic and Social Research (2019) states that migrant students have a wide range of differences and such differences, therefore, will lead to challenges in the implementation of a specific program. The report also states that language learning would significantly facilitate the social and cultural integration of the students and that family involvement improves student performance. The report also mentions the importance of the peer learning and raising the awareness of teachers of being sensitive to cultural differences. The Eurydice (2019) report also mentions the importance of taking all the needs of immigrant students, helping students' career planning through inter-cultural education and increasing school enrolment rates. It draws attention to the importance for the future of the society of protecting the rights of immigrant students by necessary legal regulations and helping them establish a future in the receiving country by knowing their entire background. The OECD (2015) report compares the achievements of first-generation and second-generation migrants and shows the impact of the language barrier on socialization and academic success. According to the report, the language problem must first be eliminated to significantly facilitate the lives of migrant students. The NESET (2017) report states that extra supports must be available to ensure the continuity of migrant students in education and that shortcomings must be eliminated by monitoring their movement within the education system. According to the report, considering that immigrant students are not likely to demonstrate the required academic success even if there is no language problem, the availability of additional academic support is important. When these

reports and the findings herein are compared, immigrant students in Turkey have also come from various countries and differ widely, and therefore, there is no specific program implemented. However, considering the importance of the language problem, there are language orientation classes opened to solve their language problems. Despite the above, students' academic process is not monitored and there are no additional supports available to remedy their academic deficiencies. The availability of communication between families and school appears as a significant contribution to the student socialization. In addition, protecting the legal rights of students and raising the awareness of teachers through various training are also a benefit for immigrant students.

CONCLUSION AND RECOMMENDATIONS

The findings show that the support model implemented in Turkey does not fall under any of the support models defined by the European Commission (2013). This is quite a normal situation, and the relevant report also states that new support models may be created, or support models may be revised. Therefore, a new support model must be created for an adaptation model that does not fall under any support model. In creating a new support model, the supports implemented must be considered to name this model, which name must describe the support model implemented.

The supports implemented in Turkey include language learning, ensuring social adaptation, family involvement in the educational process and ensuring students' access to the right to equal education. These supports are those that focus on the social adaptation of students and their families. The adaptation model may, therefore, be named "*Socialization Model*." This model recommendation is based on the findings and could be re-named if the supports implemented change or fall under a model defined by the European Commission (2013).

The socialization model is a model for Turkey, focusing on ensuring social adaptation. In this model, although there is no clear policy country-wide, there are practices in place at schools individually. This model's important future is ensuring the social adaptation and integration into the society of students and their families. This model helps immigrant families, and their children socialize without problems and learn the local culture while living their cultural values and easily adapt to this culture. This way, immigrant families and students could be easily integrated into everywhere in Turkey. The academic success of immigrant students may vary because the supports are specific to each school. Similarly, it may also vary depending on the language learning process of the students, and the time the student spends learning the language may vary their integration period. With the Socialization Model, immigrant students and their families stay in touch with the school and the society, are offered linguistic support to make their life easier during their time in Turkey, their legal rights and responsibilities are protected, and the students can continue their academic life together with the local students.

The present study attempts to explore the adaptation model applicable to the education of newly arrived immigrant students. The limitation of the study is that it has been conducted in one province. In order to define the adaptation model more clearly, supports implemented in different locations can be identified by similar studies. The support models implemented may vary by region, the number of immigrant students or school type, so it will contribute to relevant studies if they are examined in terms of various features. Supports implemented at higher education and pre-school level can also be investigated. In addition, studies related to the end of 2019 were examined in the research. Recent studies can also be examined, and model recommendations can be developed.

REFERENCES

- Altunay, Esen, and Mehmet Dede. "Gocmen Ogrencilerin Egitim Sureci Acisindan Okullar Arasi İsbirligine İlişkin Okul Yoneticilerinin Gorusleri." *Ege Egitim Dergisi* 20, no. 1 (2019): 127-144.
- Basar, Murat, Durdagi Akan, and Muhammed Ciftci. "Multeci Ogrencilerin Bulundugu Siniflarda Ogrenme Surecinde Karsilasilan Sorunlar." *Kastamonu Education Journal* 26, no. 5 (2018): 1571-1578.
- Baskale, Hatice. "Nitel Arastirmalarda Gecerlik, Guvenirlik ve Orneklem Buyuklugunun Belirlenmesi." *DEUHFED* 9, no. 1 (2016): 23-28.

- Berry, Jonh W. "Intercultural relations in plural societies." *Canadian Psychology* 40, no. 1 (1999): 12-21.
- Bilgin, Nuri. *Sosyal Psikoloji Sözlüğü*. İstanbul: Baglam Yayıncılık, 2003.
- Boru, Nese, and Adnan Boyacı. "Göçmen Öğrencilerin Eğitim-Öğretim Ortamlarında Karşılaştıkları Sorunlar: Eskişehir İli Örneği." *Turkish Studies* 11, no. 14 (2016): 123-158.
- Buyukdag, Gulden, Mesut Gulper, and Tevfik Sertac Celikceken. "Vaka Çalışması: Türkiye'de Yabancı Uyruklu Göçmen Öğrencilerin Türk Öğrencilere Karşı Duygusal Avcılar Örneği Mesafe Durumlarının İncelenmesi." *Göç Dergisi* 6, no. 2 (2019): 249-264.
- Djabanor, Jerry Nartey. *Integration of newly arrived immigrant pupils into schools*. Jyväskylä: University of Jyväskylä, 2016.
- Denzin, Norman. K. & Lincoln, Yvonna. S. *Introduction: The Discipline and Practice of Qualitative Research*. In N. K. Denzin & Y. S. Lincoln (Ed.). *The Sage Handbook of Qualitative Research*(3rd). (s. 1-32). Thousands Oaks, CA: SAGE Publications, Inc., 2005.
- Ekiz, Durmuş. *Bilimsel Araştırma Yöntemleri*, Ankara: Anı Yayıncılık, 2013.
- Erdem, Cahit. "Sınıfında Multecî Öğrenci Bulunan Sınıf Öğretmenlerinin Yasadıkları Öğretimsel Sorunlar ve Çözüm Önerileri." *Medeniyet Eğitim Araştırmaları Dergisi* 1, no. 1 (2017): 26-42.
- Eres, Figen. "Türkiye'de Göçmen Eğitimi Sorunsali ve Göçmen Eğitiminde Farklılığın Yönetimi." *Cankiri Karatekin Üniversitesi Sosyal Bilimler Enstitüsü Dergisi* 6, no. 2 (2015): 17-30.
- European Commission. *Study on Educational Support For Newly Arrived Migrant Children Final Report*. Luxembourg: Publications Office of the European Union, 2013.
- Eurydice. *Integrating Students from Migrant Backgrounds into Schools in Europe: National Policies and Measures*. Luxembourg: Publications Office of the European Union, 2019.
- Fraçkowiak, Anna. A Review of Lifelong Learning as Natural and Cultural Phenomenon. *Psycho-Educational Research Reviews* 6(2), 1-11, 2017.
- Galloway, Fred J, and John R Jenkins. "The Adjustment Problems Faced by International Students in the United States: A Comparison of International Students and Administrative Perceptions at Two Private, Religiously Affiliated Universities." *NASPA Journal* 42, no. 2 (2005): 175-187.
- Guba, E. G., & Lincoln, Y. S. *Competing Paradigms in Qualitative Research*. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 105-117), London: Sage, 1994.
- Gungor, Fisun, and E. Aysin Senel. "Yabancı Uyruklu İlkokul Öğrencilerinin Eğitim – Öğretiminde Yaşanan Sorunlara İlişkin Öğretmen ve Öğrenci Görüşleri." *Anadolu Journal of Educational Sciences International* 8, no. 2 (2018): 124-173.
- İsgüzel, Bahar, and Yüksel Baldık. "Göçmen Toplulukların Eğitim Sistemine Katılımı Sürecinde Uygulanan Eğitim ve Dil Politikalarının İncelenmesi." *Nevşehir Hacı Bektaş Veli Üniversitesi SBE Dergisi* 9, no. 2 (2019): 487-503.
- KONDA. "Biz Kimiz?,Toplumsal Yapı Araştırması." *Konda Araştırma ve Danışmanlık*. 2006. http://www.konda.com.tr/tr/raporlar/2006_09_KONDA_Toplumsal_Yapi.pdf (accessed December 7, 2019).
- Kultas, Emrah. *Türkiye' de Bulunan Eğitim Cagındaki Suriyeli Multecilerin Eğitimi Sorunu (Van İli Örneği) (Yayınlanmamış Yüksek Lisans Tezi)*. Van: Yüzüncü Yıl Üniversitesi , 2017.
- Merriam, Sharon. B., & Grenier, Robin. S. *Qualitative research in practice: Examples for discussion and analysis*. San Francisco, CA: Jossey-BassPublishers , 2019.
- Mertens, Donna. *Research and Evaluation in Education Psychology*, Los Angeles: Sage Publications, 2010.
- Nasrin, Fatima. "International Female Graduate Students' Perceptions of Their Adjustment Experiences and Coping Strategies at an Urban Research University." *Annual Meeting of the American Educational Research Association*. Seattle: University .of New Orleans, 2001. 1-70.
- National Institute of Economic and Social Research. *How Schools Are Integrating New Migrant Pupils And Their Families*. London: National Institute of Economic and Social Research, 2019.
- Nayir, Funda. "Problems And Suggested Solutions During Refugee Education Process." *Innovation and Global Issues in Social Sciences*. Antalya: InGlobe, 2017. 120-122.
- Nayir, Funda. "Göçmen Öğrencilerle Birlikte Olmak: Yararları, Zorluklar ve Destek İhtiyaçları", II. Uluslararası Eğitimde ve Kültürde Akademik Çalışmalar Sempozyumu, 12-14 September, Denizli, (2019).
- NESET. *Continuity of learning for newly arrived refugee children in Europe*. Lithuania: NESET II publications , 2017.
- Nilsson, Jenny, and Monica Axelsson. "'Welcome to Sweden...': Newly Arrived Students' Experiences of Pedagogical and Social Provision in Introductory and Regular Classes." *International Electronic Journal of Elementary Education* 6, no. 1 (2013): 137-164.
- OECD. *Helping Immigrant Students to Succeed at School - and Beyond*. Paris: OECD Publications, 2015.
- Oxford Learner's Dictionary. 2021. <https://www.oxfordlearnersdictionaries.com/definition/english/migration?q=migration> (accessed April 12, 2021).
- Ozer, İnan. *Kentleşme, Kentleşme ve Kentsel Değişim*. Bursa: Ekin Kitabevi, 2004.
- Richter, Mechthild. *How can the education of newly arrived immigrant students in Berlin be improved?* Oslo: University of Oslo, 2015.
- Robson, Colin. *Sosyal Araştırma Yaklaşımları* (Çev.Nayir, F.) in Bilimsel Araştırma Yöntemleri. 3. Baskıdan Çeviri (Ş. Çınkır, & N. Demirkasımoğlu, Çev.Ed.) Ankara: Anı Yayıncılık, 2017.
- Saglam, H. İbrahim, and Nezaket İlksen-Kanbur. "Sınıf Öğretmenlerinin Multecî Öğrencilere Yönelik Tutumlarının Cesitli Değişkenler Açısından İncelenmesi." *Sakarya University Journal of Education* 7, no. 2 (2017): 310-323.

- Sakiz, Halis. "Gocmen Cocuklar ve Okul Kulturleri: Bir Butunlestirme Onerisi." *Goc Dergisi* 3, no. 1 (2016): 65-81.
- Sam, David L., and John W. Berry. "Acculturative Stres Among Young Immigrants in Norway." *Scandinavian Journal of Psychology* 36, no. 1 (1995): 10-24.
- Sarikaya, Hakan Serhan. "Belcika Flaman Bolgesi Egitim Sisteminde Turk Kokenli Cocuklarin Yasadigi Temel Egitim Sorunlarin Incelenmesi." *Akademik Sosyal Arastirmalar Dergisi* 8 (2014): 246-260.
- Saritas, Emel, Umran Sahin, and Gulsum Catalbas. "İlkokullarda Yabancı Uyruklu Ogrencilerle Karsilasilan Sorunlar." *Pamukkale Universitesi Sosyal Bilimler Enstitusu Dergisi* 25, no. 1 (2016): 208-229.
- Sezgin, Ayse A., and Tugba Yolcu. "Goc ile Gelen Uluslararası Ogrencilerin Sosyal Uyum ve Toplumsal Kabul Sureci." *Humanitas* 4, no. 7 (2016): 417-436.
- Shenton, Andrew, K. Strategies for ensuring trustworthiness in a qualitative research projects. *Education for Information* 22, 2, 63-75, 2004. <https://www.semanticscholar.org/paper/Strategies-for-ensuring-trustworthiness-in-research-Shenton/cbe670d35e449ceed731466c316cd273032b28ca>
- Takir, Aygil, and Aysen Ozerem. "Gocle Gelen Yabancı Uyruklu Ogrencilerin Okul Ortaminda Karsilastiklari Sorunlar." *Folklor/Edebiyat* 25, no. 97 (2019): 639-657.
- Taskin, Pelin, and Ozge Erdemli. "Education for Syrian Refugees: Problems Faced by Teachers in Turkey." *Eurasian Journal of Educational Research* 75 (2018): 155-178.
- TDK. *Türk Dil Kurumu Sozlukleri*. 2019. <https://sozluk.gov.tr/?kelime=g%C3%B6%C3%A7> (accessed December 12, 2019).
- UNHCR. *UNHCR BM Multeci Orgutu*. Temmuz 2019. <https://www.unhcr.org/tr/unhcr-turkiye-istatistikleri> (accessed December 6, 2019).
- Yıldırım, Ali & Şimşek, Hasan. *Sosyal Bilimlerde Nitel Araştırma Yöntemleri*. Ankara: Seçkin Yayıncılık, (2013).
- Yurdakul, Ahmet, and Turkay N. Tok. "Ogretmen Gozuyle Multeci/Gocmen Ogrenci." *Adnan Menderes Universitesi Egitim Fakultesi Egitim Bilimleri Dergisi* 9, no. 2 (2018): 46-58.

IMPACT OF PERFECTIONISM AND SELF-COMPASSION FEELINGS OF UNDERGRADUATE STUDENTS ON THEIR FOREIGN LANGUAGE SPEAKING ANXIETY

Abstract: Foreign language anxiety is an important research topic in the field of foreign language education and speaking is accepted as the most anxiety-provoking language skill. Therefore, present study aims at investigating the extent that perceived feelings of perfectionism and self-compassion of undergraduate students affect their speaking anxiety. For this purpose 200 undergraduate students participated in the study. A mixed method design was adopted with the administration of both quantitative and qualitative instruments. Quantitative data were gathered through three scales (Self-compassion scale, Multidimensional perfectionism scale and Second language speaking anxiety scale). With the aim of strengthening quantitative data with more in-depth questions, eight voluntary participants were administered open-ended questions. The findings of the study indicated that perfectionism and self-compassion do not correlate both with each other and with foreign language speaking anxiety. However, findings of qualitative data revealed divergent results. The impact of the feelings of perfectionism and self-compassion on foreign language speaking anxiety were discussed together with the implications for a variety of parties.

Keywords: Foreign language; speaking anxiety; self-compassion; perfectionism

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INTRODUCTION

Teaching English as a foreign language has gained significance especially as a result of some socio-political issues such as European Union integration process, the significance attributed to 21st Century skills and international student mobility. This situation led the communicative and productive skills to be valued more compared to previous periods in Turkey. Despite the necessity of improvement in productive skills especially in speaking, it is also a well-known fact that it is the most difficult and latest language skill to develop. As Richards (1990) states success in language learning is evaluated based on how well learners have improved their spoken language ability. Despite this importance attributed to speaking as a skill in language learning, it has been overlooked in schools and universities due to different reasons like unnecessary overemphasis on grammar (Leong & Ahmadi, 2017).

In the field, the factors affecting the improvement of speaking as a language skill have been researched widely. According to Tuan and Mai (2015), performance conditions, listening skill, and feedback during speaking tasks, and affective factors are among the factors impeding the success in speaking. Regarding the performance conditions, time pressure, planning skill, the quality of speaking performance and the support provided are listed to be effective (Nation & Newton, 2009). The second factor is about listening skill which is believed to be an indispensable factor. As Doff (1998) says learners' ability to improve their speaking ability depends mostly on their listening ability. Comprehension of what is being told represents students' ability to process the message conveyed to speak (Shumin, 1997). Moreover, feedback received from language teachers is also listed among the factors affecting the improvement of speaking skill. Most language learners expect effective feedback from their instructors.

Another factor and may be the most effective one is the impact of affective factors. As Brown (1994) claims, elements of the affective domain are as important as the elements of the cognitive domain on language learning. The affective domain involving the emotions and feelings of people is about certain personality traits such as self-esteem, empathy, introversion, anxiety, self-compassion (Brown, 1994). Lightbown and Spada (2006) say that these features can facilitate or debilitate the language learning process. Similarly, according to Krashen (1982), motivation, self-confidence and anxiety are the three major qualities which have been researched mostly and having great impact on learners' speaking performance (Bachman & Palmer, 1996).

Anxiety as an important facet of the affective dimension is in strong connection with foreign language learning. Since language learners have difficulty in communication in foreign languages, foreign language anxiety is mostly related with speaking (Horwitz, Horwitz & Cope, 1991). The factors that are stated to cause speaking anxiety can be categorized under four subtitles; (1) personal reasons, (2) the teacher's manner in the classroom, (3) learners' beliefs, and (4) testing and teaching procedures (Aydın, 2001).

Personal reasons are explained with self-assessment of speaking ability and self-comparison to others. It can be either positive or negative. Especially negative self-evaluations have the potential to increase the feeling of anxiety (MacIntyre, Gardner & Clement, 1997; Price, 1991). The teacher's negative attitude and manners towards the language learners are also among the factors causing high anxiety (Bekleyen, 2004; Cheng, 2005). Learners' beliefs, especially unrealistic ideas about language learning can also result in anxiety while speaking. As a final factor, teaching procedures such as group work, oral presentation and oral assessment are the most common anxiety-provoking factors (Aydın, 2001; Huang, 2004).

Mostly influenced by research studies conducted by Scovel's (1978) and Horwitz et al. (1986), language anxiety research has received great interest recently. Especially the identification of anxiety levels of language learners has been the common purpose. The role of anxiety in speaking as the sub field has also been investigated frequently (e.g. Woodrow, 2006; Liu, 2007; Inthakanok, 2009-2011; Subaşı, 2010; Heng, Abdullah, & Yusof, 2012; Öztürk & Gürbüz, 2013; Zhiping & Paramasivam, 2013; Öztürk & Gürbüz, 2014). Research studies have commonly revealed that different levels of oral anxiety (from low to high) have been experienced by a number of language learners in varying foreign language contexts.

In addition to the impact of anxiety as an affective factor on speaking, the relation between language speaking anxiety and many other affective factors has also been the focus of investigation in the field. To exemplify, Akkakoson (2016) conducted a study to explore the relationship between language learners'

speaking anxiety and their attitudes to speaking in English. Results showed that despite the students' positive attitudes towards speaking English in the classroom a negative rating for their spoken English ability was reported. Many other studies have addressed the relationship between language anxiety and motivation. Specifically speaking, Gardner, Day and MacIntyre, (1992) found that integratively motivated students "are less anxious in second language contexts". In addition, Liu and Jackson (2008) found that language anxiety was positively correlated with unwillingness to communicate, but negatively with language class risk-taking, and being social in the language class. Another strand of research also supports the idea that belief is related to anxiety. For instance, Kitano (2001) concluded that students' anxiety levels were positively correlated with a perception of low ability in the language they were learning.

Perfectionism and self-compassion, two affective constructs have also been accepted as effective on language learning and achievement. Perfectionism, defined as "the perceived or real requirement for perfection for the self or for others" (Hewitt & Flett, 2004, p. 7) is believed to be a normal part of human development (Adler, 1956). However, it can result in problematic situations when people target high standards of superiority in achieving their equally unrealistic goals (Rice, Ashby, & Preusser, 1996; Rice, Ashby, & Slaney, 1998).

Kuyper et al. (2014) explain the three different dimensions of perfectionism briefly as follows;

"...self-oriented perfectionism, socially prescribed perfectionism, and other-oriented perfectionism. Self-oriented perfectionism (SOP) consists of the setting of very high standards for oneself and the critical evaluation of one's own behavior to avoid failures. Socially prescribed perfectionism (SPP) includes the need to satisfy high standards, which are perceived to be prescribed by significant others. This need originates from the conviction that acceptance by others depends on the fulfilment of their standards. Finally, other-oriented perfectionism (OOP) refers to the expectation that significant others constantly achieve unrealistic outcomes; it is accompanied by the permanent evaluation of their performance (p. 182)."

Self-oriented perfectionism as the personal facet (Hewitt & Flett, 1990,1991) result from unrealistic standards of people with high motivation who struggle to reach them. They are generally for the idea of all-or-none, so they accept either total failure or success (Flett, Hewitt and Martin, 1995). Perfectionists show unsatisfactory performance because they are excessively concerned about avoiding mistakes (Brophy,1996). In this sense, considering the link between perfectionism and anxiety, it would not be wrong to hypothesize that perfectionism could also have an effect on oral language skill and cause speaking anxiety in learning a second language. Indeed GhorbanDordinejad and Nasab (2013) found a significant positive correlation between perfectionism and foreign language anxiety. Specifically, maladaptive perfectionists were found to be more anxious than adaptive and non- perfectionists. Similarly, Pishghadam and Akhondpoor (2011) indicated that there is a significant negative relationship between perfectionism and listening, reading, speaking skills and also total academic success. Gregersen and Horwitz (2002) explain the reason of why perfectionists have lower performance compared to non-perfectionists. They claim that perfectionists aim highly assertive performance and they are very self-critical to themselves leading to high language anxiety in their oral skills. Likewise, Baran-Lucarz (2013) points out that fear of failure is the reason behind perfectionism and this also could cause to speaking anxiety.

Low achievement in language production, therefore, can be attributed to the feeling of perfectionism to some extent. This situation cause another factor to be considered as effective on speaking anxiety in recent years. Self-compassion which is defined as "being open to and moved by one's own suffering, experiencing feelings of caring and kindness toward oneself, taking an understanding, nonjudgmental attitude toward one's inadequacies and failures, and recognizing that one's own experience is part of the common human experience (p.224)" (Neff, 2003). Self-compassion also involves the recognition of a person's own weaknesses and negative aspects, and accepting them as they are, being sensitive, tolerant and understanding to oneself (Arbiyik at al., 2019). Generally speaking, studies show that high self-compassionate people are aware of their own problems, weaknesses, and they approach themselves with compassion and understanding instead of a critical and strict attitude. The construct of self-compassion demonstrates positive associations with self-acceptance, life satisfaction, social connectedness, self-esteem, mindfulness, autonomy, and environmental mastery, purpose in life, personal growth, reflective and affective wisdom, curiosity and exploration in life, happiness, and optimism. However, it demonstrates

negative correlations with anxiety, depression, self-criticism, neuroticism, rumination, thought suppression, and neurotic perfectionism (Deniz & Sümer, 2010; Kirkpatrick, 2005, Neff, 2003, Neff et al., 2005). Therefore, it would not be wrong to state that self-compassion enables the individual to develop positive feelings for herself when bad experiences are experienced as previously claimed by Leary et al. (2007).

In the light of the above discussion, it is considered that the association between perfectionism and speaking anxiety, self-compassion and perfectionism, self-compassion and speaking anxiety also be valid for the relation of perfectionism and self-compassion with second language speaking anxiety which is uninvestigated in the field.

Therefore, present study aims to fill this gap in the literature with the purpose of investigating the impact of perfectionism and self-compassion feelings of undergraduate students on their foreign language speaking anxiety.

METHOD

Mixed method design in which both qualitative and quantitative data collection instruments were used for the purpose of investigating the impact of feelings of perfectionism and self-compassion on the undergraduate level students' (N=200) speaking anxiety was adopted. In order to investigate this major purpose, following research questions were addressed:

1. Is there a relation between the undergraduate level students' feelings of perfectionism and speaking anxiety? If so, to what extent?
2. Is there a relation between the undergraduate level students' feelings of self-compassion and speaking anxiety? If so, to what extent?
3. Is there a relation between the undergraduate level students' feelings of perfectionism and self-compassion with respect to speaking anxiety?

SETTINGS AND PARTICIPANTS

200 (65 male, 135 female) undergraduate level students all of whom received English as a foreign language instruction starting from second year of their primary school education took part in the study. They also continued their English language instruction in the university with general English courses in the first year. In spite of the fact that participants are from different departments the medium of instruction in the departments was 100% English which makes participants to use English actively in class. 120 of the participants were majoring in education, whereas 80 of them were in psychology.

DATA COLLECTION

Data were gathered through both quantitative and qualitative data collection instruments. As for the qualitative part, three different questionnaires were administered. The first instrument is the Turkish version of the self-compassion scale (SCS) which was originally developed by Neff (2003) and adapted to Turkish by Deniz, Kesici and Sümer (2008). The scale investigates the characteristics of the self-compassion on a 5-point scale ranging from 1 = almost never to 5 = almost always (1-5) to find out the frequency of participants' acting in the manner stated in the items. It is a 24-item scale composed of six subscales: self-kindness, self-judgment, common humanity, isolation, mindfulness and over-identification. The second instrument is Multidimensional Perfectionism Scale (MPS) with 45 items. It was developed to investigate individual differences in perfectionism through three dimensions as Self-Oriented Perfectionism, Other-Oriented Perfectionism and Socially-Prescribed Perfectionism (Hewitt, & Flett, 1991). Self-Oriented Perfectionism Subscale measures the perfectionistic tendencies for the self, Other-Oriented Perfectionism Subscale measures the unrealistic high standards set for others and Socially-Prescribed Perfectionism Subscale measures the belief that others hold high standards for oneself (Hewitt, & Flett, 1991). MPS is a 7-point Likert scale. Responses range from 1 (strongly disagree) to 7 (strongly agree). Each dimension in MPS is measured on a subscale and each subscale consists of 15 items. The higher the scores on each subscale the greater perfectionism it demonstrates. In the study Turkish version of MPS which was adapted by Oral (1999) was used. The last questionnaire aimed at investigating the English speaking anxiety of the

students. The Second Language Speaking Anxiety Scale (Woodrow, 2006) consists of twelve items on a five-point Likert type scale. The items demonstrate the situations in which the participants were likely to engage according to the communicative setting, interlocutor (speaker/listener) variables and the nature of the communication. The communicative setting items investigate the in-class/out-of-class distinction. The Turkish version of this scale was adapted by Alkan, Bümen and Uslu (2019).

On the other hand, data received from questionnaires were strengthened with the responses gathered from eight participants, who volunteered to participate in the qualitative data gathering part, through open ended written questions (see Appendix A). Randomly selected eight participants were administered written open-ended questions regarding the three constructs investigated through questionnaires. After the questions were prepared, they were sent to external scrutiny for construct validity. Necessary changes and revisions were done prior to online administration. The questions were emailed to the participants and the responses were gathered through again email.

DATA ANALYSIS

Before the analysis of the data received through the above mentioned instruments, reliability and validity checks were done. The alpha values for each scale and the trustworthiness of the qualitative data were given in the following section. The statistical analysis of the questionnaire data to answer the research questions were conducted with Spearman's correlational statistics for the first and the second research questions and regression analysis was run for the third research question on SPSS. On the other hand, the analysis of the written data was done through pattern coding strategy which is a way for summarizing segments of data by grouping into sets, themes and constructs (Miles and Huberman, 1996).

FINDINGS/RESULTS

The statistical reliability values for the three instruments appeared to be reliable enough (Büyüköztürk, 2004) to investigate the research questions addressed for the purposes of the present study.

Table 1. Alpha Values of the Scales

Scale	Cronbach's Alpha	N of Items
SLSA	,931	12
MPS	,740	45
SCS	,686	24

In addition to the reliability of the numerical data, written data were also checked for reliability and validity concerns. To ensure the credibility of the qualitative data, background qualifications and experience of the researchers and member checks were used as suggested techniques by Guba and Lincoln (1994). The research design, its implementation, the data collection procedures and the analysis were all explained in a very detailed way to accomplish dependability. In order to check the inter-rater reliability, the pattern coding was repeated by another coder and ninety percent agreement was reached. Intra-rater percentage was also found to be ninety-six percent. All these results prove the reliability and validity of the data gathered for the study.

Prior to running any statistical tests, numerical data were checked for normality. Kolmogorov-Smirnov was preferred due to the number of participants. As can be seen in table 2, even though the data received from MPS and SCS distributed normally, SLSA does not show normal distribution. Therefore, instead of Pearson correlation, Spearman Correlation test was used for further analysis of the first and second research questions.

Table 2. Test of Normality

	Kolmogorov-Smirnov ^a		
	Statistic	df	Sig.
SLSA	,089	200	.001
MPS	,046	200	.200*
SCS	,054	200	.200*

The first research question of the study aimed at investigating the possible relationship between the undergraduate level students' feelings of perfectionism and second language speaking anxiety. The result of the statistical analysis (see table 3) showed that there wasn't any significant relationship between these two constructs.

Table 3. Relationship between Speaking Anxiety and Perfectionism

			SLSA	MPS
Spearman's rho	SLSA	Correlation Coefficient	1,000	,114
		Sig. (2-tailed)	.	,108
		N	200	200
	MPS	Correlation Coefficient	,114	1,000
		Sig. (2-tailed)	,108	.
		N	200	200

In addition, as for the result of the second research question which is investigating the relationship between the undergraduate students' second language speaking anxiety and self-compassion feelings a Spearman correlation test was run. However, no significant relation was found between the two variables, too.

Table 4. Relationship between Speaking Anxiety and Self-compassion

			SLSA	SCS
Spearman's rho	SLSA	Correlation Coefficient	1,000	-,010
		Sig. (2-tailed)	.	,836
		N	200	200
	SCS	Correlation Coefficient	-,015	1,000
		Sig. (2-tailed)	,836	.
		N	200	200

Final research question seeks answer for the relationship between undergraduate students' feelings of perfectionism and self-compassion with specific respect to second language speaking anxiety. Linear regression analysis results showed that participants' feelings of perfectionism and self-compassion are not significantly related with respect to second language speaking anxiety.

Table 5. Regression Analysis Result

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3,618	2	1,809	1,748	,177
	Residual	203,829	197	1,035		
	Total	207,447	199			

a. Dependent Variable: SLSA; b. Predictors: (Constant), SCS, MPS

Further statistical analyses were also done to investigate any possible relationship between the subscales of SCS and MPS, and SLSA scale. However, none of the subscales correlated with the second language anxiety significantly.

In order to examine and analyze any these statistical results in-depth, qualitative data gathered through open-ended questions were coded and depicted in the following tables (see appendix). The analysis was done with the application of pattern-coding strategy in which the codes were predetermined in line with the constructs of the scales. Later, related quotations were placed under each code.

The responses given to open-ended questions were analyzed on individual participant basis to explore the relation between the constructs after all the responses were coded (see Appendix A). Verbal data analysis did not reveal consistent findings with the statistical analysis. To illustrate, in the following table responses of one participant under each code of each construct can be seen.

Table 6. Quotations of participant 1 under identified codes

Self-Compassion					
<i>Self-kindness</i>	<i>Self-judgement</i>	<i>Common Humanity</i>	<i>Isolation</i>	<i>Mindfulness</i>	<i>Over-identification</i>
When the thing I want did not happen, I am kind to myself.	I am not a confident and resilient person. I tend to suffer from depression easily.	Different people can experience different problems.	I always compare my life with others. I always think I am the only person to experience such problem.		I accept my failure depending on the type. I cry and pray when I face painful situations.

Perfectionism		
<i>Self-Oriented Perfectionism</i>	<i>Others Oriented Perfectionism</i>	<i>Socially-Prescribed Perfectionism</i>
Nothing can be perfect. That's why, I don't try to be perfect in any subject.	If s/he is a person I love, I definitely care his success.	Ideas of people who are familiar to my life are important.
	I try not to disappoint others with my failure.	

Speaking Anxiety			
<i>Anxiety when speaking English</i>	<i>Anxiety in/out of class</i>	<i>Effect of other person's identity on speaking anxiety</i>	<i>Effect of the person's being non/native on speaking anxiety</i>
I don't feel anxiety. Anybody can make mistakes.	I am not anxious, but when speaking in class I am more attentive due to the formal environment.	If s/he is a professor, I am more careful so it may increase my anxiety.	When speaking to a native person I am more comfortable.

In the above table, this participant stated that he is not anxious because he believes that anybody can make mistakes. He similarly believed in the fact that nothing can be perfect and he is kind to himself. Therefore, it is possible to claim that there is a positive relation between his feelings of perfectionism and self-compassion and negative relation with foreign language speaking anxiety. Similarly, he stated that when he is speaking in class to a professor he is more anxious and he says he tries not to disappoint people with failure because ideas of people who are familiar to his life are important which also exemplifies the negative relation between perfectionism and anxiety.

Table 7. Quotations of participant 2 under identified codes

Self-Compassion					
<i>Self-kindness</i>	<i>Self-judgement</i>	<i>Common Humanity</i>	<i>Isolation</i>	<i>Mindfulness</i>	<i>Over-identification</i>
Some time after making a mistake, I forgive myself. I remind myself that it is a process. I think of worse days and try to feel better.	When I make a mistake, I think of it as a big failure	Everybody suffers from different situations in different ways.	I try to hide my real feelings. Then, I cry in front of the mirror a lot. I talk to my best friend but expect him to stay silent. Listening to music all alone helps me recover. Since I am the source of some problems, I think I am the only person to experience it.	If I repeat the same mistake, I get angry but try to be kind to learn from it. I tend to accuse others. But later I calm down.	

Perfectionism			
<i>Self-Oriented Perfectionism</i>		<i>Others Oriented Perfectionism</i>	<i>Socially-Prescribed Perfectionism</i>
If others think that what I do is perfect, then I also believe that what I am doing is perfect.		I want my close friends to be successful. Considering others’ expectations depends on who that person is. If s/he is my professor, I definitely care and try to be successful.	I care people’s ideas who I care. If my success is ignored, I am demotivated.
Speaking Anxiety			
<i>Anxiety when speaking English</i>	<i>Anxiety in/out of class</i>	<i>Effect of other person’s identity on speaking anxiety</i>	<i>Effect of the person’s being non/native on speaking anxiety</i>
I am not anxious at all. It is not because I speak perfect, but I try to control my stress in order not to be affected negatively.	In class I am more anxious because the instructor and my friends may expect a better performance.	Speaking in front of people who I care makes me more anxious because of the fear of making mistakes.	I am more comfortable while speaking to native people because showing them people from other nationalities can also speak their language makes me happy.

In a similar vein, table 7 demonstrates the quotations taken from the responses of another participant regarding the codes identified. It is clear that his feelings of self-compassion and perfectionism relate positively. To illustrate, he states after making a mistake, he thinks that it is a process and he tries to feel better. He also says he cares of superior people's ideas and try to do better. As it was the case in the findings of previous participant's responses, this participant also states not feeling anxious while speaking in foreign language in order to control his stress and not being affected negatively. This finding reveals a negative association of speaking anxiety with perfectionism and self-compassion. As another finding supporting the positive relation between self-compassion and perfectionism feelings of this participant his responses under the quotes of mindfulness and socially-prescribed perfectionism can be checked. He says he gets angry when repeating the same mistake and feels demotivated when his success is not appreciated.

DISCUSSION AND CONCLUSION

Present study aimed at investigating the impact of perfectionism and self-compassion feelings of undergraduate level students on the foreign language speaking anxiety. Under this major purpose, whether there was any relationships between perfectionism and self-compassion feelings of participants, perfectionism and speaking anxiety and self-compassion and speaking anxiety were also aimed to be investigated. For this purpose, data were collected through three scales and open-ended questions within mixed-methods design.

On the contrary to the findings of the previous studies, results of the statistical analysis did not reveal any association between the feeling of perfectionism and speaking anxiety. In the literature, these two constructs were found to be related in a significant and positive manner (Baran-Lucarz, 2013; Brophy, 1996; GhorbanDordinejad & Nasab, 2013; Gregersen & Horwitz, 2002). Gregersen and Horwitz (2002) explained that the tendency to be critical to oneself leads to higher levels of anxiety which is also repeated by Baran-Lucarz (2013).

Additionally, the findings of this study showed no correlation between self-compassion feelings and speaking anxiety of the participants contrary to the studies conducted previously (Deniz & Sümer, 2010; Kirkpatrick, 2005; Neff, 2003; Neff et al., 2005). Common point of all these studies is that their findings demonstrated significant and negative association between these two variables. In other words, people with high self-compassion generally appeared to have low speaking anxiety mostly because of the "feelings of caring and kindness toward oneself, taking an understanding, nonjudgmental attitude toward one's inadequacies and failures (p.124)" as stated by Neff (2003).

The result of the third research question aiming at investigating the relation between the undergraduate level students' feelings of perfectionism and self-compassion with respect to speaking anxiety also did not

show any significant association. This shows that these three variables are not felt to be related to each other.

However, the findings of the qualitative data diverged. When the responses of the participants were analyzed, it is clearly seen that participants who stated having low speaking anxiety have high perfectionism and self-compassion. This result is in line with the findings in the literature to some extent. In other words, as stated previously, general findings show positive relation between perfectionism (Baran-Lucarz, 2013; Brophy, 1996; GhorbanDordinejad & Nasab, 2013; Gregersen & Horwitz, 2002) and anxiety but negative relation between self-compassion and speaking anxiety (Deniz & Sümer, 2010; Kirkpatrick, 2005, Neff, 2003, Neff et al., 2005).

To conclude, present study showed that self-compassion, perfectionism and speaking anxiety do not have any impact on each other with no statistical relation. However, verbal data revealed association among these constructs to some extent. Although self-compassion and perfectionism were not perceived to have a direct impact on their English speaking anxiety, in their verbal responses, it is clear that have an impact. One reason for this divergence between the results of qualitative and quantitative findings can be the acquiescence bias, which is common in likert type scales and is called the tendency of the participant to be in harmony with the expression given regardless of the content of the expression (Johns, 2010). Another reason might be the data gathering method of the scales. Since they were administered as online forms, the participants might lack honesty.

The results of this study provide implications for various groups. To begin with, it is significant for language teachers to understand foreign language learners' wellbeing, their feelings, beliefs and perceptions with regards to foreign language before making judgements on the achievement of the students. Therefore, the role of student psychology during the process of language learning should not be ignored and the language teachers should be knowledgeable about the subject to better understand the underlying reasons of some failures.

Secondly, psychology has to be accepted and offered as an indispensable component of language teacher education departments for better pedagogy and rapport with students in future careers of the prospective teachers. That is to say, language teacher education departments should definitely offer psychology courses and language teacher candidates should be equipped with necessary psychological information about young learners, teenagers and even adult learners to manage psychology related impeding factors such as anxiety. A final implication can be suggested for in-service language teachers. They need to continue their professional development in line with the recent theoretical developments and the characteristics of the new generations in order to better cope with the language learner and learning throughout the foreign language learning/teaching process.

REFERENCES

- Adler, Alfred. The neurotic disposition. In H. L. Ansbacher & R. R. Ansbacher (Eds.), *The individual psychology of Alfred Adler* (pp. 239-262). (1956) New York: Harper.
- Akbıyık, Derya İren, Berna Arapaslan, and Yıldız Yardımcı. "The effect of psychodrama groups on self-compassion and distress in breast cancer patients." *Anatolian Journal of Psychiatry* 21.2 (2020): 173-179.doi:10.5455/apd.54341
- Akkakoson, Songyut. "Speaking Anxiety in English Conversation Classrooms among Thai Students." *Malaysian Journal of Learning and Instruction* 13.1 (2016): 63-82.
- Alkan, Hale., Nilay T. Bümen, and Öner Uslu. "İngilizce Konuşma Kaygısı Ölçeği'nin Türkçeye Uyarlanma Çalışması." *Gazi University Journal of Gazi Educational Faculty (GÜJGEF)* 39.2 (2019).
- Aydın, Belgin. "A study of sources of foreign language classroom anxiety in speaking and writing classes." (1999).
- Bachman, Lyle F., and Adrian S. Palmer. *Language testing in practice: Designing and developing useful language tests*. Vol. 1. Oxford University Press, 1996.
- Baran-Lucarz, Małgorzata. "Phonetics learning anxiety—results of a preliminary study." *Research in Language* 11.1 (2013): 57-79.
- Bekleyen, Nilüfer. "The influence of teachers and peers on foreign language classroom anxiety." *Dil Dergisi* 123 (2004): 49-66.
- Brown, Douglas. "Teaching by Principles-An Interactive Approach to Language Pedagogy-Prentice Hall Regents." *New Jersey* (1994).
- Büyüköztürk, Şener. *Veri analizi el kitabı*. Pegem Yayınevi (2004).

- Cheng, Jian-Chang. "The relationship to foreign language anxiety of oral performance achievement, teacher characteristics and in-class activities." *Unpublished master's thesis, Ming Chuan University, Taiwan* (2005).
- Deniz, Mehmet, Şahin Kesici, and A. Serkan Sümer. "The validity and reliability of the Turkish version of the Self-Compassion Scale." *Social Behavior and Personality: an international journal* 36.9 (2008): 1151-1160.
- Deniz, Mehmet Engin, and Adem Serkan Sümer. "The evaluation of depression, anxiety and stress in university students with different self-compassion levels." *Eğitim ve Bilim* 35.158 (2010): 115.
- Adrian, Doff. *Teach English: a training course for teachers: teacher's workbook*. Cambridge University Press, 1993.
- Flett, Gordon L., Paul L. Hewitt, and Thomas R. Martin. "Dimensions of perfectionism and procrastination." *Procrastination and task avoidance*. Springer, Boston, MA, (1995). 113-136.
- Gardner, Robert C., J. B. Day, and Peter D. MacIntyre. "Integrative motivation, induced anxiety, and language learning in a controlled environment." *Studies in second language acquisition* (1992): 197-214.
- GhorbanDordinejad, Farhad, and Amir Hosein Farjad Nasab. "Examination of the relationship between perfectionism and English achievement as mediated by foreign language classroom anxiety." *Asia Pacific Education Review* 14.4 (2013): 603-614.
- Gregersen, Tammy, and Elaine K. Horwitz. "Language learning and perfectionism: Anxious and non-anxious language learners' reactions to their own oral performance." *The Modern Language Journal* 86.4 (2002): 562-570.
- Guba, Egon G., and Yvonna S. Lincoln. "Competing paradigms in qualitative research." *Handbook of qualitative research* 2.163-194 (1994): 105.
- Heng, Chan Swee, Ain Nadzimah Abdullah, and Nurkarimah Yusof. "Investigating the construct of anxiety in relation to speaking skills among ESL tertiary learners." *3L: Language, Linguistics, Literature®* 18.3 (2012).
- Hewitt, Paul L., and Gordon L. Flett. "Dimensions of perfectionism in unipolar depression." *Journal of abnormal psychology* 100.1 (1991): 98.
- Horwitz, Elaine K., Michael B. Horwitz, and Joann Cope. "Foreign language classroom anxiety." *The Modern language journal* 70.2 (1986): 125-132.
- Horwitz, Elaine K., Michael B. Horwitz, and Joann Cope. "Foreign language classroom anxiety. In E. K. Horwitz & D. J. Young (Eds.), *Language anxiety: From theory and research to classroom implication* (pp. 27-36). Englewood Cliffs, New Jersey: Prentice Hall.
- Huang, H. "The relationship between learning motivation and speaking anxiety among EFL non-English major freshmen in Taiwan." *Unpublished master's thesis, Chaoyang University of Technology* (2004).
- Inthakanok, I. "Speaking anxiety of a group of Thai EFL university students: Its sources and coping strategies." *Journal of Education Silapakorn University, 1* 2 (2009): 82-101.
- Johns, Robert. Likert items and scales. Retrieved from <http://survey.net.ac.uk/sqb/datacollection/likertfactsheet.pdf>. (2010).
- Kirkpatrick, Kristin LeClair. *Enhancing self-compassion using a Gestalt two-chair intervention*. Diss. 2005.
- Kitano, Kazu. "Anxiety in the college Japanese language classroom." *The Modern Language Journal* 85.4 (2001): 549-566.
- Krashen, Stephen. "Principles and practice in second language acquisition." (1982).
- Leary, Mark R., et al. "Self-compassion and reactions to unpleasant self-relevant events: the implications of treating oneself kindly." *Journal of personality and social psychology* 92.5 (2007): 887.
- Leong, Lai Mei, and Seyedeh Masoumeh Ahmadi. "An Analysis of Factors Influencing Learners' English Speaking Skill." (2017): 34-41.
- Spada, Nina. "How language are learned." (2006).
- Liu, Meihua. "Anxiety in oral English classrooms: A case study in China." *Indonesian JELT: Indonesian Journal of English Language Teaching* 3.1 (2007): 119-137.
- Liu, Meihua, and Jane Jackson. "An exploration of Chinese EFL learners' unwillingness to communicate and foreign language anxiety." *The Modern Language Journal* 92.1 (2008): 71-86.
- MacIntyre, Peter D., Kimberly A. Noels, and Richard Clément. "Biases in self-ratings of second language proficiency: The role of language anxiety." *Language learning* 47.2 (1997): 265-287.
- Miles, Matthew B., and A. Michael Huberman. *Qualitative data analysis: An expanded sourcebook*. sage, (1994).
- Newton, Jonathan M., and I. S. P. Nation. *Teaching ESL/EFL listening and speaking*. Routledge, (2020).
- Neff, Kristin D. "The development and validation of a scale to measure self-compassion." *Self and identity* 2.3 (2003): 223-250.
- Neff, Kristin. "Self-compassion: An alternative conceptualization of a healthy attitude toward oneself." *Self and identity* 2.2 (2003): 85-101.
- Oral, Muradiye. *The relationship between dimensions of perfectionism, stressful life events and depressive symptoms in university students'a test of diathesis-stress model of depression'*. MS thesis. 1999.
- Öztürk, Gökhan, and Nurdan Gürbüz. "The impact of gender on foreign language speaking anxiety and motivation." *Procedia-Social and Behavioral Sciences* 70 (2013): 654-665.
- Öztürk, Gökhan, and Nurdan Gürbüz. "The impact of gender on foreign language speaking anxiety and motivation." *Procedia-Social and Behavioral Sciences* 70 (2013): 654-665.
- Pishghadam, Reza, and Fahimeh Akhondpoor. "Learner Perfectionism and its Role in Foreign Language Learning Success, Academic Achievement, and Learner Anxiety." *Journal of Language Teaching & Research* 2.2 (2011).
- Price, Mary Lou. "The subjective experience of foreign language anxiety: Interviews with highly anxious students." *Language anxiety: From theory and research to classroom implications* (1991): 101-108.

- Rice, Kenneth G., Jeffrey S. Ashby, and Karen J. Preusser. "Perfectionism, relationships with parents, and self-esteem." *Individual psychology* 52.3 (1996): 246.
- Rice, Kenneth G., Jeffrey S. Ashby, and Robert B. Slaney. "Self-esteem as a mediator between perfectionism and depression: A structural equations analysis." *Journal of counseling psychology* 45.3 (1998): 304.
- Richards, Jack C. "Con conversationally speaking: approaches to the teaching of conversation." *The language teaching matrix* (1990): 67-85.
- Scovel, Thomas. "The effect of affect on foreign language learning: A review of the anxiety research." *Language learning* 28.1 (1978): 129-142.
- Shumin, Kang. "Factors to consider: Developing adult EFL students' speaking abilities." *Methodology in language teaching: An anthology of current practice* 12 (2002): 204-211.
- Subaşı, Gonca. "What are the main sources of Turkish EFL students' anxiety in oral practice?." *Turkish Online Journal of Qualitative Inquiry* 1.2 (2010): 29-49.
- Vietnam, Vietnam. "Factors Affecting Students' Speaking Performance at Le Thanh Hien High School." *Asian Journal of Educational Research* Vol 3.2 (2015).
- Woodrow, Lindy. "Anxiety and speaking English as a second language." *RELC journal* 37.3 (2006): 308-328.
- Zhiping, Diao, and Shamala Paramasivam. "Anxiety of speaking English in class among international students in a Malaysian university." *International Journal of Education and Research* 1.11 (2013): 1-16.

THE USE OF THE HISTORY OF MATHEMATICS IN TEACHING-LEARNING PROCESS: THE PERSPECTIVES OF FACULTY MEMBERS AND TEACHERS¹

Abstract: The aim of this study was to investigate the faculty members' and the middle school mathematics teachers' perspectives regarding the use of the history of mathematics in the learning-teaching process of mathematics. As a phenomenological study, the qualitative data were collected through semi-structured interviews from 27 middle school mathematics teachers and seven faculty members and then, subjected to the content analysis. The findings revealed that both teachers and faculty members believed that using the history of mathematics is a worthwhile effort, with the potential to not only provide meaningful learning opportunities for students but also enrich teachers' professional development. However, it was also found that lack of historical perspective in the curriculum, teachers' inadequate knowledge, time constraint, no room for the history of mathematics in the textbooks and exams, overloaded curriculum and students' inadequate desire to learn were some of the reasons for rarely-use of the history of mathematics. Based on the overall findings of the study, it is concluded that teacher education (both pre-service and in-service), the structure of mathematics curriculum, teachers' and students' characteristics were the most important dynamics to integrate the history of mathematics into teaching effectively.

Keywords: the history of mathematics, mathematicians, mathematics teachers

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INTRODUCTION

Mathematics is a branch of science that manifests itself in every field from the smallest building blocks to the most complex formations in the universe. Striking reflections of mathematics can be seen in countless natural settings including the number of daisy flower petals, the intersecting spirals of pine seeds on cones, the elliptical orbits of the planets around the sun, the fixed value of division of the circumference by the diameter of all circles, or the helix curve shape of ivy around trees (Altun, 2008; Sertöz, 2011). Not only Galileo's description of nature as "a book written in the language of mathematics" (as cited in Topdemir, 2011, p.104) and also Sertöz's description mathematics as "creator's hints left in the nature" (2011, p.3) imply that mathematics has in fact existed in the universe since the genesis.

Since the first years of history, human beings started laying the foundations of mathematics in order to solve the daily needs, encountered problems, and to understand the universe. The earliest mathematical activity started approximately 5000 B.C. around Egypt, Mesopotamia, China, and India (Baki, 2014; Bell, 1992). The discipline gradually flourished as number systems were invented by the Babylonians, the Egyptians, the Chinese, and the Greeks fulfilling their daily needs; mathematical and arithmetic studies were carried out by mathematicians such as Pythagoras and Euclide; and Plato performed studies on irrational numbers and smooth polyhedrons (Abdulhay, 2014; Baki, 2014; Cajori, 1919/2014). In the following years, significant progress were made in the finest calculation of trigonometric values, in algebra, cubic equations, and logarithm, derivatives, integral, and complex numbers, eventually resulting in an exponential accumulation of mathematical knowledge (Baki, 2014; Cajori, 1919/2014; Zeki Bey, as cited in Demir, 2004). After the 19th century, developments in mathematics have spread across the world; as a result, significant numbers of mathematicians in different parts of the world have contributed to mathematics in various ways.

In the 21st century, understanding of mathematics has of utmost importance since learning mathematics provides individuals to develop scientific thinking skills, apply them to different situations, produce original ideas, make research, gain self-regulation skills, and develop self-confidence (Hattatoğlu, 2010; Işık, Çiltaş & Bekdemir, 2008; Karakurumer, 2003; National Council of Teachers of Mathematics, 2000; Rizki & Priatna, 2019). Putting emphasis on the essence of mathematics literacy, Ojose (2011, p.91) stated that "Mathematics is so entwined with today's way of life that we cannot fully comprehend the information that surrounds us without a basic understanding of mathematical ideas". According to the framework of the Programme for International Student Assessment (PISA) 2021, mathematical literacy is "an individual's capacity to reason mathematically and to formulate, employ, and interpret mathematics to solve problems in a variety of real world contexts. ... It assists individuals to know the role that mathematics plays in the world ..." (OECD, 2018; p.7). Tekin and Tekin (2004) also argued that mathematically literate person has knowledge and skills about the following areas: (a) content area literacy; (b) mathematical thinking process; (c) up-to-date knowledge of mathematics, and (d) historical evolution of mathematics. In a similar vein, Steen (2001) acknowledged "Cultural Appreciation" as one of the fundamental elements for the concept of quantitative literacy, and defined as "Understanding the nature and history of mathematics, its role in scientific inquiry and technological progress, and its importance for comprehending issues in the public realm" (p.8). In this respect, being mathematically literate requires understanding of the historical side of mathematics including not only evolution of mathematics as a discipline but also the leading mathematicians and their contributions. Comparing the perspectives from past to present, Ding (2019) also emphasized the essence of the history of mathematics as follow:

"In the past, it was generally believed that the study of mathematics history was an elegant, sunny and white snow-like model. However, in today's era, mathematics teaching ... pays more attention to the cultivation of ideological methods and emotional attitudes and values. The history of mathematics has thus got rid of the situation ... and it has gradually been valued ..." (p.783)

The history of mathematics is a field of study that put forwards past obstacles and difficulties which mathematicians have overcome in the development of mathematics; reveals mathematics' dynamic nature (Liu, 2003) and "shows the evolutionary and progress of mathematical knowledge through civilizations" (Baki, 2014, p.3). In other words, history of mathematics is a comprehensive area that deals with the growth

processes of mathematics, the lives, works, achievements or failures of leading figures who have contributed to mathematics, the social and cultural dimension of mathematics, and development and progression of mathematical knowledge (Bidwell, 1993; Burton, 2003; Eves, 1990; Katz, 1993; Otte, 2007; Pepe, & Guerraggio, 2017; Yee and Chapman, 2011). Studies on the use of history of mathematics in mathematics education first appeared in the 1970s. The research in this area is now being supported by various world-wide institutions and organizations concerned with mathematics education (e.g. the International Commission on Mathematical Instruction [ICMI]) (Clark, Kjeldsen, Schorcht, Tzanakis and Wang, 2016; Fauvel and Maanen, 2002; Fried, 2001).

The findings of various research studies pointed out that the use of history of mathematics in learning and teaching process bears potential contributions to both students and teachers. Specifically, it is stated that the history of mathematics helps students to comprehend the formation of mathematical thinking, improve problem-solving skills, assess mathematical topics in a comparative way between the past and present, establish relationships between mathematical topics and other disciplines, and appreciate that mathematics is a constantly evolving discipline (Alpaslan, 2011; Ho, 2008; Jankvist, 2009; Lim & Chapman, 2015; Liu, 2003; Sullivan, 1985; Wilson and Chauvot, 2000). Besides, the history of mathematics has a supporting role for teachers to gain different perspectives, to comprehend mathematical facts unnoticed before, and to move from product-oriented instruction to process-oriented (Radford, 2014). Teachers, while blending their qualified knowledge about the history of mathematics with in-class activities, can develop their creativity and also acknowledge the reason for teaching each specific topic. As a result, their teaching skills might improve (Furinghetti, 1997; Guillemette, 2017; Haile, 2008; Kjeldsen, 2011; Liu, 2003; Nataraj & Thomas, 2009; Pengelley, 2002). Bidwell (1993, p.461) notes that students think mathematics “as a closed, dead, and emotionless island; where teachers can rescue them for replacing them on an alive, open, full of emotion, and always interesting mainland” when they integrate history of mathematics in the learning and teaching of mathematics. In the literature, there have been numerous studies emphasizing that the integration of mathematics history into the learning and teaching process might provide more meaningful and real-life connected learning environment, yet there have been some factors affecting the development of such environment. According to the literature, such issues as no room for the history of mathematics in the curriculum, lack of instructional resources and/or materials, teachers’ limited or lack of knowledge about the history of mathematics, etc. (Baki & Yıldız, 2010; 2016; Başibüyük, & Şahin, 2019; Sözen, 2013; Fried, 2001; Siu, 2007; Niitsuma & Nagaoka, 2014; Tan-Şişman & Kirez, 2018).

Although there have been various research studies conducted with mathematics teachers on why’s and how’s of the mathematics history, to our knowledge, there is no research study on the views of mathematicians regarding the use of the history of mathematics. Ding (2019) argued that neither theory (the pure knowledge of mathematics history) nor practice (the pure knowledge of how to teach mathematics) has produced better ways to integrate the history of mathematics. In this respect, the purpose of the present study was to investigate the views of faculty members’ and mathematics teachers’ regarding the use the history of mathematics in the learning-teaching process of mathematics. More specifically the study seeks to answer the following research questions:

1. What are the faculty members’ opinions about the use of the history of mathematics in learning and teaching process?
2. What are the the mathematics teachers’ opinions about the use of the history of mathematics in learning and teaching process?

It is believed that portraying comparatively the views of faculty members, who have deep theoretical knowledge of the mathematics discipline, and the mathematics teachers, who are practitioners of the learning-teaching process, about why and how to use the history of mathematics is essential to promote theory-enhanced practice for the integration of the history of mathematics. It is also expected that the results of this study will be valuable for many stakeholders. Firstly, the findings will contribute to mathematics teachers who are one of key actors in interpreting and transforming written curriculum into the learning and teaching process. In addition to the mathematics teachers, the findings of this study may also be worthwhile for curriculum developers to provide comprehensive bases of why and how the history of mathematics should be used in mathematics education in terms of the different points of view. Besides, this study might

provide helpful insights and implications, emerged from not only the experiences of the mathematics teachers but also from the suggestions of the faculty members with their in-depth content knowledge, both for curriculum development and implementation process.

METHOD

RESEARCH DESIGN

In this qualitative study, the phenomenological approach that focuses on “to seek reality from individuals’ narratives of their experiences and feelings, and to produce in-depth descriptions of the phenomenon” (Yüksel & Yıldırım, 2015, p.1) was used. Since the focus of this study was on the insights of faculty members and mathematics teachers about why and how the history of mathematics should be used in teaching and learning process; the phenomenological research design was employed to understand how a phenomenon, which in this case was the use of mathematics history in learning and teaching processes, comprehended among different stakeholders.

PARTICIPANTS

The study was conducted with seven faculty members working at different Turkish public universities and 27 mathematics teachers working at the public middle schools located in six central districts of Ankara. The faculty members were selected by convenient sampling. Through searching on the official web pages of the Turkish state universities, the researchers listed the faculty members who were working as a full-time faculty at the departments of mathematics or mathematics education and were interested in the history of mathematics. Then, the faculty members were selected on the basis of their accessibility and convenience to the researchers and they were invited to the study via e-mail. As given in Table 1, totally seven faculty members from five different state universities volunteered to take part in this study. Among seven faculty members, four of them were working as a full-time faculty at the department of mathematics education and three were at the department of mathematics. With regard to the K-12 level teaching experience, three of them have experience of 1-5 years, three have no experience and one has experience of 5-10 years. In addition, while the majority of the faculty members ($n=6$) did not take any course about the history of mathematics during their undergraduate or graduate education, four of them lectured the history of mathematics course at undergraduate and/or graduate level.

Table 1. The Faculty Members’ Profiles

Faculty Members’ Profiles	F1	F2	F3	F4	F5	F6	F7
Gender	Male	Male	Male	Male	Male	Male	Male
Age	40-45	61-65	50-55	50-55	50-55	55-60	61-65
Title	Asst. Prof. Dr.	Assoc. Prof. Dr.	Prof. Dr.	Prof. Dr.	Prof. Dr.	Prof. Dr.	Prof. Dr.
University	A	B	C	D	B	E	C
Department	Math	Math Ed.	Math Ed.	Math	Math Ed.	Math Ed.	Math
K-12 teaching experience	-	5-10	1-5	-	1-5	1-5	-
Taking HoM* course	No	No	No	No	No	Yes	No
Lecturing HoM course	No	Yes	No	No	Yes	Yes	Yes

*HoM: The history of mathematics

Further, the mathematics teachers were selected through maximum variation sampling method that allows researchers to collect in-depth information and mirror divergent perspectives rather than making a generalization (LeCompte, Preissle, & Tesch, 1993; Patton, 2015). In this scope, 27 math teachers from 12 different middle schools located in Çankaya, Yenimahalle, Etimesgut, Keçiören, Pursaklar, and Altındağ districts of Ankara took part on a voluntary basis. Besides, the central district where the school located, the population of the schools, the types of schools (double-shift [DS]/single-shift [SS]), years of experience in teaching, and educational background was taken into account while determining the participants. As seen

in Table 2, 23 female and four male mathematics teachers were participated to the study. With regard to teachers' years of experience in teaching, it ranges from one to 35 years, while the majority ($n=9$) has experience of 1-5 years. In addition, 22 of the participants graduated from faculty of education and five from faculty of science.

Table 2. The Mathematics Teachers' Profiles

Teachers	Gender	Graduation	District	Teaching experience	School population	Type of schooling
T1	Male	F.ED*	Keçiören	26 and above	1000-1499	DS
T2	Female	F.ED	Keçiören	11-15	1000-1499	DS
T3	Female	F.ED	Etimesgut	11-15	1500-1999	DS
T4	Female	F.ED	Altındağ	1-5	1000-1499	DS
T5	Female	F.ED	Yenimahalle	11-15	1000-1499	DS
T6	Female	F.ED	Pursaklar	1-5	1000-1499	DS
T7	Female	F.ED	Etimesgut	6-10	500-999	SS
T8	Female	F.ED	Etimesgut	16-20	500-999	SS
T9	Female	F.ED	Yenimahalle	11-15	1500-1999	DS
T10	Female	F.ED	Altındağ	1-5	500-999	DS
T11	Male	F.SC**	Yenimahalle	16-20	1000-1499	DS
T12	Female	F.ED	Keçiören	1-5	1000-1499	DS
T13	Female	F.SC	Keçiören	26 and above	1000-1499	DS
T14	Female	F.ED	Altındağ	1-5	500-999	DS
T15	Female	F.ED	Pursaklar	1-5	1500-1999	DS
T16	Female	F.SC	Altındağ	1-5	1000-1499	DS
T17	Female	F.ED	Çankaya	6-10	500-999	DS
T18	Female	F.ED	Pursaklar	1-5	1500-1999	DS
T19	Female	F.ED	Çankaya	11-15	500-999	SS
T20	Female	F.ED	Yenimahalle	11-15	1000-1499	DS
T21	Female	F.SC	Yenimahalle	21-25	1500-1999	DS
T22	Female	F.ED	Pursaklar	11-15	1500-1999	DS
T23	Male	F.ED	Çankaya	21-25	500-999	SS
T24	Female	F.ED	Çankaya	16-20	500-999	SS
T25	Female	F.SC	Çankaya	16-20	500-999	SS
T26	Female	F.ED	Yenimahalle	6-10	1500-1999	DS
T27	Female	F.ED	Pursaklar	1-5	1000-1499	DS

F.ED*: Faculty of Education F.SC**: Faculty of Science

DATA COLLECTION INSTRUMENTS

In this study, Faculty Members Interview Form (FMIF) and Teachers Interview Form (TIF) were developed by the researchers and used as the main data collection instruments. While developing the interview schedules, first of all the literature was reviewed in detail to outline the important issues regarding the use of the history of mathematics in teaching and learning process. Through synthesizing the information gathered from the literature, the draft interview schedules were written in line with the research questions. Afterwards, the drafts went through revision with the help of expert opinions gathered from two faculty members from the department of Educational Sciences and two mathematics teachers. Based on feedbacks received from the experts, the wording of some questions was changed and some follow-up questions and prompts were either added or removed in order to make questions more clear and understandable. Then, the draft TIF was piloted with three mathematics teachers and FMIF was piloted with two faculty members to determine whether the questions make sense to the interviewees and as a result, no changes were applied to the drafts. In this respect, the final interview schedules were composed of the questions about demographic information (e.g. age, educational background, etc.) and the use of history of mathematics in learning and teaching process (e.g. "What is your opinion about the integration of the history of mathematics in teaching and learning of mathematics?", "What do you think about the current situation of the use of the history of mathematics in classrooms?", "What should be done to use the history of mathematics effectively?").

DATA COLLECTION AND ANALYSIS

Before the collection of the data, the necessary permissions from the Ethics Commission of Hacettepe University and the Ministry of National Education were obtained. In order to conduct interviews with mathematics teachers, the researchers contacted with the principals of the selected schools for scheduling the short meetings to introduce the study. Then, the interviews were conducted with 27 mathematics teachers who had volunteered to participate in the study. The faculty members were invited to the study via e-mail and totally seven faculty members from five different state universities volunteered to take part in the study. All interviews were audio recorded and lasted approximately between 30 to 45 minutes.

The collected data were subjected to content analysis. The steps followed during the content analysis process were: (1) transcribing the raw data, (2) organizing and preparing data for analysis, (3) reading through all data, (4) coding the data, (5) generating themes or description, (6) interrelating themes/description and (7) interpreting the meaning of themes/descriptions (Creswell, 2013; Yıldırım & Şimşek, 2013). In this respect, first of all, the interviews were transcribed word by word on a word document. Then transcribed data were read thoroughly for a few times considering the research problems to identify the conceptual framework. The coding was done by considering approximately every expression used by participants not missing any important details. Finally, the codes focusing/implying the similar ideas were combined under categories and themes. The teachers were coded as T1 through T27; while the faculty members were represented with F1 to F7. The opinions of the participants were reported with direct quotations.

TRUSTWORTHINESS

Trustworthiness of a research is characterized as provisions or actions that establish reliability and persuade readers about accuracy of the findings (Lincoln & Guba, 1985). To enhance trustworthiness of the present study, several strategies were used such as credibility, transferability, dependability, and confirmability. To establish credibility, triangulation via data sources (Shenton, 2004) was carried out among the teachers' and field experts' perspectives. The codes in data analysis were submitted to one faculty member from the department of Educational Sciences, who have knowledge of the research problem and qualitative research methods, as required by peer debriefing for credibility. In addition, interviews were recorded with a recording device with participants' consent and the recordings were verified by participants at the end of the interviews for member checks. Further in order to help transferability of the study, the scope and limitations of this research were set out clearly and the methodology of the study was explained thoroughly. Besides, the data were enriched by maintaining quotes from participants as well as displayed in details in order to provide thick description for the sake of trustworthiness of the study. During the study confirmability, namely "the qualitative investigator's comparable concern to objectivity" (Shenton, 2004; p.72), were provided by making use of audit trail and triangulation. The detailed methodological descriptions were made to allow integrity of research results to be investigated. In addition, the data were reported by reducing the effect of researcher bias. Lastly, Miles and Huberman's (1994) formula ($\text{Reliability} = \frac{\text{Number of agreements}}{(\text{Agreements} + \text{Disagreements})} \times 100$) was used for reliability analysis. In this respect, two randomly selected transcriptions of the participants (two from teachers, two from faculty members) were coded by one researcher and one expert separately and independently. The agreement between coders was found as .87 for TIF and .84 for FMIF. To solve the disagreements, both sets of data were compared, and through discussion, the disparities were reconciled to reach a consensus.

RESULTS

THE VIEWS OF THE FACULTY MEMBERS REGARDING THE USE OF HISTORY OF MATHEMATICS

The findings revealed that all of the faculty members expressed that the history of mathematics should be used in learning and teaching process. They believed that students could benefit from using the history of mathematics in the classroom as it provides opportunity to (a) internalize the idea that mathematics is a human creation, (b) enhance their learning, (c) understand the process of mathematical knowledge formation, (d) gain a rich perspective on mathematics and (e) appreciation of mathematics. In addition, the

faculty members stated that making use of the history of mathematics might help for mathematics teachers to enhance their content knowledge and support to implement student-centered instruction. In the Table 3, the results were summarized with quotations from the faculty members' views.

Table 3. The Benefits of Use the History of Mathematics

<i>Benefits for Students</i>	<i>f</i>	<i>Faculty Members' Views</i>
Internalizing the idea that mathematics is a human creation	3	"...Most of the students leave the lessons with a wrong impression like this: 'What I've learned right now ... is came out of the minds of a mathematician or a few mathematicians ... as a whole like the way the teacher taught me'. In fact, what one needs to know what stages have been through for bearing that theorem, its simple forms, the issues inspired that theorem." F7
Enhance students' learning	2	"...According to the Fuzzy logic, there are gray areas between zero and one. You need to rate them, too. So it's been a lot of application to technology. For example, dishwashers, you set the program as very dirty, less dirty or even lesser dirty... That's Fuzzy logic! Now, if this kind of information is given during the lesson or on textbook or a teacher draws students' attention by mentioning them in two or three minutes; s/he can transform abstract structure of mathematics into concrete one." F5
Understanding the process of mathematical knowledge formation	1	"You know, students always ask about mathematics 'What does that do? Where does it come from?' It is taught in a very abstract way. When it is taught with the historical perspective, students can be able to see that in reality, every concept was born by a need, or this need may be both the need of physics and math or came as a need in mathematics itself, but nothing contains an abstract nature in the sense that students think. Abstract but that abstraction surely solves a problem responding to something. That is the biggest advantage of the historical perspective." F4
Gaining a rich perspective of mathematics	1	"One day I asked; 'Who is this Binomial, what is the nationality?' etc. Some of the students said German, some said British. They think Binomial is a mathematician! There is no mathematician called Binomial!... Then I felt that we should look at the history of mathematics. For instance, the Pythagoras Theorem, who is Pythagoras? Is Pythagoras a human? etc. Instead of focusing only the memorization of the theories, we need to provide students with a deep and broad view of mathematics." F2
Appreciation of mathematics	1	"No matter which country you go to around the world, you see that mathematics and mathematicians are always perceived differently. Mathematics is always regarded as difficult, like in our country, but doing math is considered as the indicator of a much higher standard. It is written in many articles, mathematics has a door opener position for professional career, it is true for not only in our country, but for the whole world. This means that through the history of mathematics, students can realize that how mathematics is valuable and important." F5
<i>Benefits for Teacher</i>	<i>f</i>	<i>Faculty Members' Views</i>
Enhancing the content knowledge	1	"The strength of the use of history of mathematics in terms of a teacher, s/he can teach better. Because s/he gains knowledge about where the concepts come from, how the problems are related to." F4
Supporting student-centered instruction	1	"The history of mathematics is one of the best medium of instruction for the teachers who would like to design student-centered learning environment; by making use of the examples chosen from the history of mathematics, s/he might group students to work together and implement problem solving method." F6

Some of the faculty members also mentioned such restricting-issues related to the use of history of mathematics as "loss of prestige and trust" and "extra workload" due to teachers' poor/lack of knowledge. In Table 4, the results were summarized with quotations from the faculty members' views.

Table 4. The Restricting-issues about Use of the History of Mathematics

<i>Teacher-related issues</i>	<i>f</i>	<i>Faculty Members' Views</i>
Loss of prestige and trust	2	"While teaching Binominal Theorem, one of the students asks, 'When did Binomial live, my teacher?' if the teacher doesn't know, s/he is ruined there! Ruined!" F2
Extra workload	1	"The history of mathematics is a completely different area. A math teacher is not normally expected to know too much about the history of mathematics... It is an additional burden for her/him to deal with the history of mathematics... Spending extra efforts on it spending more time on..." F4

Further, the results indicated that all faculty members thought that the history of mathematics is almost never integrated in current mathematics lessons due to several reasons as summarized in Table 5.

Table 5. The Reasons for the Rarely-use of the History of Mathematics

Reasons	f	Faculty Members' Views
Teachers' inadequate knowledge about the history of math	4	"Since the teacher did not get such training, s/he has not any experience or accumulated knowledge of it (the history of math), the teacher is the biggest obstacle already. S/he is not trained on that ... the most crucial thing is that the teacher is at that depth; aware of that work. First s/he is introduced to the use of it (the history of math) become familiar with the activities then, s/he is able to use of it when becomes a teacher in the future." F6
		"Of course, s/he (a teacher) needs to have adequate knowledge of the developmental journey of mathematics. In fact, if s/he has enough knowledge, s/he automatically starts to talk about it at least for two minutes. So s/he says it anyway. However, if a teacher cannot have enough knowledge, s/he cannot reflect it. The teacher is particularly important here." F5
Exam-oriented education	3	"Above all, there are exams. As long as these exams are here, it (the history of math) will be like an additional burden for students because the goal is to get ready for the exams not to learn mathematics at all. It is very difficult to use the history of mathematics in such a system, we have to accept it." F4
MoNE's uninterested approach	2	"MoNE should understand the importance of it (the use of the history of math). In order to do this, a lot of work has to be done. We need to explain the importance of the history of mathematics to them (MoNE). There is also an obstacle as well. For instance one is that the decision makers are not aware of the importance of the issue enough and also they underestimate how to integrate this issue into education and class. They think that it will be done as one says 'Now do this!' but it is not the case in the class indeed." F3
Overloaded curriculum	1	"Teachers are required to follow and complete the curriculum but one can use the history of mathematics if s/he wants. It looks like the main obstacle." F5
Lack of historical perspective in the curriculum	1	"Well, there's no obstacle. Indeed, there is no room for it (the history of math) in the curriculum, so it is not reflected. But if the curriculum includes it, I guess that our students will do it with pleasure. Just put it in, I don't know why it is not taken into consideration, it must be included in the curriculum. Because it is really needed. Look, we recall Pythagoras, but the student should be able to say "Pythagoras was someone, who like that and did something, happened before Christ" and like that. For example, we always call the Euclidean Theorem. Who is this Euclid, isn't it? Here we call the Euclidean Geometry. Well, he must be mentioned in geometry, if not it is incomplete." F2
Teachers' extra responsibilities	1	"The man (teacher) has the concern of subsistence, does not earn enough money, plus, there is a lot of burden on him, then he is educator... when come to school, he has to deal with such issues as making a lesson plans, activities, attending meetings and so on. So teacher is already under very big burden. If there is no burden and extra loads, it (the use of history of math) would be possible. However, it's been a big problem since the past, and I don't think it's overcome at the moment." F7

Lastly, the faculty members proposed the ways to effectively integrate the history of mathematics in the teaching and learning process. Their recommendations, as presented in Table 6, focused on mathematics curriculum, and teacher education.

Table 6. The Faculty Members' Recommendations for Effective Use of History of Mathematics

Faculty Members' Recommendations	f
Inclusion of the history of mathematics in the curriculum	4
Organizing student-centered learning environment	3
Inclusion of the history of mathematics course in pre-service teacher education program	2
Providing in-service training programs	2
Preparing instructional materials and resources about the history of math	1
Inviting more faculty members having deep knowledge about the history of math to the curriculum development commissions	1

THE VIEWS OF THE MATHEMATICS TEACHERS REGARDING THE USE OF HISTORY OF MATHEMATICS

The findings revealed that apart from one teacher, all of the mathematics teachers expressed that the history of mathematics should be used in the learning and teaching process. As given in Table 7, the teachers stated that using the history of mathematics was a worthwhile effort, with the potential to not only provide meaningful learning opportunities for students and also enrich teachers' professional development. Besides,

the mathematics teachers stated that making use of the history of mathematics might contribute to the teaching process of mathematics.

Table 7. The Benefits of Using of the History of Mathematics

<i>Benefits for students</i>	<i>f</i>
Understanding the process of mathematical knowledge formation	8
Enhancing their learning	6
Being encouraged to do research/science	5
Internalizing the idea that mathematics is a human creation	3
Gaining a rich perspective on mathematics	2
<i>Benefits for teachers</i>	<i>f</i>
Enhancing the content knowledge	8
Gaining prestige	5
Improving job satisfaction	2
Enhancing/strengthening communication with students	1
<i>Benefits for teaching process</i>	<i>f</i>
Supporting meaningful learning	18
Leading permanent understanding	3

The teachers pointed out the students may benefit from using the history of mathematics in the classroom as it provides opportunity to (a) understand the process of mathematical knowledge formation, (b) enhance their learning, (c) being encouraged to do research/science (d) internalize the idea that mathematics is a human creation, and (e) gain a rich perspective on mathematics. In the Table 8, the results were summarized with quotations from the teachers' views.

Table 8. The Students' Benefits from the History of Mathematics

<i>Students' Benefits</i>	<i>f</i>	<i>Middle School Mathematics Teachers' Views</i>
Understanding the process of mathematical knowledge formation	8	"Children want to know how mathematics is discovered. They wonder where will it work, where did it come from." T16
		"It [the history of mathematics] could be used for explaining why we need mathematics, such as why it was discovered, what the initial driving forces were in the past." T25
Enhancing their learning	6	"... a few years ago, when I learned why mathematics emerged and its history, I realized that I better understood mathematics, so I think that the students could understand better in that way." T7
		"I think it's important to lay down the mathematical grounds of the topic." T23
Being encouraged to do research/ science	5	"The students sometimes wonder while I am teaching, 'How did they discover it teacher?', 'Can we discover something, too?', 'Is there anything discovered recently?' they ask. I say 'Yes you can.'" T13
		"As a result, when we investigate our own history, students can say: 'If people like me did it, I can do it' and be encouraged." T18
Internalizing the idea that mathematics is a human creation	3	"With the history of mathematics, it is possible to help students to figure out that mathematics is invented by people, not created in a vacuum, it is the product of human, and thus can be solved and done." T11
Gaining a rich perspective on mathematics	2	"To diversify emergence of numbers, to relate types of numbers... to make feel the numbers other than the all known classical natural numbers, whole numbers known to children, I mean they should see the existence of other numbers, they could grow the thought that these numbers are needed as well, they are used in math indeed." T5

The middle school math teachers also pointed out that the use of the history of mathematics may help for teachers to "enhance their content knowledge", "gain prestige", "improve job satisfaction", and "enhance/strengthen communication with students". The results on the benefits of using the history of mathematics for teachers were summarized in Table 9.

Table 9. Teacher's Benefits from Using the History of Mathematics

<i>Teachers' Benefits</i>	<i>f</i>	<i>Middle School Mathematics Teachers' Views</i>
Enhancing the content knowledge	8	"Although I am a mathematics teacher, I have not done much research on the history of mathematics. I never questioned where this or that came from. But when we include it in the lesson, we will inevitably need to get prepared before the lesson. If we are expert in the field of mathematics, memorizing the formulas is not enough; indeed we should learn its history" T25 "As a teacher, knowing the history of your own lesson is an important thing. At least, s/he will be aware of what s/he is doing." T7
Gaining prestige	5	"...I believe that it makes the teacher more powerful to talk about the history of mathematics while teaching. Because the student might say 'Look! The teacher knows this, too'. It makes the teacher stronger." T3 "...The student considers his/her teacher as a well-equipped with cultural and academic issues, subject matter expert. In this sense, the use of history of mathematics would be nice." T22
Improving job satisfaction	2	"We did not have the opportunity to practice, because the courses we took at the university were theoretical. Here, at least I have the opportunity to use some of the theoretical knowledge that I learned. Saying 'This is something discovered by this person', 'This is something discovered by that person' or showing their pictures, I also enjoy." T4
Enhancing/strengthening communication with students	1	"It also helps to connect or touch with the student. Since we are working hard on numbers, for instance, we cannot do anything special to touch with student, yet the history of mathematics offers some ways." T9

The mathematics teachers participated in the study stated that using the history of mathematics might also contribute to improve mathematics teaching in terms of meaningful learning and permanent understanding. In Table 10, the results were summarized with quotations from the teachers' views.

Table 10. The Benefits of Using the History of Mathematics for Teaching Process

<i>Benefits for Teaching Process</i>	<i>f</i>	<i>Middle School Mathematics Teachers' Views</i>
Supporting meaningful learning	18	"If the student knows its history, learns what it is for, then s/he listens more willingly. The lesson will be more productive. It has a positive effect on my class." T21 "...It draws attention, for example, when I teach, somewhere during the lesson, I say: 'While the Egyptians were building the pyramids, they used similarity.' or 'Thales did this and that' and so on. It draws their [students'] attention..." T3
Leading permanent understanding	3	"...For example, I taught Thales Theorem about similarity. The students immediately said 'Oh, this is a Thales question; this is something that Uncle Thales did'. I believe it is more long-lasting because they keep in mind in this way." T4 "I've always questioned my children about why and where they came from, I use the proofs, to make learning more permanent" T19

On the other hand, some of the teachers emphasized that the use of history of mathematics in learning and teaching process may turn into disadvantage due to both student-related and teacher-related issues. As given in Table 11, the student-related issues were expressed as "finding the history of mathematics as boring"; "not being interested in the history of mathematics because it is not a requirement of the mathematics course" and "failing to associate the history of mathematics with mathematics". The teacher-related issue was stated as "loss of prestige and self-confidence" due to the teachers' poor knowledge about the history of mathematics.

Table 11. The Restricting-issues about Using the History of Mathematics

<i>Student-related issues</i>	<i>f</i>	<i>Middle School Mathematics Teachers' Views</i>
Finding the history of mathematics as boring	6	"Verbal things would be problem for a student who is used to work with numbers. S/he may not like it very much. Because some students just focus on the numbers while studying on math. The history of mathematics is not very interesting to them. This may be a negative thing for them." T6
		"Those who don't like history or social study lessons might be biased towards the history aspect of math." T25
Not being interested in the history of mathematics	6	"...Some students see this [the history of mathematics] as a waste of time because they are used to testing. Sometimes, I show videos about mathematicians, for example, I hear such voices as 'Teacher, let's solve tests', 'We have exam, will they be in the exam?' from students" T27
		"It may also seem like a waste of time for the students. They are totally focused on the exam; it may seem a bit of a waste of time for them." T10
Failing to associate the mathematics with its history	1	"Perhaps the history of mathematics will sound too abstract because they will not be able to associate it with mathematics much." T24
<i>Teacher-related issues</i>	<i>f</i>	<i>Middle School Mathematics Teachers' Views</i>
Loss of prestige and confidence	4	"You need to have a strong mastery of the subject matter. If you don't have a mastery of the history, you can say something wrong in the examples you give. If the student also reads in a book and claims that this knowledge is not like this but like that, then you may contradict with the student. Then you will lose his/her trust, as well as your prestige and self-confidence." T5

The results related to the teachers' current use of the history of mathematics in their classrooms revealed that only three teachers stated that depending on the topic, they integrate adequately the history of mathematics in learning and teaching process; while the rest of the teachers stated that they rarely use the history of mathematics due to the reasons given in Table 12.

Table 12. The Reasons for the Rarely-use of the History of Mathematics

<i>Reasons</i>	<i>f</i>	<i>Middle School Mathematics Teachers' Views</i>
Lack of historical perspective in the curriculum	9	"Because of the curriculum, I mean the history of math is not included in the curriculum. We follow the curriculum and thus, we do not have to explain or teach." T11
		"The curriculum is lack of the history of math, so there's a comfort due to that. But if it was included in the curriculum, I would have to mention it; at least I would have to get prepared for, spend some more time on it. I think I'm taking advantage of not having it in the curriculum." T22
Teachers' inadequate knowledge about the history of math	9	"I couldn't include it [the history of math] in every topic because I don't know that whether the other topics are related to it frankly. I'm trying to include it in the topics that I know. I don't know, if I knew I would include it and maybe use it more effectively." T3
		"If I had mastery on it [the history of mathematics], I would certainly discuss a bit with the students at the beginning of the lesson. Actually, I do not have much knowledge about the history of mathematics and also I have not research on it much, though it was my fault." T21
No room for the history of math in exams	7	"The fact that there is no question about it [the history of math] in the exams affects a lot. A student thinks 'Such questions will not appear in exams, so it doesn't matter whether I learn it or not.'" T24
		"...The system is also built on exam-based approach. Everything is measured by tests or written exams. Among them, there is nothing about the history of math. So, for students, the number of correct answers in a text is important. The history of mathematics is not asked in exams." T15
Time constraint	5	"I already have so much to cover in class, I have no time doing such activities as 'Wow, who found it', 'Where it came from' and so on. If we had more time, we could think how we could spend this time, maybe we could figure out the use of it [the history of math]. But we never have the chance to do that." T20
No room for the history of math in the textbooks	5	"I don't do anything particularly different from the textbook. The textbook approved by the Ministry of Education is not included in it, so I think that it is not necessary. In my opinion, if it is considered as essential, then it will be in the textbook." T8
Overloaded curriculum	2	"There are a lot of content. The curriculum is overloaded, and due to the covering all topics in the curriculum, we have problems with the use of it." T16
Students' inadequate desire to learn	2	"I mention it [the history of math] only when the students ask 'What it is used for'... We explain when the student asks a question but if they ask nothing, we don't talk about it. We start the lesson directly." T9

Lastly, the middle school mathematics teachers proposed the ways to effectively integrate the history of mathematics in the teaching and learning process. Their recommendations are presented in Table 13.

Table 13. The Teachers' Recommendations for Effective Use of the History of Mathematics

<i>Teachers' Recommendations</i>	<i>f</i>
Providing in-service training programs	20
Organizing student-centered learning environment	10
Inclusion of history of math in the curriculum	10
Preparing instructional materials and resources about history of math	8
Inclusion of history of math in textbooks	5
Reducing the intensity of the curriculum	3
Using the history of math in elective mathematics courses	3
Increasing the course hours	1
Inclusion of the history of math course in pre-service teacher education program	1

DISCUSSION AND CONCLUSION

The present study was carried out to investigate the faculty members' and the mathematics teachers' perspectives regarding use of the history of mathematics in the learning-teaching process of mathematics. The findings revealed that almost all of the middle school mathematics teachers and all of the faculty members believed that the use of the history of mathematics is necessary and important. The result is consistent with the findings from previous studies in the literature (Baki & Yıldız, 2010; Dejić & Mihajlovic, 2014; Hatisaru & Erbaş, 2012; Tokay, 2019; Yevdokimov, 2007).

In addition, both teachers and faculty members expressed that the use of the history of mathematics is a worthwhile effort, since the history of mathematics might help students to understand the process of mathematical knowledge formation, to enhance their learning, to gain rich perspective on mathematics. The previous studies in the literature support the findings of the study. For example, Ho (2008) argued that the history of mathematics helps students to understand the process of mathematical knowledge formation. Similarly, according to Liu (2003), students can better understand that mathematics is a constantly developing discipline with the use of the history of mathematics. Also, Siu (1993) stated that it can help students to gain a rich perspective of mathematics. Moreover, Tözlüyurt (2008) found out that mathematics lessons involving the activities selected from the history of mathematics can provide students to gain different perspective of mathematics. Similarly, the studies of Dickey (2001), Awasonya (2001), and Nataraj and Thomas (2009) also supported that the history of mathematics can support better understanding of mathematics. Besides, the study revealed that the use of history of mathematics may provide internalizing the idea that mathematics is a human creation for students. This result was also in compliance with Kaye's (2008) study. Hence, it can be concluded that the both teachers and faculty members appreciate the importance of the history of mathematics for offering more meaningful and enriched learning experiences to students. In other words, they seem to be aware of the potentials of integrating history of mathematics into learning and teaching process in designing well-qualified and rich mathematics learning environments. Moreover, the middle school math teachers and faculty members stated that the history of mathematics may help for teachers to enhance their content knowledge. Besides, the teachers expressed gaining prestige, improving job satisfaction and enhancing communication with students as the strengths of the use of history of mathematics, while the faculty members emphasized the student-centered instruction. In the literature, it is pointed out that teachers, while blending their qualified knowledge about the history of mathematics with in-class activities, can develop their creative skills and acknowledge the reason for teaching each specific topic. As a result, their teaching skills might improve (Furinghetti, 1997; Liu, 2003; Nataraj & Thomas, 2009; Pengelley, 2002). Furthermore, it is asserted in the literature that if the teachers are interested in the history of mathematics and integrate it in the learning-teaching process this may improve their knowledge, skills and attitudes about mathematics (Panasuk & Horton, 2013; Tymocsko, as cited by Liu, 2003). Similarly, in Ulusoy and Girit-Yıldız's study (2019) it is also found that the history of mathematics is necessary in order to enhance teachers' content knowledge and prestige. Besides, the middle school math teachers stated that the history of mathematics could support meaningful learning and lead permanent understanding and these results were supported with many research studies in the literature

(Fauvel & Maanen, 2002; Ness, as cited by Fried, 2001; Rickey, 1995). The previous studies also reported that the use of the history of mathematics in learning and teaching process could increase students' interest and curiosity towards mathematics and thus, it could support meaningful learning (Ersoy, 2015; Hatisaru & Erbaş, 2012; Tong, Loc, Uyen & Thi Y, 2019). In this respect, it can be said that the mathematics teachers who participated in the study were aware of the importance of the history of mathematics in the learning and teaching process of mathematics.

Besides the strengths, the participants mentioned some limitations about the use of the history of mathematics in classroom. The middle school mathematics teachers associated these limitations with both student- and teacher-related issues; while the faculty members linked them to only teacher-related issues. Both agreed on that teacher could lose their prestige and confidence if they have poor knowledge of the history of mathematics. In addition, some of the faculty members stated that if a teacher has poor knowledge on the history of mathematics, s/he has to deal with extra workload to comprehend and understand it. In this respect, it is concluded that teachers' poor/lack of knowledge was one of the reasons preventing teachers from integrating the history of mathematics in their class. The findings of the present study indicate similar patterns with the literature (Baki & Yıldız, 2016; Başbüyük, & Şahin, 2019). Unlike the faculty members, the middle school math teachers stated that the student-related issues, namely finding the history of mathematics as boring, not being interested in the history of mathematics and failing to associate the history of mathematics with mathematics, also affected their decision-making process whether to use the history of mathematics or not. There are some studies that underline the similar student-related factors affecting the use of history of mathematics in teaching process. For instance, in the Siu's list (1998) of negative effects of the history of mathematics on students, it was stated as "...find the history no less boring than mathematics" and "lack of assessment" (as cited by Tzanakis & Arcavi, 2000, p. 203). Hence, the use of history of mathematics in the learning and teaching process might be affected by students' characteristics (e.g. beliefs, attitudes towards math, readiness level, etc.) as well as the teachers' characteristics (e.g. pedagogical content knowledge and skills, etc.).

Moreover, the majority of the teachers stated that they rarely used the history of mathematics in their classes. Lack of historical perspective in the curriculum, teachers' inadequate knowledge about the history of mathematics, no room for the history of mathematics in the exams, time constraint, no room for the history of mathematics in the textbooks, overloaded curriculum and students' inadequate desire to learn were the reasons of rarely-use of the history of mathematics in the learning-teaching process stated by the teachers. Besides, all of the faculty members expressed that the use of the history of mathematics in the classes was limited because of the teachers' inadequate knowledge about the history of mathematics, exam-oriented education, MoNE's uninterested approach, overloaded curriculum, lack of historical perspective in the curriculum and teachers' extra responsibilities were the factors affecting the use of the history of mathematics in learning-teaching process. In this respect, the present study clearly revealed that both the teachers and the faculty members perceived the history of mathematics as complementary part of mathematics teaching, but they also underlined such dynamics as education system, curriculum, instructional materials, time dedicated to math lessons, etc., that undoubtedly affect teachers' decision on whether to integrate the history of mathematics or not. The findings of the present study coincide with the related literature. For instance, Fried (2001, p.394) stated that "Teachers must complete a great number of topics in a very short time...it is not surprising that teachers should resist introducing a program of history of mathematics despite its virtues." Similarly, Siu (2007) pointed out that it might be difficult to use the history of mathematics in learning-teaching process if teachers have inadequate knowledge about it and also the history of mathematics does not affect the students' grade. In addition, Sözen's (2013) study indicated that teachers are challenged while using the history of mathematics in their classes because of having inadequate knowledge about the history of mathematics. In the study of Baki and Yıldız (2016), the most important factors that seem to prevent teachers from using the history of mathematics in their classes are the poor quality of the historical parts in the textbooks, inadequate numbers of course hours and the pressure of the central exam. Similarly, Panasuk and Horton (2012) found that teachers avoid using the history of mathematics due to lack of adequate knowledge on the history mathematics as well as not knowing how to use it in their classes.

Furthermore, providing in-service training programs, organizing student-centered learning environment, inclusion of history of mathematics in the curriculum, preparing instructional materials and resources about history of mathematics and inclusion of the history of mathematics in pre-service teacher education programs are the recommendations stated by both middle school mathematics teachers and faculty members. In addition, teachers proposed some other ways to effectively integrate the history of mathematics into learning and teaching process such as inclusion of the history of mathematics in textbooks, reducing the intensity of the curriculum, using the history of mathematics in elective mathematics courses and increasing the course hours; while faculty members emphasized that inviting more faculty members having deep knowledge about the history of mathematics to the curriculum development commissions for using the history of mathematics effectively in learning and teaching process. As a result, it can be concluded that organizing the pre-service and in-service teacher education and mathematics curriculum are priorities for integration of the history of mathematics into learning and teaching process. In other words, it is clear that both the teachers and the faculty members in the study give priority in their suggestions to increasing teachers' level of knowledge about history of mathematics and improving the aspects of the curriculum. The present study is a phenomenological research focusing on the use of history of mathematics from the perspectives of the mathematics/mathematics education faculty members and the middle school mathematics teachers. Overall, as given the Figure 1, the findings of the current study clearly answered the following questions "Why the history of mathematics should be integrated in teaching and learning of mathematics?", "What is the current situation of the use of the history of mathematics in classrooms?", "What are the reasons for rare-use of the history of mathematics?" and "What should be done to use the history of mathematics effectively?".

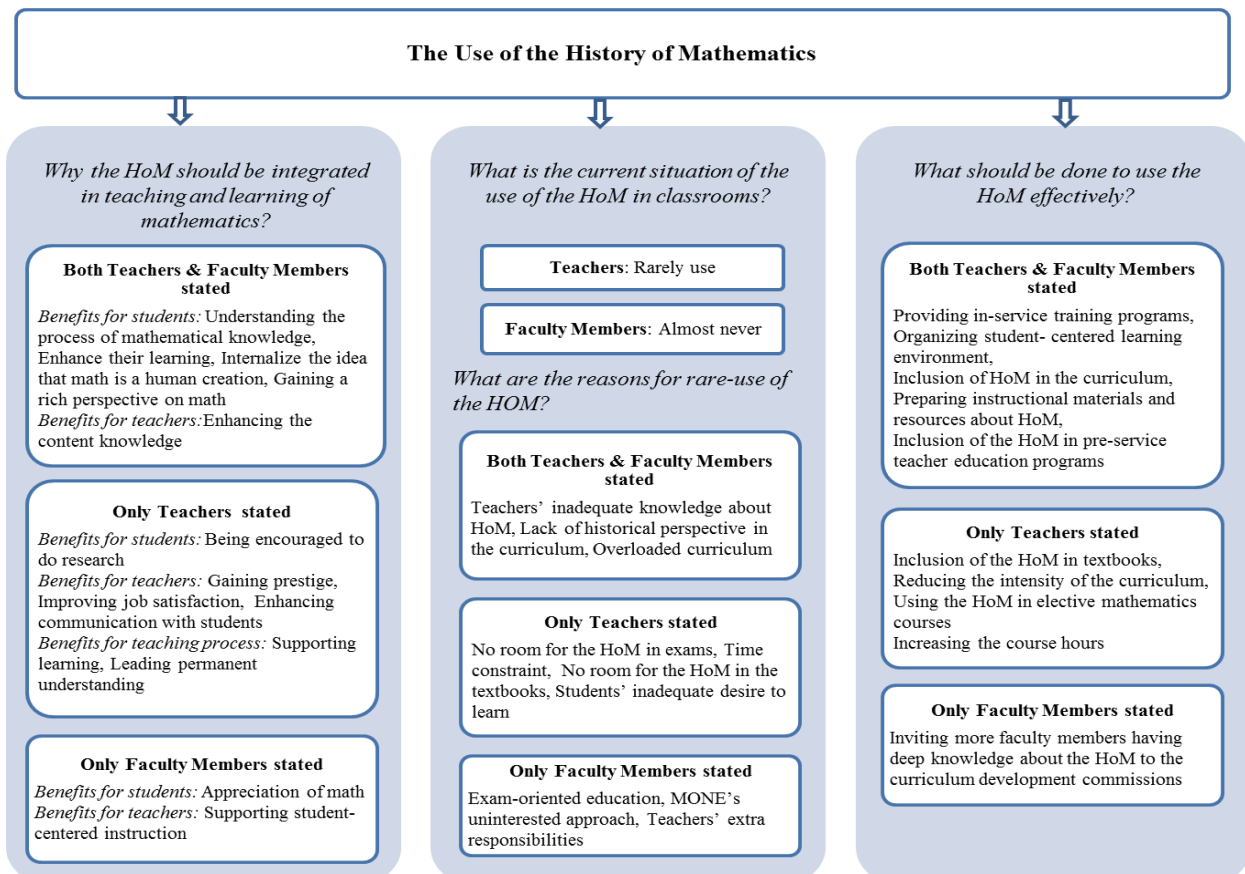


Figure 1. The history of mathematics from the perspectives of faculty members and teachers

According to the Figure 1, both the teachers and the faculty members who took part in the study stated that the history of mathematics should be used, yet the most-agreed reasons avoiding the use of history of mathematics are teachers' inadequate knowledge about history of mathematics. In this respect, the results

call for the improvements in teacher education programs (pre- and in-service) in order to equip teachers with the knowledge of the historical side of mathematics as well as how to integrate it in mathematics teaching. Moreover, the issues related to the current mathematics curriculum (e.g. no place for the history of mathematics, time constraint, etc.) should be solved. It is recommended that stakeholders (e.g. curriculum development experts, textbook authors, decision-makers, etc.) should improve both the curriculum and textbooks by considering the possible contributions of the history of mathematics for students, teachers and learning-teaching process pointed out by the teachers and faculty members in this study. Lastly, the results of the present study were only based on the views of the faculty members and mathematics teachers gathered from the qualitative data collection method. Thus, there is a need for additional research to get a wider picture about students' opinions and experiences of the history of mathematics in actual classroom practices.

REFERENCES

- Abdulhay, Medine. *Söndürülen ışık: İskenderiyeli Hypatia*. Retrieved from <http://www.bilim.org/sondurulen-iskenderiyeli-hypatia>, 2014.
- Alpaslan, Mustafa. *Prospective elementary mathematics teachers' knowledge of history of mathematics and their attitudes and beliefs towards the use of history of mathematics in mathematics education*, Unpublished Master's Thesis. Middle East Technical University, Ankara, 2011.
- Altun, Murat. *Eğitim fakülteleri ve sınıf öğretmenleri için matematik öğretimi*. Bursa: Alfa Basım Yayım, 2008.
- Awosanya, Ayokunle. *Using history in the teaching of mathematics*, Unpublished Doctoral Dissertation. The Florida State University, Florida, 2001.
- Baki, Adnan. *Matematik tarihi ve felsefesi*. Ankara: Pegem Akademi, 2014.
- Baki, Adnan and Yıldız, Cemalettin. *Use of the history of mathematics in textbooks and teacher views* [Paper presentation]. Second International Congress of Educational Research, Antalya, 2010. Retrieved from https://www.researchgate.net/publication/324877640_USE_OF_THE_HISTORY_OF_MATHEMATICS_IN_TEXTBOOKS_AND_TEACHER_VIEWS
- Baki, Adnan and Yıldız, Cemalettin. "Teachers' views about factors which affect history of mathematics usage in lessons." *Ahi Evran Üniversitesi Kırşehir Eğitim Fakültesi Dergisi*, 17 (2) (2016): 451-472.
- Başbüyük, Kani and Şahin, Ömer. "Mathematics teachers' opinion about the history of mathematics." *Acta Didactica Napocensia*, 12 (2) (2019): 117-132.
- Bell, John, Gregory. *A history of mathematics class for middle school teachers*, Unpublished Doctoral Dissertation. Illinois State University, Normal, 1992.
- Bidwell, James K. "Humanize your classroom with the history of mathematics". *The Mathematics Teacher*, 86 (6) (1993): 461-464.
- Burton, David, M. *The history of mathematics: An introduction*. New York, NY: McGraw-Hill, 2003.
- Cajori, Florian. *A history of mathematics* (D. İlan, Trans.). ODTÜ Yayıncılık, Ankara 2014 (Original work published 1919).
- Clark, Kathy, Kjeldsen, Tinne, Schorcht, Sebastian, Tzanakis, Constantinos & Wang, Xiaoqin. "History of mathematics in mathematics education. Recent developments" [Paper presentation]. History and Pedagogy of Mathematics, Montpellier, France, Jul 2016. Retrieved from <https://hal.archives-ouvertes.fr/hal-01349230/document>
- Creswell, John W. *Qualitative inquiry and research design: Choosing among five approaches*. Thousand Oaks, CA: Sage, 2013.
- Dejic, Mirko, & Mihajlovic, Aleksandra, M. "History of mathematics and teaching mathematics." *Teaching Innovations*, 27 (3) (2014): 15-30.
- Demir, Remzi. "Salih Zeki Bey'in Journal Asiatique'de yayımlanan Notation Algebrique Chez Les Orientaux adlı makalesi". *Ankara Üniversitesi Osmanlı Tarihi Araştırma ve Uygulama Merkezi Dergisi*, 15, (2004): 333-353.
- Dickey, Gregory, Patrick. *A historical approach to teaching the British Columbia mathematics eight course*, Unpublished Master's Thesis. Simon Fraser University, Canada, 2001.
- Ding, Jiutao. *Integration of mathematics history and mathematics education* [Paper presentation]. 5th International Conference on Education Technology, Management and Humanities Science, China, 2019. Retrieved from https://www.webofproceedings.org/proceedings_series/ESSP/ETMHS%202019/ETMHS19166.pdf
- Ersoy, Ezgi. "Effect of using history of mathematics on elementary 4th grade students". *İlköğretim Online*, 15 (2) (2015): 408-420.
- Eves, Howard. *An introduction to the history of mathematics*. San Francisco, CA: Saunders, 1990.
- Fauvel, John. & Van Maanen, Jan. (Eds.). *History in mathematics education-The ICMI study*. Dordrecht: Kluwer Academic, 2002.
- Fried, Michael, N. "Can mathematics education and history of mathematics coexist?" *Science & Education*, 10 (4) (2001): 391-408.
- Furinghetti, Fulvia. "History of mathematics, mathematics education, school practice: Case studies in linking different domains" *For the Learning of Mathematics*, 17 (1) (1997): 55-61.

- Guillemette, David. "History of mathematics in secondary school teachers' training: Towards a nonviolent mathematics education". *Educational Studies in Mathematics*, 96 (3) (2017): 349-365.
- Haile, Tesfayohannes, Kiflemariam. *A study on the use of history in middle school mathematics: The case of connected mathematics curriculum*, Unpublished Doctoral Dissertation. The University of Texas, Austin, 2008.
- Hatisaru, Vesife and Erbaş, Ayhan, Kürşat. *History of mathematics in mathematics education: The views of Turkish Portuguese, Spanish and French mathematics teachers* [Paper presentation]. X. National Congress of Science and Mathematics Education, Niğde University, 2017. Retrieved from https://www.pegem.net/akademi/kongrebildiri_detay.aspx?id=135883
- Hattatoğlu, Mehmet. *Matematik öğrenmenin zamanı gelmedi mi?* 2010. Retrieved from <http://www.matematik-fen-dersi.com/2010/09/mehmet-hattatoglu/>
- Ho, Weng Kin. *Using history of mathematics in the teaching and learning of mathematics in Singapore*. [Paper presentation]. 1st RICE, Singapore, 2008. Retrieved from <https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.459.5255&rep=rep1&type=pdf>
- İşık Ahmet, Çiltaş, Alper, and Bekdemir, Mehmet. "The importance and necessity of mathematics education". *Journal of Kazım Karabekir Education Faculty*, 17, (2008): 174-184.
- Jankvist, Uffe, Thomas. "A categorization of the "whys" and "hows" of using history in mathematics education". *Educational Studies in Mathematics*, 71 (3) (2009): 235-261.
- Karakurumer, Güler. *Matematik ve toplum*. 2003. Retrieved from <http://www.matder.org.tr/matematik-ve-toplum/>
- Katz, Victor, J. *A history of mathematics: An introduction*. NY: Harper Collins, 1993.
- Kaye, Ella. "The aims of and responses to a history of mathematics video conferencing project for schools." In M. Joubert (Ed.), *Proceedings of the British Society for Research into Learning Mathematics*, 28 (3), (2008) (pp.66-71).
- Kjeldsen, Tinne, Hoff. "Does History have a Significant Role to Play for the Learning of Mathematics? Multiple perspective approach to history, and the learning of meta level rules of mathematical discourse." In E. Barbin, M. Kronfellner, & C. Tzanakis (Eds.), *History and Epistemology in Mathematics Education: Proceedings of the 6th European Summer University* (pp. 51-61). Verlag Holzhausen GmbH, 2011.
- LeCompte, Margaret, Diane, Judith, Preissle, & Renata, Tesch. *Ethnography and qualitative design in educational research*. San Diego: Academic Press, 1993.
- Lim, Siew, Yee & Chapman, Elaine S. "Effects of using history as a tool to teach mathematics on students' attitudes, anxiety, motivation and achievement in grade 11 classrooms". *Educational Studies in Mathematics*, 90, (2015): 189-212.
- Lincoln, Yvonna S. and Guba, Egon G. *Naturalistic inquiry*. Newbury Park, CA: Sage, 1985.
- Liu, Po-Hung. "Do teachers need to incorporate the history of mathematics in their teaching?" *The Mathematics Teacher*, 96 (6) (2003): 416-421.
- Miles, Matthew B. and Huberman, Michael A. *Qualitative data analysis: An expanded sourcebook*. Thousand Oaks, CA, US: Sage Publications, Inc, 1994.
- Nataraj, Mala, Saraswathy and Thomas, Michael O. J. "Developing understanding of number system structure from the history of mathematics". *Mathematics Education Research Journal*, 21 (2), (2009): 96-115.
- National Council of Teachers of Mathematics [NCTM]. *Principles and Standards for School Mathematics*. Reston, VA: National Council of Teachers of Mathematics, 2000.
- Niitsuma, Sho, and Nagaoka, Ryosuke. *History of mathematics and mathematics education-A reflective study on the possibility of History of mathematics to be implemented as teaching material in upper secondary level* [Paper presentation]. Proceedings of the 12th International Conference, Herceg Novi, Montenegro 2014. Retrieved from <https://directorymathsed.net/montenegro/Niitsuma.pdf>
- Ojose, Bobby. "Mathematics literacy: Are we able to put the mathematics we learn into everyday use?" *Journal of Mathematics Education*, 4 (1), (2011): 89-100.
- Otte, Michael. "Mathematical history, philosophy and education." *Educational Studies in Mathematics*, 66(2) 2007: 243-255.
- Panasuk, Regina M. and Horton, Leslie Bolinger. "Integrating history of mathematics into curriculum: What are the chances and constraints?" *International Electronic Journal of Mathematics Education*, 7(1) (2012): 3-20.
- Panasuk, Regina M. and Horton, Leslie Bolinger. "Integrating history of mathematics into the classroom: Was Aristotle wrong?" *Journal of Curriculum and Teaching*, 2 (2) (2013): 37.
- Patton, Michael, Quinn. *Qualitative research & evaluation methods: Integrating theory and practice*. Thousand Oaks, CA: Sage, 2015.
- Pengelly, David, J. *A graduate course on the role of history in teaching mathematics* [Paper presentation]. Study the Masters: The Abel Fauvel Conference, University of Gothenburg, Sweden, 2002. Retrieved from <https://web.nmsu.edu/~davidp/gradcourserolehist.pdf>
- Pepe, Luigi, and Guerraggio, Angelo. "Why do we need the history of mathematical teaching?" *Lettera Matematica*, 5 (3) (2017): 245-251.
- Radford, Luis. History of mathematics and mathematics education. In M. N. Fried & T. Dreyfus (Eds.), *Mathematics & Mathematics Education: Searching for Common Ground* (pp. 89-110). New York: Springer, 2014.
- Rickey, Fred. My favorite ways of using history in teaching calculus. In F. Swetz, J. Fauvel, O. Bekken, B. Johansson & V. Katz (Eds.), *Learn from the Masters* (pp.123-134). The Mathematical Association of America. Washington, 1995.

- Rizki, Lussy, Midani, and Priatna, Nanang. "Mathematical literacy as the 21st century skill". *IOP Conf. Series: Journal of Physics: Conf. Series* 1157 (2019), 2019: 2-5. Retrieved from <https://iopscience.iop.org/article/10.1088/1742-6596/1157/4/042088/pdf>
- Sertöz, Sinan. *Matematiğin aydınlık dünyası*. Ankara: Tubitak Popüler Bilim Kitapları, 2011.
- Shenton, Andrew. K. Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information*, 22 2004: 63-75.
- Siu, Man-Keung. Proof and pedagogy in ancient China: Examples from Liu Hui's commentary on Jiu Zhang Suan Shu. *Educational Studies in Mathematics*, 24 (4) (1993): 345-357.
- Siu, Man-Keung. No, I don't use history of mathematics in my class. Why? In F. Furinghetti, S. Kaijser, & C. Tzanakis (Eds.), *Proceedings HPM2004 & ESU4* (pp. 268-277). Uppsala: Uppsala Universitet, 2007.
- Sözen, Sinem. *A phenomenological study on incorporating the history of mathematics into teaching from the perspective of primary and mathematics teachers*, Unpublished Master's Thesis. Middle East Technical University, Ankara, 2013.
- Steen, Lynn, Arthur. *Mathematics and democracy: The case for quantitative literacy*. Princeton, NJ: National Council on Education and the Disciplines, 2001.
- Sullivan, Kelly, Marie. Pre-service secondary mathematics teachers' attitudes about the history of mathematics, Unpublished Master's Thesis. California State University, Fresno, 1985.
- Tan-Şişman, Gülçin and Kirez, Büşra. "History of mathematics in the Turkish middle school mathematics curriculum and textbooks." *Cukurova University Faculty of Education Journal*, 47 (1), (2018): 188-215.
- Tekin, Birol, and Tekin, Seher. Matematik öğretmen adaylarının matematiksel okuryazarlık düzeyleri üzerine bir araştırma. 2004. Retrieved from <http://www.matder.org.tr/matematik-ogretmen-adaylarinin-matematiksel-okuryazarlik-duzeyleri-uzerine-bir-arastirma/>
- The Organisation for Economic Co-operation and Development [OECD]. *PISA 2021 mathematics framework (Second draft)* 2003. Retrieved from <https://pisa2021-maths.oecd.org/files/PISA%202021%20Mathematics%20Framework%20Draft.pdf>
- Tokay, Ebru. *The effect of the use of the history of mathematics on the academic achievement of the 4th class students in the teaching of numbers and operations with some geometric concepts*, Unpublished Master's Thesis. Karamanoğlu Mehmetbey University, Karaman, 2019.
- Tong, Duong, Huu, Loc, Nguyen, Phu, Uyen, Bui, Phuong and Thi, Y., Tran. "Integrating the history of mathematics into mathematics education: A case study of teaching the quadratic equations." *Universal Journal of Educational Research*, 7 (11) 2019: 2455-2462.
- Topdemir, Hüseyin, Gazi. Galileo ve doğanın matematikle kavranışı. *Bilim Teknik Dergisi*, 526, (2011): 104-107.
- Tözluyurt, Emine. *The perceptions of senior high students regarding the lessons, in which activities chosen from history of mathematics are used on the subject of numbers learning area*, Unpublished Master's Thesis. Gazi University, Ankara, 2008.
- Tzanakis, Constantinos, Arcavi, Abraham, de Sa, Carlos, Correia, Isoda, Masami, Lit, Chi-Kai, . . . Siu, Man-Keung. Integrating history of mathematics in the classroom: An analytic survey. In J. Fauvel & J. Van Maanen (eds.), *History in Mathematics Education* (pp.201-240). Dordrecht: Kluwer Academic Publishers, 2000.
- Ulusoy, Fadime, and Girit-Yıldız, Dilek. "The changing perceptions of prospective middle school mathematics teachers on their own knowledge of history of mathematics: The role of pedagogical experiences". *Kastamonu Education Journal*, 27 (6), (2019): 2730-2746.
- Wilson, Patricia, S. and Chauvot, Jennifer B. "Who? How? What? A strategy for using history to teach mathematics." *Mathematics Teacher*, 93(8) (2000): 642-645.
- Yee, Lim, Siew and Chapman, Elaine. "Using history to enhance student learning and attitudes in Singapore mathematics classrooms." *Education Research and Perspectives*, 37, (2011): 110-132.
- Yevdokimov, Oleksiy. (2007). *Using the history of mathematics for mentoring gifted students: Notes for teachers*. Proceedings of the 21st biennial conference of the Australian Association of Mathematics Teachers, Hobart, 2007 (pp.267-275). Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.555.8330&rep=rep1&type=pdf>
- Yıldırım, Ali and Şimşek, Hasan. *Sosyal bilimlerde nitel araştırma yöntemleri*. Ankara: Seçkin Yayınevi, 2013.
- Yüksel, Pelin and Yıldırım, Soner. Theoretical frameworks, methods, and procedures for conducting phenomenological studies in educational settings. *Turkish Online Journal of Qualitative Inquiry*, 6 (1) (2015): 1-20.

LEVELS OF PEER RELATIONSHIPS OF ATYPICALLY AND TYPICALLY DEVELOPING CHILDREN IN PRESCHOOL EDUCATION

Abstract: The aim of the present study was to determine peer relationship levels of preschool children showing atypical and typical development. The study group consisted of 60 children with atypical development and 60 children with typical development who participated in the inclusion practices in the formal preschools and nursery classes of primary schools in the city centers of Burdur and Isparta and in Soma district of the city of Manisa in the 2012-2013 and 2013-2014 academic years. The data was collected using the Child Behavior Scale developed by “Ladd and Profilet (1996)”. The data were analyzed by t-test and correlation calculations. The results of the study showed significant correlations between developing prosocial behavior, being anxious-fearful with peers, developing asocial behavior and hyperactivity among the peer relationships of the children with typical and atypical development attending preschool education.

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INTRODUCTION

Preschool period is the time when the fastest development occurs in all areas of development for children and the foundations are set for future learnings (Tıkıroğlu, 2019). During this period, children make efforts to adapt to the society they live in and to integrate themselves with the society. To this end, they try to acquire fundamental habits and social behaviors (Yaşar, 2008). Being a part of the society and socializing of a child is possible through a proper educational environment. Institutions of preschool education also provide a good educational setting for children to develop such behaviors as sharing, communicating and taking responsibility (Morrison, 1998).

In institutions of preschool education, children recognize themselves as individuals in the society, while realizing what the society expects from them and what they can add to the society. During this period, children learn about the customs and traditions of their society and develop appropriate behaviors. They also acquire daily life and self-care skills that will make their life easier and help them live more independently in the society (Yıldırım and Durmuşoğlu, 2009).

Each child is different from another in physical, emotional and mental aspects. When these differences are within certain limits, all children can benefit from general educational services. However, when the differences get bigger, general educational services remain inadequate and a need comes up for special education services (Kırcaali-İftar, 1998). Like all children, it is critical to encounter quality stimuli for children with atypical development for their development (Tıkıroğlu, 2019). Considering the development characteristics and paces of children attending preschool education, joining their peers through inclusive education will be highly beneficial for children with atypical development during preschool period (Yaşar, 2008). Inclusive education is a practice that enables children with atypical development to interact and communicate with other peers in the same environment with their typically developing peers full-time or part-time in special education classes (MNESESR, 2017). The aims of the program include helping children with atypical development to adapt to their environment and society, keep up with their peers developmentally and enhance their socialization and communication skills (Odom, Deciyan and Jenkins, 1984).

Inclusion practices provide atypically developing children with the opportunity to communicate with, model, observe, imitate, share, cooperate and interact with other children displaying typical development who have different developmental characteristics from themselves. In addition, games that children with atypical development play with their typically developing peers enable them to learn many skills latently and most importantly, to notice that they are accepted by other individuals. Inclusion teaches many positive behaviors to children with typical development as well. It helps them learn to help, cooperate, share, show empathy and tolerance as well as noticing the existence of individuals that are different from themselves, internalizing them, respecting their individual differences and maintain their life together with them within the environment they live in. This way, normal individuals can have higher self-confidence levels in the society (Artan and Uyanık, 2003; Darica, 1992).

Children with atypical development have their first experiences and interactions with their peers in preschool classrooms (Wood, Cowan and Baker, 2002). Therefore, peer relationships are very important for both children with typical development and those having atypical development (Menteş, 2020). Peer relationships can be defined as the total interaction going on between persons of the same age or developmental stage having similarities in terms of background, values, experiences and social context (Gülay, 2008).

Among the theories on peer relationships, Piaget (1932), stated that peer interaction is helpful in discovering the differences between their own knowledge and their peers' knowledge and in maintaining balance. Piaget's approach remarks that working with peer groups brings more benefits than working individually in cognitive terms (Fawcett and Garton, 2005; cited by Gülay, 2008) Vygotsky (1978) highlights the necessity and importance of children's interactions with their peers. Activities performed with peers are reported to provide cognitive benefits as well as affecting social development (Salkind, 2004; cited by Gülay, 2008). Bandura (1960) claims that individuals learn reinforced behaviors by observing imitating others while avoiding behaviors that are punished (Senemoğlu, 2005).

Within the general structure of peer relationships during the preschool period, determining important factors in children's interactions in this period is significant in terms of understanding and expressing peer relationships clearly (Gülay, 2008). Such positive behaviors as cooperation, kindness, helpfulness begin in this period and develop in time. Similarly, disagreement and aggression are among the variables that can influence the course of preschool peer relationships (Hay et al 2004; cited by Gülay, 2008).

When the basic qualities of peer relationships are evaluated in the preschool period, it is seen that approval is a critical social support for the child in this period. Accepting the help offered by peers and helping peers when necessary are other factors that can improve relationships. Appropriate expression of negative feelings can also affect relationships positively. While kindness enhances relationships positively, avoiding disagreement is also important in terms of peer relationships (Ladd, Kochenderfer-Ladd and Coleman, 1996; cited. Gülay, 2008).

Children who get into interaction with their peers make progress in physical, emotional and social development. They learn many behaviors through modeling during peer interaction. While playing with their peers, children learn social roles like sharing, helping, taking turns, empathizing and anger management. Children with developed peer relationships spend time with their peers by establishing emotional bonds with their peers and feel themselves better. A child who fails to build positive relationships with peers will have reduced self-confidence when he/she is refused and face problems like loneliness, anxiety and depression. Moreover, peer relationships also affect children's social development in the future; children who have healthy relations with their peers have positive its effects on their social development and other developmental domains (Arslan, 2015; Gülay, 2008; Neslitürk, 2013). Children with atypical development attending preschool education have the opportunity to display behaviors they learn from their typically developing peers and develop necessary skills for an independent life by modelling children with typical development to improve their social behaviors (Wolary and Wilbers, 1995).

When studies conducted in and outside Turkey concerning peer relationships, it is seen that the literature includes studies approaching different dimensions of peer relationships. Some of these studies are presented below.

The experimental study titled "The Child Behavior Scale: A Teacher-Report Measure of Young Children's Aggressive, Withdrawn, And Prosocial Behaviors" conducted by Ladd and Prolifet (1996) was participated by preschool children of the same age and similar characteristics from 2 different regions. The results of the study showed that the boys' aggressive behaviors and hyperactivity were significantly different from the girls, and the girls' prosocial behaviours were significantly different from the boys. Moreover, the study found that aggressiveness was a significantly and positively related with exclusion and hyperactivity, and a negatively related with prosocial behaviour. Withdrawn behaviour was found to have a significant positive relationship with being asocial, fearful and anxious as well as exclusion. Positive relationships were found between fearful depression and being asocial and between fearful-anxious behaviour and exclusion. In addition, social problems had a positive relationship with aggressiveness, asocial behaviour, fearful-anxious behaviour, hyperactivity and a negative significant relationship with prosocial behavior.

In Persson's study, which dealt with the sub-scales of the "Child Development Scale" developed by Ladd and Profilet (1996) and titled "Developmental perspectives on prosocial and aggressive motives in preschoolers' peer interactions", it was found that prosocial behaviour improved as children grew older, while aggressive behaviour had no impact. Moreover, no relationship was found between aggressiveness and gender.

The study titled "A Study on the Reliability and Validity of Peer Relationship Scales for 5-6 year-old Children and Examination of Peer Relationships in terms of certain Variables" conducted by Gülay (2008) found a significant difference between the childrens' hyperactivity levels depending on their gender. It was found that boys were more hyperactive than girls.

In addition, in other studies concerning peer relationships, it was seen that Al Jaber Mortada, 2017, Menteş, 2020 and Öztürk-Özgenel and Girli, 2016 examined the peer relationships of children with autism in classes where inclusive education is implemented; Beyazkürk, Anliak and Dinçer, 2007 and Beydoğan, 2019 investigated peer relationships during childhood; Çulhaoğlu-İmrak, 2009; Uluyurt, 2012; Yeğen, 2019 and Yorgun, 2017 studied peer relationships in inclusion classes; and Yücel, 2009 and Zorbaz, 2013

examined peer relationships during adolescence. Among the sub-dimensions of peer relationships, it is seen that studies have focused on aggressive behaviors (Al Sayed, 2018; Dalbudak, 2012; Özkatar-Kaya, 2010; Satar Abo El Fadl, 2014; Saydanoğlu, 2011; Yavuz, 2007; Yeğen, 2008; Yıldırım-Doğru et al., 2013) prosocial behaviors (Baczala, 2016; Dinç, 2002; Sarı, 2007; Tıkıroğlu, 2019; Uluyurt, 2012; Worden, 2002), and childrens' school adaptation (Erten, 2012; Gülay-Ogelman and Erten Sarıkaya, 2013; Ladd, Birch and Buhs 1999).

When studies on peer relationships of preschool children with typical and atypical development in Turkey are examined, it is seen that the studies are mostly conducted at primary and secondary education level, and a limited number of studies can be found at preschool level. Therefore, there is a need for studies to be conducted on peer relationships of children with typical and typical development in the preschool period. Thus, the data to be obtained from the present study will be useful to examine the problems faced by preschool children with typical and atypical development in peer relationships and to take necessary measures to solve these problems. In addition, the study is believed to fill in this gap in the field to a certain degree and to set an example for similar studies to be conducted on the issue.

The aim of the present study was to determine peer relationship levels of preschool children with typical and atypical development. The following questions will be answered to this end:

1. What is the level of peer relationship of the atypically developing children who participated in the study?
2. What is the level of peer relationship of the typically developing children who participated in the study?
3. Is there a significant difference between the levels of peer relationship of atypically and typically developing preschool children?

LIMITATIONS

The present study is limited to;

1. The opinions of preschool teachers of inclusion students at primary schools and kindergardens in Burdur and Isparta city centers and Soma district of Manisa in 2011/2012 and 2012/2013 academic years;
2. "The Child Behavior Scale" used as the data collection instrument in the study.

METHOD

RESEARCH MODEL

In order to determine the levels of peer relationship of atypically and typically developing children who attend preschool education, the present study used descriptive and correlational survey model. Survey model is appropriate for studies that aim at describing a past or existing phenomena without any manipulation (Karasar, 1999).

RESEARCH GROUP

The study group consisted of children with typical development in the classes of atypically developing children who participated in the inclusion practices in the formal preschools and nursery classes of primary schools in the city centers of Burdur and Isparta and in Soma district of the city of Manisa in the 2012-2013 and 2013-2014 academic years. The study was conducted at the schools in the cities and towns specified with the permission of the Ministry of National Education dated 30/12/2011 and numbered B.30.02.MAE.0.72.00.00.1184-6852. The study group was participated by 60 atypically developing children who were given inclusion reports by Guidance Research Centers and 60 children who were selected randomly from among 194 typically developing children attending these children's classes. 23 (19.2%) of the atypically developing children were girls and 37 (30.8%) were boys; while 21 (17.5%) of the typically developing children were girls and 39 (32.5%) were boys. 26 (21.7%) of the atypically developing children aged 48-59 months and 34 (28.3%) of them aged 60-72 months whereas 16 (13.3%) of the typically developing children aged 48-59 months and 44 (36.7%) of them aged 60-72 months.

While selecting the 60 children with typical development, first the names of the 194 typically developing children included within the scope of the study were written down on a piece of paper and each child was given a number from one to 194. Later, numbers were written on small pieces of paper from one 10 194 and put into a bag. After mixing the pieces of paper thoroughly in the bag, numbers were drawn from the

bag one by one. The children with the number drawn from the bag were included in the study group. This was repeated until the last child was selected and the study group was created.

IMPLEMENTATION OF DATA COLLECTION INSTRUMENTS

The present study employed the “Ladd and Profilet Child Behavior Scale”. In order to determine the peer relationships of the participating children with typical and atypical development, the study used the Child Behavior Scale, which was originally developed by “Ladd ve Profilet (1996)” and adapted into Turkish by Gülay (2008). Cronbach’s Alpha coefficients of the scale are .87 for aggression, .91 for prosocial behaviors, .84 for asocial behavior, .78 for anxious-fearful behaviors, .89 for exclusion, and .82 for hyperactivity. The instrument is a 3-point Likert Type scale consisting of 44 items in total. The Scale includes 6 subscales as 1. Displaying Aggressive Behavior to Peers 2. Displaying Prosocial Behavior to Peers, 3. Displaying Asocial Behavior to Peers, 4. Displaying Anxious-Fearful Behavior to Peers, 5. Hyperactivity and 6. Exclusion by Peers.

The “Child Behavior Scale” as assessed over total scores. Total scores obtained from the subscales are used separately. High scores on the subscales reveal the frequency of the related behaviors in the child.

DATA ANALYSIS

The data collected at the end of the study were computerized on SPSS 16.0 (Statistical Packages for the Social Sciences) by the researcher. The relationship among the subscales and the level and direction of the relationship of the typically and atypically developing preschool children was determined using simple correlation. The correlation between the levels of peer relationship of typically and atypically developing children was analyzed with independent samples t-test. Independent samples t-test is performed to test whether the difference between the means of two independent samples is significant or not.

FINDINGS

T-Test was applied to examine the difference between the levels of peer relationship of atypically and typically developing preschool children. The results are presented in Tables below.

Table 1. Levels of Peer Relationship of the Participating Children and t-Test Results

Subscales		N	\bar{X}	S	sd	t	p
1. Aggression	A.D.C.	60	3,03	3,68	118	0,12	.900
	T.D.C.	60	2,95	3,57			
2. Prosocial Behavior	A.D.C.	60	9,53	5,28	118	2,31	.023
	T.D.C.	60	11,70	4,99			
3. Asocial Behavior	A.D.C.	60	4,81	3,93	118	4,19	.000
	T.D.C.	60	2,11	3,05			
4. Anxious-Fearful	A.D.C.	60	5,36	3,43	118	2,01	.004
	T.D.C.	60	3,98	4,05			
5. Exclusion	A.D.C.	60	3,73	3,73	118	2,16	.036
	T.D.C.	60	2,38	3,20			
6. Hyperactivity	A.D.C.	60	3,83	2,55	118	2,43	.017
	T.D.C.	60	2,70	2,54			

Note: A.D.C : Atypically developing child, T.D.C: typically developing child

1. Examining Table 1 showing the children’s levels of peer relationships and t-test results; it is seen that the scores of atypically and typically developing children on the aggression towards peers subscale are ($\bar{X}=3,03$) and ($\bar{X}=2,95$) respectively. This difference occurring between aggression towards peers scores of the atypically and typically developing children is not statistically significant [$t(118)=0,12$, $p>0.05$].

2. Mean scores on the prosocial behavior subscale are ($\bar{X}=9,53$) and ($\bar{X}=11,70$) for atypically and typically developing children respectively. This difference occurring between atypically and typically developing children’s mean scores on the prosocial behavior subscale aiming at helping peers is statistically significant [$t(118)=2,31$, $p<0.05$].

3. Mean scores on the developing asocial behavior towards peers subscale appear as ($\bar{X}=4,81$) in atypically developing children and as ($\bar{X}=2,11$) in typically developing children. This difference occurring between the atypically and typically developing children's mean scores on developing asocial behavior towards peers is statistically significant [$t_{(118)}=4,19$, $p < 0.05$].
4. Mean scores on being anxious-fearful to peers subscale were found as ($\bar{X}=5,36$) for children with atypical development and as ($\bar{X}=3,98$) for those with typical development. This difference occurring between the mean scores of atypically and typically developing children on being anxious-fearful to peers subscale is seen to be statistically significant [$t_{(118)}=2,01$, $p < 0.05$].
5. Mean scores on the exclusion by peers subscale were found as ($\bar{X}=3,73$) for atypically developing children and ($\bar{X}=2,38$) for typically developing ones. The difference between the mean scores of children with atypical development and typical development on exclusion by peers subscale was found to be statistically significant [$t_{(118)}=2,16$, $p < 0.05$].
6. Hyperactivity scores appear as ($\bar{X}=3,83$) in children with atypical development and as ($\bar{X}=2,70$) in those with typical development. The difference between the mean scores on hyperactivity of atypically and typically developing children is seen to be statistically significant [$t_{(118)}=2,43$, $p < 0.05$].

Basic correlation technique was used to examine the relationships between the levels of peer relationship of children with atypical and typical development. In simple correlation, a correlation coefficient of 1.00 between two variables shows a perfect positive relationship; a coefficient of -1.00 indicates a perfect negative relationship and 0.00 reveals the absence of a relationship. In terms of interpreting the magnitude of the correlation coefficient, an absolute value between 0.70 and 1.00 is defined as a high level of correlation; one in the range of 0.70-0.30 shows a moderate correlation and a value of 0.30-0.00 indicates a low level of correlation (Büyüköztürk, 2012). The findings obtained are presented below.

Table 2. Correlations between the Levels of Peer Relationship of Preschool Children with Atypical Development

Subscales	N	1	2	3	4	5	6
1. Aggression	60	1					
2. Prosocial Behavior	60	-,630**	1				
3. Asocial Behavior	60	,465**	-,586**	1			
4. Anxious-Fearful Behavior	60	,551**	-,458**	,593**	1		
5. Exclusion	60	,705**	-,678**	,684**	,643**	1	
6. Hyperactivity	60	,748**	-,701**	,485**	,625**	,636**	1

** $p < .05$

When Table 2 showing the correlations between the levels of peer relationship of the participating preschool children with atypical development, it can be seen that the correlation between their levels of peer relationship is significant at the level of .05 and the correlation coefficients of the subscales range between ,458 and ,748. Based on this finding, the highest correlation is between hyperactivity and aggression while the lowest level of correlation is between anxious-fearful behavior and prosocial behaviors.

It is seen in Table 2 that the atypically developing children's aggression towards their peers has a moderate negative significant relationship ($r = -0,630$) with their prosocial behaviors; a moderate positive significant relationship ($r = 0,465$); with displaying asocial behavior to peers; a moderate positive significant relationship ($r = 0,551$) with showing anxious-fearful behavior to peers; a strong positive significant relationship with exclusion by peers ($r = 0,705$); and a strong positive significant relationship with hyperactivity ($r = 0,748$).

The atypically developing children's prosocial behavior has a moderate negative significant relationship ($r = -0,586$) with showing asocial behavior to peers, a moderate negative significant relationship ($r = -0,458$) with being anxious-fearful towards peers; a moderate negative significant relationship ($r = -0,678$) with exclusion by peers; a strong negative significant relationship ($r = -0,701$) with hyperactivity.

It is seen that the atypically developing children's prosocial behavior has a moderate positive significant relationship ($r = 0,593$) with being anxious-fearful towards peers; a moderate positive significant

relationship with exclusion by their peers ($r=0,684$); and a moderate positive significant relationship ($r=0,485$) with hyperactivity.

The atypically developing children's anxious-fearful behavior towards their peers has a moderate positive significant relationship ($r=0,643$) with exclusion by their peers and a moderate positive significant relationship ($r=0,625$) with hyperactivity.

A moderate positive significant relationship ($r=0,636$) is seen between the participating atypically developing children's exclusion by peers and their hyperactivity.

Table 3. Correlations between the Levels of Peer Relationship of Preschool Children with Typical Development

Subscales	N	1	2	3	4	5	6
1. Aggression	60	1					
2. Prosocial Behavior	60	-,467**	1				
3. Asocial Behavior	60	,390**	-,257*	1			
4. Anxious-fearful Behavior	60	,537**	-,420**	,768**	1		
5. Exclusion	60	,713**	-,324*	,676**	,584**	1	
6. Hyperactivity	60	,724**	-,486**	,345**	,602**	,565**	1

** $p<.01$ * $p<.05$

When Table 3 showing the correlations between the levels of peer relationship of the participating preschool children with typical development, it is seen that the relationships of peer relationship levels with each other are significant at .01 and .05 level and the correlation coefficients of the subscales range between ,257 and ,768. Based on these findings, the highest level of relationship is between asocial behavior and anxious-fearful behavior while the lowest level of relationship is between prosocial behavior and asocial behavior.

It is seen that the typically developing children's aggressive behavior towards their peers has a moderate negative significant relationship ($r=-0,467$) with prosocial behavior; a moderate positive significant relationship ($r=0,390$) with asocial behavior towards peers; a moderate positive significant relationship ($r=0,537$) with being anxious-fearful towards peers; a strong positive significant relationship ($r=0,713$) with exclusion by peers and a strong positive significant relationship ($r=0,724$) with hyperactivity.

Prosocial behavior of the typically developing children who participated in the study has a low negative significant relationship ($r=-0,257$) with showing asocial behavior towards their peers; a moderate negative significant relationship ($r=-0,420$) with being anxious-fearful towards their peers; a moderate negative significant relationship ($r=-0,324$) with exclusion by peers and a moderate negative significant relationship ($r=-0,486$) with hyperactivity.

Asocial behavior displayed towards their peers by the typically developing children who participated in the study has a strong positive significant relationship ($r=0,768$) with being anxious-fearful towards peers; a moderate positive significant relationship ($r=0,676$) with exclusion by peers and a moderate positive significant relationship ($r=0,345$) with hyperactivity.

Anxious-fearful behavior of the typically developing children towards their peers has a moderate positive significant relationship ($r=0,584$) with exclusion by peers and a moderate positive significant relationship ($r=0,602$) with hyperactivity.

The typically developing children's exclusion by peers has a moderate positive significant relationship ($r=0,565$) with hyperactivity.

DISCUSSION AND CONCLUSION

The first subquestion of the study analyzed any possible difference between atypically and typically developing children and their levels of peer relationship. The results of the study showed a significant difference between aggressive behaviors of atypically and typically developing children towards their peers. This finding is parallel with the findings of the studies conducted by Sucuoğlu and Özokçu (2004) and Akalın (2007). Comparing the findings relatively, it can be said that peer aggression scores of atypically and typically developing children are very close to each other and that peer aggression behaviors

of both groups are low. In other words, it can be asserted that children with atypical development display as many aggressive behaviors as their typically developing peers.

The study found that prosocial behaviors of the typically developing children who participated in the study were significantly higher compared with the children with typical development. The literature states that such factors as having a disability or lower intelligence levels affect atypically developing children's relationships with their peers. Drawing on the findings obtained, it could be said that atypically developing children display less helpful, sharing and cooperative behavior towards their peers than children with typical development; their social skills and academic competency fall behind their typically developing peers while they exhibit more problem behavior. The finding is similar to those obtained in the studies carried out by Sucuoğlu and Özokçu (2004), Baysal (1989), Uysal (1999) and Çulhaoğlu-İmrak (2009) showing a significant difference between prosocial behaviors of atypically and typically developing children.

As another result of the study, it was seen that atypically developing children show significantly higher levels of asocial behaviors towards their peers compared with children with typical development. Considering the fact that asocial behaviors include behaviors like preferring to play alone, unwillingness to be engaged in something, avoiding peer activities etc. in the literature and in the light of the findings obtained; it can be asserted that children with atypical development exhibit solitary, shy, less sharing and unhelpful behaviors compared with typically developing children. The finding is parallel with the one reported by Deschamps and colleagues (2014) revealing a significant difference between atypically and typically developing children and their development of asocial behaviors.

The study also found that children with atypical development are more anxious-fearful towards their peers-at a significantly higher level than typically developing children. Based on this finding, it can be said that children with atypical development are rather unhappy, distressed, tearful, shy and fearful compared with typically developing children. The finding supports Saylor and Leach's (2008) finding that shows a significant difference between atypically and typically developing children and their fearful behaviors towards their peers.

The results indicated that children with atypical development experience significantly higher level of exclusion by their peers compared with atypically developing children. In the study carried out on social acceptance levels of children with mental disabilities in inclusion classrooms, Şahbaz (2004) states that children with typical development do not like atypically developing children, they do not want to play and study together, see them as the laziest students in the class who annoy their classmates with their jokes or disturb them during the lesson; that is, they do not accept their atypically developing peers socially. Baydık and Bakkaloğlu (2009) examined the sociometric statuses of children who do and do not display atypical development and reported that one of the two variables that strongly predict the social acceptance of atypically developing children was academic competency and the other one was physical appearance. In the light of these findings, it can be said that children with atypical development are excluded, not liked very much, rejected, not chosen as playmates and ignored by their peers. The finding obtained from the present study is parallel with those of Hoza and colleagues (2005) and Kabasakal and colleagues (2008) in which significant differences were observed between atypically and typically developing children and their exclusion by peers.

The study found that hyperactivity levels of children with atypical development were significantly higher than compared with typically developing children. Based on this finding, it could be asserted that children with atypical development are more active and hastier, more difficult to stand still, harder to remain inactive, more careless and messier than typically developing children.

The second subquestion of the study compared the subscales of atypically developing children's levels of peer relationships with each other. According to the results of the study, atypically developing children's development of prosocial behavior, which aims at the positive social behavior of helping peers, has a negative and significant relationship with their aggressiveness, developing asocial behavior, being anxious-fearful, excluded by peers and hyperactivity. The related literature states that being excluded by their peers causes decreased prosocial behavior, increased aggressive behavior and more asocial behavior in children

with atypical development. This finding of the study is similar to those obtained by Uz-Baş and Siyez (2011) and Sucuoğlu and Özokçu (2004).

The third subquestion compared the subscales of typically developing children's levels of peer relationships with each other. According to the results of the study, typically developing children's development of prosocial behavior, which aims at the positive social behavior of helping peers, has a negative and significant relationship with their aggressiveness, developing asocial behavior, being anxious-fearful, excluded by peers and hyperactivity. These findings are parallel with the findings obtained by Crick and Ladd, (1993), Ladd and Profilet (1996), and Uluyurt (2012).

In conclusion, although children with atypical development exhibit as much aggressive behavior as atypically developing children, it can be suggested that being excluded by their peers causes these children to choose to play in isolation, feel unhappy, anxious, and fearful or display less sharing, more unhelpful and shy behaviors. In addition, the findings of the study also support the fact that children with atypical development are more active and hastier than their typically developing peers.

The study makes the following recommendations for further research:

- The present study was limited to the city centers of Burdur and Isparta and Soma district in the city of Manisa in discovering the problems in peer relationship levels of atypically and typically developing children. Studies can be conducted with different and variable sample groups.
- Studies could be conducted on the effects of the type and degree of the requirements of atypically developing children on their levels of peer relationships.
- Seminars can be organized to inform parents and teachers about the problems faced by children with atypical and typical development in their peer relationships and the effectiveness of these seminars could be assessed.

REFERENCES

- Akalın, Selma. *İlköğretim birinci kademedeki sınıf öğretmenleri ile kaynaştırma öğrencisi olan ve olmayan öğrencilerin sınıf içi davranışlarının incelenmesi (Examination of classroom behaviors of primary school teachers and students with and without mainstreaming students)*. Unpublished master thesis, Ankara University, Ankara. 2007.
- Al Jaber Mortada, Abla Muhammed. "The Effect of Peer-Mediated Picture Exchange Communication System Intervention in Improving Vocabulary Knowledge in Children with Autism Spectrum Disorders". *Psycho-Educational Research Reviews (PERR)*, 6 (2), (2017): 23-29. Retrieved from <https://www.journals.lapub.co.uk/index.php/perr/article/view/167>.
- Al Sayed, Al Farahti. The effectiveness of social stories intervention on aggressive behavior of aggressive preschool children. *Psycho-Educational Research Reviews (PERR)*, 7(2),(2018): 67-72. Retrieved from <https://www.journals.lapub.co.uk/index.php/perr/article/view/207>.
- Artan, İsmihan Zeliha ve Uyanık Balat, Gülden. Okul öncesi eğitimcilerinin entegrasyona ilişkin bilgi ve düşüncelerinin incelenmesi (Knowledge And Thoughts Of The Early Childhood Education Teachers On Integration). *Kastamonu Eğitim Dergisi*, 11(1) (2003): 65-80.
- Baczała, Ditta. Social skills of individuals with intellectual disabilities. *Psycho-Educational Research Reviews (PERR)*, 5 (2), (2016): 68-77. Retrieved from <https://www.journals.lapub.co.uk/index.php/perr/article/view/139>.
- Bapoğlu Dümenci, Sigma Seda. *Üstün zekâlı ve yetenekli çocukların akran ilişkilerine sosyal beceri eğitim programının etkisinin incelenmesi (Examining the effects of social skills training on the gifted and talented children's peer relations)*. Unpublished master thesis, Ankara University, Ankara, 2018.
- Baydık, Berrin ve Bakkaloğlu, Hatice. Alt sosyoekonomik düzeydeki özel gereksinimli olan ve olmayan ilköğretim öğrencilerinin sosyometrik statülerini yordayan değişkenler (Predictors of sociometric status for low socioeconomic status elementary mainstreamed students with and without special needs). *Kuram ve Uygulamada Eğitim Bilimleri*, 9(2), (2009):401-447.
- Baysal, Nilgün. *Okul öncesi dönemindeki down sendromlu ve normal gelişim gösteren çocukların entegrasyonunda sosyal iletişim davranışlarının incelenmesi (Investigation of social communication behaviors in the integration of preschool children with Down syndrome and normal development)*. Unpublished Doctoral Thesis, Hacettepe University, Ankara. 1989.
- Beyazkürk, Derya, Anlık, Şakire ve Dinçer, Fatma Çağlayan. Çocuklukta akran ilişkileri ve arkadaşlık (Peer relations and friendship in childhood). *Eurasian Journal of Educational Research (EJER)*, 26, (2007):13-26.
- Beydoğan, Büşra. *4-5 yaş çocukların sosyal problem çözme becerilerinin akran ilişkileri ve kaygı durumları açısından incelenmesi (Investigation of social problem solving skills of 4-5 year old children in terms of peer relationship and, anxiety levels)*. Unpublished Master Thesis, Selçuk University, Konya, 2019.

- Büyüköztürk, Şener. Sosyal bilimler için veri analizi el kitabı istatistik, Araştırma deseni SPSS uygulamaları ve yorum (Handbook of data analysis for social sciences statistics, Research pattern, SPSS applications and interpretation). Ankara: Pegem Yayıncılık, 2012.
- Crick, Nicky ve Ladd, Gary. *Children's perceptions of their peer experiences: Attributions, loneliness, social anxiety, and social avoidance*. *Developmental Psychology*, 29(2), (1993): 244-254.
- Çulhaoğlu-İmrak, Hülya. *Okulöncesi dönemde kaynaştırma eğitimine ilişkin öğretmen ve ebeveyn tutumları ile kaynaştırma eğitimi uygulanan sınıflarda akran ilişkilerinin incelenmesi (Teachers' and parents' attitudes toward inclusion in preschool period and investigation of peer relationship in inclusion classrooms)*. Unpublished Master Thesis, Çukurova University, Adana. 2009.
- Dalbudak, İbrahim. *13 -15 yaş arası görme engelli sporcuların stres ve saldırganlık düzeylerinin incelenmesi (The evaluation of stress and aggression levels of 13-15 years old aged visually impaired athletes)*. Unpublished Master Thesis, Ege University, İzmir. 2012.
- Darıca, Nilüfer. *Özürlü çocukların eğitimlerinde entegrasyonun önemi (The importance of integration in the education of children with disabilities)*, 1.Ulusal Özel Eğitim Kongresi Bildirileri, Ankara, 1992.
- Deschamps, Peter, Schutter, Dennis J.L.G., Kenemans, J. Leon. and Matthys, Walter. Empathy and prosocial behavior in response to sadness and distress in 6- to 7-year olds diagnosed with disruptive behavior disorder and attention-deficit hyperactivity disorder. *Eur Child Adolesc Psychiatry*, 24, (2014): 105–113.
- Dinç, Berrin. *Okulöncesi eğitimin, 4-5 yaş çocuğunun sosyal gelişimine etkileri konusunda öğretmen görüşleri (Teacher opinions about the effects of pre-school education on the social development of 4-5 years old children)*. Unpublished Master Thesis. Anadolu University, Eskişehir. 2002.
- Ersoy, Özlem ve Avcı, Neslihan. *Özel eğitim (Special education)*. İstanbul: Ya-pa Yayıncılık, 2001.
- Erten, Hatice. *Okul öncesi eğitime devam eden 5-6 yaş çocuklarının sosyal beceri, akran ilişkileri ve okula uyum düzeyleri arasındaki ilişkilerin izlenmesi (Following relations of 5-6 year-old children, who attend preschool education, in terms of social skills, peer relationships and school adjustment levels)*. Master Thesis, Pamukkale University, Denizli, 2012.
- Gülay, Hülya. *5-6 yaş çocuklarına yönelik akran ilişkileri ölçeklerinin geçerlik güvenirlik çalışmaları ve akran ilişkilerinin çeşitli değişkenler açısından incelenmesi (Standardization of a scale for measuring peer relations among 5-6 years old children and studying the relations between some familial variables and peer relations of children at this age)*. Unpublished Doctoral Thesis, Marmara University, İstanbul, 2008.
- Gülay-Ogelman, Hülya ve Erten, Hatice. 5-6 yaş çocuklarının akran ilişkileri ve sosyal konumlarının okula uyum düzeyleri üzerindeki yordayıcı etkisi (boylamsal çalışma) (Following relations of 5-6 year-old children, who attend preschool education, in terms of social position, peer relationships and school adjustment levels (longitudinal study)). *Selçuk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 30, (2013): 153-163.
- Hoza, Betsy, Mrug, Sylvie, Gerdes, Alyson C., Hinshaw, Stephen, Bukowski, William Michel. What aspects of peer relationships are impaired in children with attention deficit/ hyperactivity disorder? *Journal of Consulting and Clinical Psychology*, 73 (3), (2005): 411-423.
- Kabasakal, Zekavet, Girli, Alev, Okun, Burcu, Çelik, Neslihan ve Varlı, Gülseren. Kaynaştırma öğrencileri, akran ilişkileri ve akran istismarı (Disabled students, coequal relations and their abuse). *Dokuz Eylül Üniversitesi Buca Eğitim Fakültesi Dergisi* (23), (2008): 169-176.
- Ladd, Garry W., ve Profilet, Susan Muth. The child behavior scale: a teacher-report measure of young children's aggressive, withdrawn, and prosocial behaviors. *Developmental Psychology*, 32 (6), (1996): 1008-1024.
- Menteş, Hazel Sıla. *Otizm spektrum bozukluğuna sahip bir çocuğun okul öncesi kaynaştırma sınıfındaki akran ilişkilerinin incelenmesi (Investigation of the children's relationship in the inclusive preschool classroom of a child with autism spectrum disorder)*. Unpublished Master Thesis, Çukurova University, Adana, 2020.
- Millî Eğitim Bakanlığı, MEB. *Özel eğitim ve rehberlik hizmetleri genel müdürlüğü* (2017). Kaynaştırma / bütünleştirme yoluyla eğitim uygulamaları genelgesi. Retrieved from https://orgm.meb.gov.tr/meb_iys_dosyalar/2017_09/21112929_kaynastirma_genelge.pdf adresinden alınmıştır.
- Morrison, George. *Early Childhood education today*. (Seventh Edition). Columbus, Ohio. University of North Texas: Merrill and Imprint of Prentice Hall, 1998.
- Neslitürk, Seviye. *Anne değerler eğitimi programının 5–6 yaş çocuklarının sosyal beceri düzeyine etkisi (The effect of mother values program to the social skill levels of the 5-6 years old children)*. Doctoral Thesis, Selçuk University, Konya, 2013.
- Odom L. Samuel, Yoder, Paul ve Hill Glinda. Developmental intervention for infants with handicaps: purposes and programs. *The Journal of Special Education*, 22 (1), (1988): 11-24.
- Odom, L. Samuel, Deciyan, Michelle ve Lenkins. R. Joseph. Integrating handicapped and nonhandicapped preschoolers: Developmental impact on nonhandicapped children. *Exceptional Children*, 51(1), (1984): 41 -48.
- Özkatar Kaya, Emire. *18-25 yaş arası işitme engelli sporcuların stres ve saldırganlık düzeylerinin incelenmesi (The investigation of stress and aggression levels in hearing-impaired sportsmen aged between 18-25 years old)*. Unpublished Master Thesis, Erciyes University, Kayseri, 2010.
- Özmen, Dilek. *5-6 yaş grubu çocukların akran ilişkilerinin sosyal problem çözme becerisi açısından incelenmesi (The analysis of peer relations of 5-6 years old children in terms of social problem solving abilities)*. Unpublished Master Thesis, Selçuk University Sosyal Bilimler Enstitüsü, Konya, 2013.

- Öztürk-Özgenenel, Semra ve Girli, Alev. Otizmlı kaynaştırma öğrencilerinin sınıflarında akran ilişkilerinin geliştirilmesine yönelik eğitim programının etkililiğinin incelenmesi (The examination of an education program to improve peer relationships of the autistic children integrated in classrooms). *Elementary Education Online*, 15(1)(2016): 286-298.
- Persson, Gun. E. B. *Developmental perspectives on prosocial and aggressive motives in preschoolers' peer interactions*. International Journal of Behavioral Development, 29 (1), (2005): 80-91.
- Sarı, Elif. *Anasınıfına devam eden 5-6 yaş grubu çocukların, annelerinin çocuk yetiştirme tutumlarının, çocuğun sosyal uyum ve becerilerine etkisinin incelenmesi (An investigation of the effects of mothers' child rearing attitudes on child's social cohesion and skills for 5-6 years old child who attend kindergarten)*. Unpublished Master Thesis, Gazi University, Ankara, 2007.
- Satar Abo El Fadl, Mahfouz Abdul. Effectiveness of social information processing skills training using making choices program on promoting social competence of primary school children with aggressive behavior. *Psycho-Educational Research Reviews (PERR)*, 3(1), (2014): 8-16. Retrieved from <https://www.journals.lapub.co.uk/index.php/perr/article/view/225>.
- Saydanoğlu, Tuncer. *Sağlık meslek lisesi öğrencilerinde saldırganlık ve öfke düzeylerinin dikkat eksikliği ve hiperaktivite bozukluğu belirtileri ve benlik saygısı ile olan ilişkisinin araştırılması (Investigation of the relationship between aggression and anger levels with attention deficit and hyperactivity disorder symptoms and self-esteem in health vocational high school students)*. Unpublished Specialty Thesis, Kocaeli University Medical School, Kocaeli, 2011.
- Saylor, Conway. ve Leach, John Brandley. Perceived bullying and social support in students accessing special inclusion programming. *Journal Of Developmental and Physical Disabilities*, 21, (2008): 69-80.
- Senemoğlu, Nural. Gelişim, öğrenme ve öğretim: Kuramdan uygulamaya (Development, learning and teaching: From theory to practice). Ankara: Gazi Kitabevi, 2005.
- Sucuğlu, Bülbün ve Özokçu, Osman. Kaynaştırma öğrencilerinin sosyal becerilerinin değerlendirilmesi (Evaluation of inclusive students' social skills). *Ankara Üniversitesi Eğitim Bilimleri Fakültesi Özel Eğitim Dergisi*, 6 (1), (2005): 41-57.
- Şahbaz, Ümit. Kaynaştırma sınıflarına devam eden zihin engelli öğrencilerin sosyal kabul düzeylerinin belirlenmesi (Determining the social acceptance levels of mentally disabled students attending inclusive classes). 13. Ulusal Özel Eğitim Kongresi Bildirileri – Özel Eğitimden Yansımalar. Eskişehir, 2004.
- Tıkıroğlu, Çiğdem. *Tipik gelişen çocukların oyun etkinlikleri sırasında akran aracılı uygulamaları kullanmalarının tipik gelişen ve otizmlı çocukların sosyal etkileşim davranışları üzerindeki etkileri (The effects of typically developing children's use of peer-mediated interventions during play activities on the social interaction skills of typically developing children and children with autism)*. Unpublished Doctoral Thesis, Anadolu University, Eskişehir, 2019.
- Uluyurt, Fazilet. *Bazı değişkenlere göre okul öncesi eğitim kurumlarına devam eden 5- 6 yaş grubu çocuklarının akran ilişkileri (Peer relationships of the children attending pre-school according to some variables)*. Master Thesis, Selçuk University, Konya, 2012.
- Uysal, Ayten. *Zihinsel engelli ve normal öğrencilerin sosyal beceri düzeylerinin karşılaştırılması (Comparison of the social skill levels of mentally disabled and normal students)*. 4. Ulusal Eğitim Bilimleri Kongresi, Eskişehir, 1999.
- Uz-Baş, Aslı ve Siyez, Diğdem Müge. Akranları tarafından kabul gören ve görmeyen ilköğretim okulu öğrencilerinin akran ilişkilerine yönelik algılarının incelenmesi (Investigation of perceptions of primary school students accepted and not accepted by their peers towards peer relations), *Türk Eğitim Bilimleri Dergisi*, 9(2), 2011.
- Wood, Jeffrey J., Cowan, Philip A. & Baker, Bruce L. Behavior problems and peer rejection in preschool boys and girls. *Journal of Genetic Psychology*, 163 (1), (2002):72-89.
- Wolary, Mark ve Wilbers, Jan S. *Including children with special needs in early childhood programs*, Washington: NAEYC, 1995.
- Yaşar, Şefika. Okul öncesi eğitimde temel alışkanlıklar ve sosyal davranışların kazandırılması: *Okul öncesi eğitime giriş* (Basic habits and social behaviors in preschool education: Introduction to pre-school education). Eskişehir:Anadolu Üniversitesi Yayınları, 2008.
- Yavuz, Şehriban. *Son çocukluk dönemi öğrencilerinin saldırganlık düzeylerinin benlik saygısı ve bazı değişkenler açısından incelenmesi (Examination of aggressiveness level of the students in last childhood term in respect of self-respect and some factors)*. Unpublished Master Thesis, Selçuk University, Konya, 2007.
- Yeğen. Beyza. *Ortaöğretim öğrencilerinin sosyal uyumları ile saldırganlık düzeyleri arasındaki ilişkinin incelenmesi: Kadıköy İlçesi Örneği (Review of relation between aggression reactions and social adaptation levels of secondary education students)*. Unpublished Master Thesis, Yeditepe University, İstanbul, 2008.
- Yeğen, Tuğba. *Okulöncesi dönemde çocukların akran ilişkileri, duygusal ve davranışsal problemleri ve problem çözme becerileri arasındaki ilişkinin incelenmesi (Examine the relationship between peer relationships, emotional and behavioral problems and problem solving skills of pre-schoolers)*. Unpublished Master Thesis, Aksaray University, Aksaray, 2019.
- Yıldırım Doğru, Sunay., Kaygılı, Gökhan., Alabay, Erhan., Kuşçu, Özden ve Sarıkaya, Ayşegül. Ailesinde engelli birey bulunan okul öncesi dönem çocuklarının sosyal becerileri ve problem davranışlarının incelenmesi (Examining the social abilities and problem behaviors of the child of preschool age with a handicapped individual in family). *Ahi Evran Üniversitesi Kırşehir Eğitim Fakültesi Dergisi*, 14 (2), (2013): 219-236.
- Yıldırım Doğru, Sunay ve Durmuşoğlu Saltalı, Neslihan. *Erken çocukluk döneminde özel eğitim (Special education in early childhood)*. İstanbul: Maya Akademi, 2009.

- Yorgun, Elif. *Korunmaya muhtaç olan ve aileleri ile birlikte yaşayan 61–72 aylık çocukların ahlaki değerleri ile akran ilişkileri ve akran şiddetine maruz kalma durumları arasındaki ilişkinin incelenmesi* (The examination of the relationship between the moral values, peer relationships, and exposure to peer violence of 61-71- month- old children who are in need of protection and children living with their families). Unpublished Master Thesis, Gazi University, Ankara, 2017.
- Yücel, Nur. *Ergenlerin akran ilişkileri ve yalnızlık düzeylerinde evde internet kullanımının etkisinin incelenmesi* (A study on the effect of the internet use at home on the peer relations and the loneliness level of the adolescents). Master Thesis, Ankara University, Ankara, 2009.
- Zorbaz, Osman. *Lise öğrencilerinin problemli internet kullanımının sosyal kaygı ve akran ilişkileri açısından incelenmesi* (Analysis of problematic internet use of high school students in terms of social anxiety and peer relations). Unpublished Master Thesis, Hacettepe University, Ankara, 2013.

AN EXAMINATION OF VALUES EDUCATION BASED ON THE EXPERIENCES OF CLASSROOM TEACHERS

Abstract: Classroom teachers, who have the duty of fostering values in the socialization of the child, occupy a key position in achieving success in primary education. In this research, the impact of values education on the Turkish education system was revealed, based on the experiences of classroom teachers. The research was conducted in a case study design, which is one of the qualitative research methods. A purposive sampling method was used to determine the study group by considering gender, professional experience, graduate/postgraduate education status, job seniority, work location and class levels. The results revealed that values education enables for students hardworking, honesty, successfulness and virtuousness, solidarity, and cooperation. The values, which is necessary to be nurtured in students are primarily universal, individual and national values. Values education must be supported by integrating it with lessons and by the participation of the family. In order to attain success in a sustainable values education, it is seen that for fostering of basic values, responsibility should be shared among the stakeholders.

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INTRODUCTION

Value is one of the most important virtues of an individual and of being a person. We can recognise this virtue by externalised emotions and behaviours. Value, in which ethics and morals are intertwined, has been discussed as a philosophical subject. And an answer to the meaning of value has been sought, since the beginning of human existence. In order to find an answer to this question, values philosophy came into being. Although good and fine emotions reside in value, these values can only be projected with action. Actions are the all things that humans do. Just as these types of action affect the selection of individuals' aims they also express what is important for them in their lives (Sagiv, 2002; Schwartz, 1994). For this reason, values bring with it personal or, when necessary, social responsibility. In personal and interpersonal behaviours that give harmony and coherence to people and to the art, music, architecture and science that people create, they are the values that create this harmony. While values are affected by a society, in which they belong to the living dynamics of that society, the values also affect that society. While the relativity of values is formed according to the society, culture and surrounding geography that depend on time and space, they also have a universal dimension. At the same time, this universal dimension is an important factor, in ensuring social stability, since values, by defining the ideal behaviours desired by society, consequently direct our actions (Rokeach, 1973).

Although values are perceived as the morals, religion and beliefs, they differ in terms of theoretical structure from morals, religion and beliefs. Actually, they are one of the moral areas most commonly agreed upon by people at a theoretical level. Honesty, integrity, courage and devotion are highly welcomed in every philosophy and faith (Bardi and Schwartz, 2003; Kuçuradi, 2002). On the other hand, just as values accelerate the rise of conflicts in society when they function inadequately, they also have an important place in peace and happiness (Inglehart and Welzel 2005; Ornstein and Hunkins, 2017). In this context, values education must form an important dimension of the education to be provided to individuals. Values education has irreplaceable importance both in shaping an individual's character and in enabling social tranquillity and integration (Heslep, 1995; Sönmez, 2018;).

Studies related to the subject of the teaching and fostering of values are given the name of "values education". Values education, consists of all educational efforts carried out towards nurturing and developing awareness of positive values in children, and towards advancement in line with their own potential (UNESCO, 2020). By developing individuals' ability to project their ideas, make judgements and form viewpoints, as well as their ability to acquire values based on the components of their own cultures, values education helps them to understand what is valuable (Kızıllhan, 2017). At the same time, values education also develops together with it the qualities of having responsibility, being tolerant, and showing respect for other beliefs and different ideas (O'Connell, 2012).

When values education is considered as a process for individuals' acquisition of identity and socialisation, families and schools have an important duty in children's acquisition of values. By means of values education, the school prepares children as the individuals equipped for society (Lunn et al., 2016). Among the school staff, the main duties of teachers are to instil basic personal and social values in future generations (Yazar, 2018). In this context, teachers constitute the essence of values education. During the process of teaching values, teachers must be a role-model, create a common social area in the classroom, give responsibility to every student, contribute to the development of their values, give students the opportunity to make decisions, and encourage them for cooperation (Colnerud, 2006; Halstead and Taylor, 2000).

The values that are to be nurtured in students should be determined by obtaining the views of students, teachers, families and non-governmental organisations (Brynildssen, 2002). In studies conducted with regard to students' acquisition of values, it is seen that values are taught by integrating them to curricula (Ornstein and Hunkins, 2017; Thornberg, 2016; Ulavere and Veisson, 2015). Furthermore, in previous studies it has been revealed that the values can be fostered in children in values curriculum through family participation (Crowther, 1995). In Turkey, values education was conducted within the scope of the hidden curriculum until the year 2005. In the 2005-2006 academic year, it was included in the Life Sciences, Social Studies, Turkish, Science and Technology, Mathematics, and Religion and Ethics curricula. From the 2010-2011 academic year onwards, values education has been given at all levels of education with in-class and

out-of-class activities (Cihan, 2014). In Turkey, values education as an education policy is given special attention. Projects are carried out to support values education in formal curricula in primary schools in the provinces such as Konya, Denizli, Çanakkale, and Erzincan. However, in previous studies, despite all these efforts, it is revealed that the desired level of success in values education has not been achieved. In addition, there have been problems in transforming the values into behaviour in values curriculum. Moreover, the values which are attempted to be fostered in school have not been supported by families. On the other hand, the preservice and in-service values education in teacher training is inadequate (Aktepe et al., 2020; Çelik, 2020).

Within the context of these problems experienced in values education in Turkey, certain questions need to be examined. Within its characteristics (the values of responsibility, belief, happiness, rationality, diligence, etc.) how values education should be given to children? Should it be provided in the form of an independent “values education course”, or should it be interspersed among the contents of certain suitable adjacent subjects? Within this activity, which common educational institutions outside school can be utilised? Are values an indispensable complementary factor that assists in social, sporting, artistic and academic success for an individual? Are a social and well-balanced individual and an organised and harmonious societal life possible in the absence of values? Can we leave the functioning of such a vital phenomenon to another institution? Developing both theoretical solutions to questions and the policies for implementing them are not tasks that can be carried out easily and hastily. Just as it is discussed in philosophical theories, the problem is whether to provide values education as part of Religion and Ethics lesson, or to gain it separately. On the other hand, one another question is the appropriateness of it in terms of democracy culture. In this sense, within the scope of the problems revealed by the related literature and the questions that are examined, the state of values education in primary schools in Rize province is an issue of concern. Within this context, the answers were sought to the following questions:

1. What are the contributions of values education to students?
2. Which values should be included in values education?
3. How should the values curriculum be implemented?
4. Which factor/factors, such as ‘family’, ‘school’, ‘peer groups’, or ‘media’ are more effective in values education?

METHOD

RESEARCH DESIGN

This qualitative research was conducted in a case study model. The case study, which is an in-depth description and examination of a limited system, is a methodological approach that includes an examination of how that system operates and functions by collecting multiple data (Merriam, 2013). Factors (environment, individuals, events, processes, etc.) related to a situation are investigated with a holistic approach. Focus is on how these factors affect the related situation and how they are affected by the related situation.

STUDY GROUP

A purposive sampling approach was adopted for selection of the study group. The study group consisted of teachers employed in state primary schools having low, medium and high socio-economic levels affiliated to Rize Provincial Directorate of Education in the academic year of 2018-2019, in Turkey. The participants were selected with the criteria of having at least 10 years’ classroom teaching experience at the schools and of having taught different grades (1st, 2nd, 3rd and 4th). The research was conducted on a total of 36 teachers, working nine state primary schools (3 at low, 3 at medium, and 3 at high socio-economic levels), which met these conditions. The age of teachers ranged from 25 to 62 years old. The job seniority of the participants ranged from 10 to 35 years. The study group consisted of 16 female and 20 male teachers. Only five teachers had received in-service training related to values education. Among the participants, six teachers were have master’s degree.

DATA COLLECTION TOOL

A semi-structured interview form was used for collecting data. The following steps were performed for setting the questions included in the semi-structured interviews. 1. The theoretical framework of the interviewing questions was determined by in-depth examination of the literature related to the subject, and pilot questions were prepared. 2. The views of three experts from three different state universities, with published studies on the subjects of classroom teaching and values education, were obtained. By taking the feedback obtained from the experts into account, the interviewing forms were rearranged and clarified with four questions. In this way, an attempt was made to ensure the content and face validity of the questions. 3. With the aim of determining the lucidity and comprehensibility of the interview questions, a pilot interview was held with three classroom teachers working three different primary schools (1 at low, 1 at medium, and 1 at high socio-economic levels). 4. After the pilot interview, the interviewing questions were rearranged with respect to the format, content validity, and lucidity and comprehensibility. The views of the experts were applied again with regard to the revised questions. By considering the feedback from the experts, the final form to the interviewing questions were given. 5. The revised interviewing questions were used for the semi-structured interviews.

In the pilot interviews, an attempt was made to reveal primarily how present-day values education was perceived and interpreted by the classroom teachers. Three pilot interviews based on the socio-economic group variable were carried out in 2018 and lasted about in 40-65 minutes. The aim of the pilot interviews was to reveal the important facts related to the aim of this research that have remained hidden. An attempt was also made to remain faithful to this principle in this research. The individual interviews were conducted between October 2018 and June 2019. The semi-structured interviews were made with the 36 teachers, each of them lasted about in 50-65 minutes. The individual interviews were audio-recorded, while the recordings were supported by note-taking. The interviews were conducted based on the principle of voluntariness. The participants were encouraged to speak frankly and were informed that they could withdraw from the research at any time that they wished without providing a reason (Shenton, 2004). The semi-structured interviews were carried out with respect to the most suitable time and location in the teachers' room after school hours.

DATA ANALYSIS

The data were analysed by using Marshall and Rossman's (2011) seven steps for content analysis. (1) Raw data were obtained by converting the audio-recorded interviews into written format using the computer-assisted NVivo 12 qualitative data analysis software. (2) The research questions, field notes and printouts of all the interviews were read three times by the researcher to confirm their accuracy. (3) The interview documents of this research were coded by examining them with inductive analysis, and the initial themes and subthemes were created. (4) Independent codes for the data were generated by the researcher and three experts working separately. After the data had been grouped according to the research findings, the views of the three experts were obtained and the data were reduced to the codes in the data set (Corbin and Strauss, 2015). Next, the themes were generated. (5) For the creation of the themes and subthemes, differences of opinion in the coding between the researcher and experts were revealed, the determined themes were compared and a consensus was reached. In order to provide clear meanings in some themes, certain statements were revised. (6) For arranging and defining the data according to the codes and themes, and for interpreting the findings, alternative explanations, negative situations and different interpretations of the data were evaluated and the themes were described (Maykut and Morehouse, 1994). (7) At the final stage of the data analysis, the obtained findings were explained, and interpretations and conclusions were presented.

With the aim of ensuring the internal validity of this research, the theoretical framework was created by conducting a comprehensive review of the literature related to the subject. Valuable results were accessed that could be used in practice and were consistent with all the criteria in the research by ensuring consistency between the research questions and data collection and analysis techniques in this research (Eisenhart and Hove, 1992). For data triangulation in this qualitative research, attention was given to the variations in gender, professional experience, graduate/undergraduate education status, schools at different socio-

economic levels and voluntary participation in interviews (Guba, 1981; Shenton, 2004). For transferability of this research, the findings were supported with the most up-to-date versions of literary research related to the subject in a local and universal context. Transferability is the ability to adapt the findings of previously conducted studies to similar situations while preserving their meanings and inferences. The transferability of findings is possible by thoroughly describing the factors affecting the research and methods followed in the selection of the sample. One of the basic criteria in evaluating qualitative research is that the researcher should be able to correlate his/her findings with findings in the field literature (Silverman, 2000). Prior to transmission, it is necessary to provide information such as (1) number and locations of schools included in the research, (2) limitations related to participants providing data, (3) number of people included in the field research, (4) methods used for gathering data, (5) number and duration of data gathering sessions, (6) period elapsed since data gathering procedure (Shenton, 2004). In this research, attention was given to all the components that should exist for transmission of qualitative research. Data were supported with direct quotations where required. In cases where a statement in a quotation was long, the parts expressed in the quotations were transmitted by preserving the explanations of the participants. For parts not taken up for transmission, three dots (...) are used next to the quoted part of the statement. In the quoted statements, the number of the participant producing the quotation is shown in the form P-2. P denotes the participant, while 2 indicates his/her number in the list.

Reliability is the detailed explanation, in the analysis and interpretation process, of the themes determined by their effects on the data collection and analysis studies of the research processes (Morrow, 2005). Reliability is the conclusion drawn about the process in general by examination of the research reports by an expert not involved in the research (Lincoln and Guba, 1986). The findings are the acceptability for reflecting the investigated phenomenon as much as possible, free from the beliefs, desires and prejudices of the researcher. In this context, all of the findings belong to the gathered data (Morrow, 2005). It is very important to give assurance that the findings originate from the experiences and opinions of the participants. In this research, acceptability has been ensured with direct quotations by the participants. One of the most effective ways of increasing the reliability of qualitative studies is consensus among coders based on the use of multiple coders for analysis of written data. Consensus is the confirmation of conclusions made by obtaining assistance from experts for analysis of the data. By using the NVivo program for deciphering and coding the sound recordings in the research, the reliability of the research was increased (Miles and Huberman, 1994; Silverman, 2006). Computer programs like NVivo and MAXQDA are among the effective credibility techniques used.

FINDINGS

In this research, by evaluating the data we have obtained from the responses given to the questions we addressed to the classroom teachers, we have tried to throw light on related problems by attempting to describe their opinions and experiences with a holistic interpretation of their viewpoints and experiences related to values education. The opinions of the teachers with regard to the values education process were grouped under five themes. Findings are presented thematically in depth below, according to the process steps followed.

CONTRIBUTIONS OF VALUES EDUCATION

In Theme 1, the contributions of values education are grouped and presented in the Table 1. Values education contributes to diligence, honesty and achievement. It enables virtuous individuals to be raised. It instils national and universal values, it establishes social order. It enables individuals who serve society to be raised. Lastly, it fosters an understanding of work discipline, and it produces individuals who create and share knowledge. The fact that the classroom teachers expressed the contributions of values education in a number of different dimensions, indicating that their awareness of being the implementers of the subject was high, is quite a satisfying situation.

Table 1. The Contributions of Values Education

1. It contributes to diligence, honesty and achievement
2. It enables virtuous individuals to be raised
3. It instils national and universal values
4. It establishes social order
5. It enables individuals who serve society to be raised
6. It fosters an understanding of work discipline
7. It produces individuals who create and share knowledge

In the semi-structured interviews, many teachers stressed the importance of values education for acquiring national and universal values. Some teachers stated that for communal living, in acquiring national and universal values, besides fostering universal values and information sharing and contributing to mankind, values education also contributed to humans' cultural richness and to the conservation of nature. It was again emphasised that by means of values education, virtuous individuals could be raised and societal security could be ensured. In this context, the raising of humanist individuals who valued and accepted others was stressed. The fact that the teaching of national values in values education was stressed by a majority of teachers is quite a striking situation. However, they also expressed different opinions on this subject. There were also views to the effect that values education transformed behaviours into a life philosophy by developing an ethical understanding independently of ethnic and religious elements. Two rather conflicting views, other than those expressing values education for communal living, were stated. These were:

“Values taught independently of ethnic and religious elements make it possible for universal values to be acquired for accessing and sharing information” (P-7). While this statement expresses the opinion that a values education independent of ethnic and religious elements needs to be given in order to achieve universal values, the following view, which is completely contrary to this one, is striking:

“Values education must be given by the family. The codes of ethics that constitute values are not universal. A behaviour considered immoral in our society might be considered a normal behaviour for another society. Values education is important for creating a national consciousness” (P-31).

Classroom teachers expressed the view that the most important contributions of values education were that it contributed to diligence, honesty and achievement. By considering the values of diligence, responsibility, honesty and achievement as very important, the fact that the teachers expressed these as priority values is a striking finding. In all explanations made after this, the contributions of values education were based on diligence, responsibility, honesty and success. The idea that values education contributed to enabling the raising of virtuous individuals was also supported. A few teachers stressed that values education given at young ages would be a means for internalising a work discipline understanding. Teachers' views were as follows:

“Values education is used for developing a consciousness of organised and systematic work and of responsibility” (P-5).

“Of course, values are important for academic achievement. For example, work ethics, work discipline, and refraining from plagiarism in academic studies. Individuals with weak values will also have low levels of success. A person who has received a strong values education will believe in effort and work accordingly” (P-10, P-29).

While a majority of the participating teachers believed that individuals could acquire values of the information society via values education, two teachers expressed the contradictory view that values such as responsibility, diligence, being scientific, and serving the community, etc. could not be fostered in individuals by means of values education. These two examples are as follows:

“The thing that you call value is a costume that in which individuals is dressed in order of experience after belief, customs and traditions. A person has no chance to choose. Academic success is individual and scientific. Achievement cannot be founded on abstract principles” (P-3).

“If you compel people with a set of rules by saying values education, you will reduce their levels of success” (P-13).

It can be said that the views of these two teachers are a reflection of the fact that in Turkey in recent years, values education as a state and education policy has been overemphasised, that is has been given theoretically in the syllabi of almost all subjects, and that preparation of weekly/monthly noticeboards and displays related to the subject has been imposed. None of the classroom teachers who took part in this research had received theoretical or practical training aimed at ways of teaching values education to students during their undergraduate education. Values education is a cultural issue and teachers also need to believe in this issue and internalise it. Values cannot be acquired by students with external impositions. The teacher needs to believe in them first of all, and then to project them onto his/her behaviours and onto the learning environment within the process. This type of teaching is one of the professional values. This is why pre-service training in the acquisition and internalisation of professional values is important. Some teachers regarded values education as a means of establishing social order and of fostering national and universal values. One teacher’s view was:

“Of course, values education is important. For society to live in peace and harmony, people should possess such values. Or else society should possess universal principles in its consciousness...” (P-9).

In countries in a pioneering position on a global scale, values education is provided from young ages onwards. In bringing up productive individuals who will form the information society of the future, values education occupies a very important place. The teachers who participated in this research also expressed opinions to the effect that values education acquire an understanding of work discipline, raised individuals who produce and share information and raised individuals who serve the community. Since building the information society of the future is achieved via education institutions and teachers, these findings, that the participants of this research had high levels of awareness of this subject, are very important. One teacher stated:

“Values are precious in the sense that they are important for acquiring, generating and sharing knowledge...” (P-17).

PRIMARY VALUES THAT SHOULD BE GAINED BY STUDENTS

In Theme 2, universal values, which were expressed by the majority of teachers as primary values that needed to be acquired by students, are respect for human rights, equality, freedom, peace, justice and democracy. The fact that the classroom teachers gave priority to the values of respect for human rights, equality, freedom, peace, justice and democracy above individual values is an interesting finding in the sense that they had high levels of awareness of this subject. In one sense, the fact that in the acquisition of the values such as respect for human rights, equality, freedom, peace, justice and democracy, classroom teachers project these values via experiential learning as a model is important for the internalisation of these values by students.

Table 2. Primary Values that Should Be Gained by Students

1. Respect for human rights
2. Equality
3. Freedom
4. Peace
5. Justice
6. Democracy

The views of teachers on this subject were:

“Universal values are founded on the value of humanity, which is a value common to all religions... Human values must be included primarily. In places where there are no human values, whatever you give to someone goes up in the air” (P-1, P-8, P-27).

“Respect for human rights, protecting the environment, preserving and developing social and universal values. Equality, freedom, peace and justice” (P-5).

Individual values come in second place as primary values that should be fostered in students. These values are honesty, diligence, respect, love, patience, empathy, mercy, helpfulness and tolerance. Some teachers' views were:

“Respect, honesty, righteousness, respect for others' efforts, and establishing empathy” (P-17).

“Honesty, diligence, respect for individual rights, and tolerance. If respect is found within a society, then that society will be happier and more at peace” (P-29).

National values were asserted by only 6 teachers. These were patriotism, devotion, loyalty and commitment.

Views of two teachers were:

“...Common socio-cultural values, as well as religious belief and commitment to conscience teaching, devotion and loyalty that are requirements for being a human” (P-11).

“Subjects aimed at the essence of the Turkish Nation should be increased. In my opinion, it is very important to educate our students, who are the guarantee of our future, with their own essential culture and make it a lifestyle. Therefore, the values of patriotism especially, as well as devotion, loyalty and commitment should be taught...” (P-15).

IMPLEMENTATION OF VALUES EDUCATION IN THE CURRICULUM

In Theme 3, implementation of values education in the curriculum was categorised as follows: it should be provided in all lessons, it should be given as the school culture, it should be provided as a separate values education lesson, it should be given by combining it with the Religion and Ethics class, and it should be provided by combining it with the subject of Turkish (Table 3). The ways of values education should be implemented in the curriculum were suggested in these five different dimensions by the implementers of the subject.

Table 3. Implementation of Values Education in the Curriculum

1. It should be provided in all lessons
2. It should be given as the school culture
3. It should be provided as a separate values education lesson
4. It should be given by combining it with the Religion and Ethics class
5. It should be provided by combining it with the subject of Turkish

Most of the classroom teachers expressed the view that implementation of values education should be included in all subjects of the curriculum. The fact that the teachers expressed the need for values education to be provided by integrating it into all classes and that implementations should be made in this way is certainly an encouraging situation with respect to values education, since it was revealed that the best example applications of values education need to be given by combining values education with all subjects. This finding revealed by the teachers is very important. In one sense, the implementers of the subject had reached this conclusion with the years of experience they had gained. Views of two teachers on this subject were:

“Values education can be given in all lessons. It would be wrong to associate it with the religion lesson. Sporting values in the physical education lesson, artistic values in art-music classes, scientific values in academic classes, etc. ...” (P-9, P-31).

“The contribution of values education to a single class or not one lesson, to all lessons is a necessary subject. Therefore, education on values nested in society should be given in all lessons and in our books...” (P-34).

In contrast with the view that values education should be implemented within all subjects of the curriculum, a limited number of teachers expressed the opinion that it should be given by integrating it with the Religion and Ethics class. It can be said that this view originates from the belief that values are faith-based and from the perception that this subject is like an obligation. Again, a limited number of teachers expressed the opinion that values education was not a subject for the Religion and Ethics lesson and that it should be taught separately as a Values Education lesson or as a school culture. Views on this subject were:

“Values education must be an independent subject” (P-14, P-15).

“It has been integrated with the Religion and Ethics lesson. As if it only belonged to the subject of religion and ethics, when in fact, value is life itself. Religion is not culture. Ethics are not

knowledge at all. The subject of values education should be given in a separate course” (P-18).

“It should be provided, not as lesson content but as a school and social culture...” (P-2, P-36).

Contrary to the views of the other teachers, it was stated that values education should be given by combining it with the subject of Turkish lesson. One teacher’s view was:

“Values education should be acquired especially at primary school level. Therefore, I believe that a lot of space should be given to values education in Turkish course books” (P-28).

With this viewpoint, values education has been reduced to a rather narrow and limited area. As is argued in the literature related to the subject, values should be taught as a separate subject under the heading “values education”, and yet the idea that it will be internalised does not go beyond a myth. In fact, there cannot be a lesson for value. Values education should be offered to students as a culture both within school and out of school by classroom teachers at primary school level.

EFFECTIVE INSTITUTIONS FOR VALUES EDUCATION

In Theme 4, institutions that are effective for values education are headed by the family, followed by the media, all of them, school, the family and media, and peer groups. The majority of teachers gave priority to the family at the head of effective institutions for values education. Teachers’ views on this subject were:

Table 4. Institutions that are Effective for Values Education

1. Family
2. Media
3. All of them
4. School
5. The family and media
6. Peer groups

“The family is the place where individuals have their first educational experience. The other components are also effective for values education, but I believe that values education begins in the family. Here, the development of the family’s understanding of value and its harmony with society are important” (P-4, P-6, P-19).

“The foundation of values education is laid in the family. The gains made in the family will contribute to shaping the following stages of life. If values education has begun in the family, we educators can be even more successful in this subject...” (P-10, P-17).

“The media provide both positive and negative examples. A person may acquire both. Some have a negative effect on societal values. The opposite may also occur” (P-11, P-22).

“The family and media. A person spends most time with his/her family. At home, the vehicles most often interacted with are television and computers. Therefore, these facilities must be used in a positive way” (P-12).

“All of them... Values education begins with the family, but undergoes change with peers and the media, and the behaviours nurtured by the family are damaged over time. When entering adolescence, the most important factor for values education in particular is peer education” (P-18).

A limited number of teachers referred to school, which is a social education institution, among the effective institutions for values education.

“I consider it important for the values that are attempted to be taught in school to be supported at home as well” (P-2).

Here, while the classroom teachers’ own reflections should have been made to the effect that school, as a social education institution where values will be acquired in future generations, should go in parallel with the family with regard to providing values education, it is a striking finding that only a limited number of teachers placed emphasis on the school. In fact, this percentage ought to have been a lot higher.

The opinions related to the values education process of the participants in the research were grouped under four themes. As contributions of values education to students, the values of diligence, honesty and

achievement were regarded as very important, while for raising virtuous individuals, the acquisition of national and universal values was included. Other contributions of values education were raising individuals who create and share knowledge and bringing up individuals who serve the community by fostering an understanding of work discipline in them. In the theme related to which should be the priority values that needed to be acquired by students, these included (i) respect for human rights, equality, justice, freedom, peace and democracy as universal values, (ii) honesty, diligence, respect, love, patience, empathy, mercy, helpfulness and tolerance as individual values, and (iii) patriotism, devotion, loyalty and commitment as national values. In the theme about implementation of values education in the curriculum, methods expressed varied among providing it as part of all lessons, under the name of a separate values education subject, by integrating it in the religion and ethics lesson, by combining it with the Turkish lesson, and as a school culture. Regarding which institutions were effective for values education, these were expressed under the headings of the family, the media, school, peer groups, the family and media, and all of them.

DISCUSSION AND CONCLUSION

In this study, it is aimed to examine values education in depth based on the experiences of classroom teachers. This research also aims to contribute the related subject area in both the national and universal context by means of a thematic discussion within a holistic approach.

In the Turkish education system, values education has been implemented as a state policy by means of a formal curriculum since the year 2005. For the transmission and acquisition of values, this function is performed by teachers in schools, which are the secondary social institution after the family. Serious problems are experienced in this process, such as teachers who do not receive pre-service training for values education, teachers who take the values education course as an elective course in faculties during the preservice period so that this subject remains theoretical, failure of the subject to be accessed by all teachers via in-service training, failure of values education theory to be converted into practice during in-service training, insufficiency of curriculum applications and course books aimed at values education, course books that consist only of reading passages, inadequate family participation in values education, the fact that classroom/school applications turn into mere poster and noticeboard applications, and teachers who are inadequately equipped for the subject of values education (Karabacak et al., 2018; Sezer et al., 2019; Uştu et al., 2016).

The results revealed that the contributions of values education to be diligence, honesty, contributing to success, enabling the raising of virtuous individuals, fostering national and universal values, establishing social order, enabling individuals who serve the community to be raised, fostering an understanding of work discipline, and raising individuals who produce and share knowledge. A rather limited number of studies related to contributions of values education were accessed in the field literature. In Taymur's (2015) and Namlı-Başçı's (2017) studies, the contributions of values education were expressed as factors effective for establishing social order, giving meaning to life, and guiding behaviours. In one sense, values education also contributes to remedying social problems. In this context, to derive the maximum benefit from values education, the most important factor is education. Many thinkers from Plato and Aristotle to Kant and Dewey have stated that one of the main functions of education is for a person to acquire character and worth (Heslep, 1995). Individuals spend a significant part of their lives in educational institutions and during this period, their characters are also formed and moulded. Indeed, values education, whose aim is happiness and welfare, should be developed for everyday situations in all areas of life (O'Connell, 2012). That is, by way of values education, individuals acquire the skill of internalising values based on their own cultural items for developing their viewpoints for having responsibility, being tolerant, and respecting others' beliefs and different ideas.

According to the results, the priority values that needed to be acquired in students were determined as the universal values such as respect for human rights, equality, justice, freedom, peace and democracy. In addition, the results revealed the individual values such as honesty, diligence, respect, love, patience, empathy, mercy, helpfulness and tolerance. Moreover, the results revealed the national values such as patriotism, devotion, loyalty and commitment. The related literature reveals that teachers gave most

importance to the values of “honesty, respect, responsibility, love, diligence and patriotism” as basic values that should be fostered in students, while values such as “virtuousness, courage, commitment, ethics and aesthetics” were included nearer the end (Namlı-Başcı, 2017; Yıldırım, 2009). In studies conducted on classroom teachers, however, values of “honesty, respect, responsibility, love, diligence and patriotism” were given priority by this teaching group. In studies conducted on classroom teachers, although values of “honesty, respect, responsibility, love, diligence and patriotism” were given priority by this teaching group, in studies carried out in secondary schools and especially those aimed at the Social Sciences lesson, it is seen that at the top of the list of priority values were national values and the value of patriotism.

For the 2019-2020 academic year, a large number of values (48) under the headings of “being scientific, aesthetics, prudence, respect, tolerance and responsibility” are included as values to be fostered via the curriculum in students in the fourth grade. Some of these values included as values to be fostered via the curriculum are not suitable values (tolerance, fidelity, loyalty, mercy, modesty, conscientiousness and courage) for fourth-grade students, who are in the concrete operational stage of cognitive development. In fact, values are attempted to be acquired by children in the primary school years based on a concrete context. Values such as purity, good will, gratitude, conviction, humility, forgiveness, sensitivity, devotion, sacrifice, justness, love of truth, shame, tolerance, sincerity, martyrdom, appreciation and fidelity are not suitable for inclusion as values to be fostered through the curriculum in fourth-grade primary students who are in the concrete operational stage. In a study conducted by Batmaca (2016), it was revealed that since the values of being scientific, independence, respect for one’s Turkish elders, patriotism and giving importance to family unity, which are among the values included in the subject of 4th grade primary school Social Studies, were too abstract for the students’ age and grade level, they could not be acquired by the students. In this context, it can be said that too many values are included in the primary school curriculum. Whereas too many values are included at class level in curricula in Turkey, in the world in general, a limited number of 8 or 10 values are included in curricula implementations. For example, in the education systems of countries such as USA, Australia, Finland, France and UK, it is determined that a limited number of values are targeted to be fostered in all students (Lickona, 2006; UNESCO, 2020; Prencipe and Helwig, 2002; Ryan and Bohlin, 1999). At primary school level, these basic values to be acquired in students are equality, mercy, responsibility, freedom, honesty, reliability, respect, understanding, good citizenship, cooperation and helpfulness.

The results revealed that with regard to the implementation of values education in curricula, opinions expressed were that it would be effective to apply values in all lessons, as a separate values education class, by integrating it with the subject of religion and ethics, by including it in Turkish lessons, and as a school culture. Prior to 2005, values were mainly taught via the hidden curriculum, while from 2005 onwards, it was formally included in the developed curricula. In this implementation, values education is carried out within certain curricula and as part of the school-based hidden curriculum. The teaching of values is included in the curricula for subjects such as Religion and Ethics, Life Sciences, Social Studies and Turkish, and explicitly and implicitly in the curricula of other subjects. A very limited number of studies have been accessed on the subject of implementations of values education in curricula. Similarly, in Taymur’s (2015) research, it was stated that values education should be provided continuously, and in this context, that curricula should be prepared in such a way that the subject could be continued outside a lesson or period of time during breaks and in all areas of school. Whereas, Çetinbaş (2015) concluded that a separate lesson with the name of values education should be included. For every individual in the learning age to be equipped with the values and skills that will help him/her to make suitable moral decisions and display behaviours to that effect, values education should be delivered by means of curricula in education institutions. In studies conducted on the subject of fostering values, it is seen that values education is provided by integrating it in curricula (Akpınar and Özdaş, 2013; Gunawan et al., 2018). It is very important that the attitudes of teachers, who are the implementers of values education in the field, should be positive towards values education. In this context, the views and beliefs of teachers about teaching, learning and the curriculum are very effective on what type of learning activities are to be carried out, and on students’ learning or achievements. The targets set in curriculum gain functionality with these aims and outcomes of teachers. The values possessed by teachers are related to good quality education.

The results revealed that the institutions which should be effective for values education were expressed as the family, the media, school, peer groups, the family and media, and all of them, in that order. In the opinions of the classroom teachers, the most effective institution for acquiring values was the family. In the limited number of studies carried out, the family is also the most important of the institutions effective for values education (Aksoy, 2017; Gündoğdu et. al., 2019; Kavgaoglu and Fer, 2020). With regard to the results of this research, this is a rather striking finding, since it would have been expected that teachers, who are in the position of implementers of the field and are the people who foster values in education institutions, would express the school as being the most effective institution for values education. The fact that teachers considered the family to be responsible for values education rather than the school/teachers is a striking finding. Perhaps the fact that the values that teachers attempted to foster in children in school were not converted into behaviour due to insufficient support by families can be said to have affected this result (Acar-Başegmez and Er, 2017; Doktaş-Yeşiltaş and Mentiş Taş, 2016). In this context, there are studies revealing that family participation efforts are inadequate in Turkey (Aykol, 2019; Kıvrak and Yıldırım, 2020). Contrary to this result, there are also studies related to values education in which the school comes in first place (Akpınar and Özdaş, 2013). In the related literature, it is stated that the school is charged with great social responsibility for acquiring values. It is revealed in the studies carried out that the values in values curriculum can be nurtured in children via the participation of families (Crowther, 1995).

Values education must be designed with the integration of family, school, media and peer groups. Nowadays, values education with only one of these institutions alone is not sufficient. Values education must be provided with the support of all these institutions (Barbour et al., 2018). In this context, in the education systems of countries such as USA, Australia, Finland, France and UK, responsibility for fostering basic values is shared among education stakeholders. Within the framework of basic values, the roles of teachers, administrators and families are specified, and activities aimed at acquisition of values are determined and shared at every level.

In conclusion, the state of values education in primary schools in Rize has been revealed according to the views and experiences of classroom teachers. The classroom teacher, who occupies a position between disciplines, is capable of providing values education to students at young ages with a multi-disciplinary, holistic approach. In this context, classroom teachers must possess the values required by the profession. In one sense, classroom teachers also have the duty of socialising the child. Classroom teachers are in a key position for fostering values in young children through formal and informal means. This research is a tool for revealing the current position of values education in a qualitative dimension. In this context, the following suggestions can be made:

1. At a local level, the problems encountered by classroom teachers in values education can be revealed, and solutions to these problems can be found with scientific methods.
2. For values education of classroom teachers, supportive studies can be made aimed at values acquisition by means of family participation.
3. In school-based values education, curriculum studies can be conducted aimed at acquiring values education as a school culture.
4. Values education should be presented as a culture to preservice teachers in undergraduate classroom curricula and as part of faculty culture.
5. To teach real-life situations in values education via experiential learning methods, the necessary arrangements should be made in in-school and out-of-school curricula.
6. Classroom teachers' deficiencies in values education competencies should be eliminated by means of practical values education with in-service training.

REFERENCES

- Acar-Başegmez, Derya and Er, Kemal O. "Sınıf öğretmeni adaylarının değer öğretimine ilişkin görüşleri (The Opinions of Classroom Teacher Candidates Related to the Value Teaching)". *International Periodical for the Languages, Literature and History of Turkish or Turkic*, 12 (33) (2017):1-34. <http://dx.doi.org/10.7827/TurkishStudies.12642>
- Aktepe, Vedat., Keser, Hilal & Şeref, Şükran E. "Sınıf öğretmenlerinin perspektifinden değerler ve değerler eğitimi uygulamalarının değerlendirilmesi araştırma (The assessment of values education activities according to the primary school teachers' opinions)". *Afyon Kocatepe Üniversitesi Sosyal Bilimler Dergisi*, 22 (4) (2020):897-918.

- Akpınar, Burhan and Özdaş, Faysal. "Teachers values education at primary schools: A qualitative analysis". *Fırat University Journal of Social Science*, 23 (2) (2013):105-113.
- Aksoy, Ebumüslüm. "İlkokullarda değerler eğitiminde etkili olan faktörlere ilişkin sınıf öğretmenlerinin görüşlerinin değerlendirilmesi (Evaluation of the opinions of the class teachers on the factors that are effective in values education in primary schools)" Unpublished Master's Thesis. Siirt Üniversitesi, Siirt, 2017.
- Aykol, Bediha G. "Öğretmen ve veli görüşlerine göre ailenin eğitime katılımı (Evaluation of the opinions of the class teachers on the factors that are effective in values education in primary schools)" Unpublished Master's Thesis. İstanbul Sabahattin Zaim Üniversitesi, İstanbul, 2019.
- Bardi, Anat and Schwartz, Shalom H. "Values and behavior: Strength and structure of relations". *Personality and Social Psychology Bulletin*, 29 (2003):1207-1220.
- Batmaca, Mehmet K. "Sınıf öğretmenlerinin 4. sınıf Sosyal Bilgiler dersinde yer alan değerlerin öğretimine ilişkin görüşleri (Views of classroom teachers on the teaching of values in the field of 4th grade social studies)" Unpublished Master's Thesis. Kafkas Üniversitesi, Kars, 2016.
- Barbour, Chandler H. et. al. "Families, schools and communities: Building partnerships for educating children". USA: Pearson, 2018.
- Bozdaş, Şükran. "Öğretmenlerin mesleklerine adanmışlık düzeyleri ile değerler eğitimi uygulama düzeyleri arasındaki ilişki (The relationship between the level of teachers' commitment to teaching and the level of their practice in values education)" Unpublished Master's Thesis. Hacettepe Üniversitesi, Ankara, 2013.
- Brownlee, Lunn, J. Et al. "Critical values education in the early years: Alignment of teachers' personal epistemologies and practices for active citizenship". *Teaching and Teacher Education*, 59 (2016):261-273.
- Cihan, Nazlı. "Okullarda değer eğitimi ve Türkiye'deki uygulamaya bir bakış (Values education at schools and its practice in Turkey)". *International Periodical for Languages, Literature and History Turkish or Turkick*, 9 (2) (2014):429-436.
- Colnerud, Gunnel. "Teacher ethics as a research problem: Syntheses achieved and new issues". *Teachers and Teaching: Theory and Practice*, 12 (3), (2006): 365-385.
- Corbin, Juliet and Strauss, Anselm. "Basics of qualitative research: Techniques and procedures for developing grounded theory (4th ed.)". Sage Publications (2015).
- Crowther, Eleanor. "An independent school library-classroom- parent partnership program to encourage respect, responsibility, courtesy and caring for students prekindergarten through eighth grade" Unpublished Master's Thesis. Practicum, Nova Southeastern University, 1995. <https://eric.ed.gov/?id=ED388964>
- Çelik, Çiğdem. "İlkokul kademesinde uygulanan değerler eğitimi programının sınıf öğretmenleri, okul psikolojik danışmanları ve okul yöneticilerinin görüşlerine göre değerlendirilmesi: Tek durumlu bir örnek olay çalışması (An investigation of values and character education program which is leaded in primary school: A single case study based on elementary school teachers, school psychological counselors and managers views)" Unpublished Master's Thesis. Adnan Menderes Üniversitesi, Aydın, 2020.
- Çetinbaş, Emin. "Sınıf öğretmenlerinin değerler eğitime yönelik yeterliliklerinin incelenmesi (Examining the competencies of primary school teachers toward values education)" Unpublished Master's Thesis. Akdeniz Üniversitesi, Antalya, 2015.
- Kavgaoğlu, Derya and Fer, Seval. "Örtük program, resmi program ve okul dışı etmenlerin değerleri kazandırma etkililiğinin incelenmesi (Analysis of hidden curriculum, school curricula and out-of-school-sources about gaining values)". *İstanbul Gelişim Üniversitesi Sosyal Bilimler Dergisi*, 7 (2) (2020):404-420.
- Doktaş-Yeşiltaş, Pınar and Mentiş-Taş, Ayşe. "Okul müdürlerinin değer ve değer kazanımına ilişkin görüşleri (School Managers' Remarks On Values And Gaining Values)". *Hitit Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 9 (2) (2016):1125-1146. <http://dx.doi.org/10.17218/hititsosbil.280834>
- Eisenhart, Margaret A. and Howe, Kennet R. "Validity in educational research. In M. LeCompte, W. Millroy and J. Preissle (Eds.), *The handbook of qualitative research in education* (pp. 642-680)". Academic Press, 1992.
- Guba, Egon G. "Criteria for assessing the trustworthiness of naturalistic inquiries". *Educational Technology Research and Development*, 29 (2) (1981):75-91.
- Gunawan, Imam et al. "Hidden curriculum and its relationship with the student character building". *Advances in Social Science, Education and Humanities Research*, 269 (2018):9-11
- Gündoğdu Kerim et. al. "Teachers' views on character/values education in schools". *International Journal of Psycho-Educational Sciences*, 8 (3) (2019):14-28.
- Halstead, Mark, J. and Taylor, Monica J. "Learning and teaching about values: A review of recent research". *Cambridge Journal of Education*, 30 (2) (2000):169-202.
- Heslep, Robert, D. "Moral education for Americans". Praeger, 1995.
- Inglehart, Ronald and Christian Welzel. "Modernization, cultural change, and democracy: The human development sequence". Cambridge University Press, 2005.
- Karabacak, Nermin., Küçük, Mehmet & Korkmaz, İsa. "An investigation of elementary school teacher undergraduate curriculum related to professional value". *Turkish Journal of Teacher Education*, 7 (1) (2018):61-75.
- Kıvrak, Zehra and Yıldırım, Kasım. "Öğretmenlerin gözünden birinci sınıf öğrencilerin okuma ve yazma becerilerini öğrenim süreçlerine ailelerin katılımı (Effects of parent involvement in first-grade students' learning reading and writing: Views of elementary school classroom teachers)". *Ana Dili Eğitimi Dergisi*, 8 (2) (2020):447-468.
- Kızılhan, Pınar. "Teaching virtue at schools: Why and how". *Journal of Education and Future*. 11 (2017):177-196.

- Kuçuradi, İoanna. “*Etik*”. Ankara: Türkiye Felsefe Kurumu Yayınları, 2002.
- Lickona, Thomas. “Eleven principles of effective character education”. *Journal of Moral Education*, 25 (1) (2006):63-80.
- Lincoln, Yvonna, S and Guba, Egon G. “But is it rigorous? Trustworthiness and authenticity in naturalistic evaluation”. *New directions for evaluation*, 30 (1986):73-84.
- Merriam, Sharan B. “*Qualitative research and case study applications in education*”. Jossey-Bass Publishers, 2013.
- Marshall, Martin N. “Sampling for qualitative research”. *Family practice*, 13 (6) (1996):522-526.
- Marshall, Catherine and Rossman, Gretchen B. “*Designing qualitative research* (5th ed.)”. Thousand Oaks, CA Sage Publications, 2011.
- Maykut, Pamela and Morehouse, Richard. “*Beginning qualitative research: A philosophic and practical guide*”. London: The Falmer Press, 1994.
- Miles, Matthew B. and Huberman, Michael A. “*An expanded sourcebook: Qualitative data analysis* (Second edition)”. Thousand Oaks, CA: Sage Publications, Inc, 1994.
- Morrow, Susan L. “Quality and trustworthiness in qualitative research in counseling psychology”. *Journal of Counseling Psychology*, 52 (2) (2005):250-260.
- Namlı-Başçı, Z. “Sınıf öğretmenlerinin perspektifinden değerler eğitiminin incelenmesi: Erzurum örneği (Examining values education from the perspective of class teachers: Sample of Erzurum)”. *İnsan ve Toplum Bilimleri Araştırmaları Dergisi*. 6 (1) (2017):343-367.
- O'Connell, Erin B. “*Positive behavior support as character education: A nonexperimental, explanatory, cross-sectional study*” Unpublished Doctoral Thesis. Seton Hall University, South Orange, New Jersey, 2012.
- Ornstein, Allan C. and Hunkins, Francis P. “*Curriculum: foundations, principles and issues*”. Boston: Allyn and Bacon, 2017.
- Prencipe, Angela and Helwig, Charles C. “The development of reasoning about the teaching of values in school and family contexts”. *Child Development*. 73 (3) (2002):841-856.
- Ryan, Kevin and Bohlin, Karen. “*Building character in schools*”. California: Jossey-Bass Inc, 1999.
- Rokeach, Milton. “*Nature of human values*”. New York: The Free Press, 1973.
- Sagiv, Lilach. “Vocational interests and basic values”. *Journal Career Assess*, 10 (2) (2002):233-257.
- Sezer, Şenol et. al. “School administrators’ opinions on professional values and professional skills required to be gained to classroom teachers inservice training process”. *Journal of Theoretical Educational Science*, 12 (4) (2019):1223-1238. <http://dx.doi.org/10.30831/akukeg.458061>
- Schwartz, Shalom H. “Are there universal aspects in the structure and content of human values?” *Journal Social Issues*, 50 (4) (1994):19-45.
- Shenton, Andrew K. “Strategies for ensuring trustworthiness in qualitative research projects”. *Education for Information*, 22 (2) (2004):63-75.
- Silverman, David. “*Doing qualitative research: A practical handbook*”. Thousand Oaks, CA: Sage Publications, 2000.
- Silverman, David. “*Interpreting qualitative data* (3rd. ed)”. Thousand Oaks, CA: Sage Publications, 2006.
- Sönmez, Selami. “Bir kültür ve medeniyet yaratıcısı olarak öğretmen (Teacher as a creator of culture and civilization)”. In M. Ergün, N. Karabacak, İ. Korkmaz, M. Küçük (Eds.), *Öğretmenliğin mesleki değerleri ve etik (Professional values and ethics of teaching)* (pp. 131-158). Ankara: Anı Yayıncılık, 2018.
- Taymur, Zeynel A. “*İlkokul öğretmenlerinin değerler eğitimi ve uygulamalarına yönelik görüşleri üzerine nitel bir araştırma Batman il örneği (Primary teachers' views on qualitative research value for education and practice)*” Unpublished Master’s Thesis. Akdeniz Üniversitesi, Antalya, 2015.
- Thornberg, Robert. “Values education in Nordic preschools: A commentary”. *International Journal of Early Childhood*, 48 (2) (2016):241-257.
- Ulavere, Pärje and Veisson, Marika. “Values and values education in Estonian preschool child care”. *Institutions Journal of Teacher Education for Sustainability*, 17 (2) (2015):108-124, <https://doi.org/10.1515/jtes-2015-0014>
- UNESCO. “*Living values education*”. (2020). <https://livingvalues.net/values/>
- Yazar, Taha. “Öğretmenlik mesleğinin değerleri (The values of the teaching profession)”. In M. Ergün, N. Karabacak, İ. Korkmaz, M. Küçük (Eds.), *Öğretmenliğin mesleki değerleri ve etik (Professional values and ethics of teaching)* (pp. 159-182). Ankara: Anı Yayıncılık, 2018.
- Yıldırım, Kasım. “Values education experiences of Turkish class teachers: A phenomenological approach”. *Eurasian Journal of Educational Research*, 35 (2009):165-184.

THE RELATIONSHIP BETWEEN TEACHER ACADEMIC OPTIMISM AND STUDENT ACADEMIC ACHIEVEMENT: A META-ANALYSIS

Abstract: This meta-analysis of 13 studies examines the relationship between teacher academic optimism and student academic achievement. The studies have been reached from Web of Science, ERIC, Proquest Digital Dissertations, Turkish Academic Network and Information TR Directory, Google Academic and Council of Higher Education Thesis Center databases. The correlation scores of the studies included in the meta-analysis were computed by the Fisher z method and Comprehensive Meta-Analysis V3 (CMA) Program was used. As a result, the relationship between teacher academic optimism and student academic achievement has a strong effect size with a value of 0.513 according to the random effects model. Additionally, the moderator analysis was performed for verbal and non-verbal courses. There was no statistically significant difference observed and no publication bias in the meta-analysis study. Education policy makers and school administrators can put on their agenda the strengthening of teacher academic optimism for student academic achievement.

Keywords: Teacher academic optimism, student academic achievement, meta-analysis, effect size.

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INTRODUCTION

Many in-school and out-of-school factors affect student academic achievement. The concept of teacher academic optimism has recently drawn the attention of researchers in studies aimed at determining in-school factors affecting students' academic achievement (Anderson, 2012; Bevel, 2010; Kirby & DiPaola, 2011; Nelson, 2012; Wagner, 2018). Teacher academic optimism is seen as a teacher characteristic that affects the academic achievement of the student (Beard et al., 2010). Considering that the most important factor affecting student achievement is the teacher, it is natural that the academic optimism of the teacher, which is thought to affect student success, is a research subject. In this context, teachers' academic optimism was chosen as the subject of this study.

Aspects of schools and teachers had positive impacts on student achievement based on Coleman's social capital theory, Bandura's social cognitive theory and Seligman's learned optimism studies, K. Hoy and his colleagues' school climate and culture-oriented research (Beard, Hoy & Hoy, 2010). As a result of Hoy and his colleagues' research, they found that trust, academic emphasis and collective self-efficacy at school are three important factors affecting student achievement, and they also concluded that, through the interaction of these three factors, a new structure called academic optimism emerged and influenced student achievement (Hoy, Tarter & Hoy, 2006). This structure creates a culture with collective beliefs and norms, whose teachers are talented, students are eager, parents are supportive, and academic achievement is attainable (McGuigan & Hoy, 2006). Hoy et al. (2006) explain how these three factors interact and create an academic optimism culture as follows: the common sense of collective self-efficacy improves trust. When trust arises, teachers encourage each other. They place more emphasis on academic standards as they have confidence in receiving parental support. Improvement in trust positively affects student achievement because teachers feel they have the freedom and expertise to implement changes that will positively affect student achievement. Academic achievement becomes more important by teachers who experience a common sense of self-efficacy. Academic optimism creates a common belief that not only will teachers prepare the environment for student development, but also that student performance will increase. Academic optimism is a set of beliefs that students' achievement is important, that teachers can help students' achievement, that the family will cooperate in the school's work in this direction and will trust teachers (McGuigan & Hoy, 2006).

As the research on academic optimism for schools increased, it was revealed that academic optimism also existed at the teacher level (Beard, 2008; Beard et al., 2010; Hoy et al., 2008). Teachers' academic optimism has affective, cognitive and behavioral aspects. Trust in students and parents, affective aspects; self-efficacy, expectations and beliefs indicate the cognitive aspect and academic emphasis, various behaviors determined behavioral aspect (Beard et al., 2010). These three aspects influence and reinforce each other. Teachers' trust in parents and students makes the teacher feel competent, and the teacher's sense of competence reinforces trust. Similarly, if the teacher trusts the parents, they can establish high academic standards that cannot be undermined by the parents. High academic standards strengthen teachers' confidence. Finally, when the teacher believes that s/he can organize and implement actions for a positive impact on student achievement, they emphasize academic achievement and the academic emphasis strengthens the teacher competence feeling (Beard et al., 2010; Woolfolk Hoy, 2012; Woolfolk Hoy, Hoy & Kurz, 2008). In this context, teachers' academic optimism is the belief that teachers attach importance to on that academic achievement is attainable, subsequently they can cooperate with both parents and students for student success, and that they will help students' academic achievement (McGuigan & Hoy, 2006). Teacher academic optimism can also be defined as the belief that teachers will make a positive difference in student achievement in various ways (Hoy et al., 2008). Teacher academic optimism consists of the functionally interconnected elements, self-efficacy perception of the teacher, her/his trust in parents and students, and academic emphasis. These components are detailed below.

Teacher self-efficacy: According to Bandura (1994), self-efficacy is the body of individuals' beliefs, abilities and judgments about their performance against events that have an impact on their lives. Besides, it determines how hard individuals will try and how persistent they will be in their efforts when they encounter a situation that they do not want in their lives. Teacher self-efficacy shows the belief that the teacher can bring unmotivated or difficult students to the desired level in taking responsibility and learning

(Tschannen-Moran & Woolfolk Hoy, 2001). The teacher's belief in his potential to succeed can also be seen as self-efficacy.

Even if it looks simple, teacher self-efficacy can have important consequences. The most important result is that when teacher self-efficacy increases, student achievement also increases (Bandura, 1993; Goddard, Hoy & Woolfolk Hoy, 2000). The teacher sets high expectations and makes a high level of effort to get his expectations, and when he encounters difficulties, he prefers to struggle with them instead of giving up (Woolfolk Hoy et al., 2008). Perceptions of self-efficacy affect teachers' effort, willingness and goal setting. Teachers with high/positive self-efficacy beliefs take responsibility and are entrepreneurs in increasing student achievement. They bring all the necessary elements together for the realization of success. Their beliefs in themselves are an important driving force to address the problem (Tschannen-Moran & Woolfolk Hoy, 2001).

Trust of the teacher to the parents and students: According to Bandura (1994), trust is the level of belief of an individual towards the competence and goodwill of the other to behave predictably, ethically and fairly. It enables the risks and uncertainties arising from the interactions of individuals to be managed. Although teachers' sense of self-efficacy is important, it is not always sufficient for student achievement. A teacher with a sense of self-efficacy also needs to establish a trust-based relationship with parents and students. Trust-based relationships and partnerships provide positive learning environments in the classroom (Adams & Forsyth, 2013). Believing that the teacher will not harm him in a positive learning environment, the student takes more courageous steps and makes more effort to learn. Student's learning attempts provide parents with positive clues about the teacher and these tips mostly result in parents' trust in the teacher (Hoy & Tschannen-Moran, 1999). In short, the trust of the teacher in parents and student returns as trust and support to the teacher and led him to make more effort for student success.

The student's learning initiative not only makes the parent trust on the teacher but also makes the teacher has trust on the parent and the student. When the teacher verbally expresses trust, it may affect the encouragement of the parent to contribute to the academic achievement of the student. The efforts of the parents can facilitate the teachers to reach the standards and expectations set by them by mediating the teacher-parent collaboration (Goddard et al., 2001; Kurz, 2006). Studies focusing on trust and academic achievement relationships (Tschannen-Moran & Hoy, 2000; Goddard, Tschannen-Moran & Hoy, 2001; Goddard, Salloum & Berebitsky 2009; Adams & Forsyth, 2013) even when students' socio-economic conditions are under control, trust is an important predictor of academic achievement.

Teacher's academic emphasis: Teacher's tendency towards academic success is called by several conceptions such as success pressure, academic emphasis, academic pressure, or academic rigidity (Wagner & DiPaola, 2011). Beard et al. (2010) defined academic emphasis as that teachers finds out various ways to involve the student in appropriate academic tasks. Accordingly, academic emphasis constitutes the behaviors of teachers to ensure that students use their time effectively, to enable their participation in academic activities appropriate for their academic achievement, to optimize the classroom environment for learning, to explain the lesson effectively, and to follow homework by giving effective assignments (McGuigan & Hoy, 2006). Academic emphasis is also on the teacher's belief in academic goals and achievement (Goddard et al., 2001). Academic emphasis is on reflecting the teacher's sense of self-efficacy and confidence in his behavior (Woolfolk Hoy et al., 2008). Parents who see that the teacher uses the time effectively for the academic achievement gives effective homework and follows these assignments, in short, the academic emphasis, can volunteer to help the teacher and the student (McGuigan & Hoy, 2006). According to Kurz (2006), academic emphasis provides continuity not only in the arrangement of the learning environment but also in the continuation of the learning environment. The academic emphasis of the teacher, with this aspect, is the learning power that directs the student to academic achievement.

Studies show that there is a relationship between teacher academic optimism and student academic achievement (Hoy et al., 2006; McGuigan & Hoy, 2006; Nelson, 2012; Wagner & DiPaola, 2011). The results of research conducted in different countries also support the relationship between teacher academic optimism and student academic success. For example; Wu, Hoy & Tarter (2013) examined the relationship between school structure, academic optimism and student academic achievement in Taiwan. Similarly, Heidarzadeh and Abbasian (2014) and Safari and Soleimani (2019) in Iran, Strakova, Simonová & Greger (2018) in Czechia, Wu (2013) in Taiwan and Adekunle and Omolola (2019) in Nigeria found that there is a correlation between teacher academic optimism and student academic achievement in different

geographies. As the number of studies carried out different contexts has been growing, there appear a need to look at their results comprehensively. However, literature review indicates a research gap on a meta-analysis on the relationship between teacher academic optimism and student academic achievement.

One of the main goals of educational research is to identify the factors that positively affect and maintain student achievement. In this context, academic optimism and teacher academic optimism attracted the attention of researchers, and studies examining the relationship between teacher academic optimism and student achievement continue to be conducted. Integrating the results of studies may determine the size of the relationship between these two variables and may eliminate hesitations about the relationship between them. This study is based on evaluating the results of researches independently from each other in a holistic manner and to contribute to the stronger interpretation of the findings by combining them. This study aims to examine the relationship between teacher academic optimism and student academic achievement using the meta-analysis method. To achieve this goal, the following questions were sought:

- i. What is the average effect size of the relationship between teacher academic optimism and student academic achievement?
- ii. Does the average effect size of the relationship between teacher academic optimism and student academic achievement differ according to the verbal and non-verbal courses?

In this way, it is expected to reveal the bigger picture and create a discussion environment by determining the effect size of teacher academic optimism on student academic achievement.

METHOD

The meta-analysis method was used to determine the average effect size between teacher academic optimism and student academic achievement. The researcher, who uses the meta-analysis method, chooses the researches from the relevant literature by the goals and criteria he has previously determined.

Some databases were searched to get data for this study. Web of Science, ERIC and ULAKBİM TR Index for article search; Proquest Digital Dissertations and Council of Higher Education Thesis Center were scanned for thesis scanning. The paper booklets published for the papers were scanned via Google Scholar. Study data were collected between December 2019-March 2020. The first screening was carried out between December 2019 and January 2020, then the necessary controls were provided by scanning again between February 2020-March-2020. The keywords used to reach researchers in databases are: “academic optimism, teacher academic optimism, student achievement, student success and student academic achievement”. In the literature review, 102 articles, 98 master/doctorate theses and 5 reports were identified. In the literature review, studies not contain determined data for this study were excluded. The process of inclusion of the studies is presented in the flow chart in Figure 1.

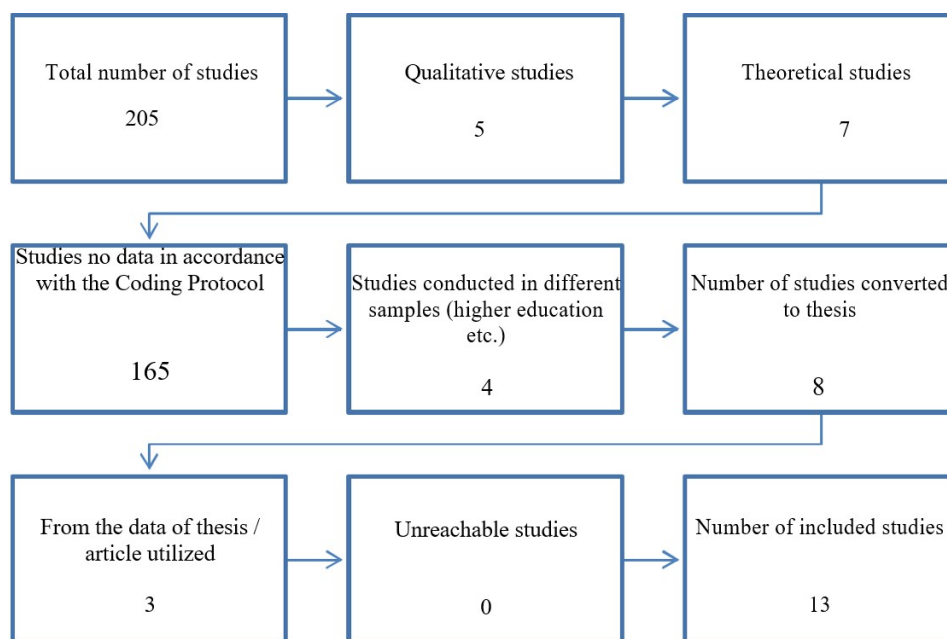


Figure 1. Prisma Flow Diagram for Meta-analysis

In the study, researches conducted between 2009 (the year the teacher academic optimism studies started) and 2019 were included. The data of the publication type, sample size and courses of the studies included in the study are presented in Table 1.

Table 1. Descriptive Data of Studies

Variable		f
Publication type	Article	10
	Doctoral dissertation	3
	Total	13
Sample size	Article	7.727
	Doctoral dissertation	1.130
	Total	8.857
Courses	Language arts/mathematics and science	5
	Mathematics and science	1
	It is not included in the analysis of the course areas since the course is not distinguished.	7
	Total	13

As can be seen in Table 1, 10 (ten) articles and 3 (three) doctoral dissertations were included in the study. The total sample size of the studies was 8.857.

INCLUSION CRITERIA

The following criteria were used in selecting the previous studies in the study:

- The research has been done between 2009 and 2019.
- Whether the research is an article, a report, a master's or doctoral thesis.
- Studies reveal the correlation between teacher academic optimism and student achievement.
- To determine the effect size in the study, partial correlation coefficients between variables are given or qualitative studies are not included. Studies eligible for the further analysis are marked in the reference part.

CODING PROTOCOL AND RELIABILITY

A clear and detailed coding form was developed by examining the sampled studies following the inclusion criteria. The coding form consists of three parts: (a) "Study ID" was the first part and the identification number, title, author (s), type and year of publication were included. (b) "Content of the study" was the second part and covered the courses where teacher academic optimism and student academic achievement were evaluated. (c) "Study data" formed the third section. This section had the correlation values of the relationship between courses and teacher academic optimism and the sample size.

According to Card (2012), ensuring the reliability of the coding protocol also affects the reliability of meta-analysis studies. In this study, interrater reliability was used for the reliability of the coding protocol. Since sections 1 and 2 of the Coding Protocol contain objective data, there is no need for intercoder reliability. Approximately 40% ($n = 6$) of the studies in the coding form for reliability calculation were determined by random assignment. The identified studies were encoded into the coding form after being read by a second reader with a good knowledge of English. The second coder is one of the authors. It was observed that the agreement between coders was 92% (Card, 2012).

VALIDITY

The validity of the meta-analysis studies depends only on the ability of the data collection tools of the included studies to measure what is intended. According to Petitti (2000), the validity of the average effect size obtained as a result of the meta-analysis is directly proportional to the validity level of the studies included in the analysis. In this study, it was observed that the validity of the data collection tools used in all studies was ensured.

DATA ANALYSIS

In the sampled studies, the relationship between teacher academic optimism and student academic achievement has been researched based on reading, mathematics and science (Kirby & DiPaola, 2011; Wagner & DiPaola, 2011; Wu & Lin, 2017) or social sciences, language lessons, reading and writing courses (Adekunle & Omolola, 2019; Nelson, 2012). On the other hand, some researchers (Heidarzadeh & Abbasian, 2014; Chang, 2011; Ngidi, 2012; Safari & Soleimani, 2019) investigated the relationship

between teacher academic optimism and student academic achievement by integrating course areas into verbal and non-verbal courses or courses under academic and skill courses. Therefore, to determine whether the average effect size of the relationship between teacher academic optimism and student academic achievement differs according to the courses (2nd research question), first: (a) courses were combined under the fields of verbal (reading, writing, social sciences and language courses) and non-verbal courses (mathematics, science). Then (b) the correlation values of non-verbal and verbal courses (Andersen, 2012; Kirby & DiPaola, 2011; Wagner & DiPaola, 2011; Wu, 2013; Wu et al., 2013; Wu & Lin, 2017) were combined via CMA program. (c) The obtained values were used to analyze whether the relationship between teacher academic optimism and student academic achievement differs according to the courses. To determine the average effect size of the relationship between teacher academic optimism and student academic achievement (1st research question): (a) A single correlation value for the academic achievement variable was determined by integrating the correlation values of the verbal and non-verbal courses via CMA program. (b) The obtained value and the correlation values of the studies that did not separate academic achievement according to the courses were used.

META-ANALYSIS PROCESS

In this study, statistical analysis and heterogeneity tests were performed using the Comprehensive Meta-Analysis V3 (CMA) Program. Degrees of freedom Chi-Square heterogeneity test (Q statistic) and I^2 were used to evaluate true heterogeneity among the studies. While Field and Gillett (2010) recommended using the random-effects model to make inferences about the universe of research included in the meta-analysis study. Borenstein et al. (2009), Field and Gillett (2010) and Schmidt et al. (2009), many researchers do not find a single assumption of real effect size, which is the basic assumption of the fixed effects model, isn't realistic for all situations and quite limited. Due to the limitations of the fixed effects model, it is recommended to use the random-effects model. In the study, the random-effects model was used for the reasons stated.

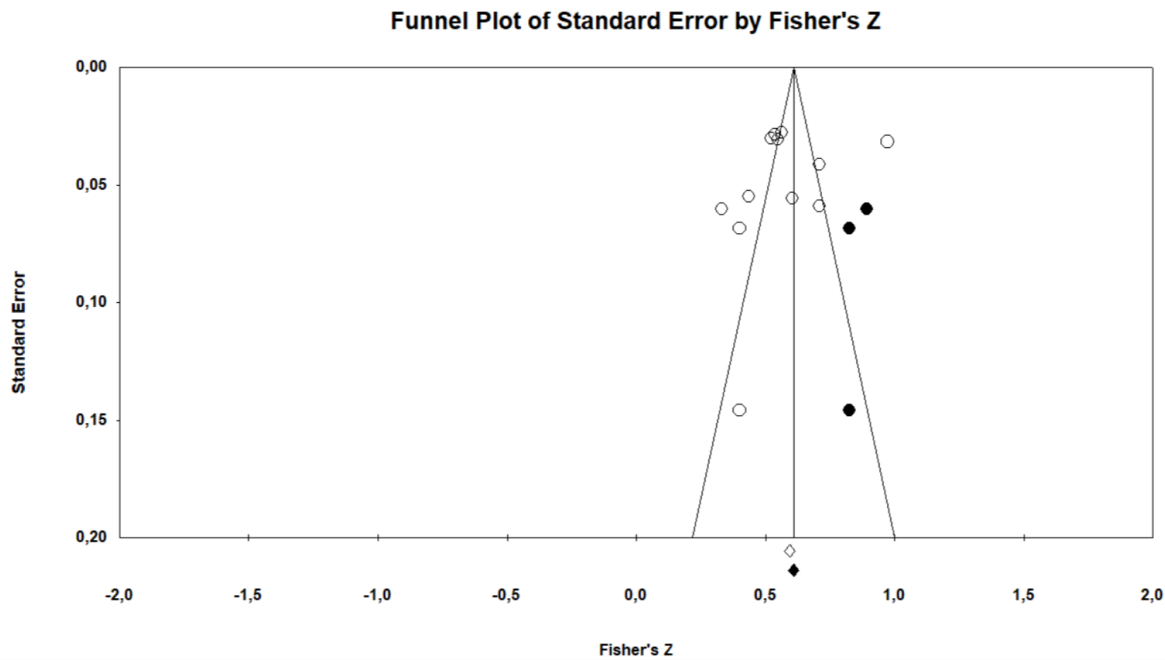
SPSS 21.0 statistical package program was used for the descriptive data analysis and Microsoft Excel 2010 program was used for data entry of the coding form. The effect size was calculated depending on the correlation. In all calculations of the effect size, the confidence interval was determined as 95% and the level of significance as .05. To determine the effect size of each study included in the meta-analysis and the study, correlation values were converted to Fisher z values and analyses were performed. The interpretation of the effect size findings was generated by converting them into the correlation coefficient. Benchmark values were based on Cohen et al. (2011):

$0.00 \leq \text{effect size value} \leq 0.10$ weak,
 $0.10 \leq \text{effect size value} \leq 0.30$ modest,
 $0.30 \leq \text{effect size value} \leq 0.50$ moderate,
 $0.50 \leq \text{effect size value} \leq 0.80$ strong,
 Effect size value ≥ 0.80 very strong Effect

Funnel plot, Begg and Mazumdar rank correlations, Rosenthal's fail-safe N, Egger's linear regression and Duval and Tweedie's trim and fill tests were used for publication bias.

PUBLICATION BIAS

The funnel plot was used to detect publication bias. The funnel graphic of the study is presented in Graphic 1. When Graph 1 is examined, the studies are close to asymmetrical distribution and that the studies do not concentrate on one side. Studies in the inner part of the funnel plot show studies that have higher effects on the meta-analysis result. Also, studies at the end of the funnel represent studies with big sample size, while studies at the bottom of the funnel represent studies with a low sample size. The vertical line results in the funnel plot show the effect sizes of the studies combined. Looking at the funnel plot, the studies are distributed almost symmetrically on the right and left sides of this line. Based on this result, we can argue that there is no publication bias. However, the funnel plot does not contain statistical information and does not provide precise information.



Graphic 1. Funnel Plot of publication bias

Begg and Mazumdar's rank correlation test, Rosenthal's safe N test and Egger's linear regression tests were applied for statistical information of publication bias. Results of the tests are included in Table 2.

Table 2. Confidence Tests and Results Showing Publication Bias

Confidence Tests	Data of Confidence Tests	
Rosenthal's Fail- Safe N	z-value for observed studies	51.08923
	p-value for observed studies	0.00000
	Alpha	0.05000
	Tails	2.00000
	z for Alpha	1.95996
	Number of observed studies	13.00000
	Fail-Safe N (FSN)	8820.00000
Begg and Mazumdar Rank Correlation	Tau	-0.09091
	Tau for z-value	0.42706
	p-value (1 tailed)	0.33467
	p-value (2 tailed)	0.66933
	Standart Error	3.35742
Egger's Linear Regression	95% loer limit (2 tailed)	-9.57517
	95% upper limit (2 tailed)	5.20410
	t-value	0.65096
	df	11.00000
	p-value (1 tailed)	0.26422
	p-value (2 tailed)	0.52844

The p-value ($p = 0.000$) in the result of Rosenthal's safe N test shows that the result of the meta-analysis study is statistically significant. The number of studies needed to remove the significance of the meta-analysis study ($p > 0.05$) is 8820. On the other hand, when the Begg and Mazumdar rank correlations test results are taken into account, the sample of the meta-analysis study is not biased; Kendall's Tau coefficient and p-value (-0.09091 ; $p = 0.33467$) are not statistically significant. There is no publication bias in the meta-analysis study based on the results of the test. Besides, Egger's linear regression test results ($p = 0.52844 > 0.05$) show that there is no publication bias with a 95% confidence interval.

Duval and Tweedie's trim and fill test is used to determine the impact of probably lost studies on the findings. Table 3 contains the results of Duval and Tweedie's trim and fill tests.

Table 3: Duval and Tweedi's trim and fill test

		Fixed Effect			Random Effect			Q-value
	Studies Trimmed	Point Estimate	Lower Limit	Upper Limit	Point Estimate	Lower Limit	Upper Limit	Q-value
Observed values		0.593	0.572	0.614	0.566	0.474	0.567	201.846
Adjusted values	3	0.608	0.588	0.628	0.612	0.525	0.699	247.621

When Duval and Tweedie's trim and fill test is evaluated, the number of missing studies is only 3 (three). As 3 (three) studies are added to the meta-analysis study, the average effect size according to the random effects model is 0.612. Also, the lower limit of the average effect size in the random-effects model is 0.525 and the upper limit is 0.699.

RESULTS

In this part, there are findings to determine the average effect size based on the relationship between teacher academic optimism and student academic achievement.

FINDINGS OF EFFECT SIZE BASED ON THE RELATIONSHIP BETWEEN TEACHER ACADEMIC OPTIMISM AND STUDENT ACADEMIC ACHIEVEMENT

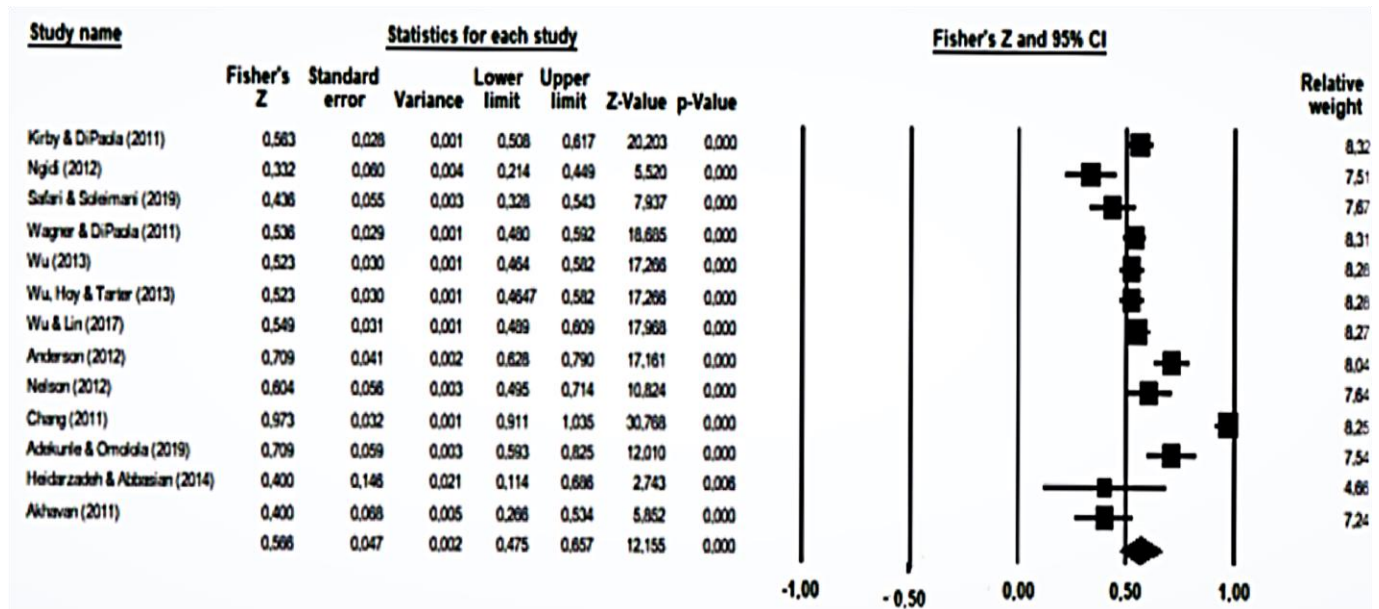
One of the important purposes of meta-analysis studies is to determine the statistical significance and confidence interval of the effect size. It is also trying to reach a general index. Another aim is to test the heterogeneity of the effect size. Q and I^2 statistics are frequently used tests for testing heterogeneity. The Q statistic is the weighted sum of squares. The I^2 statistic determines the ratio of total variance to true half. Although the I^2 statistic is based on the Q statistic, unlike the Q statistic, it provides an intuitive measure of heterogeneity that is not dependent on the effect size. In this meta-analysis study, Q and I^2 statistics were used to detect heterogeneity. Table 4 contains meta-analysis results.

Table 4. Meta-Analysis of the Relationship between Teacher Academic Optimism and Student Academic Achievement

		%95 confidence interval			Test of null		Heterogeneity test			
Model	N	Effect Size	Lower Limit	Upper Limit	Z-value	P-value	Q-value	df (Q)	P-value	I^2
Fixed	13	0.593	0.572	0.614	55.708	0.000	210.847	12	0.000	94.309
Random	13	0.566	0.475	0.657	12.155	0.000				

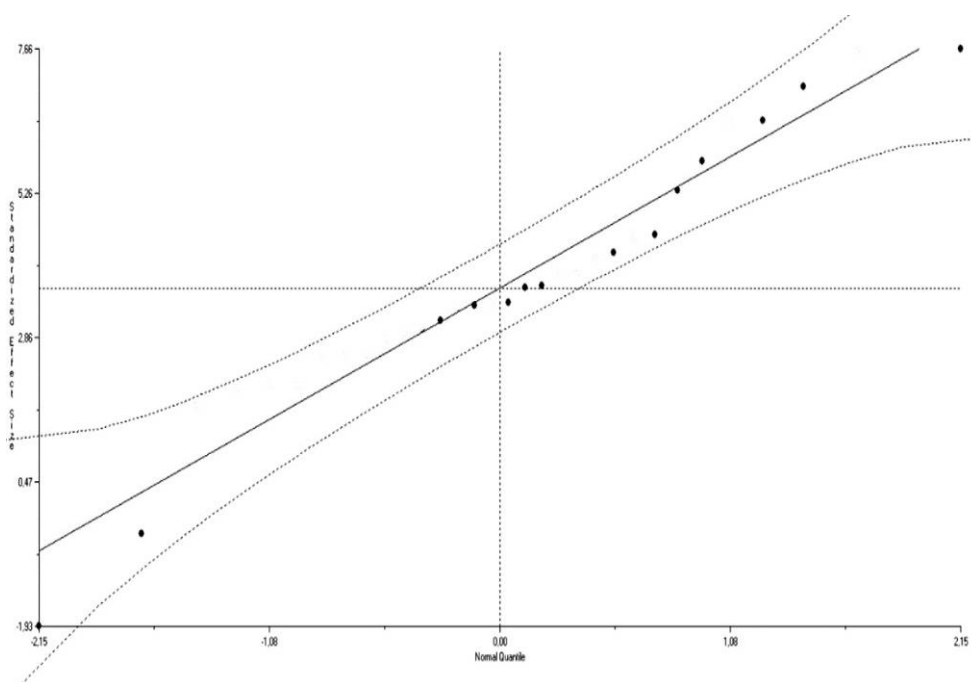
When Table 4 is examined, the heterogeneity test is significant (Q: 210,847; df (Q): 12; p: 00). With 12 degrees of freedom and a 95% significance level in the χ^2 table, it is seen that the critical value (df: 12; χ^2 (0.95) = 21.0260) in the chi-square distribution table is exceeded. Besides, the I^2 statistic exceeds the 75% limit value with a value of 94.309, indicating a high level of heterogeneity (Higgins et al., 2003). For this reason, it is concluded that the distribution is heterogeneous. The heterogeneous nature of the studies indicates that the effect size difference is greater than the expected sampling error-induced change (Field & Gillett, 2010). When Table 2 is evaluated, it is seen that the average effect size according to the fixed effect model is 0.593 according to the Fisher z value. According to the random effect model, the average effect size is 0.566 according to the Fisher z value. When the Fisher z value (0.566) is transformed into the correlation value, the average effect size (0.513) has a strong effect size. According to the random-effects model analysis results, the standard error was 0.013, the upper limit of the effect size was 0.657 and the lower limit was 0.475. When the average effect size value is interpreted according to Cohen et al. (2011), there is a strong and positive relationship between teacher academic optimism and student academic achievement. According to the z-test results for statistical significance, it was calculated as $z = 12.155$ and the analysis was statistically significant with the value of $p = 0.000$.

When the studies on teacher academic optimism and student academic achievement variables are analyzed according to the random-effects model, the effect size and the weights of the studies are included in the forest plot, Graphic 2.



Graphic 2. Effect Size and Weights of Studies

According to the forest plot, the research with the largest confidence interval belongs to Heidarzadeh and Abbasian (2014) and the lowest confidence interval belongs to Kirby and DiPaola (2011) and Wagner and DiPaola (2011). The studies with the highest weight on the meta-analysis result were Kirby and DiPaola (2011) with 8.32% and Wagner and DiPaola (2011) with 8.31%, while the research with the lowest weight was Heidarzadeh and Abbasian (4.66%). 2014). The weight percentages of other studies are close to each other. The highest effect size is 0.973 of Chang's (2011) research; It can be evaluated that Ngidi (2012) has the lowest effect size with 0.332. Additionally, each study has a positive effect size. The fact that all of the studies have a positive effect is an indicator of high effectiveness between teacher academic optimism and student academic success. Further, the general distribution of the effect sizes was also examined to decide whether the research data will be used in calculating the average effect size. As observed in Graphic 3, the effect sizes are within the confidence interval and the ordering along the $x = y$ line shows that the research data can be used in calculating the average effect size (Card, 2012).



Graphic 3. General Distribution of Effect Sizes

Findings of Effect Size Based on the Relationship between Teacher Academic Optimism and Student Academic Achievement Effect Size According to Courses

Courses were divided into two groups, verbally and non-verbally, to determine whether the average effect size varies according to the courses. Analysis results are in Table 5.

Table 5. A meta-Analysis of the Fields of the Courses

Variable	Confidence interval %95					Heterogeneity test		
	Q _B	N	Effect size	Lower Limit	Upper Limit	Q-value	df (Q)	p
Courses	0.546							
Matematics and science (Non-verbal)		6	0.610	0.501	0.581	1.929	1	0.165
Language arts (Verbal)		5	0.530	0.480	1.138			

The course areas in which the studies were conducted are examined, the average effect size for non-verbal courses is 0.610 according to Fisher's z value. The average effect size for verbal courses is 0.530. When the average effect sizes of the courses are converted into correlation values, they have a strong effect level with 0.544 for non-verbal courses and a medium effect level with 0.486 for verbal courses (Cohen et al., 2011). On the other hand, the homogeneity test value between courses was $Q_B = 0.546$. At the 95% significance level, 1 degree of freedom in the χ^2 table was observed with a value of 3.841 ($\chi^2 (0.95) = 3.841$). Since the value of 1 degree of freedom in the χ^2 table is less than ($\chi^2 = 3,841$), the relationship between teacher academic optimism and student academic achievement does not differ significantly according to courses. Based on this finding, the assumption of homogeneity for the effect size distribution can be accepted in the fixed-effects model.

DISCUSSION AND CONCLUSION

In this study, it was found that the relationship between teacher academic optimism and student academic achievement was positive and strong. It has been determined that the effect size has a moderate effect on verbal courses and a strong effect on non-verbal courses. However, it was observed that the relationship between teacher academic optimism and student academic achievement did not differ significantly according to the courses. Teacher academic optimism has a medium effect level and above not only with one of the verbal or non-verbal courses but with both field courses. That means that teacher academic optimism affects student academic achievement at all courses. This result shows that teacher academic optimism is an issue that should be taken into consideration both in the education system generally and in schools.

Based on teachers' academic optimism, teachers invest in their self-efficacy, increase student achievement, develop a trust-based relationship with students and parents and involve students and parents in learning activities (Beard et al., 2010; Flutter, 2007; Kurz, 2006; Tschannen-Moran & Woolfolk Hoy, 2001; Woolfolk Hoy et al., 2008). Teacher self-efficacy, which is one of the sub-dimensions of teachers' academic optimism, is affected by the environment of the school (less or more developed environment, the environment that sees education as a value), organizational conditions (school culture, climate, number of students, success in central exams) and individual movements (Schunk & Meece, 2006). Klassen et al. (2010) found that student academic achievement has a positive effect on both teacher and student motivation. However, class size above 30, students with low socioeconomic level, obstructive bureaucratic school structure and anxiety in central exams negatively affect teachers' academic optimism (Üzümlü, 2017). Firat (2016) determined that experienced teachers' trust is higher than the teachers who have just started the profession. Bandura (1994) defined learning from the experiences of others as a component of self-efficacy. New teachers working with experienced teachers will be effective in developing the dimension of academic optimism. For example; Babaoğlu and Korkut (2010) concluded that classroom management skills and teacher self-efficacy have a positive and significant relationship. Efforts should be made to increase the motivation and self-efficacy perceptions of new teachers. It may be suggested that prospective teachers be

employed in schools with experienced teachers, students with a high probability of success, or academically successful students and is not crowded classes.

Hoy (2003) and Hoy and Sweetland (2001) determined that the practices of school administrators who have direct contact with the teacher are also important in the relationship between teacher academic optimism and student academic achievement and teachers' academic optimism should be supported in schools. Kurt (2009), Lev and Koslowsky (2009) and Skaalvik and Skaalvik (2007) concluded that there is a positive and significant relationship between teachers' academic optimism and collective self-efficacy. Therefore, the practices of school administrators to increase collective self-efficacy will increase academic optimism. School administrators can demonstrate the importance given to academic achievement at school by holding regular meetings where teaching at the school is questioned. These meetings can increase the collective and individual self-efficacy perceptions by providing the opportunity for teachers to be aware of each other's practices and evaluate student learning. Also, according to Goddard et al. (2004), the source of collective self-efficacy is teachers' belief in their self-efficacy and capacities. School administrators can increase collective self-efficacy by strengthening teachers' beliefs in their self-efficacy by implementing the meetings suggested above in school. According to Bümen (2009), professional development programs positively affect teachers' self-efficacy perceptions. School administrators can encourage teachers to participate in professional development programs and ensure that participation in these programs is seen as a value in school culture. Therefore, school administrators can improve teachers' self-efficacy perceptions by enabling teachers to focus on student learning and teaching and by supporting them to develop their knowledge and skills.

Studies on the leadership behaviors of school administrators have also revealed that school administrators should ensure that teachers focus on student learning, teaching and support teachers to develop their knowledge and skills. There is a positive and significant relationship between teachers' self-efficacy and educational leadership (Çalık et al., 2012), teacher self-efficacy and distributed leadership (Alenzi, 2019; Chang, 2011; Malloy, 2012; Mascall et al., 2008; Oldaç, 2016). School administrators should exhibit educational and distributive leadership behaviors. Alenzi (2019) pointed that school administrators spend a lot of time on bureaucratic work and cannot work with teachers to increase student academic achievement. School administrators may focus on educational leadership behaviors to increase teacher academic optimism and student academic achievement by transferring administrative responsibilities and bureaucratic tasks, which can also be shown among distributive leadership behaviors, to their assistants. According to Çalık et al. (2012), the school administrator's guidance on new teaching methods and techniques for teachers and encouragement to use them in the classroom can provide teachers with a sense of self-efficacy. The school administrator may guide teachers in teaching activities, set goals for them and the school with them, and bring student academic success to the school's agenda. The school principal can direct the agenda of the school and convey a clear message about the mission of the school with its significant managerial power.

Researchers have found out that the development of teachers' academic optimism in schools depends on various factors. Hoy and Sweetland (2001) and Sinden, et al. (2004) show that among these reasons, individual differences are welcomed, teachers are supported to take responsibility in teaching processes, school members develop healthy relationships with each other, and teachers' professional development are constantly supported. Hoy and Sweetland (2001) state that teachers become lonely and insensitive to student learning in schools where teachers are expected to obey rules unconditionally and are closely supervised. School administrators should ask themselves whether the procedures, rules and regulations that exist in the school help or prevent teachers from doing their work. The school administrator may ask teachers what rules and practices are the obstacles to doing the teaching. As McGuigan and Hoy (2006) stated, the rules are not fixed because they emerged as a result of previous practices and often have purposes that do not serve the present.

Teachers with high academic optimism set high academic goals for their students, attempt to develop effective teaching in the classroom to achieve the goals they set, and they believe that every student can be successful (McGuigan & Hoy, 2006). Teachers can be expected to have academic optimism in schools where school administrators support teachers, see them as experts in their fields, facilitate their work, and show that they respect their competencies, knowledge and skills.

School administrators' trust in students and parents also affects teachers' trust in parents and students because the school administrator is a model (Simonova et al., 2019). Bryk and Schneider (2002) also state that trust is an important school factor in student success. School administrators' attitude of trust towards parents is modeled by teachers (Hoy & Tschannen-Moran, 2003). Therefore, the attentive approach of the school administrator in his speeches about parents and his communication with parents can give teachers the message that trust and respect to parents is a valuable feature. The school administrator can create adequate opportunities for both working and non-working parents to meet with teachers. It can organize activities that will enable all parents and teachers to collaborate for academic success. For example, he can use homework and feedback applications to build cooperation and trust.

Studies investigating the relationship between teacher academic optimism and student academic achievement are relational studies. Relational studies do not determine the cause and effect, but only determine the level of relationship between variables (Büyüköztürk et al., 2014). Therefore, it may be wrong to interpret the finding that there is a positive and strong effect size based on the relationship between teacher academic optimism and student academic achievement as that teacher academic optimism leads to student academic success. In other words, teacher academic optimism is the independent variable and student academic achievement is the dependent variable that may not reflect the reality and even the opposite may be true. Strakova et al. (2018) and Woolfolk Hoy et al. (2008) concluded that teachers' academic optimism is also low in schools with low student academic achievement. Therefore, explanations stating that teacher academic optimism positively affects student academic achievement should be approached with caution. Researchers who want to work on the subject may be recommended to conduct experimental research to clarify this situation.

Although the concept of teacher academic optimism has been studied intensively in recent years, it is open to research whether the meaning and consequences of the concept differ across cultures. Teacher academic optimism is heavily seen in studies originating in the United States. More studies on the subject need to be done in different geographies. The time, place and application forms of the studies in the field of social sciences may differ. This situation often causes the research results to be viewed with suspicion. Besides, according to Rust, Lehmann and Farley (1990) evaluation, the biggest problem in meta-analysis studies is that printed publications generally have a strong influence. Because the statistical significance of a study increases the rate of publication, otherwise the rate of printing is almost negligible. The inclusion of 13 studies in the study can be seen as a limitation.

Although the studies included in this study are mainly from the United States of America, there are also studies from different geographies (Taiwan, Iran, Republic of South Africa, Nigeria), which can be seen as one of the strengths of the study. It is remarkable in terms of showing that the relationship between teacher academic optimism and student academic achievement is not only functional in the sociology of society but also distant geographies and cultural structures of the world. The total sample size of the studies included (8.857) can be seen as a remarkable aspect of the research and its result. The strong effect size of the relationship between teacher academic optimism and student academic achievement can be considered as a sign that teachers' academic optimism should be strengthened in schools.

REFERENCES

Studies marked with an asterisk () are included in the meta-analysis.*

- Adams, Curt. M. & Forsyth, Patrick. B. "Revisiting the trust effect in urban elementary schools". *The Elementary School Journal*, 114 (1) (2013): 1–21. doi.org/10.1086/670736
- *Adekunle, Odedokun. S. & Omolola, Odekunle. M. "Principal leadership styles and teachers' academic optimism as facilitators of student academic success among secondary school students in Ejigbo local government area of Osun State". *Al-Hikmah Journal of Education*, 6 (2) (2019): 259-267.
- *Akhavan, Nancy L. "The effects of coaching on teacher efficacy, individual academic optimism and student achievement". Unpublished Doctoral Thesis. California State University, Fresno, 2011.
- Alenezi, Attaulla. F. "The Relationship between distributed leadership practices and academic optimism among faculty members in Northern Border University". *Pegem Eğitim ve Öğretim Dergisi*, 9 (1) (2019): 61-90. doi.org/10.14527/pegegog.2019.003
- *Anderson, Karen. "Examining relationships between enabling structures, academic optimism and student achievement". Unpublished Doctoral Thesis, Auburn University, Alabama, 2012.
- Babaoğlu, Emine & Korkut, Kübra. "The correlation between the level of classroom teachers' self-efficacy beliefs and classroom management ability perceptions". *Inonu University Journal of the Faculty of Education*, 11 (1) (2010): 1-19.

- Bandura, Albert. "Self-efficacy". In V. S. Ramachandran (Eds.), *Encyclopedia of Human Behavior*, (pp. 71-81). New York: Academic Press, 1994.
- Beard, Karen. S. "An exploratory study of academic optimism and flow of elementary school teachers" Unpublished Doctoral Thesis, The Ohio State University, Ohio, 2008.
- Beard, Karen. S. & Hoy, Wayne. K. "The nature, meaning, and measure of teacher flow in elementary schools: a test of rival hypotheses". *Educational Administration Quarterly*, 46 (3) (2010): 426-458. doi.org/10.1177/0013161X10375294
- Beard, Karen. S., Hoy, Wayne. K. & Woolfolk Hoy, Anita. "Academic optimism of individual teachers: Confirming a new construct". *Teaching and Teacher Education*, 26 (2010): 1136-1144. doi.org/10.1016/j.tate.2010.02.003
- Bevel, Raymona. K. "The effects of academic optimism on student academic achievement in Alabama" Unpublished Doctoral Thesis, The University of Alabama, Alabama, 2010.
- Borenstein, Michael, Hedges, Larry V., Higgins, Julian P. T. & Rothstein, Hannah R. "Introduction to meta-analysis". West Sussex, UK: John Wiley & Sons, Ltd, 2009.
- Bryk, Anthony & Schneider, Barbara. "Creating caring schools". *Educational leadership*, 60 (6) (2003): 6-78.
- Bümen, Nilay T. "Possible effects of professional development on Turkish teachers' self-efficacy and classroom practice". *Professional Development in Education*, 35 (2) (2009): 261-278. doi.org/10.1080/13674580802568385
- Büyüköztürk, Şener, Kılıç Çakmak, Ebru, Akgün, Özcan. E., Karadeniz, Şirin & Demirel, Funda. "Bilimsel Araştırma Yöntemleri". (17. Baskı). Ankara: Pegem Akademi, 2014.
- Card, Noel. A. "Applied meta-analysis for social science research". New York: The Guilford Press, 2012.
- *Chang, Hua. "A study of the relationships between distributed leadership, teacher academic optimism and student achievement in Taiwanese elementary schools". *School Leadership and Management: Formerly School Organisation*, 31(5) (2011): 491-515, doi.org/10.1080/13632434.2011.614945
- Cohen, Louis, Manion, Lawrence & Morrison, Keith. "Research methods in education". New York: Routledge, 2011.
- Çalik, Temel, Sezgin, Ferudun, Kavgaci, Hasan & Kilinc, Ç. Ali. "Examination of relationships between instructional leadership of school principals and self-efficacy of teachers and collective teacher efficacy". *Educational Sciences: Theory and Practice*, 12 (4) (2012): 2498-2504.
- Fırat, Fatih. "Okulların akademik iyimserlik düzeyinin öğretmenlerin epistemolojik inançları ve bazı değişkenler açısından incelenmesi" Unpublished Master Thesis. Necmettin Erbakan Üniversitesi, Konya, 2016.
- Field, Andy. P. & Gillett, Raphael. "How to do a meta-analysis". *British Journal of Mathematical and Statistical Psychology*, 63 (3) (2010): 665-694.
- Goddard, Roger. D., Hoy, Wayne. K. & Woolfolk Hoy, Anita. "Teacher efficacy: its meaning, measure, and impact on student achievement". *American Educational Research Journal*, 37 (2) (2000): 479-507. doi.org/10.3102/00028312037002479
- Goddard, Roger. D., Tschannen-Moran, Megan & Hoy, Wayne. K. "A multilevel examination of the distribution and effects of teacher trust in students and parents in urban elementary schools". *Elementary School Journal*, 102 (1) (2001): 3-17. doi.org/10.1086/499690
- Goddard, Roger. D., Hoy, Wayne. K. & Woolfolk Hoy, Anita. W. "Collective efficacy beliefs: Theoretical developments, empirical evidence, and future directions". *Educational Researcher*, 33 (3) (2004): 3-13. doi.org/10.3102/0013189X033003003
- Goddard, Roger. D., Salloum, Serena. J. & Berebitsky, Dan. "Trust as a mediator of the relationships between poverty, racial composition, and academic achievement: evidence from Michigan's public elementary schools". *Educational Administration Quarterly*, 45 (2) (2009): 292-311. doi.org/10.1177/0013161X08330503
- *Heidarzadeh, Sarah & Abbasian, Hossien. "Study the effect of teachers' academic optimism and enabling school structure on students achievement". *International Journal of Scientific Management and Development*, 2 (7) (2014): 284-289.
- Higgins, Julian P., Thompson, Simon G., Deeks, Jonathan J. & Altman, Douglas G. "Measuring inconsistency in meta-analyses". *British Medical Journal*, 2 (2003): 557-560. doi.org/10.1136/bmj.327.7414.557.
- Hoy, Wayne K. "An analysis of enabling and mindful school structures. Some theoretical, research and practical considerations". *Journal of Educational Administration*, 41(1) (2003): 87-108. doi.org/10.1108/09578230310457457
- Hoy, Wayne K. & Sweetland, Scott R. "Designing better schools: The meaning and nature of enabling school structure". *Educational Administration Quarterly*, 37 (2001): 296-321. doi.org/10.1177/00131610121969334
- Hoy, Wayne K., Tarter, John C. & Woolfolk Hoy, Anita. "Academic optimism of schools: A force for student achievement". *American Educational Research Journal*, 43 (3) (2006): 425-446. doi.org/10.3102/00028312043003425
- Hoy, Wayne K. & Tschannen-Moran, Megan. "Five faces of trust: an empirical confirmation in urban elementary schools". *Journal of School Leadership*, 9 (1999): 184-208. doi.org/10.1177/105268469900900301
- Hoy, Wayne K. & Tschannen-Moran, Megan. The conceptualization and measurement of faculty trust in schools: The omnibus T-scale". In W.K. Hoy & C.G. Miskel (Eds.), *Theory and Research in Educational Administration*. Greenwich: Information Age Publishing, CT, 2003.
- *Kirby, Misty M. & DiPaola, Michael F. "Academic optimism and community engagement in urban schools". *Journal of Educational Administration*, 49 (5) (2011): 542-563. doi.org/10.1108/09578231111159539
- Klassen, Robert M., Tze, Virginia M., Betts, S. M. & Gordon, Kelly A. "Teacher efficacy research 1998-2009: Signs of progress or unfulfilled promise?". *Educational Psychology Review*, 23 (1) (2011): 21-43. doi.org/10.1007/s10648-010-9141-8
- Kurt, Türker. "Okul müdürlerinin dönüşümcü ve eylemci liderlik stilleri ile öğretmenlerin kolektif yeterliği ve öz yeterliği arasındaki ilişkilerin incelenmesi" Unpublished Doctoral Thesis, Gazi Üniversitesi, Ankara, 2009.
- Kurz, Nan. M. "The relationship between teachers' sense of academic optimism and commitment to the profession" Unpublished Doctoral Thesis, The Ohio State University, Ohio, 2006.

- Lev, Smadar & Koslowsky, Meni. "Moderating the collective and self-efficacy relationship". *Journal of Educational Administration*, 47 (4) (2009): 452-462. doi.org/10.1108/09578230910967437
- Malloy, John P. "Effects of Distributed Leadership on Teachers' Academic Optimism and Student Achievement" Unpublished Doctoral Thesis, The University of Toronto, Toronto, 2012.
- Mascall Blair, Leithwood Kenneth, Strauss Tiiu & Sacks Robin. "The relationship between distributed leadership and teachers' academic optimism. In: Harris A. (Eds.) *Distributed Leadership. Studies in Educational Leadership*, (pp. 81-100). Springer, Dordrecht, 2009. doi.org/10.1007/978-1-4020-9737-9_5
- McGuigan, Leigh & Hoy, Wayne. K. "Principal leadership: Creating a culture of academic optimism to improve achievement for all students". *Leadership and Policy in Schools*, 5 (3) (2006): 203-29. doi.org/10.1080/15700760600805816
- Miles, Matthew B. & Huberman, Michael A. "Qualitative data analysis: An expanded sourcebook". Thousand Oaks, California: Sage, 1994.
- *Nelson, Murray L. "The relationship between academic optimism and academic achievement in middle schools in Mississippi" Unpublished Doctoral Thesis, The University of Southern Mississippi, Mississippi, 2012.
- *Ngidi, David P. "Academic Optimism: An Individual Teacher Belief". *Educational Studies*, 38 (2) (2012): 139-150. doi.org/10.1080/03055698.2011.567830
- Oldaç, Yusuf. İ. "The Relationship between distributed leadership, enabling school structure, teacher collaboration, academic optimism and student achievement: a school effectiveness model" Unpublished Master Thesis. Middle East Technical University, Ankara, 2016.
- Rust, Roland, Lehmann, Donald & Farley, John. "Estimating publication bias in meta-analysis". *Journal of Marketing Research*, 27 (1990): 220-226. doi.org/10.1177/002224379002700209
- *Safari, Mahmood & Soleimani, Nader. "The relationship between teachers' academic optimism culture and student achievement in junior high schools in Tehran". *Journal of Education Experiences*, 1 (2) (2019): 43-58.
- Schmidt, Frank L., Oh, In-Sue & Hayes, Theodore L. "Fixed- versus random-effects models in meta-analysis: model properties and an empirical comparison of differences in results". *British Journal of Mathematical and Statistical Psychology*, 62 (2009): 97-128.
- Schunk, Dale H., Meece, Judith R. & Pintrich, Paul R. "Motivation in education: Theory, research, and applications". Boston: Pearson Higher Ed, 2012.
- Sinden, James E., Hoy, Wayne. K. & Sweetland, Scott R. "An analysis of enabling school structure". *Journal of Educational Administration*, 42 (4) (2004): 462-478. doi.org/10.1108/09578230410544071
- Skaalvik, Einar M. & Skaalvik, Sidsel. "Dimensions of teacher self-efficacy and relations with strain factors, perceived collective teacher efficacy, and teacher burnout". *Journal of Educational Psychology*, 99 (3) (2007), 611-625. doi.org/10.1037/0022-0663.99.3.611
- Straková, Jana, Simonová, Jaroslava & Greger, David. "Improving mathematics results: does teachers' academic optimism matter? A study of lower secondary schools". *School Effectiveness and School Improvement*, 29 (3) (2018): 446-463. doi.org/10.1080/09243453.2018.1446449
- Tschannen-Moran, Megan & Hoy, Wayne A. "Teacher efficacy: Capturing an elusive construct". *Teaching and Teacher Education*, 17 (7) (2001): 783-805. doi.org/10.1016/S0742-051X(01)00036-1
- Tschannen-Moran, Megan & Hoy, Wayne K. "A multidisciplinary analysis of the nature, meaning and measurement of trust". *Review of Educational Research*, 70 (2000): 547- 593. doi.org/10.3102/00346543070004547
- Üzümlü, Selman. "Ortaokullarda akademik iyimserliğe etki eden faktörler" Unpublished Master Thesis, Necmettin Erbakan Üniversitesi, Konya, 2017.
- Wagner, Charles A. "Academic optimism of Virginia high school teachers: Its relationship to organizational citizenship behaviors and student achievement" Unpublished Doctoral Thesis, The College of William and Mary, Virginia, 2008.
- *Wagner, Charles. A. & DiPaola, Michael F. "Academic optimism of high school teachers: Its relationship to organizational citizenship behaviors and student achievement". *Journal of School Leadership*, 21 (6) (2011): 893-926. doi.org/10.1177/105268461102100607
- Woolfolk Hoy, Anita. "Academic optimism and teacher education". *The Teacher Educator*, 47 (2) (2012): 91-100. doi.org/10.1080/08878730.2012.662875
- Woolfolk Hoy, Anita, Hoy, Wayne K. & Kurz, Nan M. "Teacher's academic optimism: the development and test of a new construct". *Teaching And Teacher Education*, 24 (4) (2008): 821-835. doi.org/10.1016/j.tate.2007.08.004
- *Wu, Jason H. "Academic optimism and collective responsibility: An organizational model of the dynamics of student achievement". *Asia Pacific Education Review*, 14 (3) (2013): 419-433. doi.org/10.1007/s12564-013-9269-6
- *Wu, Jason. H., Hoy, Wayne. K. & Tarter, John C. "Enabling school structure, collective responsibility, and a culture of academic optimism". *Journal of Educational Administration*, 51 (2) (2013): 176-194. doi.org/10.1108/09578231311304698
- *Wu, Jason. H. & Lin, Chunn-Ying. "A multilevel analysis of teacher and school academic optimism in Taiwan elementary schools". *Asia Pacific Education Review*, 19 (1) (2017): 53-62. doi.org/10.1007/s12564-017-9514-5

THE EFFECT OF AUGMENTED REALITY AND MOBILE APPLICATION SUPPORTED INSTRUCTION RELATED TO DIFFERENT VARIABLES IN 7TH GRADE SCIENCE LESSON⁸

Abstract: The purpose of this study is to investigate the effect of augmented reality and mobile application supported instruction on students' academic achievement, attitude towards astronomy, anxiety and motivation towards learning science in the "Solar System and Beyond/Earth and Universe" units in seventh grade Science lesson. In the study, pre-test-post-test control group quasi-experimental design was used. The study group consisted of 56 students (29 students in the experimental and 27 students in the control group) selected with the convenience sampling method, who were studying in 7th grades of a secondary school in Hatay province, Turkey. Data was collected through the "Solar System and Beyond Success Test" (SSBST) developed by the researcher; "Science Learning Anxiety Scale" (SLAS) developed by Yıldırım (2015) "Astronomy Attitude Scale" (AAS) developed by Zeilik, Schau and Mattern (1999) and adapted into Turkish by Bilici, Armağan, Çakır and Yürük (2012) and "Students' Motivation Scale for Science Learning" (SMSS) developed by Tuan, Chin and Shieh (2005) and adapted to Turkish by Yılmaz and Çavaş (2007) was used. The data were analyzed using descriptive statistics as the mean, standard deviation, frequency percentage values, and the inferential statistics as dependent and independent t-tests. As a result, it was found that mobile application and augmented reality supported instruction had a positive impact on academic success, did not have any effect on anxiety and motivation towards the lesson, and negatively affected attitude towards the content according to the methods suggested by the current program.

Keywords: Science Teaching, Augmented Reality, Mobile Application, Solar System, Academic Success, Attitude Towards Astronomy, Motivation, Anxiety.

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INTRODUCTION

In today's world, the rapid development of science and technology causes some changes in human lives (Akkoyunlu, 1998). The fact that people are affected by this development has also affected the instructional environments. From past to the present, the transition from chalkboards to interactive whiteboards in instructional environments is an indicator of how fast the change occurs in technology. Educational implementations developed for use on desktop computers, tablets and mobile phones enrich students' imaginations, embody intangible concepts and add excitement to learning with the help of various multimedia elements combined (Timur & Özdemir, 2018). The differentiation of technological applications and the development of mobile technology have revealed the concept of mobile learning. Mobile learning is that learners can access to education, training content in different environments, with various tools and wireless networks (Moldovan, Weibelzahl & Muntean, 2014). Quinn (2000) defined mobile learning as an e-learning environment realized with computers, tablets and smart mobile phones. Using mobile devices in education the advantages such as creating an out-of-school learning environment, easy access to information resources for students in different environments, saving time, discovering information with concrete experiences, enabling repetition, reaching a result without a dangerous situation (such as experiments in science subjects that can endanger human health) and reaching real solutions to problems are an undeniable reality (Behera, 2013; Bayraktar & Kaleli, 2007). In addition, augmented reality (AR), which can be used in mobile or non-mobile devices, takes important steps towards becoming one of the innovative technologies that are thought to contribute to today's learning environments (Özdemir, 2017). Cai, Chiang & Wang (2013) defines AG as the transfer of 2D and 3D virtual objects produced in computer environment to the user environment., using human computer interaction techniques, 3D graphic technology, various visual perception technologies and multi-media methods. AR is also defined as transferring the existing reality to virtual environment by supporting it with pictures, video, animation and 3D (Demirer & Erbaş, 2015). Thanks to AR, it provides the opportunity to model some features (magnetic field, current, energy, etc.) that cannot be seen with the eye in the real world, to be modeled in three dimensions and numerically, to present information together with real world entities, and to concretize some intangible concepts (Timur & Özdemir, 2018).

When the literature on the subject is examined, it is seen that the use of AR in educational environment has many contributions in both cognitively and effectively. Use of AG provides contributions such as to learn by building/doing by transforming to concrete from intangible (Chiang, Yang & Hwang, 2014; Wang, Duh, Li, Lin & Tsai, 2014), to learn by inquiry, improving their creativity by influencing their imagination (Aktamış & Arıcı, 2013), to enable students to participate in the lesson by increasing their concentration (Delello, 2014; Dede & Yaman, 2008; Wolters & Rosenthal, 2000), to support cooperative learning (Timur and Özdemir, 2018), to increase positive attitude and motivation, (Çavaş, Huyugüzel & Can, 2004; Ersoy, Duman & Öncü, 2016; Uluyol & Eryılmaz, 2014; Onbaşılı, 2018; Delello, 2014; Chiang, Yang & Hwang, 2014; Furió, Juan, Seguí & Vivó, 2015; Perez-Lopez & Contero, 2013; Solak & Cakir, 2015; Timur & Özdemir, 2018; Huang, Chen & Chou 2016) and to alleviate anxiety (Çavaş, Huyugüzel & Can, 2004). It is stated in the studies of the education that motivation is effective on the concepts that have critical roles in the learning process such as success, critical thinking, and high-level thinking skills, and highly motivated students participate in the lesson more (Dede & Yaman, 2008; Wolters & Rosenthal, 2000). This situation reveals the necessity of keeping students' motivation high. Another affective factor that has an important effect on the learning process is attitude. Attitude can be defined as the pre-tendency that an individual has about any subject. The attitude directs the individual's behavior by causing the individual to behave biased in the decision-making process (Nuhoglu, 2008). It can be said that it is one of the most important contributions to increase the success of the students with the effect of the mentioned these contributions. When the studies on AR applications are examined, it is seen that intangible concepts are widely used in science courses where there are a lot of them and they provide the stated contributions (Abdüsselam & Karal, 2012; Abdüsselam, 2014; Ibáñez, Di Serio, Villarán & Kloos, 2014; Zhang, Sung, Hou & Chang, 2014; Wojciechowski & Cellary, 2013; Wang, Duh, Li, Lin & Tsai, 2014; Chen & Wang, 2015; Hsiao, Chen & Huang, 2012; Timur & Özdemir, 2018).

Science, by its nature, consists of the facts and events that we live and experience in life. Despite this, the science course is one of the courses with low academic achievement due to this least understood and not so liked by students (Timur, Timur, Özdemir & Şen, 2016). This situation may indicate reasons such as the

fact that science subjects are intangible and cannot be given in relation to daily life. Subjects that are not given in relation to the daily life of the student prevent the internalization of knowledge. To understand abstract scientific concepts, students need to create mental models (Ibáñez, Di Serio, Villarán & Kloos, 2014). The fact that there are abstract and difficult to visualize concepts such as astronomy subjects in science classes causes these subjects to be perceived as belonging to invisible worlds (Anagün, Ağır & Kaynaş, 2010; Taşdemir & Demirbaş, 2010; Canpolat & Ayyıldız, 2019). In this context, it is thought that effective use of innovative technologies such as augmented reality (AR) and mobile applications in science lessons will be beneficial in achieving gains (Timur & Özdemir, 2018).

This study aims to investigate the effect of applying augmented reality and mobile applications in teaching astronomy in terms of different angles. Computer software used in the field of astronomy is based on the use of the computer in educational environments. However, the history of professional astronomy programs covers the last 20 years (Gülseçen, 2002). Astronomers test the proposed theories in virtual environments created by simulation programs. These virtual environments guide scientists working in this field to better see the formation of the Solar System and the planets, and the changes that have occurred years later. Therefore, In this study, it was aimed to examine the effect of teaching supported by augmented reality and mobile applications in the seventh grade Science lesson "Solar System and Beyond / Earth and Universe" unit on students' academic achievements, attitudes towards astronomy and anxiety and motivation towards learning science . This study differs in terms of determining the effects of augmented reality and mobile applications on many variables such as success, attitude, anxiety and motivation in a study.

METHOD

In the study, pre-test-post-test unequaled control group quasi-experimental design one of the quantitative research methods was used. As required by the quasi-experimental design, the groups were determined as one experiment group and the other as control group, by random assignment. Students in the experimental and control groups cannot be randomly created since the classes of the students are determined beforehand and the students cannot switch between classes (Fraenkel & Wallen, 2000). The pretest-posttest unequaled control group quasi-experimental design used in the study is given in Table 1.

Table 1. The pretest-posttest unequaled control group quasi-experimental design

Groups	Pretest	Implementation	Posttest
Experimental	Solar System and Beyond Success Test (SSBST) Science Learning Anxiety Scale (SLAS) Astronomy Attitude Scale (AAS) Students' Motivation Scale for Science Learning (SMSS)	Teaching Supported by e-Mobile Application and Augmented Reality	Solar System and Beyond Success Test (SSBST) Science Learning Anxiety Scale (SLAS) Astronomy Attitude Scale (AAS) Students' Motivation Scale for Science Learning (SMSS)
Control	Solar System and Beyond Success Test (SSBST) Science Learning Anxiety Scale (SLAS) Astronomy Attitude Scale (AAS) Students' Motivation Scale for Science Learning (SMSS)	Teaching with the Methods Proposed by the Current Program	Solar System and Beyond Success Test (SSBST) Science Learning Anxiety Scale (SLAS) Astronomy Attitude Scale (AAS) Students' Motivation Scale for Science Learning (SMSS)

THE STUDY GROUP

The study taught with a total of 56 students studying in two separate 7th grades of a secondary school located in the Hatay/Antakya in the 2017-2018 academic year. The study groups were selected using the convenience sampling method as the groups were already formed in two branches in the school. Experimental groups of 29 students and control groups of 27 students were determined through random assignment.

DATA COLLECTION

As data collection tool, the "Solar System and Beyond Success Test" (SSBST), "Science Learning Anxiety Scale" (SLAS), "Astronomy Attitude Scale" (AAS) and "Students' Motivation Scale for Science Learning" (SMSS) was used in both groups before and after the application.

SOLAR SYSTEM AND BEYOND SUCCESS TEST (SSBST)

Solar System and Beyond Success Test consisted of initially 32 test questions, benefiting from the test books based on the unit's "Celestial Bodies", "Solar System" and "Spacecraft" subjects and 9 achievements in total. Before the pilot study to be conducted for the validity and reliability study of the test, the opinions of an expert instructor and two science teachers were taken to determine the suitability of the questions to the objectives, and a Turkish language expert to determine the suitability of the grammar rules. As a result of the feedback, question stem arrangements were made and grammatical errors were corrected. Then, to determine the validity and reliability of the test, a pilot application of the test was applied over 32 questions to 172 students attending 8th grade at two secondary schools in Hatay/Antakya, Turkey. Since the item discrimination index of 5 of the questions was below ,30 they were removed from the test and an achievement test of 27 questions was obtained. There were 11 questions on the subject of celestial bodies, 8 questions on the subject of the solar system, 8 questions on the subject of spacecraft in the SSBST. The results of SSBST item analysis were given in Table 2.

Table 2. SSBST Item Analysis Results

Item number	Item Difficulty Index	Item Standard Deviation	Item Discrimination Index	Item number	Item Difficulty Index	Item Standard Deviation	Item Discrimination Index
1	0,56	0,50	0,69	15	0,72	0,45	0,65
2	0,85	0,35	0,43	16	0,58	0,49	0,41
3	0,85	0,36	0,56	17	0,77	0,42	0,67
4	0,85	0,35	0,48	18	0,56	0,50	0,65
5	0,90	0,30	0,44	19	0,39	0,49	0,54
6	0,47	0,50	0,67	20	0,60	0,49	0,37
7	0,56	0,50	0,41	21	0,49	0,49	0,69
8	0,70	0,46	0,50	22	0,49	0,50	0,61
9	0,55	0,50	0,31	23	0,75	0,50	0,61
10	0,60	0,49	0,61	24	0,75	0,43	0,76
11	0,70	0,43	0,59	25	0,50	0,43	0,37
12	0,65	0,48	0,69	26	0,66	0,50	0,72
13	0,82	0,39	0,43	27	0,64	0,47	0,61
14	0,35	0,48	0,31				

As seen in Table 2, there are 14 easy questions with item difficulty index above 0.60, 11 medium difficulty questions with item difficulty index between 0.60 and 0.40 and 2 difficult questions with item difficulty index below 0.40 in test questions. KR20 reliability coefficient was calculated using the formula given below.

$$KR_{20} = \frac{K}{K-1} \left[1 - \frac{\sum pq}{S_x^2} \right]$$

K = Number of questions in the test
 p = Item difficulty
 q = 1- p

S_x^2 = Variance of the test (Büyüköztürk, Çakmak, Akgün, Karadeniz & Demirel, 2010).

KR-20 reliability coefficient of SSBST, calculated according to the above formula, was found to be 0.81. According to the data obtained, the final version consists of 27 questions, suitable for the class level, is a very well discriminating (0.54), easy (0.65) and reliable test. In addition, the researcher determined that the test was also valid by preparing a table of indicators to check the content validity after the questions. In addition, the researcher determined that the test was also valid by preparing a table of specification to check the content validity after the questions.

SCIENCE LEARNING ANXIETY SCALE (SLAS)

The "Science Learning Anxiety Scale" (SPSAS) used in the study was developed by Yıldırım (2015) to determine the anxiety of 5, 6, 7 and 8th grade students towards the science course. First of all, the draft scale with 32 items and 5-point Likert type was applied to 844 students after student interviews and expert opinions. First of all, the interface as a draft with 32 items and 5-point Likert type was applied to 844

students after student interviews and expert opinions. When the analysis process was completed, the 19-item scale, which was finalized, was gathered under three factors: teaching and content anxiety, student anxiety, and lesson anxiety. However, in this study, it is aimed to determine the anxiety of the students who participated in the application against their general science learning, rather than examining them in factorial dimensions. Cronbach's alpha reliability coefficient of the scale was calculated as 0.85 and it was determined that it is a reliable scale (Yildirim, 2015).

ASTRONOMY ATTITUDE SCALE (AAS)

To determine the students' attitudes about Astronomy, which is the subject of the study, the "Astronomy Attitude Scale" (ASST), which was finalized by Zeilik, Schau and Mattern (1999) was used. The scale was originally developed in two parts consisting of 34 items. Of these 34 items, 22 were for astronomy, and 12 were for determining their attitudes towards science. The initial form of the scale was developed as a 5-point Likert type, but in 1995 the scale was used as a 7-point Likert type (Zeilik, Schau, Mattern, Hall, Teague & Bisard, 1997; Zeilik, Schau & Mattern, 1999). The Cronbach alpha reliability coefficient of the scale used in this study was calculated as for the pre-test 0.86 and 0.92 for the post-test (Zeilik et.al.,1997). The adaptation study of the 5-point Likert type of the scale into Turkish was done by Bilici, Armağan, Çakır and Yürük (2012). In this study, 22 items of the scale developed for Astronomy by Zeilik et al. (1999) were used. Translation of the scale was made by experts in the field. Five students were interviewed to determine the comprehensibility of the items. The necessary arrangements were made and applied to the working group consisting of 255 people. As a result of the analysis, 7 items were removed from the scale and the "Astronomy Attitude Scale" with 15 items was created. The Cronbach alpha reliability coefficient of the scale was found to be 80 and it was determined to be a reliable scale.

STUDENTS' MOTIVATION SCALE FOR SCIENCE LEARNING (SMSS)

In this study, "Students 'Motivation Scale for Science Learning" (SMSS), developed by Tuan, Chin and Shieh (2005) and adapted into Turkish by Yılmaz and Çavaş (2007), was used in order to measure students' motivation towards science lessons. The 5-point Likert type scale initially contains 35 items. In order to adapt the scale to Turkish, science educators, foreign language experts and assessment and evaluation experts were consulted to ensure language validity. It was applied to a total of 659 students studying in 6 different schools' 6th, 7th, and 8th the grade, For scale validity and reliability studies, and as a result of the statistical analysis of the scale, 2 items were removed from the scale and the 33-item scale was finalized. The scale consists of six factors: the value of learning science, self-efficacy, active learning strategies, encouragement in the learning environment, performance goal, and achievement goal. However, this study did not examine the factorial dimension, it was aimed to determine the motivation of the students who participated in the application only towards science learning. The reliability of the scale was calculated by two methods: Equivalent Half (test halving) and Cronbach Alpha internal consistency. The reliability coefficient obtained by test halving was 0.89, Cronbach Alpha reliability coefficient was 0.87, and it was determined to be a reliable scale.

IMPLEMENTATION

INSTRUCTIONAL PROCESS USED IN THE RESEARCH

The implementation was carried out during a 5-week process, including 16 lesson hours of the delivery of the methods and four of the data collection. While a learning environment supported by augmented reality and mobile applications was used in one of the groups (in the experimental group), in the other (in the control group) a learning environment suitable for the methods suggested by the current curriculum was used. The lessons were conducted by the researcher in the experimental and control groups. Some of the materials were developed by the researcher, others were downloaded from the "play store" and "app store" programs as mobile applications.

Pre-tests were administered to the groups three months before the application started, and post-tests were administered immediately after the course delivery. As pre-test and post-test, the "Solar System and Beyond Success Test" (SSBST), "Science Learning Anxiety Scale" (SLAS), "Astronomy Attitude Scale" (AAS) and "Students' Motivation Scale for Science Learning" (SMSS) has been applied.

AUGMENTED REALITY AND MOBILE APPLICATION SUPPORTED INSTRUCTIONAL PROCESS

At the beginning of the implementation, the planning and design phase of the teaching process was proposed. Later, in line with the acquisitions, content selection and preparation of learning-teaching

activities were started. In addition, a Space booklet was prepared by the researcher based on the general objectives and content in the Science course curriculum and the experimental group was taught according to active learning, technology-centered and internet interactive learning methods supported by mobile and augmented reality implementations. There are around 240 mobile application play stores in various languages related to the sky view and the solar system, which is the subject of research. 24 of all applications were VR (virtual reality), 9 of them were AR applications, and the remaining applications were 3D applications. However, only 10 of the 240 applications were in Turkish. All these mobile applications and their contents were analyzed by the researcher and the applications closest to the curriculum were used in the teaching process.

Before the implementation, groups of 4 students were formed and a tablet was given to each group. The students were requested to install “Sky View”, “3D Solar System”, “Solar System VR”, “Hp Reveal” and “AR Science Cards” mobile applications from the playstore on the tablets and information was given about these programs. In addition, the Space booklet prepared by the researcher was distributed to the students. Researchers began to “celestial bodies”, the first subject of the unit, by “What do you observe when you look at the sky in a cloudless sky?” question. After receiving student answers, the students were taken to the garden of the school with tablets distributed to the groups and they were requested to observe the sky. Later, they were asked to watch the sky with the “Sky view free” application installed on their tablet (Figure 2). With the Sky view free mobile application, which is a 3D software that shows the orbits of stars, planets and other celestial bodies based on the positions of the users, where they are at what time and where they will be found, students focus on the concepts of star, planet, constellation, space, universe and light years. They were asked whether they could see the celestial bodies belonging to them on tablet computers. During the solar observations were mentioned to things that need attention and Biruni's Works. In addition, they were requested to make the same observations at night and to note their observations. The students were given the opportunity to discuss the observation process, were requested to write down the celestial bodies they saw in the sky and their names, and opinions about the formation of the universe were discussed. As a result of all these observations and the research and questioning process, the differences between stars and planets were expressed by the students and they were requested to do the relevant activity in the space booklet.



Figure 2. Experimental group's sky observation with Sky View mobile application

The second subject of the unit, "Solar system", was entered by asking questions about the Sun and the planets in the Solar system, and then the students were requested to use the mobile application called 3D Solar System, which is a free mobile software that shows the planets and their movements in the universe in three dimensions. As seen in Figure 3, the students observed the planets and their properties with the mobile application called 3D Solar System. The researcher stated that the properties of the Sun and the planets in the Solar system are located in the left part of the 3D Solar System mobile application, requested

them to carefully follow these features and answered the questions from the students as a result of the observations of the students



Figure 3. Experimental group's observation with 3D Solar System mobile application

In the next lesson, AR science cards with Turkish augmented reality application and software created by adding 3D images and sounds were distributed to the students. (Figure 4). Then, by using the Hp Reveal computer program, which enables the users to display a photo they have selected to the camera and play sound, video and animations, the relevant ones from the AG cards developed by the researcher were distributed to the students and the lessons were continued with these video-supported cards (Figure 5).

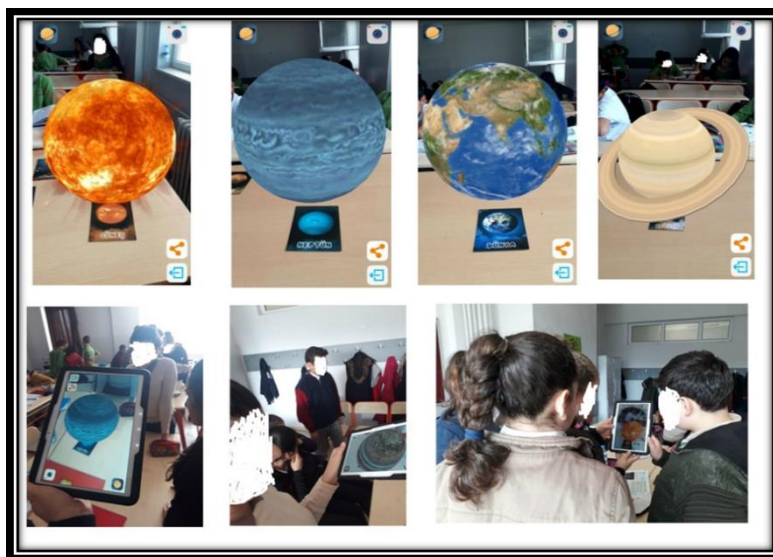


Figure 4. Experimental group's investigation of the Solar System and planets with AR Science cards

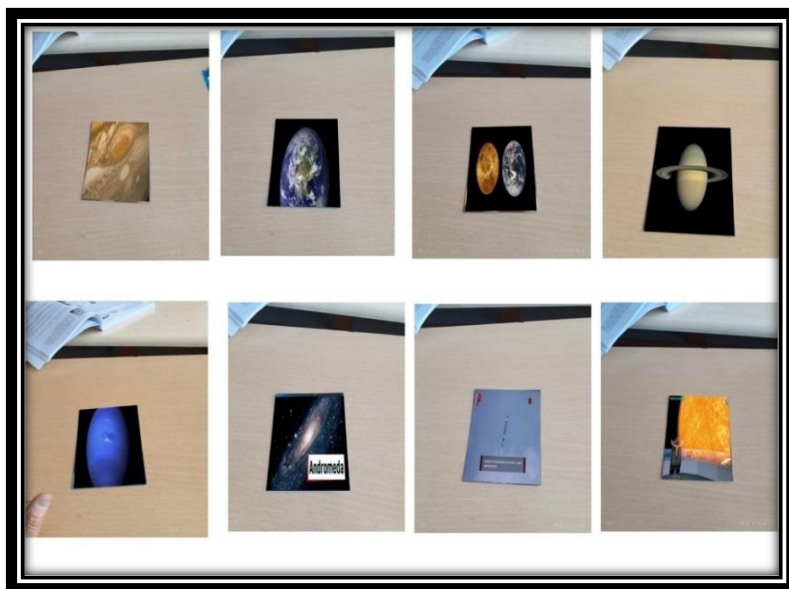


Figure 5. Experimental group's investigation of the Solar System with AG cards developed with Hp Reveal

As a result of their observations, the students expressed what they learned about the solar system and the planets, what they did that day, what attracted their attention the most, what they liked least and where they had the most difficulties.

Starting with the question of "What is telescope good for?" in the of "spacecraft" subject which is the last subject of the unit. After discussing the students' answers, the AR cards prepared for the development of the telescope and space research were distributed to the students, and the students were requested to note their observations. The notes taken by the students were discussed and interpreted in the classroom environment. Then, the students were asked about the astronomer, astronaut, astrology, astronomy concepts they heard in daily life and their definitions and their answers were evaluated. Later, the students were requested to imagine themselves as an astronaut and write down their dreams. In the following process, students were given a virtual space tour with AR glasses distributed (Figure 6).



Figure 6. Experimental group students' investigation of the solar system with Solar System Vr (virtual reality)

Finally, AR cards related to space pollution were distributed to students and they were asked to read the card with tablets, after watching the video here carefully, it was discussed about the studies to be done to reduce space pollution. A general evaluation was made by the researcher at the end of the unit, and then the 16-hour implementation process was ended.

IMPLEMENTATION OF THE METHODS SUGGESTED BY THE CURRENT CURRICULUM

In the control group, activities and implementations related to the "Solar System and Beyond" unit in the textbook were made in line with the annual plan prepared according to the current science curriculum program. The researchers carried out various activities by using many techniques such as lecture, question-answer method and brainstorming techniques to increase students' interest in the lesson. In addition, various videos, images and animations related to the subject were watched from EBA.

The course started with some preparatory questions on the subject of "celestial bodies", which is the first subject of the unit, and discussed over the questions in the textbook. During the solar observations were mentioned to things that need attention and Biruni's Works. Students' views on the concepts of universe and space and the formation of the universe were taken. The differences between stars, constellations, light years, and planets are given to students based on their research and inquiries. At the end of the subject, "Let's observe" activity and subject tests were done. The second subject of the unit was introduced by asking some questions about the Sun and the Solar system, and then their definitions were made and the properties of the planets in the solar system were expressed as given in the textbook. Then, the "Let's make a model" activity was made to the students according to the instruction in the textbook (Figure 7).



Figure 7. The control group students' "Let's Make a Model" activity studies

It is pointed out that the materials used in the modeling process should be suitable for the size order of the planets. After making the model, the documentary about the properties of the solar system and the planets was watched. Then, the definition of Galaxy was given and end-of-topic activity and topic tests were made. The subject of "spacecraft", which is the last subject of the unit, has been started with a few general questions about the subject. After the answers to these questions were discussed in the classroom, the necessary information was provided by the researcher. Later, the students were requested to do research on space technologies. After the students did their research, they presented the results of the research in the classroom. Then, the astronomer, astronaut, astrology, astronomy concepts and their definitions were asked to the students and their answers were evaluated. After this evaluation, the students were requested to imagine themselves as an astronaut and write a day in space in their notebooks, and the texts written by the students were read aloud in the classroom and necessary feedbacks were made.

Finally, students' ideas about reducing space pollution were taken and discussed. Then, the lesson was ended by having activities and tests at the end of the subject.

DATA ANALYSIS

Statistical analysis of the data obtained within the scope of the research was made using the SPSS package program. In order to decide which tests to use in the analysis phase of the data, normality test was performed and independent t-test was applied for the data showing normal distribution. In addition, in the analyzes, Cohen's d effect size was calculated for the independent t-tests of the posttests that had a significant difference between the groups in order to determine the degree to which the independent variable affected the dependent variable.

In the research, it is necessary to examine the normality of the tests in order to decide which test will be used in the analysis of the data obtained from the pre-tests of the SSBST, SLAS, AAS, SMSS and post-tests of the same tools applied to the study group. In the study, Shapiro-Wilk test results were examined because the sample size was less than 29 in both the experimental and control groups (Kalaycı, 2016). The SSBST, SLAS, AAS, SMSS pre-test and post-test normality test results are given in Table 3.

Table 3. SSBST, SLAS, AAS, SMSS pre-test and post-test normality test results

Group	Tests		Statistics	df	F	skewness	kurtosis
Experimental	Pre-test	SSBST	,954	29	,231	-,211	,237
		SLAS	,974	29	,659	-1,394	2,610
		AAS	,954	29	,230	-,788	1,964
		SMSS	,878	29	,003*	,132	-,663
	Post-test	SSBST	,926	29	,014*	-,806	,087
		SLAS	,945	29	,138	,426	-,891
		AAS	,926	29	,044*	-,935	1,964
		SMSS	,948	29	,163	-,261	,042
Control	Pre-test	SSBST	,956	27	,295	,356	1,232
		SLAS	,972	27	,652	-,938	,791
		AAS	,969	27	,572	-,187	-,439
		SMSS	,924	27	,050	,038	-,685
	Post-test	SSBST	,963	27	,424	-,522	-,030
		SLAS	,973	27	,675	-,048	-1,120
		AAS	,932	27	,077	,461	-,768
		SMSS	,956	27	,305	,272	-,342

When the Shapiro-Wilk test results of the Experiment Group (EG) and Control Group (CG) in Table 3 are examined, while EG's SMSS pre-test, SSBST post-test and AAS post-test data do not show normal distribution ($p < 0,05$), it is seen that EG and CG's other tests show normal distribution ($p > 0,05$).

However, since the kurtosis and skewness values of the tests with $p < 0,05$ were between -3 and +3, it was decided that they were suitable for normal distribution (Kalaycı, 2016). Therefore, independent t-test was used to compare experimental and control groups in the study.

FINDINGS

An independent t-test was applied to analyze whether there is a significant difference between the "Solar System and Beyond" unit academic achievement pre-test scores of the EG students, for whom the courses were taught supported by augmented reality and mobile implementations were planned and the CG students for whom the courses were planned using the methods suggested by the current curriculum program. Independent t-test results were given in table 4.

Table 4. Independent t-Test Analysis Results of SSBST Pre-Test Scores

Groups	n	\bar{X}	SD	Df	t	p
Experimental group	29	52,83	17,869	54	1,088	.282
Control Group	27	47,85	16,247			

The maximum score for SSBST is 108.

When the data in Table 4 were examined, it is seen that there is no statistically significant difference between the SSBST of EG and CG ($t=1.088$; $p > 0,05$). According to these findings, it can be said that the success levels of the students in EG and CG were similar in the "Solar System and Beyond" unit before starting the implementation.

Independent t-test was applied to find out whether there was a statistically significant difference between the mean SSBST post-test scores of the EG students and the CG students. Analysis results were given in Table 5.

Table 5. Independent t-Test Analysis Results for SSBST Post-Test Scores

Groups	n	\bar{X}	SD	Df	t	p	Cohen's <i>d</i>
Experimental group	29	93,24	9,628	54	8,422	.000	2,227
Control Group	27	59,26	19,312				

The maximum score for SSBST is 108.

Looking at the data in Table 5, it is seen that there is a statistically significant difference in favor of EG between the SSBST posttests of EG and CG ($t=8.422$; $p<0.05$). The cohen's d size, which shows the effect size of the experimental group practices on success, shows that the effect is very large (Cohen's $d=2,227$). According to these findings, it was seen that the achievement levels of the students in EG were higher than the students in CG. It is thought that the concretization of 7th grade Astronomy subjects and teaching with AR and mobile applications were effective in increasing academic achievement. Independent t-test was applied to understand whether there is a statistically significant difference between the mean scores of the "Science Learning Anxiety Scale" (SLAS) pre-test scores of the students in EG and CG. Analysis results were given in Table 6.

Table 6. Independent t-Test Analysis Result of SLAS Pre-Test Scores

Groups	n	\bar{X}	SD	df	t	p
Experimental group	29	37,00	9,986	54	,347	.730
Control Group	27	36,11	9,108			

The maximum score for SLAS is 95.

When looking at the data in Table 6, it is seen that there is no statistically significant difference between EG and CG pre-tests ($t=0.347$; $p>0.05$). According to these findings, it can be said that the science learning anxiety levels of the students in EG and CG were similar before starting the implementation.

Independent t-test was applied to determine whether there was a statistically significant difference between the mean SLAS post-test scores of the students in EG and CG. Analysis results were given in Table 7.

Table 7. Independent t-Test Analysis Result of SLAS Post-Test Scores

Groups	N	\bar{X}	SD	df	t	p
Experimental group	29	48,14	15,524	54	-0,115	.909
Control group	27	48,56	11,164			

The maximum score for SLAS is 95.

When the data in Table 7 were examined, it is seen that there is no statistically significant difference between the SLAS posttests of EG and CG ($t=0.115$; $p>0.05$). According to these findings, it is seen that there is no difference, and it can be said that the science learning anxiety levels were similar after the implementation. However, when the SLAS post-test scores of the groups were examined, it was seen that their anxiety levels increased compared to their pre-test scores. By causing an increase in anxiety and tension levels; the thought of being unsuccessful at the end of the academic process, students' awareness of the implementation, and their unfamiliarity with the process can be shown.

Independent sample t-test was applied to determine whether there is a statistically significant difference between the mean scores of the "Astronomy Attitude Scale" (AAS) pre-test scores of the students in EG and CG. Analysis results were given in Table 8.

Table 8. Independent t-Test Analysis Result of AAS Pre-Test Scores

Groups	n	\bar{X}	SD	df	t	p
Experimental group	29	49,28	6,948	54	-,117	.907
Control Group	27	49,48	6,123			

The maximum score for AAS is 75.

When looking at the data in Table 8, it is seen that there is no statistically significant difference between the pre-tests of EG and CG of DG and CG ($t=-0.117$; $p>0.05$). According to these findings, it can be said that students in EG and CG have similar attitudes towards astronomy before starting the implementation. This situation can be explained by the similarities of the students' past experiences on the subject.

Independent t-test was applied to understand whether there is a statistically significant difference between the mean scores of AAS post-test of the students in EG and CG. Analysis results were given in Table 9.

Table 9. Independent t-Test Analysis Result of AAS Post-Test Scores

Groups	n	\bar{X}	SD	df	t	p	Cohen's <i>d</i>
Experimental group	29	42,38	8,170	54	-2,736	.008	0,738
Control Group	27	47,41	5,116				

The maximum score for AAS is 75.

Considering the data in Table 9, it is seen that there is a statistically significant difference between the AAS post-tests of the experimental and control groups ($t=-2,736$; $p<0.05$). According to these findings, it was observed that there was a difference in the attitude towards Astronomy levels in favor of CG students after the implementation was made. When Cohen's *d* effect size value is examined, it is seen that experimental group practices have a negative effect on students' attitudes towards Astronomy (Cohen's $d=0,738$). However, when the AAS pre-test and post-test arithmetic averages of both groups were examined (Table 8, Table 9), it was seen that the post-test scores decreased. This situation suggests that the students noticed that they were involved in an implementation and that awareness caused them to develop a negative attitude towards the subject.

To determine whether there is a statistically significant difference between the averages of the "Students' Motivation Scale for Science Learning" (SMSS) pre-test scores of the students in EG and CG, independent sample t-test was applied and the analysis results were given in Table 10.

Table 10. Independent t-Test Analysis Results of the SMSS Pre-Test Scores

Groups	n	\bar{X}	SD	df	t	p
Experimental group	29	121,76	16,858	54	,224	.824
Control Group	27	120,85	13,020			

The maximum score for SMSS is 165.

When looking at the data in Table 10, it is seen that there is no statistically significant difference between the experimental and control groups in the SMSS pre-tests ($t=0.224$; $p>0.05$). According to these findings, it can be said that students in EG and CG have similar levels of motivation for science teaching before they start to practice.

To determine whether there is a statistically significant difference between the mean scores of the SMSS post-test of the students in DG and CG, independent sample t-test was applied and the analysis results were given in Table 11.

Table 11. Independent t-Test Analysis Result of the SMSS Post-Test Scores

Groups	n	\bar{X}	SD	df	t	p
Experimental group	29	127,21	17,145	54	1,079	.285
Control Group	27	122,81	12,827			

The maximum score for SMSS is 165.

When looking at the data in Table 11, it is seen that there is no statistically significant difference between EG and CG's post-tests in SMSS ($t=1.079$; $p>0.05$). According to these findings, it can be said that the motivation levels of students in EG and CG towards science teaching were similar after the implementation. The fact that the methods proposed by the current program applied to the control group were also suitable for active learning, and the teaching of the lesson with these methods, the students' willingness to listen to science lesson, to learn science, to quench their curiosity, and to discuss science issues, can be shown as a reason that there is no difference between the groups.

DISCUSSION AND CONCLUSION

In this study, the effect of augmented reality and mobile application supported instruction on the students' academic achievement, attitudes towards astronomy and their anxiety and motivation towards learning science in the Solar System and Beyond/Earth and Universe unit of the seventh grade Science lesson were examined. Before the implementation, it was determined that the groups showed similar characteristics in terms of their academic achievement, attitude towards astronomy and anxiety and motivation towards learning science. At the end of the instructional process, a significant difference in favor of the experimental

group was found between the groups in terms of academic achievement in the Solar System and Beyond/Earth and Universe unit. At the secondary school level, "Solar System and Beyond" is one of the units that contain abundant abstract concepts that are difficult to explain by teachers. Mobile applications and AR technology constitute a concrete life for learning and it is thought to positively affect the success levels of students. There are many studies in the literature that show that Mobile and AR applications increase course success (Vilkoniene, 2009; Sin & Zaman, 2014; Sırakaya, 2015; Demirel, 2017; Eroğlu, 2018; Kaufmann & Schmalstieg, 2002; Rashvand & Hsiao, 2015; Ibáñez, Di Serio, Villarán & Kloos, 2014; Chiang, Yang & Hwang, 2014; Ersoy, Duman & Öncü, 2016; Korucu, Gençtürk & Sezer, 2016; Başal, 2019; Cai, Chiang, & Wang, 2013; Özarslan, 2013; Abdüsselam & Karal, 2012; İbili, 2013; Çakır, Solak, & Tan, 2015; Sırakaya, 2015; Bicen & Bal, 2016; Gül, 2016; Şahin, 2017; Buluş-Kırıkkaya & Şentürk, 2018; Çankaya & Girgin, 2018; Şentürk, 2018). In addition to these, there are also studies that do not comply with this study (Kayabaşı, 2016; Baysan & Uluyol, 2016; Erbaş, 2016; Baysan, 2015; Gün, 2014). When the research process was completed, the results of SLAS, which were applied post-tests to the groups in order to determine whether augmented reality and mobile applications supported instruction affected students' anxiety on learning science, showed that this instruction did not have any effect on students' anxiety in learning science. However, it was observed that anxiety levels increased compared to pre-test scores. The thought of being unsuccessful at the end of the academic process, the realization of the implementation, and their unfamiliarity with the process can be shown, which causes an increase in anxiety and tension levels. When the related literature is analyzed, there are studies showing that similar practices give similar results, while there are studies showing that students reduce anxiety towards the lesson (Başal, 2019; İbili, 2013; Küçük, Yılmaz, & Göktaş, 2014).

The results of AAS applied to the groups at the end of the application to determine the effect of teaching supported by augmented reality and mobile applications on students' attitudes towards astronomy show that the methods proposed by the current program are more effective than teaching supported by augmented reality and mobile applications. However, when we look at the pre-test and post-test arithmetic averages of AAS applied to the groups from this study, it is seen that both the AAS scores of the groups decrease after the application. This situation suggests that the students noticed that they were involved in an application and that awareness caused them to develop a negative attitude towards the subject. When the related literature is examined, there are studies that do not match the results of the study and show that mobile and AR applications positively affect the attitude towards science (Kayabaşı, 2016; Cai, Chiang, & Wang, 2013; Akçayır, 2016; Şahin, 2017, Sırakaya & Sırakaya, 2018; Şentürk, 2018), no study has been found on how it affects attitude towards astronomy.

The results of the SMSS applied to the groups showed that the scores of experimental group had similar to the students' scores who taught by the current curriculum. This suggested that the methods proposed by the current curriculum applied to the control group were also effective for active learning, effective in listening to science lesson, in learning science, in eliminating curiosity, since they were willing to discuss science issues, it does not create any difference between the groups. When the relevant literature is examined, there are studies showing that similar practices affect motivation positively (Chiang, Yang, & Hwang, 2014; Ersoy, Duman & Öncü, 2016; Yıldırım, 2016; Çakır, Solak & Tan, 2015; Sırakaya, 2015; Erbaş, 2016; Onbaşılı, 2018; Sırakaya & Sırakaya, 2018; Şentürk, 2018).

REFERENCES

- Abdüsselam, Mustafa Serkan, and Karal, Hasan. "Fizik öğretiminde artırılmış gerçeklik ortamlarının öğrenci akademik başarısı üzerine etkisi: 11. Sınıf manyetizma konusu örneği". *Eğitim ve Öğretim Araştırmaları Dergisi*, 1(4) (2012): 170-181.
- Abdüsselam, Mustafa Serkan. "Fizik öğretiminde artırılmış gerçeklik ortamlarının kullanımlarına ilişkin öğretmen ve öğrenci görüşleri: 11. Sınıf manyetizma konusu örneği." *Pegem Eğitim ve Öğretim Dergisi*, 4(1) (2014): 59-74.
- Akçayır, Murat. "Fen laboratuvarında artırılmış gerçeklik uygulamalarının üniversite öğrencilerinin laboratuvar becerilerine, tutumlarına ve görev yüklerine etkisi" (Yayımlanmamış doktora tezi). Gazi Üniversitesi, Eğitim Bilimleri Enstitüsü, Ankara. (2016).
- Akkoyunlu, Buket. "Bilgisayar ve eğitimde kullanılması". *Çağdaş Eğitimde Yeni Teknolojiler*, 3(4) (1998): 5.
- Aktamış, Hilal, & Arıcı, Volkan Aydın. "Sanal gerçeklik programlarının astronomi konularının öğretiminde kullanılmasının akademik başarı ve kalıcılığa etkisi". *Mersin Üniversitesi Eğitim Fakültesi Dergisi*, 9 (2) (2013): 58-70.
- Anagün, Şengül S., Ağır, Oktay & Kaynaş, Esra. "İlköğretim Öğrencilerinin Fen ve Teknoloji Dersinde Öğrendiklerini Günlük Yaşamlarında Kullanım Düzeyleri". 9. Ulusal Sınıf Öğretmenliği Eğitimi Sempozyumu. Elazığ: Fırat Üniversitesi Eğitim Fakültesi. (2010).

- Başal, Suphan. C. “Artırılmış Gerçeklik ve Karekod Teknolojileri Kullanılarak Geliştirilen Mekanik Laboratuvarı Deneylerinin Bazı Değişkenler Üzerindeki Etkisinin Araştırılması” (Yayımlanmamış yüksek lisans tezi). Hacettepe Üniversitesi, Eğitim Bilimleri Enstitüsü, Ankara. (2019).
- Bayraktar, Erkan, & Kaleli, Fatih. Sanal gerçeklik ve uygulama alanları. *Akademik Bilişim*, (2007): 1-6.
- Baysan, Emre, & Uluyol, Çelebi. “Artırılmış gerçeklik kitabının (ag-kitap) öğrencilerin akademik başarılarına etkisi ve eğitim ortamlarında kullanımı hakkında öğrenci görüşleri”. *Eğitim ve İnsani Bilimler Dergisi: Teori ve Uygulama*, 7(14) (2016): 55-78.
- Baysan, Emre. “Artırılmış gerçeklik kitap (AG-Kitap) kullanımının öğrencilerin akademik başarısına etkisi ve ortamla ilgili öğrenci görüşleri” (Yayımlanmamış yüksek lisans tezi). Gazi Üniversitesi, Eğitim Bilimleri Enstitüsü, Ankara. (2015).
- Behera, Santosh K. “M-learning: A new learning paradigm”. *International Journal on New Trends in Education and Their Implications*, 4(2) (2013): 24-34.
- Bicen, Hüseyin & Bal, Erkan. “Determination of student opinions in augmented reality”. *World Journal on Educational Technology: Current Issues*, 8(3) (2016): 205- 209.
- Bilici-Canbazoglu, Sedef, Armağan-Öner, Fulya, Çakır-Kozcu, Nevin & Yürük, Nejla. “Astronomi tutum ölçeğinin Türkçe’ye uyarlanması: Geçerlik ve güvenilirlik çalışması”. *Journal of Turkish Science Education*, 9(2) (2012): 116-127.
- Buluş-Kırıkkaya Esmâ, & Şentürk Melek. “Güneş sistemi ve ötesi ünitesinde artırılmış gerçeklik teknolojisi kullanılmasının öğrenci akademik başarısına etkisi”. *Kastamonu Eğitim Dergisi*, 26(1) (2018): 181-189.
- Büyüköztürk, Şener, Çakmak, Ebru.K., Akgün, Özcan.E., Karadeniz, Şirin. Ve Demirel, Funda. “Bilimsel araştırma yöntemleri”. *Ankara: Pegem Yayıncılık*. (2010).
- Cai, Su, Chiang, Feng-Kuang & Wang, Xu. “Using the Augmented Reality 3D technique for a convex 311nivers experiment in a physics course”. *International Journal of Engineering Education*. 29(4) (2013): 856–865.
- Canpolat, Erdal & Ayyıldız, Kübra. “8. Sınıf öğrencilerinin fen bilimleri dersi bilgilerini günlük yaşam ile ilişkilendirebilme düzeyleri”. *Anadolu Üniversitesi Eğitim Fakültesi Dergisi*, 3(1) (2019): 21-39.
- Chen, Cheng-Ping & Wang, Chang-Hwa. “Employing augmented-reality-embedded instruction to disperse the 311niversity of individual differences in earth science learning”. *Journal of Science Education and Technology*, 24(6) (2015): 835–847.
- Chiang, Tosti. H. C., Yang, Stephen. J. H., & Hwang, Gwo. Jen. “An augmented realitybased mobile learning system to 311nivers students’ learning achievements and motivations in natural science inquiry activities”. *Journal of Educational Technology & Society*, 17(4) (2014): 352-365.
- Çakır, Recep, Solak, Ekrem, & Tan, Sabri, S. “Artırılmış gerçeklik teknolojisi ile ingilizce kelime öğretiminin öğrenci performansına etkisi”. *Gazi Eğitim Bilimleri Dergisi*, 1(1) (2015): 45-58.
- Çankaya, Büşra & Girgin, Sönmez. Artırılmış gerçeklik teknolojisinin fen bilimleri dersi akademik başarısına etkisi. *Journal of Social and Humanities Sciences Research*, 5(30) (2018): 4283-4290.
- Çavaş, Bülent, Huyugüzel, Pınar & Can, Bilge. “Eğitimde sanal gerçeklik”. *The Turkish Online Journal of Educational Technology*, 3 (2004): 110-116.
- Dede, Yüksel & Yaman, Süleyman. “Fen Öğrenmeye Yönelik Motivasyon Ölçeği: Geçerlik ve Güvenirlik Çalışması”. *Necatibey Eğitim Fakültesi, Elektronik Fen ve Matematik Eğitimi Dergisi*, 2(1) (2008): 19-37.
- Delello, Julie. A. “Insights from pre-service teachers using science-based augmented reality”. *Journal of Computers in Education*, 1(4) (2014): 295–311.
- Demirel, Tuba. “Argümantasyon yöntemi destekli artırılmış gerçeklik uygulamalarının akademik başarı, eleştirel düşünme becerisi, fen ve teknoloji dersine yönelik güdülenme ve argümantasyon becerisi üzerindeki etkisinin incelenmesi” (Yayımlanmamış Doktora Tezi). Çukurova Üniversitesi, Sosyal Bilimler Enstitüsü, Adana. (2017).
- Demirer, Veysel & Erbaş, Çağdaş. “Mobil Artırılmış Gerçeklik Uygulamalarının İncelenmesi ve Eğitimsel Açından Değerlendirilmesi”. *Mersin Üniversitesi Eğitim Fakültesi Dergisi*, 11 (3) (2015): 802-813.
- Erbaş, Çağdaş. “Mobil artırılmış gerçeklik uygulamalarının öğrencilerin akademik başarı ve motivasyonuna etkisi” (Yayımlanmamış yüksek lisans tezi). Süleyman Demirel Üniversitesi, Eğitim Bilimleri Enstitüsü, Isparta. (2016).
- Eroğlu, Büşra. “Ortaokul öğrencilerine astronomi kavramlarının artırılmış gerçeklik uygulamaları ile öğretiminin değerlendirilmesi” (Yayımlanmamış Yüksek Lisans Tezi). Karadeniz Teknik Üniversitesi, Eğitim Bilimleri Enstitüsü, Trabzon. (2018).
- Ersoy, Hasan, Duman, Emel & Öncü, Semir. “Artırılmış gerçeklik ile motivasyon ve başarı: deneysel bir çalışma”. *Journal of Instructional Technologies & Teacher Education*, 5(1) (2016): 39-44.
- Fraenkel, Jack, R. & Wallen, Norman. E. “How to design and evaluate educational research”. (2000).
- Furió, D., Juan, M.-C., Seguí, I. ve Vivó, R. “Mobile learning vs. traditional classroom lessons: a comparative study”. *Journal of Computer Assisted Learning*, 31(3) (2015): 189–201.
- Gül, Kağan. “Bilgisayar donanım öğretimi için artırılmış gerçeklik materyalinin geliştirilmesi ve etkililiğinin incelenmesi” (Yayımlanmamış Yüksek Lisans Tezi). Gazi Üniversitesi, Bilişim Enstitüsü, Ankara. (2016).
- Gülseçen, Sevinç. “Bilgi teknolojisinin astronomi araştırmalarına ve eğitim öğretimine etkileri”. *Ulusal Fen Bilimleri ve Matematik Eğitimi Kongresi Bildiriler Kitabı*, 1, (2002): 10-15.
- Gün, Ezgi. “Artırılmış gerçeklik uygulamalarının öğrencilerin uzamsal yeteneklerine etkisi” (Yayımlanmamış Yüksek Lisans Tezi). Gazi Üniversitesi, Eğitim Bilimleri Enstitüsü, Ankara. (2014).
- Hsiao, Kuei-Fang, Chen, Nian-Shing. Ve Huang, Shih-Yu. “Learning while exercising for science education in augmented reality among adolescents”. *Interactive Learning Environments*, 20(4) (2012): 331–349.
- Huang, Tien-Chi, Chen, Chia-Chen & Chou, Yu-Wen. Animating eco-education: To see, feel, and discover in an augmented reality-based experiential learning environment. *Computers ve Education*, 96 (2016): 72–82.

- Hwang, Gwo-Jen, Wu, Po-Han, Chen, Chi-Chang ve Tu, Nien-Ting. Effects of an augmented reality-based educational game on students' learning achievements and attitudes in real-world observations. *Interactive Learning Environments*, 24(8) (2016): 1895–1906.
- Ibáñez, Maria, Blanca, Di Serio, Ángela, Villarána, Diego & Kloos, Carlos. "Experimenting with electromagnetism using augmented reality: Impact on flow student experience and educational effectiveness". *Computers & Education*, 71, (2014): 1–13.
- İbili, Emin. "Geometri dersi için artırılmış gerçeklik materyallerinin geliştirilmesi, uygulanması ve etkisinin değerlendirilmesi" (Yayınlanmamış doktora tezi). Gazi Üniversitesi, Eğitim Bilimleri Enstitüsü, Ankara. (2013).
- Kalaycı, Şeref. (Ed.) SPSS Uygulamalı Çok Değişkenli İstatistik Teknikleri. *Ankara: Asil Yayın Dağıtım*. (2016).
- Kaufmann, Hannes & Schmalstieg, Dieter. "Mathematics and geometry education with collaborative augmented reality". In *ACM SIGGRAPH 2002 conference abstracts and applications*, (2002): 37-41.
- Kayabaşı, Alper. "4D mobil uygulamaların fen eğitiminde başarıya ve öğrenci tutumlarına etkisinin değerlendirilmesi" (Yayınlanmamış Yüksek Lisans Tezi), Ağrı İbrahim Çeçen Üniversitesi, Fen Bilimleri Enstitüsü, Ağrı. (2016).
- Korucu, Agah T., Gençtürk, Tarık & Sezer, Cem. "Artırılmış gerçeklik uygulamalarının öğrenci başarı ve tutumlarına etkisi". In *XVIII. Akademik Bilişim Conference*, Aydın, Turkey. (2016).
- Küçük, Sevdâ, Yılmaz, Rabia & Göktaş, Yüksel. "İngilizce öğreniminde artırılmış gerçeklik: Öğrencilerin başarı, tutum ve bilişsel yük düzeyleri". *Eğitim ve Bilim*, 39(176) (2014): 393- 404.
- Moldovan, Arghir-Nicolae, Weibelzahl, Stephan & Muntean, Cristina. H. "Energy-aware mobile learning: Opportunities and challenges". *IEEE Communications Surveys & Tutorials*, 16(1) (2013): 234-265.
- Nuhoglu, Hasret. "İlköğretim Fen ve Teknoloji dersine yönelik bir tutum ölçeğinin geliştirilmesi". *İköğretim Online*, 7(3) (2008): 627–639.
- Onbaşılı, Ümit.İ. "Artırılmış gerçeklik uygulamalarının ilkökul öğrencilerinin artırılmış gerçeklik uygulamalarına yönelik tutumlarına ve fen motivasyonlarına etkisi". *Ege Journal of Education*, 19(1) (2018): 320-337.
- Özarslan, Yasin. "Genişletilmiş Gerçeklik ile Zenginleştirilmiş Öğrenme Materyallerinin Öğrenen Başarısı ve Memnuniyeti Üzerindeki Etkisi" (Yayınlanmamış Doktora Tezi). Anadolu Üniversitesi, Sosyal Bilimler Enstitüsü, Eskişehir. (2013).
- Özdemir, Muzaffer. "Artırılmış gerçeklik teknolojisi ile öğrenmeye yönelik deneysel çalışmalar: Sistematik bir inceleme". *Mersin Üniversitesi Eğitim Fakültesi Dergisi*, 13(2) (2017): 609-632.
- Perez-Lopez, David & Contero, Manuel. Delivering educational multimedia contents through an augmented reality application: A case study on its impact on knowledge acquisition and retention. *Turkish Online Journal of Educational Technology – TOJET*, 12(4) (2013): 19–28.
- Quinn, Clark. mLearning: Mobile, wireless, in-your-pocket learning. *LiNE Zine*, 2006 (2000). 1-2.
- Rashvand, Habib F., and Kuei-Fang Hsiao. "Smartphone intelligent applications: a brief review." *Multimedia Systems* 21(1) (2015): 103-119.
- Sırakaya, Mustafa, and Didem Alsancak Sırakaya. "Artırılmış gerçekliğin fen eğitiminde kullanımının tutum ve motivasyona etkisi." *Kastamonu Eğitim Dergisi* 26(3) (2018): 887-905.
- Sırakaya, Mustafa. "Artırılmış gerçeklik uygulamalarının öğrencilerin akademik başarıları, kavram yanılgıları ve derse katılımlarına etkisi." Yayınlanmamış doktora tezi. Gazi Üniversitesi, Eğitim Bilimleri Enstitüsü, Ankara (2015).
- Sin, Aw Kien, and Halimah Badioze Zaman. "Live Solar System (LSS): Evaluation of an Augmented Reality book-based educational tool." *2010 International Symposium on Information Technology*. 1(2010): 1-6.
- Solak, Ekrem, and Recep Cakir. "Exploring the Effect of Materials Designed with Augmented Reality on Language Learners' Vocabulary Learning." *Journal of Educators Online* 12(2) (2015): 50-72.
- Sullivan, Gail M., and Richard Feinn. "Using effect size or why the P value is not enough." *Journal of graduate medical education* 4(3) (2012): 279.
- Şahin, Dilara. "Artırılmış gerçeklik teknolojisi ile yapılan fen öğretiminin ortaokul öğrencilerinin başarılarına ve derse karşı tutumlarına etkisi." Unpublished Master Thesis), Atatürk University, Institute of Educational Sciences, Department of Mathematics and Science Education, Erzurum (2017).
- Şentürk, Melek. "Mobil artırılmış gerçeklik uygulamalarının yedinci sınıf "güneş sistemi ve ötesi" ünitesinde kullanılmasının öğrencilerin akademik başarı, motivasyon, 312nivers teknolojiye yönelik tutumlarına etkisinin 312nivers dört gruplu modelle incelenmesi." Yayınlanmamış yüksek lisans tezi. Kocaeli Üniversitesi, Fen Bilimleri Enstitüsü, Kocaeli (2018).
- Taşdemir, Adem, & Murat Demirbaş. "İlköğretim öğrencilerinin fen ve teknoloji dersinde gördükleri konulardaki kavramları günlük yaşamla ilişkilendirebilme düzeyleri." *Uluslararası İnsan Bilimleri Dergisi* 7(1) (2010): 124-148.
- Timur, Betül, & Muzaffer Özdemir. "Fen Eğitiminde Artırılmış Gerçeklik Ortamlarının Kullanımına İlişkin Öğretmen Görüşleri." *Uluslararası Türk Eğitim Bilimleri Dergisi*.10 (2018): 62-75.
- Timur, Betül, Timur, Serkan, Özdemir, Muzaffer and Şen, Cansu. "Challenges encountered in the teaching of units in the primary science course curriculum solution and recommendation." *Journal of Theory and Practice in Education*, 12(2) (2016): 389-402
- Tuan, Hsiao-Lin, Chi-Chin Chin, and Shyang-Hong Shieh. "The development of a questionnaire to measure students' motivation towards science learning." *International journal of science education* 27(6) (2005): 639-654.
- Uluyol, Çelebi, and Selami Eryılmaz. "Examining pre-service teachers' opinions regarding to augmented reality learning." *Gazi Üniversitesi Gazi Eğitim Fakültesi Dergisi* 34(3) (2014).
- Vilkoniene, Margarita. "Influence of Augmented Reality Technology upon Pupils' Knowledge about Human Digestive System: The Results of the Experiment." *Online Submission* 6(1) (2009): 36-43.
- Wang, Hung-Yuan, Duh, Henry, Been-Lirn, Li, Nai, Lin, Tzung-Jin, & Tsai, Chin- Chung. "An investigation of 312niversity students' collaborative inquiry learning behaviors in an augmented reality simulation and a traditional simulation." *Journal of Science Education and Technology*, 23(5), (2014): 682-691.

- Wojciechowski, Rafał, and Wojciech Cellary. "Evaluation of learners' attitude toward learning in ARIES augmented reality environments." *Computers & education* 68 (2013): 570-585.
- Wolters, C. A., and Holly Rosenthal. "The relation between students' motivational beliefs and their use of motivational regulation strategies." *International journal of educational research* 33.7-8 (2000): 801-820.
- Yıldırım, Serkan. "*Fen bilimleri dersinde artırılmış gerçeklik uygulamalarının öğrencilerin başarısına, motivasyonuna, problem çözme becerilerine yönelik algısına ve tutumlarına etkisi.*" Yayınlanmamış yüksek lisans tezi. Ankara Üniversitesi, Eğitim Bilimleri Enstitüsü, Ankara (2016).
- Yılmaz, Hülya, and Pınar Huyugüzel Çavaş. "Reliability and validity study of the Students' Motivation toward Science Learning (SMTSL) Questionnaire." *İlköğretim online* 6(3) (2007): 430-440.
- Yıldırım, Bekir. "Fen bilimleri öğrenme kaygı ölçeği: Geçerlilik ve güvenirlik çalışması." *Anemon Muş Alparslan Üniversitesi Sosyal Bilimler Dergisi* 3(1) (2015): 33-43.
- Zeilik, Michael, Candace Schau, and Nancy Mattern. "Conceptual astronomy. II. Replicating conceptual gains, probing attitude changes across three semesters." *American Journal of Physics* 67(10) (1999): 923-927.
- Zhang, Ji., Sung, Yao-Ting, Hou, Huei-Tse and Chang, Kuo-En. "The development and evaluation of an augmented reality-based armillary sphere for astronomical observation instruction." *Computers & education* 73 (2014): 178-188.

MEASURING “CRABS IN A BUCKET” PHENOMENON AT SCHOOLS: A SCALE DEVELOPMENT STUDY⁹

Abstract: The purpose of this research was to develop a “Crabs in a Bucket at Schools Scale” (CBSS) measuring the perceptions of teachers regarding crab mentality in educational organizations. The data of the study was collected in 2019-2020 academic year from high school teachers working at different high schools of Aydın province, located in Aegean Region in Turkey. In order to provide the validity of the measurement tool, content and construct validity analyses were performed. So as to provide content validity, the item pool was subjected to expert view and expert panel. Following this, the data was collected from high school teachers by using the 44-item draft scale and then, the data was subjected to construct validity analysis. For construct validity, Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were performed by using separate datasets (305 participants for EFA and 279 participants for CFA). In an effort to provide the reliability of the scale; Cronbach Alpha, Spearman-Brown and Guttman Split-Half coefficients were calculated. As a result of the analyses, it was concluded that the scale comprised a 27-item and 2 factor (*individual factors sub-dimension* and *organizational factors sub-dimension*) structure, and the psychometric properties of CBSS was quite valid and reliable.

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INTRODUCTION

As a man walking on the beach approaches the fisherman, he sees the crabs in the bucket. The top of the bucket is open and it has no lid. This situation surprises him because he thinks that the crabs might escape. When he asks the fisherman, he replies “Yes, if there was only one crab, it would definitely run away. However, when there are many crabs and when one tries to crawl out, the others grab it, pull it down and make sure it does not run away. The rest also experience the same fate”. While one single crab can easily get out of the bucket without a lid, the escape becomes impossible as the number increases, because instead of pushing each other up, the crabs pull each other down and in the end, no one wins. This is the starting point of the “crabs in a bucket” phenomenon (Bell, 2017; Duke, 2014; Şahin, 2018; Vibes, 2015).

“Crabs in a bucket” phenomenon is a psychological concept, a pattern of behavior based on the mentality of “*if I cannot have it, neither can you*”. People with crab mentality aim to reduce the importance of those who are trying to be successful by surpassing the others in their group. Instead of watching the success of others while they themselves are failing, they expect them to be unsuccessful, too. Even in happy moments, they can find points to criticize, but they do not want to hear any criticism (Şahin, 2018). The behaviors of people with the understanding of crab mentality are positioned around such behaviors as discouraging others, being jealous, undermining what they are doing, and exhibiting an impolite and excessively competitive attitude (Abrugar, 2014). Discouraging behaviors are related to underrating and criticizing others by using harsh words, whereas impolite and excessively competitive behaviors involve such behaviors as blaming, gossiping, making up conspiracy theories, and refusing to cooperate (Miller, 2019: 357).

It would not be wrong to assert that probably the most important reason for “crabs in a bucket” phenomenon to be experienced in the society and organizations is the legitimization of individualism and competition culture in such a world dominated by capitalism. In the globalizing world, competition is seen as an important component of progress and creativity, and is defended widely by masses. However, in the philosophical sense, competition should be in the form of competing with one’s own self. The individual should not have the desire to be equal or superior to others, but to prevail over the previous and current states of his own self. That is why, there are no dangerous feelings like jealousy, grudge, pride and boasting in such a competition (Akkaya, 2008; Gövsa, 1998). The desire to be no inferior to others, which is involved in the legitimized competitive attitude imposed by the capitalist system, constitutes the basic assumption of “*if I cannot have it, neither can you*” mentality inherent in “crabs in a bucket” phenomenon.

When the “crabs in a bucket” phenomenon is examined within the context of education and educational administration, it would again be an adequate approach to consider and discuss the terms along with the globalization process that have affected the whole world (Nelson & Dawson, 2015). The field of educational administration has gone through a rapid change and transformation process with the globalization process (Eser, 2014; Yıldız, 2008), and with the rapid developments and changes in television, computer and information technologies, the world has become a “global village” (McLuhan, 1964), which has begun to impose itself as a requirement for societies to take the competition in the global arena into consideration in order to keep up with the developments and changes experienced (Eser, 2014). In this regard, the areas mostly affected by the neo-liberal policies, which have become widespread throughout the world, have been education systems along with health and social security systems, and educational and instructional processes have been significantly affected by the globalization process. In today’s understanding of education, every individual is directed from criticism and solidarity to “compromise” and “competition” under great control and pressure, and learners are educated according to the superior values of neo-liberalism. It is doubtful that these values and an education system based on them will provide the environment and climate in which a democratic social life will prevail (Yıldız, 2008).

In the literature review, it has been determined that the studies on “crabs in a bucket” phenomenon are generally carried out so as to conceptualize the phenomenon, and the number of empirical studies, especially those in the field of education, is quite few. “Crabs in a bucket” phenomenon, which was first used and conceptualized by Duke (1994) in educational organizations, was considered as a “*stumbling block*” in front of teacher leadership. Duke (1994) emphasized that teachers should abandon the “crabs in a bucket” culture in order to go beyond the pre-determined leader roles of teacher leadership parameters. According to him, some schools act with the “crabs in a bucket” culture and actively resist the efforts of their members. Kumar and Soubhari (2014) used the “*crab mentality factors scale*” in a quantitative study

conducted to reveal the impact of “crabs in a bucket” phenomenon on job stress, and it was emphasized that establishing such a mentality in the academic staff, the study group of the research, created such thoughts and behaviors as competition, non-cooperation, jealousy and conspiracy theories in the workplace. It was also revealed in the study that behaviors such as hostility, jealousy, greed, obsession, disrespect and hatred triggered insecurity in the individuals. In a qualitative study conducted by Marques (2009), it was emphasized that “crabs in a bucket” phenomenon was one of the most important factors in the progress and promotion of women, and it was argued that this “*glass ceiling*” in the workplace originated from other women. In a phenomenological study conducted by Aydın and Oğuzhan (2019) so as to determine whether crab mentality affected dissatisfaction, absenteeism and motivation in the workplace, it was found that such a mentality negatively affected the employees’ motivation and job satisfaction, and increased absenteeism. Besides, it was also revealed that the individuals who exhibited such behavior did this mostly due to egocentrism and jealousy, which was followed by such reasons as career advancement efforts, ambition and academic inadequacy.

Based on the studies mentioned above, it can be seen that mostly qualitative research design has been used in the studies and these studies have been carried out in order to conceptualize the phenomenon, with very few number of studies having been conducted. In addition to this, the fact that there is no measurement tool found aiming to measure the perception levels in terms of “crabs in a bucket” phenomenon at schools is considered as an important starting point for this study. In this regard, the main purpose of this study was to develop “Crabs in a Bucket Scale at Schools” intended to measure the perception levels of teachers regarding “crabs in a bucket” phenomenon in educational organizations.

METHOD

PROCEDURES

In the study, it was aimed to develop “Crabs in a Bucket Scale at Schools” intended to measure the perception levels of teachers regarding “crabs in a bucket” phenomenon. In the scale development process carried out with an inductive approach, the common points of the scale development approaches introduced by different researchers (Benson, Lavelle, Spence, Christopher & Dean, 2020; Carpenter, 2018; Clark & Watson, 1995; DeVellis, 2014; Nunnally & Bernstein, 1994; Tay & Jebb, 2017) have been blended and the following steps have been followed:

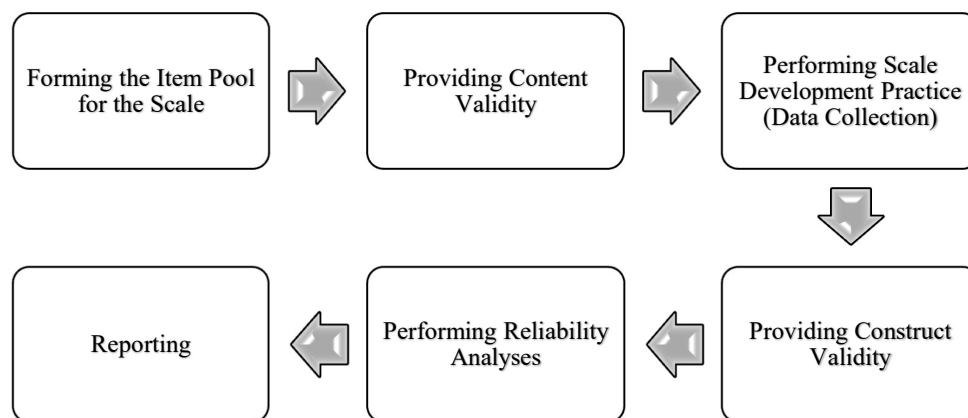


Figure 1. The Steps of Scale Development

As can be seen in Figure 1, the first step of the scale development process was to form an item pool for the scale. According to Tay and Jebb (2018), whether the approach to scale development is deductive or inductive, one of the most important aspects in developing a good scale is to conceptualize the structure well. This requires a detailed review of the literature aiming to reveal what the phenomenon is and what is not, in other words, to describe and define the structure. Based on this, the literature on the “crabs in a bucket” phenomenon was reviewed in detail in order to form the item pool of “Crabs in a Bucket Scale at Schools”. While doing the search, scientific journals and articles, accessible theses and books as well as internet news websites and other available online resources were also utilized. As a result of the literature review, together with the fact that the number of scientific studies accessed was very limited (Aydın & Oğuzhan, 2019; Duke, 2014; Kumar & Soubhari, 2014; Marques, 2019; Miller, 2019; Sampath, 1997;

Spacey, 2015), it was determined that most of these studies dealt with the subject only from a theoretical perspective.

Based on the information presented in the resources obtained as a result of the literature review, an item pool which was composed of 45 items was formed. While forming the item pool for the scale, some statements were expressed negatively, whereas others were purposefully written as “reverse coded” items. The main purpose here was to avoid response bias (DeVellis, 2014; Tay & Jebb, 2018). In the next step, the item pool formed of 45 items was sent to 14 faculty members working in the Education Faculties of three different state universities in the Aegean Region of Turkey for expert view so as to ensure the content validity of the item pool (Ayre & Scally 2014, Lawshe, 1975; Wilson, Pan & Schumsky, 2012). In the process carried out based on Lawshe technique (1975), a 3-point form prepared as “Must Stay”, “Must Be Revised”, and “Must Be Removed” was first sent to the experts in order to obtain their views regarding the items, and the experts were asked to evaluate each item and mark one of the options they deemed appropriate. In the analysis of the expert views obtained from 11 experts who gave feedback, the content validity calculation technique, which is frequently used in scale development studies, developed by Lawshe (1975) and revised by Ayre and Scally (2014) and Wilson, Pan, and Schumsky (2012) was utilized. As a result of the expert view, Content Validity Ratios (CVR) and Content Validity Index (CVI) of the data obtained were calculated. CVR is an item statistic based on the content validity regarding whether each item in the scale should stay or not, and is calculated according to the formula below. (Lawshe, 1975);

$$CVR = \frac{Nu - \frac{N}{2}}{\frac{N}{2}} \quad \text{or} \quad CVR = \frac{Nu}{\frac{N}{2}} - 1$$

In the CVR formula; “Nu” refers to the number of experts expressing “Must Stay” for each item in the scale, and “N” refers to the number of experts expressing views on the item. CVR has a value between -1 (absolute rejection) and +1 (absolute acceptance), and if all the experts rate any item in the scale as “Must Stay”, the CVR value of that item is 1 (Ayre & Scally, 2014; Lawshe, 1975; Wilson, Pan & Schumsky, 2012). Lawshe (1975) stated that for each item with a positive value, the content validity criterion [CVR (critical)] should be considered at the significance level of $\alpha=.05$. CVR (critical) is defined as the CVR value needed to remove the possibility that the ratio of appropriateness to each item in the scale is by chance and decide whether an item is really adequate or not. As a result of the calculation, 7 items with CVR value lower than CVR (critical) value ($<.636$) were removed from the item pool of 45 items (Ayre & Scally 2014; Lawshe, 1975; Wilson, Pan & Schumsky, 2012). In order to deepen the content validity in the research, it was decided to hold an expert panel following the expert view step. According to Worthington and Whittaker (2006), the evaluation of the quality of scale items by more than one field expert group is a critical stage in the scale development process. According to Erkuş (2012), expert views can be obtained through statistical methods and panel discussion, and one or both of these methods can be used together. The expert panel, which was held in order to deepen the content validity in the research, was carried out with 5 experts of Educational Sciences, considering the availability of the experts. It is stated that there should be at least 5 experts from different academic levels in expert panels, and even when it is difficult to find experts for the subject, at least 3 experts should be reached (Gilbert & Prion, 2016; Lawsche, 1975; Lynn, 1986). The experts were informed in advance about the research process and the issues to be discussed in the panel, and they were informed about the subject. Besides, when the expert panel session started, the research subject was briefly introduced by the researcher, the process of forming the item pool and the expert view step were explained in detail. According to Lynn (1986), despite the fact that the experts have general knowledge and expertise about the research subject in general, it is not an adequate method alone to give them the scale and ask them to evaluate. Experts should be given a range of detailed information, the information should be correlated with the items of the scale, and it should be ensured that they have an understanding of the overall scale. In this regard, the issues discussed in the expert panel are as follows:

- Discussing the understandability of each item in the 38-item scale obtained after expert view and making appropriate changes in the items where necessary.
- Evaluating each of the 19 items suggested by the experts in the expert view step and deciding whether it is appropriate to include them in the scale.
- Determining the measurement style and format of the scale.

As a result of the discussion and evaluation in the expert panel, which lasted for about 3 hours, the scale item pool composed of 38 items was evaluated conceptually and grammatically, and some changes were

made where necessary. After that, it was decided to include 6 of the 19 items in the scale suggested by the experts in the expert view step [CVR value for each item accepted=1.000 (Ayre & Scally, 2014; Lawshe, 1975; Wilson, Pan & Schumsky, 2012)]. Besides, it was also determined in the expert panel that the 2-subdimension theoretical structure (*individual factors sub-dimension* and *organizational factors sub-dimension*), which was considered by the researcher based on the literature during the step of forming the item pool, was appropriate and the scale should be a 5-point Likert type scale [(1) *I strongly disagree*, (2) *I disagree*, (3) *I am neutral*, (4) *I agree*, (5) *I strongly agree*]. Within the context of content validity, an item pool of 44 items was obtained as a result of the expert view step (38 items) and the expert panel step (6 items).

PARTICIPANTS

In accordance with the purpose of the research, the 44-item scale whose content validity was provided was applied to high school teachers working in the different districts of Aydın province, located in the Aegean Region of Turkey, in the 2019-2020 academic year. In determining the participants, convenient sampling method was used. The main reason for obtaining the data by using convenient sampling method was the requirement that the teachers could not be reached at schools and it was obliged to collect the data of the research via online questionnaire form due to the fact that face-to-face education activities were terminated and distance education was launched due 16th March 2020 in all school levels in Turkey because of Covid-19 pandemic, which was first seen in the Peoples Republic of China in December 2019 and later spread around the world, and which started to be effective in Turkey in March 2020 (Wikipedia, 2020). The online form prepared by the researcher was sent to high school teachers working in Aydın province in March 2020, which was the population of the study, by utilizing the most widely used instant messaging application “WhatsApp” and mainstream social media tools “Facebook” and “Twitter”, and the teachers who volunteered to participate in the study were asked to fill in the form. Together with the fact that there are different views in the literature about how much data should be obtained; Nunnally (1978) suggested that a sample of 300 participants would be adequate in scale development studies, whereas Comrey and Lee (1992) and Worthington and Whittaker (2006) stated that a sample group of 200-300 participants would be appropriate, and Cattell (1978) expressed that a sample group of at least 250 participants would be needed. On the other hand, Bryman and Cramer (2001), Gorsuch (1983), Tavşancıl (2010), Yiğit and Kurnaz (2010) and Büyüköztürk (2002) suggested that the data set should be at least 5 times the number of items in the scale. In this regard, it was determined in this study that the data set should be at least 5 times the number of items obtained in the content validity test of the scale, which was a 44-item scale obtained as a result of the content validity. Furthermore, when the literature is examined, it can be revealed that in order to ensure the construct validity in scale development studies, it is necessary to begin the analysis with Exploratory Factor Analysis (EFA), and then test the determined structure with Confirmatory Factor Analysis (CFA) by using a new data set (Cabrera-Nyugen, 2010; Costello & Osborne, 2005; Henson & Roberts, 2006; Worthington & Whittaker, 2006). Indeed, Henson and Roberts (2006) stated that performing EFA and CFA by using the same sample group might reveal misleading results. For this reason, a data set of 320 individuals was used for EFA, and a separate data set of 298 individuals was used for CFA.

DATA ANALYSIS

In order to determine the construct validity of “Crabs in a Bucket Scale at Schools”, first, Exploratory Factor Analysis (EFA) was performed on the data set obtained from 320 participants. Prior to the analysis, normality distribution of the data was tested, and 15 data that did not meet the normality assumptions were removed from the relevant data set and it was decided to perform EFA with a data set of 305 participants. Besides, item total correlations of the 44-item scale and item mean scores of the lower 27% and upper 27% groups were calculated, and two items whose item discrimination was low ($r < .30$) and whose item mean scores of the lower 27% and upper 27% groups were not significant were excluded from the scale. Therefore, it was determined to perform EFA with 42 items. The appropriateness of the structure of the data set used in EFA to factor analysis was tested via Kaiser-Meyer-Olkin (KMO) and Bartlett’s Test of Sphericity. While evaluating the factor structure of the scale; Communalities table obtained with Principle Component Analysis, Scree Plot, Total Variance Explained, and Rotated Component Matrix were considered. As a result of EFA; Cronbach Alpha, Spearman-Brown and Guttman Split-Half coefficients were calculated in order to determine the reliability level of the structure of “Crabs in a Bucket Scale at Schools” composed of 27 items and 2 factors.

In order to test the construct validity of the 2-factor scale obtained as a result of EFA, Confirmatory Factor Analysis (CFA) was performed with a separate data set obtained from 298 participants. Prior to the analysis, normality distribution of the data was tested, and by removing 19 data that did not meet the normality assumptions, it was decided to perform CFA with a data set of 279 participants. Besides, item total correlations of the 27-item scale and item mean scores of the lower 27% and upper 27% groups were calculated, and it was determined that the t-values of all the items were significant. Therefore, it was determined to perform CFA with 27 items. The findings obtained in CFA were evaluated according to RMSEA (Root Mean Square Error Approximation) value, Chi-square value, the ratio of Chi-square value to degree of freedom (χ^2/df), SRMR (Standardized Root Mean Square Residual) value and fit indices (NFI, NNFI, CFI, IFI, GFI, AGFI). As a result of CFA; Cronbach Alpha, Spearman-Brown and Guttman Split-Half coefficients were calculated in order to determine the reliability level of the 27-item and 2-factor “Crabs in a Bucket Scale at Schools” whose construct validity was provided.

In the application of the Lawsche (1975) technique used for the content validity of the scale, Microsoft Excel 2016 program was used, and SPSS 22.0 package program and LISREL 8.80 program were used to test the construct validity. In addition to this, since the scale used in the data collection process was in Turkish language, the scale items presented in this study were reported by providing translation validity. In this regard, the translation validity of the scale was provided as a result of the views of three field experts, and the items of the scale were presented in the “findings” section

FINDINGS

In order to determine the construct validity of “Crabs in a Bucket Scale at Schools”, first, Exploratory Factor Analysis (EFA) was performed on the data set obtained from 320 participants. Prior to the analysis, normality distribution of the data was tested, and 15 data that did not meet the normality assumptions were removed from the relevant data set and it was decided to perform EFA with a data set of 305 participants. The appropriateness of the structure of the data set used in EFA to factor analysis was tested via Kaiser-Meyer-Olkin (KMO) and Bartlett’s Test of Sphericity. Accordingly, in the first analysis, it was observed that Kaiser-Meyer-Olkin (KMO) value was .952, and Bartlett’s Test of Sphericity was significant ($\chi^2=8808.184$; $p<.01$). According to the researchers, Kaiser-Meyer-Olkin (KMO) test examines whether the partial correlations are small, and whether the distribution is sufficient for factor analysis. The closer this value is to 1, the better it is; whereas if this value is below .50, it expresses “unacceptable ratio”. If this value is above .90, it is interpreted as “perfect” (Çokluk, Şekercioglu, & Büyüköztürk, 2014; Leech, Barrett, & Morgan, 2005; Şencan, 2005; Tavşancıl, 2010). Bartlett’s test of Sphericity examines whether the data comes from multivariate normal distribution, and the significance of the test result supports the hypothesis that the data comes from multivariate normal distribution (Çokluk, Şekercioglu, & Büyüköztürk, 2014; Otrar & Arın, 2015; Tavşancıl, 2010). Following this, the items that were not structured under any factor and whose factor load were below .60 according to Rotated Components Matrix obtained as a result of the analysis performed using Varimax Vertical Rotation Technique were excluded from the analysis one by one, and the analysis was repeated again and again by reviewing Rotated Components Matrix each time. Within the framework of the findings obtained as a result of the repeated analyses; it was observed that Kaiser-Meyer-Olkin (KMO) value was perfect (.944), and Bartlett’s Test of Sphericity was significant ($\chi^2=997.591$; $p<.01$). In the subsequent step of the analysis, Rotated Component Matrix obtained by Varimax Vertical Rotation Technique was examined in order to examine the factor status of the scale items. According to the matrix, the items and factors of the scale obtained as a result of EFA are presented in Table 1.

According to Rotated Components Matrix presented in Table 1, which was obtained by using Varimax Vertical Rotation Technique based on .60 factor load; it was concluded that the scale was composed of a 2-factor structure, the first factor involved the items regarding *individual factors sub-dimension*, and the second factor involved the items regarding *organizational factors sub-dimension*. It was also determined that the eigenvalues of both factors were above 1, and that the first factor explained 32.688% of the total variance, while the second factor explained 26.317% of the total variance. Therefore, it was found that the 2-factor and 27-item structure explained 59.004% of the total variance. Researchers stated that the variance ratio varying between 40% and 60% can be considered sufficient (Çokluk, Şekercioglu, & Büyüköztürk, 2014; Scherer, Wiebe, Luther, & Adams, 1988; Tavşancıl, 2010).

Table 1. The Structure Obtained as a Result of EFA

ii	Factor	
	1	2
At my school, there are teachers who are jealous of me when I achieve success.	.844	
At my school, there are teachers who do not like my administrator to appreciate me.	.815	
At my school, there are teachers who compare me with themselves.	.797	
At my school, there are teachers who compete with me.	.793	
At my school, there are teachers who gossip about me.	.752	
At my school, there are teachers who do not want me to do what they cannot do.	.750	
At my school, there are teachers who try to hinder my professional development.	.748	
At my school, there are teachers who do not support me when I have a failure.	.745	
At my school, there are teachers who try to stop me when I present something new.	.725	
At my school, there are teachers who underestimate my ideas.	.713	
At my school, there are teachers who unfairly criticize what I do.	.702	
At my school, there are teachers who do not give satisfactory answers to my questions on purpose.	.690	
At my school, there are teachers who do not respect differences between individuals.	.670	
At my school, there are teachers who blame me for the problems I experience.	.666	
When I have a suggestion about the functioning of the school, I immediately face opposing ideas.	.621	
Cooperation among teachers is supported by the school administration.		.807
The school administration does not take my expectations into consideration.		.784
I do not receive institutional support in my school-related work.		.783
My suggestions about the functioning of the school are taken into consideration by the school administrators.		.773
Good communication among teachers is supported by the school administration.		.735
At my school, personal development is supported.		.698
At my school, my work is devaluated.		.691
I face institutional barriers to accessing facilities at my school.		.676
At my school, there is an environment of trust where I can easily share my ideas.		.675
At my school, I am appreciated for what I do.		.658
At my school, we are supported to improve ourselves through in-service training.		.652
Our school has a strong culture.		.625

In order to determine the reliability level of the structure obtained after EFA, Cronbach Alpha, Spearman-Brown and Guttman Split-Half coefficients were calculated for the overall scale and two sub-dimensions. The findings obtained as a result of the analysis are presented in Table 2.

Table 2. Reliability Analysis of “Crabs in a Bucket Scale at Schools” (Post EFA)

Crabs in a Bucket Scale at Schools	Cronbach Alpha	Spearman-Brown	Guttman Split-Half
Individual Factors Sub-dimension	.951	.925	.914
Organizational Factors Sub-dimension	.927	.917	.915
Overall Scale	.953	.746	.727

As can be seen in Table 2, Cronbach Alpha, Spearman-Brown and Guttman Split-Half coefficients were calculated separately for the overall scale and two sub-dimensions in order to determine the reliability level of “Crabs in a Bucket Scale at Schools” after EFA. Accordingly, Cronbach Alpha coefficient of “Individual Factors Sub-dimension” of the scale was .951, Spearman-Brown coefficient was .925, and Guttman Split-Half coefficient was .914; whereas Cronbach Alpha coefficient of “Organizational Factors Sub-dimension” of the scale was .927, Spearman-Brown coefficient was .917, and Guttman Split-Half coefficient was .915. It was also determined that Cronbach Alpha coefficient of the overall scale was .953, Spearman-Brown coefficient was .746, and Guttman Split-Half coefficient was .727. Due to the fact that all the calculated values are above .700 (Büyüköztürk, 2011; Can, 2014; Erkuş, 2012; Tavşancıl, 2010), it can be said that the reliability of the overall scale and its sub-dimensions is high.

In order to determine the construct validity of “Crabs in a Bucket Scale at Schools” after EFA, Confirmatory Factor Analysis (CFA) was performed on the data set obtained from 298 participants. Prior to the analysis, normality distribution of the data was tested, and 19 data that did not meet the normality assumptions were removed from the relevant data set and it was decided to perform CFA with a data set of 279 participants. As a result of the first analysis, it was decided to take modification suggestions into consideration (RMSEA=0.086, $\chi^2/df=3.06$), and it was decided that the modifications to be made respectively between

ITEM16 and ITEM18 [Chi-square (Decrease)=58.3], between ITEM9 and ITEM14 [Chi-square (Decrease)=40.1] and between ITEM4 and ITEM5 [Chi-square (Decrease)=36.3] would contribute significantly to Chi-square. Besides, improvement was expected in the fit indices as a result of the modifications to be made. According to Çokluk, Şekercioglu and Büyüköztürk (2014), the modifications should be made respectively if the number of modifications to be made is more than one. In this regard, the modification suggestions presented in the model were applied one-by-one and CFA was repeated after each modification. The model obtained as a result of the analysis is presented in Figure 2.

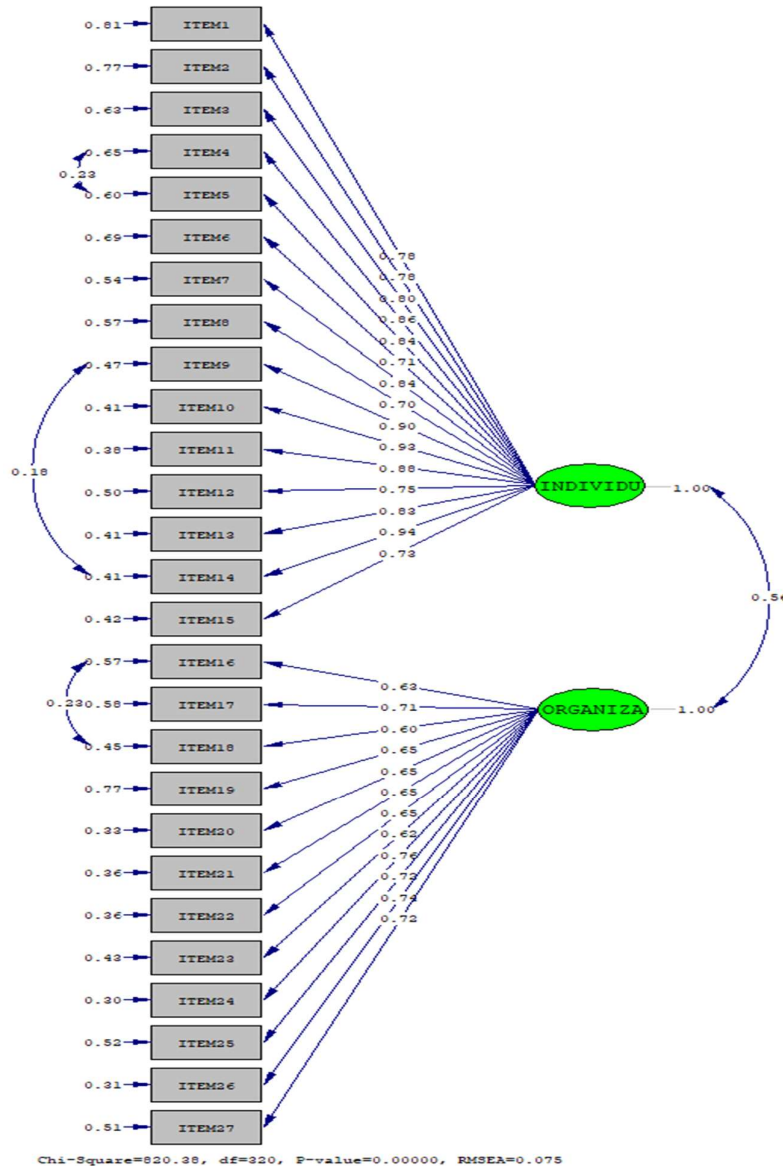


Figure 2. CFA Result Regarding “Crabs in a Bucket Scale at Schools”

According to the model presented in Figure 2, which was obtained as a result of the modifications made regarding the construct validity of the 2-factor “Crabs in a Bucket Scale at Schools”, it was determined that the modifications made respectively between ITEM16 and ITEM18 [Chi-square (Decrease)=58.3], between ITEM9 and ITEM14 [Chi-square (Decrease)=40.1] and between ITEM4 and ITEM5 [Chi-square (Decrease)=36.3] contributed significantly to Chi-square. According to researchers, associating errors between factors leads to misinterpretations. However, associating errors within the same factor is a general practice that reflects a realistic view, and similar expressions in the items of modification encourage the association of errors (Bollen & Lennox, 1991; Brown, 2014; Hansen, 2019). It can be said that the modifications made in the study are meaningful as they are within the same factor. Besides, it can be said

that the modifications made between ITEM16 “*Good communication among teachers is supported by the school administration.*” And ITEM18 “*Cooperation among teachers is supported by the school administration.*”, between ITEM9 “*At my school, there are teachers who are jealous of me when I achieve success.*” And ITEM14 “*At my school, there are teachers who do not like my administrator to appreciate me.*”, and between ITEM4 “*At my school, there are teachers who compete with me.*” And ITEM5 “*At my school, there are teachers who compare me with themselves.*” May be stemming from the association of similar expressions in the related items. Besides, it should be noted that in the repeated trials for CFA, the expressions mentioned above that were similar to each other were removed, and the analysis was performed again, but it was found out that removing similar items did not contribute to RMSEA, Chi-square and other fit indices. Therefore, it was deemed appropriate to take modification suggestions into consideration and make modifications between related items. As a consequence, the Fit Indices Regarding the Model obtained as a Result of CFA are presented in Table 3.

Table 3. Fit Indices Regarding the Model Obtained as a Result of CFA

Fit Indices	Obtained Values	Appropriateness
χ^2 (Chi-Square)	820.38	Appropriate Value
df (Degree of Freedom)	320	Appropriate Value
χ^2 / df	2.56	Perfect Fit
RMSEA (Root Mean Square Error of Approximation)	.075	Good Fit
NFI (Normed Fit Index (NFI)	.96	Perfect Fit
NNFI (Non-Normed Fit Index)	.97	Perfect Fit
CFI (Comparative Fit Index)	.97	Perfect Fit
IFI (Incremental Fit Index)	.97	Perfect Fit
SRMR (Standardized Root Mean Square Residual)	.057	Good Fit
GFI (Goodness of Fit Index)	.82	Acceptable Fit
AGFI (Adjusted Goodness of Fit Index (AGFI)	.79	Acceptable Fit

As can be seen in Table 3, according to the final model obtained after the modifications performed for the structure validity of the 2-factor structure of “Crabs in a Bucket Scale at Schools”, the 320-degree of freedom value of the 279-participant sample was found 820.38. When these values were estimated to each other for the fit index, it was determined that the ratio of Chi-square value to degree of freedom was 2.56 (820.38/320) ($p < .01$). The fact that χ^2/df is below 3 corresponds to “perfect fit” in large samples (Kline, 2005; Sümer, 2000; Çokluk, Şekercioğlu, & Büyüköztürk, 2014). When RMSEA (Root Mean Square Error of Approximation) in the model was examined, it was observed that a fit index of .075 was obtained, which indicates “good fit” (Brown, 2014; Browne & Cudeck, 1993; Çokluk, Şekercioğlu & Büyüköztürk, 2014; Jöreskog & Sörbom, 1993; Tabachnick and Fidel, 2013). When NFI (Normed Fit Index), NNFI (Non-Normed Fit Index), CFI (Comparative Fit Index) and IFI (Incremental Fit Index) were examined, it was found that NFI was .96, NNFI, CFI and IFI was .97, which correspond to “perfect fit” (Çokluk, Şekercioğlu, & Büyüköztürk, 2014; Sümer, 2000). According to another fit index, Standardized RMR was found to be 0.057, which corresponds to “good fit” (Brown, 2014; Çokluk, Şekercioğlu, & Büyüköztürk, 2014). Finally, it was found that GFI (Goodness of Fit Index) was 0.82, and AGFI (Adjusted Goodness of Fit Index) was 0.79, which corresponds to “acceptable fit” (Hooper, Caughlan, & Mullen, 2008; Çokluk, Şekercioğlu, & Büyüköztürk, 2014). In the light of the findings obtained from CFA performed within the scope of structure validity of the scale, it can be said that “Crabs in a Bucket Scale at Schools” exhibited “good fit” in high school teachers sample.

It can also be seen in the model that the first factor of the scale was “*individual factors sub-dimension*” and it involved 15 items; whereas the second factor was “*organizational factors sub-dimension*” and it involved 12 items. Besides, some of the items in the scale were purposefully “reverse coded” (ITEM16, ITEM18, ITEM19, ITEM20, ITEM21, ITEM25, ITEM26, ITEM27). According to DeVellis (2014) and Tay and Jebb (2018), the goal in writing reverse coded items is the effort to avoid justification, acceptancy and response bias.

Following the construct validity phase completed with CFA, Cronbach Alpha, Spearman-Brown and Guttman Split-Half coefficients were calculated for the overall scale and two sub-dimensions in order to determine the reliability level of the scale after CFA. The findings obtained as result of the analysis are presented in Table 4.

Table 4. Reliability Analysis of “Crabs in a Bucket Scale at Schools” (Post CFA)

Crabs in a Bucket Scale at Schools	Cronbach Alpha	Spearman-Brown	Guttman Split-Half
Individual Factors Sub-dimension	.948	.907	.904
Organizational Factors Sub-dimension	.924	.886	.886
Overall Scale	.949	.706	.701

As can be seen in Table 4, Cronbach Alpha, Spearman-Brown and Guttman Split-Half coefficients were calculated separately for the overall scale and two sub-dimensions in order to determine the reliability level of “Crabs in a Bucket Scale at Schools” after CFA. Accordingly, Cronbach Alpha coefficient of “Individual Factors Sub-dimension” of the scale was .948, Spearman-Brown coefficient was .907, and Guttman Split-Half coefficient was .904; whereas Cronbach Alpha coefficient of “Organizational Factors Sub-dimension” of the scale was .924, Spearman-Brown coefficient was .886, and Guttman Split-Half coefficient was .886. It was also determined that Cronbach Alpha coefficient of the overall scale was .949, Spearman-Brown coefficient was .706, and Guttman Split-Half coefficient was .701. Due to the fact that all the calculated values are above .700 (Büyüköztürk, 2011; Can, 2014; Erkuş, 2012; Tavşancıl, 2010), it can be said that the reliability of the overall scale and its sub-dimensions is high.

CONCLUSION, DISCUSSION AND SUGGESTIONS

“Crabs in a bucket” phenomenon refers to a behavioral situation in which the individual tries to pull down those who perform better than himself or herself. As a concept, “crabs in a bucket” was put forth from an observation of the fisherman’s bucket full of crabs. The fisherman does not have to cover his bucket full of crabs with a lid because when a crab in the bucket tries to crawl out, the others grab it from his foot and try to pull him down into the bucket (Abrugar, 2014; Duke, 1994; Hard & O’Gorman, 2007; Spacey, 2015). This psychological definition, which was made by referring to the story told in the Philippines, was first used by the Filipino activist writer Ninitchka Rosca (Şahin, 2018; Tosun, 2019). “Crabs in a bucket” phenomenon represents the mentality and behaviors of the individuals who are identified with or belong to a particular marginalized community or culture that undermines the behaviors of others and the opportunities they have to achieve certain promotion goals. “Crabs in a bucket” phenomenon, which was first described in educational organizations by Duke (1994), was seen as one of the most important obstacles to the professional development of teachers as educational leaders, and was conceptualized and introduced into the literature (Duke, 1994; Hard & O’Gorman, 2007). However, together with the fact that the number of scientific studies in the literature on “crabs in a bucket” phenomenon was quite few (Aydın & Oğuzhan, 2019; Duke, 2014; Kumar & Soubhari, 2014; Marques, 2019; Miller, 2019; Sampath, 1997; Spacey, 2015), no measurement tool could be found to evaluate this phenomenon from the perspectives of teachers working in educational organizations. From this point of view, in this study, it was aimed to develop “Crabs in a Bucket Scale at Schools”.

In the scale development process, inductive approach was followed and the common points of scale development approaches put forth by various researchers (Benson et al., 2020; Carpenter, 2018; Clark & Watson, 1995; DeVellis, 2014; Nunnally & Bernstein, 1994; Tay & Jebb, 2017) were utilized. In this regard, first of all, a scale item pool was formed in the light of the relevant literature (Aydın & Oğuzhan, 2019; Duke, 2014; Kumar & Soubhari, 2014; Marques, 2019; Miller, 2019; Sampath, 1997; Spacey, 2015). In order to ensure the content validity of the item pool, expert view was applied, and then an expert panel was held (Erkuş, 2012; Worthington & Whittaker, 2006). The 44-item scale whose content validity was provided was applied to high school teachers working in the different districts of Aydın province, located in the Aegean Region of Turkey, in the 2019-2020 academic year. In collecting the data, convenient sampling method was used and the data of the research was collected via online questionnaire form due to the fact that face-to-face education activities were terminated and distance education was launched due 16th March 2020 in all school levels in Turkey because of Covid-19 pandemic. Following the data collection process, EFA and CFA were performed to ensure the construct validity of the scale. Consideration was taken to use different data sets while performing EFA and CFA (Cabrera-Nyugen, 2010; Costello & Osborne, 2005; Henson & Roberts, 2006; Worthington & Whittaker, 2006). After performing EFA, a 27-item and 2-factor (*individual factors sub-dimension* and *organizational factors sub-dimension*) structure

was obtained, and CFA was performed to test the validity of the obtained structure. Following CFA, the 27-item and 2-factor structure of “Crabs in a Bucket Scale at Schools” was confirmed and it was determined that the structure had a good fit. Besides, after each factor analysis, reliability analyses (Cronbach Alpha, Spearman-Brown, and Guttman Split-Half) were performed and it was found that all of the coefficients were above .700, which, in this regard, referred that the reliability of the overall scale and its sub-dimensions was high (Büyüköztürk, 2011; Can, 2014; Erkuş, 2012; Taşancıl, 2010). Therefore, it can be said that “Crabs in a Bucket Scale at Schools” is a valid and reliable scale that can be used in the literature.

“Crabs in a Bucket Scale at Schools” developed within the framework of the purpose of this research can be used in quantitative or mixed design studies to be carried out by sampling the teachers working in different cities, and the teachers’ perceptions regarding the phenomenon can be revealed. Moreover, this research can be a reference to qualitative research aiming to reveal possible crab behaviors and the causes and consequences of these behaviors, and provide an in-depth analysis of the subject. The scale, which was developed by sampling high school teachers, can be adapted and used in different educational levels, for example in higher education institutions, to measure the perceptions of academic staff in terms of “crabs in a bucket” phenomenon. Last but not least, it is thought that the scale will shed light on future researches to be carried out in educational organizations and is important in this sense as there are no previously developed measurement tools found on the subject.

REFERENCES

- Abrugar, Victorino Q. 10 signs that a person has a crab mentality, 2014. Retrieved from <https://faq.ph/10-signs-that-a-person-has-a-crab-mentality/> on 10 April 2019.
- Akkaya, Selma. *Ortaöğretim (Lise) öğrencilerinde rekabetçi tutum ile ana-baba tutumları arasındaki ilişki düzeyi (The level of relation between competition and parental attitude considering high school students)*. Unpublished Master Thesis, Sakarya University, Sakarya, Turkey, 2008.
- Aydın, Gizem Zevde, and Oğuzhan, Gülpembe. “The “crabs in a bucket” mentality in healthcare personnel: A phenomenological study”. *Hitit University Journal of Social Sciences Institute*, 12(2) (2019): 618-630. doi: 10.17218/hititsosbil.628375.
- Ayre, Colin, and Scally, Andrew John. “Critical values for Lawshe’s content validity ratio: Revisiting the original methods of calculation”. *Measurement and Evaluation in Counseling and Development*, 47(1) (2014): 79-86.
- Bell, Sita. The parable of the crab bucket, 2017. Retrieved from <https://www.stevenshenager.edu/blog/the-parable-of-the-crab-bucket> on 12 April 2019.
- Benson, Tony, Lavelle, Fiona, Spence, Michelle, Elliott, Christopher T., and Dean, Moira. “The development and validation of a toolkit to measure consumer trust in food”. *Food Control*, 110 (2020).
- Bollen, Kenneth, and Lennox, Richard. Conventional wisdom on measurement – A structural equation perspective. *MIS Quarterly*, 28(2) (1991): 305–314.
- Brown, Timothy A. (2014). *Confirmatory factor analysis for applied research*. New York, NY: Guilford Press, 2014.
- Browne, Michael W., and Cudeck, Robert. “Alternative ways of assessing model fit”. In K. A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (pp. 132–162). Thousand Oaks, CA: Sage, 1993.
- Bryman, Alan and Cramer, Duncan. *Quantitative data analysis with SPSS release 8 for windows*. New York: Routledge, Taylor & Francis e-Library, 2001.
- Büyüköztürk, Şener. *Sosyal bilimler için veri analizi el kitabı (Handbook of data analysis for social sciences)*. Ankara: Pegem Academy, 2011.
- Cabrera-Nguyen, Peter. “Author guidelines for reporting scale development and validation results in the journal of the society for social work and research”. *Journal of the Society for Social Work and Research*, 1(2) (2010): 99-103.
- Can, Abdullah. *SPSS ile bilimsel araştırma sürecinde nicel veri analizi (Quantitative Data Analysis with SPSS in Scientific Research Process)*. Ankara: Pegem Academy, 2014.
- Carpenter, Serena. “Ten steps in scale development and reporting: A guide for researchers”. *Communication Methods and Measures*, 12(1) (2018): 25-44.
- Cattell, Raymond B. *The scientific use of factor analysis*. New York: Plenum, 1978.
- Clark, Lee Anna, and Watson, David. “Constructing validity: Basic issues in objective scale development”. *Psychological Assessment*, 7(3) (1995): 309–319.
- Comrey, Andrew L., and Lee, Howard B. *A first course in factor analysis*. Hillsdale, NJ: Erlbaum, 1992.
- Costello, Anna B., and Osborne, Jason. “Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis”. *Practical Assessment, Research and Evaluation*, 10(7) (2005): 1-9.
- Çokluk Ömay, Şekercioğlu, Güçlü, and Büyüköztürk, Şener. *Sosyal bilimler için çok değişkenli istatistik: SPSS ve Lisrel Uygulamaları (Multivariate statistics for social sciences: SPSS and Lisrel Applications)*. Ankara: Pegem Academy, 2014.
- DeVellis, Robert F. *Ölçek geliştirme: Kuram ve uygulamalar (Scale development: Theory and practice) (T. Totan, Trans. Ed.)*. Ankara: Nobel Academy Publishing, 2014.
- Duke, Daniel L. “Drift, detachment, and the need for teacher leadership”. In D.R. Walling (Ed.) *Teachers as Leaders: Perspectives on the professional development of teachers* (pp. 255-273). Bloomington: Phi Delta Kappa Educational Foundation, 1994.

- Erkuş, Adnan. Psikolojide ölçme ve ölçek geliştirme-1: Temel kavramlar ve işlemler (Measurement and scale development in psychology-1: Basic concepts and processes). Ankara: Pegem Academy, 2012.
- Eser, Esen. "Küreselleşme süreci ve eğitime etkisi (Globalization process and its effect on education)". *Muş Alpaslan University Journal of Social Sciences*, 2(2) (2014): 211-224.
- Gilbert, Gregory E., and Prion, Susan. "Making sense of methods and measurement: Lawshe's Content Validity Index". *Clinical Simulation in Nursing*, 12(12) (2016): 530-531.
- Gorsuch, Richard L. Factor analysis (2nd Ed.). Hillsdale, NJ: Erlbaum, 1983.
- Gövsu, İbrahim Alaettin. Çocukta duygusal gelişim (Emotional development in the child). İstanbul: Hayat Publishing, 1998.
- Hansen, Karolina. "Accent Beliefs Scale (ABS): Scale Development and Validation". *Journal of Language and Social Psychology*, 39(1) (2019): 148-171.
- Hard, Louise, and O'Gorman, Lyndal. "'Push-Me' or 'Pull-You'? An Opportunity for Early Childhood Leadership in the Implementation of Queensland's Early Years Curriculum". *Contemporary Issues in Early Childhood*, 8(1) (2007): 50-60.
- Henson, Robin K., and Roberts, J. Kyle. "Use of exploratory factor analysis in published research: Common errors and some comment on improved practice". *Educational and Psychological Measurement*, 66 (2006): 393-416.
- Hooper, Daire, Coughlan, Joseph, and Mullen, Michael. "Structural equation modeling: Guidelines for determining model fit". *The Electronic Journal of Business Research Methods*, 6(1) (1986): 53-60.
- Jöreskog, Karl G., and Sörbom, Dag. Lisrel 8: Structural equation modeling with the simplis command language. Lincolnwood: Scientific Software International, Inc., 1993.
- Kline, Rex B. Principles and practice of structural equation modeling (2nd Ed.). New York, NY: Guilford Press, 2005.
- Kumar, Yathish, and Soubhari, Tushar. "The crab-bucket effect and its impact on job stress—An exploratory study with reference to autonomous colleges". *International Journal on Recent and Innovation Trends in Computing and Communication*, 2(10) (2014): 3022-3027.
- Lawshe, Charles H. A quantitative approach to content validity. *Personnel Psychology*, 28(4) (1975): 563-575.
- Leech, Nancy L., Barrett, Karen Caplovitz, and Morgan, George Arthur. SPSS for intermediate statistics: Use and interpretation. Psychology Press, 2005.
- Lynn, Mary R. "Determination and quantification of content validity". *Nursing Research*, 35(6) (1986): 382-385.
- Marques, Joan. "Sisterhood in short supply in the workplace: It's often the women who hold back their female colleagues". *Human Resource Management International Digest*, 17(5) (2009): 28-31.
- McLuhan, Marshall. Understanding media. New York: Mentor, 1964.
- Miller, Carliss D. "Exploring the crabs in the barrel syndrome in organizations". *Journal of Leadership & Organizational Studies*, 26(3) (2019): 352-371.
- Nelson, Robert, and Dawson, Phillip. "Competition, education and assessment: Connecting history with recent scholarship". *Assessment & Evaluation in Higher Education*, 42(2) (2015): 304-315. doi: 10.1080/02602938.2015.1105932.
- Nunnally, Jum C. Psychometric theory. New York: McGraw-Hill Companies, 1978.
- Nunnally, Jum C., and Bernstein, Ira H. Psychometric theory (3rd Ed.). New York: McGraw Hill, 1994.
- Otrar, Mustafa, and Arın, F. Süleyman. "Öğrencilerin sosyal medyaya ilişkin tutumlarını belirlemeye yönelik bir ölçek geliştirme çalışması. (A scale development study in terms of determining the students' attitudes regarding social media)". *Journal of Education and Instruction Research*, 4(1) (2015): 391-403.
- Sampath, Niels. "Crabs in a bucket: Reforming male identities in Trinidad". *Gender & Development*, 5(2) (1997): 47-54.
- Scherer, Robert F., Luther, David C., Wiebe, Frank A., and Adams, Janet S. "Dimensionality of coping: Factor stability using the ways of coping questionnaire". *Psychological Reports*, 62(3) (1988): 763-770.
- Spacey, Simon. Crab Mentality, Cyberbullying and "Name and Shame Rankings", 2015. Retrieved from <https://www.srl.to/u5e2dNha/Crab%20Mentality%20C%20Cyberbullying%20and%20Name%20and%20Shame%20Rankings.pdf>. on 01 March 2019.
- Sümer, Nebi. "Yapısal eşitlik modelleri (Structural equation models)". *Turkish Psychology Articles*, 3(6) (2008): 49-74.
- Şahin, Pınar. Yengeç sepeti sendromu (Crabs in a bucket syndrome), 2018. Retrieved from <https://kariyerheybesi.wordpress.com/2018/07/31/yengec-sepeti-sendromu/> on 10 April 2019.
- Şencan, Hüner. Sosyal ve davranışsal ölçümlerde güvenilirlik ve geçerlilik (Reliability and validity in social and behavioral measurements) Ankara: Seçkin Publishing, 2005.
- Tabachnick, Barbara G., and Fidell, Linda S. *Using multivariate statistics* (6th Ed.). Boston, MA: Pearson, 2007.
- Tavşancıl, Ezel. Tutumların ölçülmesi ve SPSS ile veri analizi (The measurement of attitudes and data analysis with SPSS). Ankara: Nobel Publishing, 2010.
- Tay, Louis, and Jebb, Andrew T. "Scale Development". In S. Rogelberg (Ed.), *The SAGE Encyclopedia of Industrial and Organizational Psychology*, 2nd edition. Thousand Oaks, CA: Sage, 2017.
- Vibes, John. Crabs in a bucket: As an analogy for modern human society, 2015. Retrieved from <http://www.trueactivist.com/crabs-in-a-bucket-as-an-analogy-for-modern-human-society/> on 12 April 2019.
- Wilson, F. Robert, Pan, Wei, and Schumsky, Donald A. "Recalculation of the critical values for Lawshe's content validity ratio". *Measurement and Evaluation in Counseling and Development*, 45(3) (2012): 197-210.
- Wikipedia. Covid-19 pandemisi (Covid-19 pandemic). Retrieved from https://tr.wikipedia.org/wiki/COVID-19_pandemisi on 16 August 2020.
- Worthington, Roger L., and Whittaker, Tiffany A. "Scale development research: A content analysis and recommendations for best practices". *The Counseling Psychologist*, 34(6) (2006): 806-838.
- Yıldız, Naciye. "Neoliberal küreselleşme ve eğitim. (Neoliberal globalization and education)". *D.U. Journal of Ziya Gökalp Faculty of Education*, 11 (2008): 13-32.

APPENDIX:

CRABS IN A BUCKET SCALE AT SCHOOLS (English Version)						
		I totally disagree	I disagree	I am neutral	I agree	I totally agree
		(1)	(2)	(3)	(4)	(5)
1	At my school, there are teachers who unfairly criticize what I do.					
2	At my school, there are teachers who gossip about me.					
3	At my school, there are teachers who underestimate my ideas.					
4	At my school, there are teachers who compete with me.					
5	At my school, there are teachers who compare me with themselves.					
6	At my school, there are teachers who do not respect differences between individuals.					
7	At my school, there are teachers who do not give satisfactory answers to my questions on purpose.					
8	When I have a suggestion about the functioning of the school, I immediately face opposing ideas..					
9	At my school, there are teachers who are jealous of me when I achieve success..					
10	At my school, there are teachers who do not want me to do what they cannot do.					
11	At my school, there are teachers who do not support me when I have a failure.					
12	At my school, there are teachers who blame me for the problems I experience.					
13	At my school, there are teachers who try to stop me when I present something new.					
14	At my school, there are teachers who do not like my administrator to appreciate me.					
15	At my school, there are teachers who try to hinder my professional development.					
16	Good communication among teachers is supported by the school administration.					
17	The school administration does not take my expectations into consideration.					
18	Cooperation among teachers is supported by the school administration.					
19	Our school has a strong culture.					
20	My suggestions about the functioning of the school are taken into consideration by the school administrators.					
21	At my school, I am appreciated for what I do.					
22	I do not receive institutional support in my school-related work.					
23	I face institutional barriers to accessing facilities at my school.					
24	At my school, my work is devaluated.					
25	At my school, there is an environment of trust where I can easily share my ideas.					
26	At my school, personal development is supported.					
27	At my school, we are supported to improve ourselves through in-service training.					

OKULLARDA YENGEÇ SEPETİ ÖLÇEĞİ (Turkish Version)						
		Kesinlikle Katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Kesinlikle Katılıyorum
		(1)	(2)	(3)	(4)	(5)
1	Okulumda, yaptığım işleri haksız yere eleştiren öğretmenler vardır.					
2	Okulumda, hakkımda dedikodu yapan öğretmenler vardır.					
3	Okulumda, fikirlerimi küçümseyen öğretmenler vardır.					
4	Okulumda, benimle rekabet eden öğretmenler vardır.					
5	Okulumda, beni kendileriyle kıyaslayan öğretmenler vardır.					
6	Okulumda, bireyler arası farklılıklara saygı duymayan öğretmenler vardır.					
7	Okulumda, sorularıma bilerek tatmin edici cevaplar vermeyen öğretmenler vardır.					
8	Okuldaki işleyişle ilgili bir önerim olduğunda hemen karşıt fikirlerle karşılaşırım.					
9	Okulumda, bir başarı elde ettiğimde beni kıskanan öğretmenler vardır.					
10	Okulumda, yapamadıkları işleri benim de yapmamı istemeyen öğretmenler vardır.					
11	Okulumda, bir başarısızlık yaşadığımda bana destek olmayan öğretmenler vardır.					
12	Okulumda, yaşadığım sorunlar karşısında beni suçlayıcı davranan öğretmenler vardır.					
13	Okulumda, bir yenilik sunduğumda önümü kesmeye çalışan öğretmenler vardır.					
14	Okulumda, yöneticimin beni takdir etmesinden hoşlanmayan öğretmenler vardır.					
15	Okulumda, mesleki gelişimimi engellemeye çalışan öğretmenler vardır.					
16	Öğretmenler arasındaki iyi iletişim, okul yönetimi tarafından desteklenir.					
17	Okul yönetimi, beklentilerimi dikkate almaz.					
18	Öğretmenler arasındaki işbirliği, okul yönetimi tarafından desteklenir.					
19	Okulumuzun güçlü bir kültürü vardır.					
20	Okuldaki işleyişle ilgili önerilerim okul yöneticileri tarafından dikkate alınır.					
21	Okulumda, yaptığım işlerden dolayı takdir edilirim.					
22	Okula ilişkin yaptığım işlerde kurumsal destek görmem.					
23	Okulumdaki olanaklara erişimde kurumsal engellerle karşılaşırım.					
24	Okulumda, yaptığım işler değersizleştirilir.					
25	Okulumda, fikirlerimi rahatlıkla paylaşabileceğim bir güven ortamı vardır.					
26	Okulumda, bireysel gelişim desteklenir.					
27	Okulumda, hizmet içi eğitimlerle kendimizi geliştirmemiz desteklenir.					

VALIDITY AND RELIABILITY STUDY OF THE PARENT-CHILD SHARED BOOK READING INVENTORY

Abstract: This study aimed to adapt the original form of the “Parent-Child Shared Book Reading Survey” developed by Cutler (2020) to Turkish and to test its validity and reliability. During the adaptation process, the survey was translated into Turkish first, and then the expert opinion was sought for validity, followed by back translation. The adapted inventory was finalized after the pilot implementation. The validity study of the Parent-Child Shared Book Reading Inventory included testing the factor analysis assumptions for the following five questionnaires included in the inventory: Reading Skills Beliefs Scale for Shared Book Reading, Parents’ Reading and Writing Habits Scale, Parents’ Modeling for Reading-Writing Habits Scale, Shared Book Reading Activity Scale and Child’s Reading Habits Scale. Then exploratory factor analysis (EFA) was implemented to 332 parents with preschool children. The accuracy of the factor structures revealed by EFA was tested on a second data set with confirmatory factor analysis (CFA) on 158 parents. The results demonstrated that the Parent-Child Shared Book Reading Inventory is a valid and reliable measurement tool in assessing the quality and characteristic of parent-child shared book reading activities.

Keywords: Shared reading, parent-child, preschool, inventory, early child.

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INTRODUCTION

Early childhood is a critical period for language development (Yavuzer, 2003; Yıldız Bıçakçı & Aral, 2009). Language acquisition, which starts in the mother's womb, develops after birth as a result of the child's interaction with his/her family, close environment and teacher(s) (Şahin et al, 2012). Children's language development is supported when parents read picture books to their babies from the first months, chat with them about the pictures in the books in the following months and include their children in the reading process (Barry, 2006; Neuman et al., 2000; Yıldız Bıçakçı et al, 2018). Performing reading activities with their parents especially accelerates the language development of children aged 3-5 and improves their reading habits and increases school achievement in later years (Bus, Van Ijzendoorn & Pellegrini, 1995; Burgess et al; 2002).

The first interaction with books in early childhood takes place with the support of adults because the child is illiterate. "How" the adult reads the books is an important point in this period when the first connection is established with the books which will make a significant contribution to the child throughout life (Tetik, 2011). The literature defines *reading to a child* and *reading with a child* as two separate concepts (Snow et al., 2014). An adult's reading to a child and establishing interaction with the child in this process is called shared reading (Ahmad Mostafa, 2016; Hindman et al, 2014; Gonzalez et al, 2013). Previously defined as reading aloud, shared reading is as a model that expands the text by teaching the child literary skills (e.g. checking the continuity of the text and letter-sound relationship) by expanding the text read (cited in Ping, 2014). In shared reading process, the adult creates a problem situation for the child and provides information about it. This interaction enables the child to establish a relationship with print and the child interacts with the adult as well (Turan & Topçu, 2018). Thus, the child takes a more active role in reading. Led by the development in language skills, positive contributions are observed in children's cognitive, emotional and social development, when they are more active in reading (Işıkoğlu Erdoğan, 2016). Children reading books with their parents from infancy are more eager to read (Yumuş, 2018), have stronger family relationships (Sever, 2017; Çer, 2016; Veziroğlu, 2009), and are superior to their peers regarding receptive and expressive language development (Payne et al, 1994).

How the process of reading books with the child is performed and how it will be more effective has been an important topic in the literature for the past 25 years (Bracken & Fischel, 2008; Lane & Wright, 2011; Bus et al, 1995). Based on the previous studies, two different approaches are proposed for shared reading (Justice & Pullen, 2003).

1. *Dialogic /Interactive Reading*: Dialogic/interactive reading developed by Whitehurst et al. (1988) is an approach that provides an interactive setting among adults, the child and other children, that makes the child active and that encourages the child to express what he/she thinks. In this type of reading, first, the child is asked as many open-ended questions as possible. The answers given by the child are repeated by the adult, the information is expanded by providing more detailed explanations and tips, and the child's interest is followed with reinforces (Justice & Pullen, 2003; Zevenergen & Whitehurst, 2003). The main purpose of dialogic reading is to encourage children to express themselves and to create a language-rich conversation environment (Troseth et al., 2020). In this environment, the roles of the reader and the listener change over time (Hafizoğlu Çelik et al, 2020; Yıldız Bıçakçı et al, 2018). As a result of these changing roles, the child takes responsibility, pays more attention to the pictures and text in the book, discovers the details in the text and thus benefits more from the book.
2. *Print Referencing*: It is an approach that aims to improve the concepts related to writing, print awareness and information about letters (Turan & Topçu, 2018). While reading a book, the adult tries to draw the child's attention to the form, function and characteristics of print. The adult tries to increase the child's interest in print by asking various questions/giving information to the child (Look, there is a letter here from your name. shall we read the text on the cover of the book? etc.) and by tracing the text with his/her finger while reading (Justice et al., 2009). The reading studies conducted with this approach showed that it significantly contributes to the children's print and alphabet awareness (Justice & Pullen, 2003).

When parents read books with their children, they set in motion the initial step for lifelong reading achievement in children (Tezel et al., 2019). Although learning to read and write takes place in educational institutions, parents have key roles in supporting the literacy skills of their children, reading books and

making reading a habit (Özbek Ayaz et al, 2017; Çelebi Öncü, 2016). Studies in the field indicate that early literacy skills are generated long before the child starts school (Van Vechten, 2013; Şahin et al, 2012). Existence of books at home in early childhood, observing parents while they are reading, reading books to their children by their parents and talking about books and children's literature with children support early literacy skills (Sawyer, 2004).

In addition, social and emotional sharing within the family increases when parents read books to their children, (Çelebi Öncü, 2016; Golinkoff et al, 2015; Arıcı&TüfekçiAkcan, 2019). In summary, studies in the field show that parents' read to their children positively affects children's literacy and language skills are (Sloat et al., 2015), helps prepare children for school (Hoyne & Egan, 2019); provides children with a foundation of literacy (Rosenkoetter& Barton, 2002), expands their vocabulary (Veldhuijzen Van Zanten et al, 2012) and supports brain development (Hutton et al., 2017).

In their study, Dunst et al. (2012) reported that parents' reading books with their children encourages expressive and receptive language in children, and the sooner this intervention starts, the greater the developmental benefits. Based on all these studies, home can be defined as the most important place where the foundations of children's language and literacy skills are laid (Van Vechten, 2013).

Evaluating the development of the child is extremely important for early detection of developmental problems and ensuring early intervention (Apaydın Demirci & Arslan, 2020). Since the rich stimuli offered by parents to children and the behaviors, they model are effective on the children's literacy and language skills, it is necessary to determine how much these stimuli and modeling improve these skills and to correct the shortcomings in a timely manner (Bayraktar, 2018). For this reason, it is necessary to evaluate the existing status of the parent-child shared book reading activity, which contributes to the multidimensional development of the child, with valid and reliable tools. Numerous studies abroad examine the quantity and quality of book reading in relation to the development of children with various measurement tools (DeBruin-Parecki, 1999, 2007; Robertson & Ree, 2015; Bennett et al, 2002). However, studies that define and assess parent-child shared book reading activities are quite limited in Turkey. One reason for this limitation may be due to the lack of a comprehensive measurement tool to evaluate parent-child shared book reading activities. In addition, studies that address the importance and value of parent-child shared book reading are implemented a little later in Turkey. Studies on this subject mostly examined the value and quality of the picture story book reading activities of teachers rather than parents. Emphasizing parent-child shared book reading in Turkey is an important starting point for this study. The relevant national literature includes the "Shared Book Reading Skills Assessment Scale" developed by Yumuş (2018) to measure shared reading behaviors in infancy and "Child-Parent Shared Reading Activities Scale" developed by Işıkoğlu Erdoğan (2016) to measure these behaviors in the preschool period as the most widely used scales. In this regard, the existence of only one measurement tool that examines parent-child reading activities in the preschool period and lack of an alternative measurement tool developed or adapted to Turkish in the last five years is an important shortcoming.

The rationale for adapting the Parent-Child Shared Book Reading Survey developed by Cutler (2020) to Turkish and carrying out its validity and reliability studies was based on the lack of comprehensive measurement tools to determine the existing situation in Turkey in relation to parent-child shared book reading activities, which have an important role in the development of children, and to support parents in this context.

METHOD

STUDY GROUP

Table 1 presents the Frequency-Percentage values for the research sample. Since a measurement tool was developed in this study, analyzes were performed on two separate samples.

Table 1. Frequency-Percentage Distribution of the Study Group

Variable	Category	Sample 1		Sample 2	
		f	%	f	%
Gender	Female	305	91.9	135	85.4
	Male	27	8.1	23	14.6
Age	21-30	75	22.6	38	24.1
	31-40	214	64.5	100	63.3
	41-50	41	12.3	17	10.8
	Over 50	2	.6	3	1.9
Income	0-2870	32	9.6	17	10.8
	2871-8700	157	47.3	73	46.2
	8701 and higher	140	42.2	68	43.0
Level of Education	Primary	24	7.2	23	14.6
	Secondary	55	16.6	27	17.1
	Associate Degree	25	7.5	16	10.1
	Undergraduate Degree	186	56.0	77	48.7
	Graduate Degree	42	12.7	15	9.5

Table 1 demonstrated that the characteristics of the individuals in both samples were parallel to each other. 92% of the first sample was females, 64% were between the ages of 31-40 and 56% had undergraduate degrees. When analyzed in terms of income distribution, it was observed that 10% earned minimum wage, 47% earned an income between the minimum wage and the poverty line and 42% were above the poverty line. A similar distribution was observed in the second sample as well: 85% were females, 63% were between the ages of 31-40 and 49% were undergraduates. In terms of income distribution, it was observed that 11% were earned minimum wage, 46% earned an income between the minimum wage and the poverty line and 43% were above the poverty line.

DATA COLLECTION TOOL

Within the scope of adaptation studies, the following steps were carried out to adapt the measurement tool developed by Cutler (2020) into Turkish:

- **Translation:** Translation can be considered as the first step of the adaptation process. In this context, the measurement tool was first translated into Turkish by the researchers. Then, the translation phase was repeated by 3 independent translators who translated texts from Turkish to English and from English to Turkish. The translations done by the researchers and by the language experts were compared and the final text, which was agreed upon, was checked again by 3 language experts who had a good command of the literature and were able to use both languages well.
- **Expert Panel:** At this phase, the Inventory form in Turkish was sent to 18 experts (2 Turkish language experts, 2 measurement and evaluation experts, 14 field experts) for comments. 12 of these experts responded to the forms sent to them (2 Turkish language experts, 1 measurement and evaluation expert, 9 field experts). Adjustments were made on the measurement tool, taking the expert opinions into account.
- **Back Translation:** In order to prevent digressions in the Turkish version from the structure of the original measurement tool and to avoid semantic deviations, the final form was sent to 2 academicians working in the field of English Language and Literature, and the form was translated back to English.
- **Pilot Implementation:** No problem was encountered in back translation, so the pilot implementation phase was initiated. 5 parents from different occupational groups and with children from different age groups (3-6 years) filled the measurement tool face to face during the pilot implementation to determine the comprehensibility of the measurement tool in terms of language and structure, the duration it took to fill the form and whether the items were comprehended by the parents.
- **Final Version:** At this phase, the forms filled in by the parents were reviewed by the researchers and the form was finalized.

The data of this study were collected through Google forms between May 1-10, 2020 by using the Parent-Child Shared Book Reading Inventory and Demographic Information Form. The parents who agreed to participate in the study were asked to fill in the inventory via social media. The Demographic Information Form contains general demographic information such as age, gender, and occupation. The Parent-Child

Shared Book Reading Inventory which includes four sections and a total of 39 items was developed from the Parent-Child Shared Book Reading Survey, originally developed by Cutler (2020). Ethics permit (decision nr. 2020/129) was received from Uşak University Human Research Ethics Committee before the start of the study. The measurement tool was sent to the voluntary participants online to be filled.

The first section of The Parent-Child Shared Book Reading Inventory is composed of *Reading Skills Beliefs Scale for Shared Book Reading* consisting of 7 items that measures parents' support for reading skills in shared book reading as well as *two independent items* exploring the reasons why parents undertake shared book reading activities with their children and what obstacles they encounter while reading together. Reading Skills Beliefs Scale for Shared Book Reading is a five-point Likert type scale with response categories such as "Absolutely Disagree", "Disagree", "No Idea", "Agree", "Strongly Agree" that measure parental beliefs about their children's acquisition of literacy skills through shared book reading. The lowest score that can be obtained from the scale is 5 and the highest score is 35, and the higher the score, the higher parental beliefs about shared book reading skills.

The second section of the inventory presents 3 scales: Parents' Reading and Writing Habits Scale, Parents' Modeling for Reading-Writing Habits Scale and Shared Book Reading Activity Scale. Parents' Reading and Writing Habits Scale consists of four items that measure parents' reading behaviors at home and Parents' Modeling for Reading-Writing Habits Scale consists of four items that measure the reading behaviors of parents to set an example for their children at home. Shared Book Reading Activity Scale is a two-dimensional scale with a total of 7 items. The first dimension, *Doing an Activity Together*, has 3 items that measure the characteristics of the activities that parent do with their children before or after reading. The second dimension, *Being a Model for Reading and Writing*, has 4 items that measure the characteristics of how parents act as models for their children by doing these activities together. All the scales in this section have Likert-style items based on a six-point rating system with the following available responses: "Never", "Rarely", "A few times per month", "Once a week", "Several times per week" and "Daily". The lowest score that can be obtained from both the Parents' Reading and Writing Habits Scale and Parents' Modeling for Reading-Writing Habits Scale is 4 and the highest score is 24, and the higher the score, the higher parents' reading and writing habits and their capacity to act as role models for their children. The lowest and highest scores that can be obtained from Shared Book Reading Activity Scale *Doing an Activity Together* dimension are 3 and 18; respectively while the lowest and highest scores that can be obtained from Shared Book Reading Activity Scale *Being a Model for Reading and Writing* are; The lowest score the dimension of Being a Model for Reading and Writing dimension are 4 and 24. The lowest and highest scores that can be obtained from the whole scale are 7 and 42, respectively. In this section, the level of quality and awareness of shared book reading activities increases as the score obtained in both dimensions and the whole scale increases. In addition, this section includes two independent items inquiring about the timeframe when parents first did reading activities with their children and who was involved (mother or father).

The third section of the inventory includes the Child's Reading Habits Scale which measures the reading habits of children along with an independent item inquiring about the number of children's books at home. Child's Reading Habits Scale is a six-point Likert type scale with a total of four items and the following response categories: "Never", "Rarely", "A few times a month", "Once a week", "A few times a week", and "Daily". The lowest score that can be obtained from the scale is 4 and the highest score is 24, and the higher the score, the higher the reading habits of the children.

The fourth section of the inventory includes two items exploring how much the parents enjoy the activities they do with their children. These four-point Likert type items have the following response categories: "I try to avoid it", "I don't enjoy it", "I enjoy it", "I enjoy it very much". The lowest and highest scores that can be obtained from this section of the inventory are 2 and 8 respectively and higher scores indicate that the parents enjoy doing shared book reading activities with their children at higher levels. The other two items in this section in four-point Likert type explore how much children enjoy shared reading activities with the following response categories: "He/she tries to avoid it", "He/she does not enjoy it", "He/she enjoys it", and "He/she enjoys it a lot". The lowest and highest scores that can be obtained from this section are 2 and 8 respectively and the higher scores indicate that the child enjoys shared book reading activities more. This section of the inventory includes two items inquiring first about the parents' prior experience of reading a picture story book with their children and how much they enjoyed this activity. Parents are expected to respond to this four-point Likert type item with the following response categories: "I didn't

enjoy it at all”, “I mostly didn’t enjoy it”, “I enjoyed it” and “I enjoyed it very much”. The other item inquiring about how much the children enjoyed this activity and parents are expected to respond to this four-point Likert type item with the following response categories “He/she didn’t enjoy it at all”, “He/she mostly didn’t enjoy it”, “He/she enjoyed it” and “He/she enjoyed it very much”. The lowest score that can be obtained from these two items separately is 1, the highest score is 4 and as the score increases, the level of enjoyment from the shared book reading activity increases. The last item in this section inquires about how familiar the child was with the story content after the shared book reading activity. This item is expected to be answered by using the following: “Very familiar” (2 points), “Somewhat familiar” (1 point), “Not at all familiar” (0 points) and “I don't know” (0 points).

DATA ANALYSIS

Explanatory Factor analysis (EFA) was performed first within the scope of the validity study for Parent-Child Shared Book Reading Inventory to reveal the factor structure of all five scales included in the inventory (Reading Skills Beliefs Scale for Shared Book Reading, Parents' Reading and Writing Habits Scale, Parents' Modeling for Reading-Writing Habits Scale, Shared Book Reading Activity Scale, Child's Reading Habits Scale). Before EFA was performed, the data set for each scale was tested for factor analysis assumptions such as missing value, univariate and multivariate outlier, univariate and multivariate normality, multi-collinearity and singularity.

In cases where the rate of missing data was less than 5% based on the missing value analysis, the missing data were removed from the data set. For univariate outlier analysis, scale item scores were converted to standard z scores and values outside the ± 3 z score range were accepted as outliers and removed from the data set (Tabachnick & Fidell, 2007). For the multivariate outlier analysis, Mahalanobis Distance (MD) was calculated, and the MD values were compared with $\alpha=0.001$ and the critical χ^2 value in the relevant degree of freedom. Observations exceeding this value were removed from the data set (Tabachnick & Fidell, 2007). The skewness and kurtosis coefficients of the items with univariate normality were calculated and analyzed.

As long as the skewness coefficient does not exceed $|3|$ (Chou & Bentler, 1995) and the kurtosis coefficient does not exceed $|10|$ (Kline, 2005), univariate normality assumption is assumed to be met. Multivariate

normality was examined with the scatter plot created by squared mahalanobis distance values (m_i^2) and inverse cumulative chi-square values, and it was determined that the assumption of multivariate normality was fulfilled when this graph presented a linear structure (Alpar, 2011).

The existence of multi-collinearity problem between variables was investigated through Condition Index (CI), Variance Inflation Factor (VIF) and tolerance values. The CI value for the variables below 30, VIF value less than 10 or tolerance values around .10 or above was considered as an indication that there was no multi-collinearity problem in the data set (Hair, Anderson, Tahtam, & Black, 1998). For singularity, the pairwise correlations of the items were examined and there was no singularity problem in the data set since they did not exceed the critical value of $r = 0.85$ (Kline, 2005).

EFA was performed after the assumptions of the factor analysis were tested. The likelihood estimation was used in factor extraction based on the assumption of multivariate normality and sufficient sample size (Fabrigar et al, 1999). In addition, while the likelihood estimation method is the estimation method with the lowest parameter estimation bias when the sample size is over 200 (Uyumaz & Sirganci, 2020), the EFA performed with this method is the most comparable to the confirmatory factor analysis (CFA) (Conway & Huffcutt, 2003; Harman, 1976; Mislevy, 1986).

In this study, direct oblimin rotation was preferred from among oblique rotation methods, since the dimensions of the five scales in the Parent-Child Shared Book Reading Inventory were thought to be related based on the theoretical infrastructure. The cut-off value for the factor load value was determined as 0.50 for both EFA and CFA (Hair et al, 2009).

The accuracy of the factor structures revealed by EFA was tested with CFA over a second data set. Before performing CFA, the assumptions of the factor analysis for the second data set were tested as well. Confirmatory factor analysis was calculated from the covariance matrix based on the marginal maximum likelihood estimation (MLM) method (Joreskog 1999). CFA model fit was examined with items' factor load values, the variance values explained by the items and model data fit index values.

Model data fit was examined by chi-square (χ^2), Standardized Root Mean Squared Residual (SRMR), Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) (Brown, 2006). Examination of extreme values regarding goodness of fit values in literature shows that the ratio of χ^2 / df should be less than 3 (Kline, 2005); CFI and TLI values should be in 0.90-1.00 range (Bentler & Bonnet, 1980; Tucker & Lewis, 1973); the lower limit for RMSEA and SRMR values should be 0 and the upper limit for RMSEA and SRMR values should be 0.08 (Hooper et al, 2008). Convergent validity was examined after examining the construct validity. Convergent validity is used to measure the correlation level of more than one indicator/item of the same structure. To ensure convergent validity, item factor load values should be ≥ 0.5 (Hair et al, 2009) and construct reliabilities (CRs) should be $CR \geq 0.7$ (Fornell & Larcker, 1981).

The reliability of the five scales in the Parent-Child Shared Book Reading Inventory was examined with Cronbach alpha and composite reliability. These two reliability indices take values between 0 and 1, with a higher value indicating a higher reliability level. In descriptive/exploratory studies, the composite reliability/Cronbach alpha values between 0.60 and 0.70 are acceptable, while the value should be higher than 0.70 in further stages (Hair et al, 2014).

Assumption tests and exploratory factor analysis were done by using SPSS 20.0 and confirmatory factor analysis was performed with the help of Mplus 8.0. Composite Reliability (CR) was calculated in an Excel program using the formulas suggested by Fornell and Larcker (1981).

FINDINGS

THE VALIDITY OF THE PARENT-CHILD SHARED BOOK READING INVENTORY

SECTION 1

READING SKILLS BELIEFS SCALE FOR SHARED BOOK READING

The factor structure of the Reading Skills Beliefs Scale for Shared Book Reading in the Parent-Child Shared Book Reading Inventory was determined by the exploratory factor analysis performed on the data set collected from the first sample. Before explanatory factor analysis was performed, the assumptions of exploratory factor analysis for each scale data were examined. The observations regarding the 15-missing data among the responses provided for the Reading Skills Beliefs Scale for Shared Book Reading were removed from the data set. Since all standard scores for the scale items were within the ± 3 z score range (Tabachnick & Fidel, 2007), no univariate outlier value was found in the data set. As a result of the multivariate outlier analysis, 10 observations with MD values exceeding $\alpha = 0.001$ and critical $\chi^2 = 31.26$ value in 11 degrees of freedom were excluded from the data set because they had multivariate outliers (Tabachnick & Fidell, 2007). Since the skewness coefficients of the items were between -1.563 and 0.851 (Chou & Bentler, 1995) and the kurtosis coefficients were between -0.982 and 1.542 (Kline, 2005), the assumption of univariate normality was met. As shown in Figure 1, the scatter plot created by the squared

Mahalanobis Distance values (m_i^2) of the Reading Skills Beliefs Scale for Shared Book Reading and the inverse cumulative chi-square values presented a linear structure, so the assumption of multivariate normality was also met (Alpar, 2011).

No multi-collinearity problem was observed in the data set because the CI value of the variables was below 30, the VIF value was less than 10 or the tolerance values were above .10 (Hair et al, 1998). Examination of items' pairwise correlations demonstrated that the correlations of two items (item 6 and item 7) were above the critical value of $r = 0.85$. Therefore, it can be argued that these items have a singularity problem (Kline, 2005). When these two items are examined, it was observed that the expressions had similar meanings ("Item 6: It is important to check a child's understanding by asking him/her questions at the end of each story." "Item 7: It is necessary to check a child's understanding by asking him/her questions while reading a story")

According to Justice & Pullen (2003), in shared book reading, parents are expected to progress by chatting with the child, talking and asking questions about the book, discussing and explaining new words. For this reason, it was decided to keep item 7 on the scale. When the item total correlations were examined, it was observed that the correlation of the two items with the scale was less than 0.30 (item 3 and item 9). Since the correlations of these items with each item of the scale were quite low, factor analysis was performed by removing these two items from the data set (Nunnally & Bersntein, 1994).

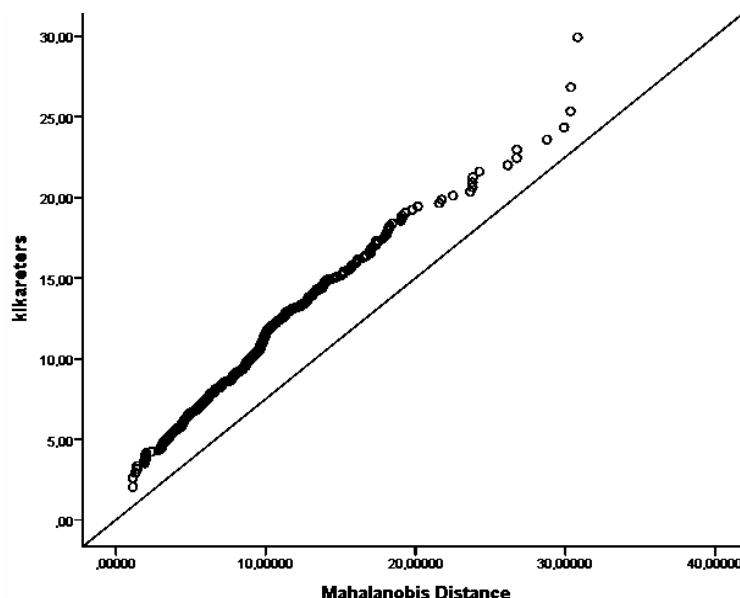


Figure. 1 Reading Skills Beliefs Scale for Shared Book Reading Multivariate Normality Distribution

Based on the test of assumptions, 25 observations were extracted from the first sample consisting of 332 observations and EFA was performed on the responses provided to 8 items by 307 people. Kaiser-Meyer-Olkin (KMO) and Bartlett tests were used to examine whether the relevant data set of the Reading Skills Beliefs Scale for Shared Book Reading was suitable for exploratory factor analysis. Having a KMO value of 0.60 and above in social sciences factor analysis studies is considered sufficient (Kline, 2005). In this

study, KMO value was calculated as 0.92. When the Bartlett test results were examined, the obtained $\chi^2 = 1405.722$; $df = 28$ ($p = 0.000$) was found to be significant at the 0.01 level. Therefore, it was concluded that the correlation matrix was different from the unit/identity matrix. According to KMO value and Bartlett test results, it was concluded that the 8-item data matrix of the Reading Skills Beliefs Scale for Shared Book Reading was suitable for factor analysis. Examination of the item factor load value demonstrated that the load value of an item (item 4) was 0.309 and the factor analysis was repeated by removing this item from the scale because the cut-off value was below 0.50. As a result of the repeated factor analysis, a single factor structure was observed with an eigenvalue above 1.00. A single factor structure with an eigenvalue of 4.269 explained 61% of the total variance. It is sufficient for the explained variance rates to be between 30% in one-dimensional scales and between 40% and 60% in multidimensional scales (Büyüköztürk, 2016; Tavşancıl, 2014). Examination of the scree plot provided in Figure 2 shows that the items of Reading Skills Beliefs Scale for Shared Book Reading were collected under a single factor. Table 2 presents that the factor loads of 7 items under this single factor varied between 0.613 and 0.878. EFA results demonstrated that Reading Skills Beliefs Scale for Shared Book Reading was composed of a single-factor structure consisting of 7 items in total.

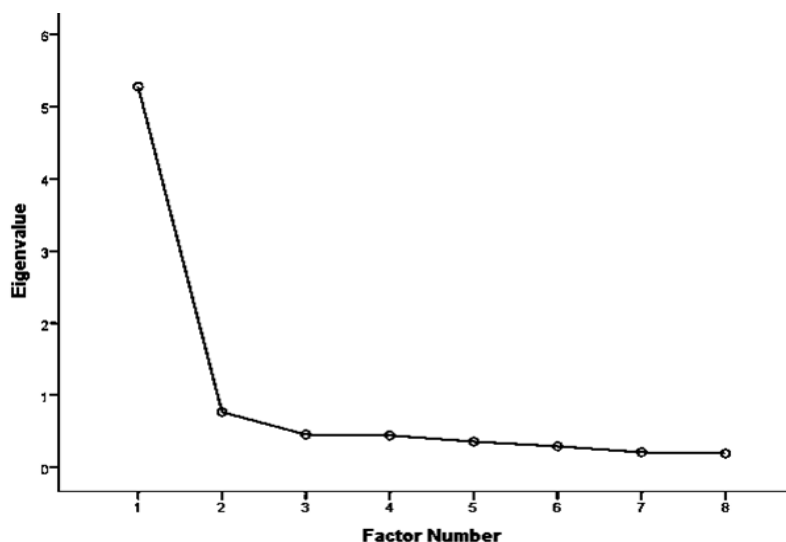


Figure 2. Reading Skills Beliefs Scale for Shared Book Reading Scree Plot

A7-item scale was implemented on the second sample of 157 parents selected independently from the first sample to verify that Reading Skills Beliefs Scale for Shared Book Reading had a single-factor structure as indicated by EFA and a confirmatory factor analysis was performed on the data. Table 2 presents the CFA results regarding the single-factor structure of the scale. The standardized factor load (λ_i) obtained as a result of the confirmatory factor analysis was found to be between the range of 0.779 and 0.950. These values were higher than recommended value of 0.5 as acceptable load value (Hair et al., 2009). When the goodness of fit indices related to CFA were evaluated, the ratio of χ^2 / df was found to be 1.66 ($\chi^2 / df = 23.327 / 14$) along with the following values: CFI = 0.99, TLI = 0.98, RMSEA = 0.066, SRMR = 0.021. These fit values show that the single-factor structure of the Reading Skills Beliefs Scale for Shared Book Reading had perfect data fit for the model. In other words, it can be argued that the single factor structure of the scale was verified in the secondary data set.

Table 2 presents the correlation coefficients between the scores obtained from all items and the scores obtained from the scale. When the item-test correlation coefficients were examined, the lowest correlation value was found to be 0.771 while the highest correlation value was 0.918. Therefore, item total correlations of all items were well above the acceptable value of 0.20 (Kalaycı, 2010). These coefficients are validity coefficients for the discrimination of all items and show the consistency of items with the whole scale.

Table 2. Descriptive Statistics, Factor Loads (λ_i), Fit Indices and Item Total Correlation Values of the Reading Skills Beliefs Scale for Shared Book Reading

Items	EFA (<i>λ</i> _i)	CFA (<i>λ</i> _i)	Mean	Sd.	Item-Total Correlation	
A child needs workbook that teach specific reading skills to support his/her reading skills.	0.745	0.816	3.71	1.3	0.810	
A child benefits from hearing favorite story/stories read over and over.	0.877	0.861	3.74	1.4	0.830	
You're helping a child learn to read by encouraging him/her to discuss the book being read.	0.731	0.913	3.80	1.4	0.887	
It is necessary to check a child's understanding by asking him/her questions about the story during reading.	0.613	0.779	3.68	1.4	0.771	
It is a good idea to allow the child "read" familiar books by retelling the story from memory using the pictures from the book.	0.800	0.909	3.90	1.3	0.892	
It is important for children to see what their parents reading and writing.	0.878	0.950	4.07	1.4	0.918	
Children must be at a certain developmental level before they start learning to read and write.	0.789	0.876	3.87	1.3	0.844	
<i>Fit Values</i>						
χ^2	Sd	χ^2 /df	CFI	TLI	SRMR	RMSEA (90% CI)
23.327*	14	1.66	0.986	0.979	0.021	0.066[0.000. 0.112]

SECTION 2

PARENTS' READING AND WRITING HABITS SCALE

Parents' Reading and Writing Habits Scale was examined in terms of the assumptions of the factor analysis. 5 missing data were removed from the observation data set based on the missing value analysis. All the standard scores of the scale items were observed to be within the ± 3 z score range (Tabachnick & Fidel, 2007) and no univariate outlier was found. As a result of the multivariate outlier analysis, no multivariate outliers were detected in the data sets since none of the observations was over MI values of $\alpha = 0.001$ and

critical $\chi^2 = 18.47$ in 4 degrees of freedom (Tabachnick & Fidell, 2007). Since item skewness coefficients of the scale were between -0.787 and -0.218 (Chou & Bentler, 1995) and kurtosis coefficients ranged from -1.394 to -0.686, the assumption of univariate normality was met for both scales. As depicted in Figure 3, the scatter plot of the scale shows a linear structure, hence, the assumption of multivariate normality was also met (Alpar, 2011). The CI value for the variables below 30, VIF value less than 10 or tolerance values around .10 or above was considered as an indication that there was no multi-collinearity problem in the data set (Hair et al, 1998). When the pairwise correlations of the items were examined, it was seen that their correlations were below the critical value of $r = 0.85$. Therefore, it can be argued that these items did not have a singularity problem (Kline, 2005). When the item total correlations were examined, it was observed that the correlation of all items with the scale was over 0.30.

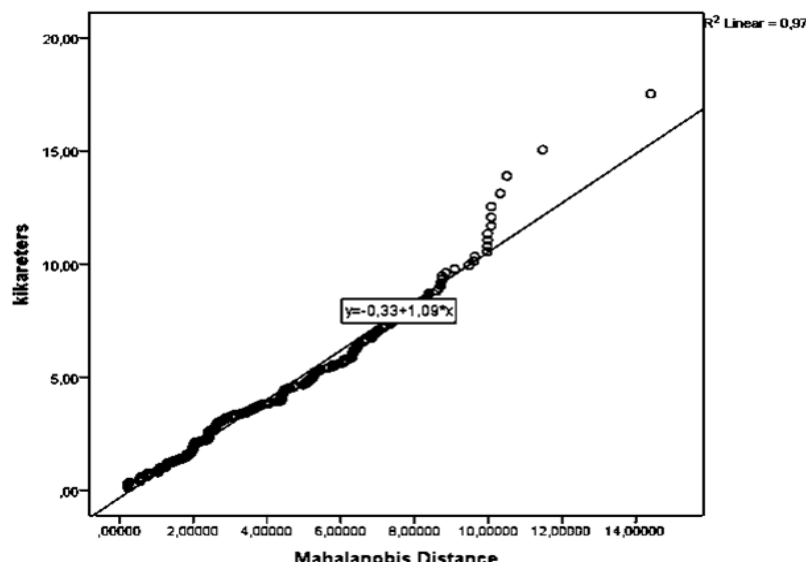


Figure 3. Parents' Reading and Writing Habits Scale Scatter Plot

Based on the test of assumptions, 5 observations were extracted from the first sample consisting of 332 observations and EFA was performed on the responses provided by 327 people. According to the result of the factor analysis, KMO value of the Parents' Reading and Writing Habits Scale was found to be 0.74 and

Bartlett test result was $\chi^2 = 204.586$; $df = 6$ ($p = 0.000$). Hence, it was concluded that the 4-item data matrix was suitable for factor analysis. Examination of the item factor load value presented in Table 3 demonstrated that the load values of the items in the Parents' Reading and Writing Habits Scale ranged between 0.572 and 0.637 and the cut-off value for the load values of all items was over 0.50. In addition, it was observed that the scale displayed a single factor structure with an eigenvalue above 1.00. The eigenvalue of Parents' Reading and Writing Habits Scale was 1.457 and the scale explained 36% of the total variance. It is considered to be sufficient when the explained variance rates are above 30% in one-dimensional scales (Büyüköztürk, 2016; Tavşancıl, 2014). In addition, examination of the scree plot presented in Figure 4 shows that the scale items were collected under a single factor. Based on EFA results, it was concluded that the Parents' Reading and Writing Habits Scale had a single-factor structure consisting of 4 items.

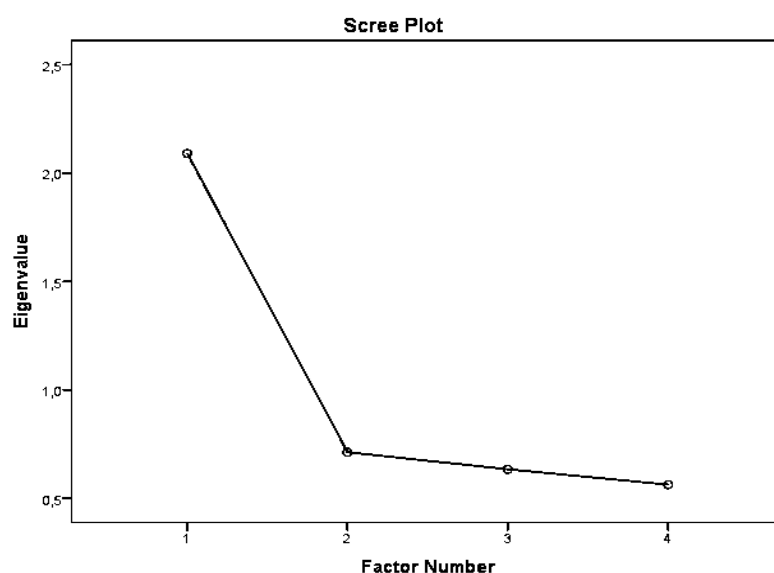


Figure 4. Parents' Reading and Writing Habits Scale Scree Plot

CFA was performed on the second sample to verify that the Parents' Reading and Writing Habits Scale had a single-factor structure as indicated by EFA and a confirmatory factor analysis was performed on the data. Confirmatory Factor analysis was performed on the response patterns of the remaining 140 parents after the factor analysis assumptions test was conducted in the second sample of 157 people. According to Table

3, the standardized factor load (λ_i) obtained as a result of the confirmatory factor analysis of Parents' Reading and Writing Habits Scale varied between 0.489 and 0.685. The goodness of fit indices for the scale were evaluated as follows: the ratio of χ^2 / df was found to be 1.66 ($\chi^2/df=2.317/2$), CFI = 0.99, TLI = 0.98, RMSEA = 0.034, SRMR = 0.026. These fit values show that the single-factor structure was a perfect data fit for the model. In other words, it can be argued that the single factor structure of the Parents' Reading and Writing Habits Scale was verified in the secondary data set.

Table 5 presents the correlation coefficients between the scores obtained from all items and the scores obtained from the scale. The item test correlation coefficients of the Parents' Reading and Writing Habits Scale were found to range from 0.415 to 0.608. Item total correlations of the scale were above the acceptable value of 0.20 (Kalaycı, 2010). These coefficients were validity coefficients for the discrimination of all items and showed consistency of items with the whole scale.

Table 3. Descriptive Statistics, Factor Loads (λ_i), Fit Indices and Item Total Correlation Values of Parents' Reading and Writing Habits Scale Items

Items	EFA (<i>λ</i> _i)	CFA (<i>λ</i> _i)	Mean	Sd.	Item-Total Correlation	
Parents' Reading and Writing Habits Scale						
How often do you read print books, magazines, or articles at home (for pleasure, for information, for work, etc.)?	0.572	0.489	4.40	1.5	0.415	
How often do you read books, magazines, or articles using electronic devices at home (e.g., e-readers, smart phones, tablets, etc.)?	0.585	0.582	3.61	1.7	0.484	
How often do you write at home using a pen/pencil and paper (e.g., making hand-written lists, writing birthday or thank-you cards, etc.)?	0.637	0.644	3.99	1.5	0.476	
How often do you write at home using electronic devices (e.g., typing on a computer/laptop, creating social media posts, sending emails, etc.)?	0.618	0.685	3.90	1.7	0.608	
<i>Fit Values</i>						
<i>χ</i> ²	Sd	<i>χ</i> ² /df	CFI	TLI	SRMR	RMSEA (90% CI)
2.317	2	1.16	0.995	0.985	0.026	0.034[0.000. 0.175]

PARENTS' MODELING FOR READING-WRITING HABITS SCALE

Parents' Modeling for Reading-Writing Habits Scale was examined in terms of the assumptions of the factor analysis and 5 missing data were removed from the observation data set. Since all of the standard scores of the scale items were observed to be within the ± 3 z score range (Tabachnick & Fidell, 2007), no univariate outlier was found. As a result of the multivariate outlier analysis, no multivariate outliers were

detected in the data sets since none of the observations was over MI values of $\alpha = 0.001$ and critical $\chi^2 = 18.47$ in 4 degrees of freedom (Tabachnick & Fidell, 2007). Since item skewness coefficients of the scale were between -0.787 and -0.218 (Chou & Bentler, 1995) and kurtosis coefficients ranged from -1.394 to -0.686, the assumption of univariate normality was met for both scales. As depicted in Figure 5, the scatter plot of the scale shows a linear structure, hence, the assumption of multivariate normality was also met (Alpar, 2011). The CI value for the variables below 30, VIF value less than 10 or tolerance values around .10 or above was considered as an indication that there was no multi-collinearity problem in the data set (Hair et al, 1998). When the pairwise correlations of the items were examined, it was seen that their correlations were below the critical value of $r = 0.85$. Therefore, it can be argued that these items did not have a singularity problem (Kline, 2005). When the item total correlations were examined, it was observed that the correlation of all items with the scale was over 0.30.

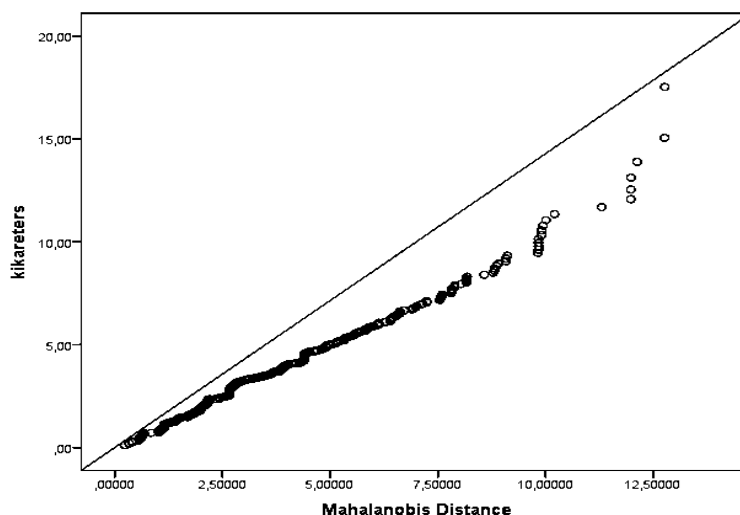


Figure 5. Parents' Modeling for Reading-Writing Habits Scale Scatter Plot

Based on the test of assumptions, 5 observations were extracted from the first sample consisting of 332 observations and EFA was performed on the responses provided by 327 people. According to the result of the factor analysis, KMO value of the Parents' Modeling for Reading-Writing Habits Scale was found to

be 0.68 and Bartlett test result was $\chi^2 = 185.425$; $df=6$ ($p=0.000$). Hence, it was concluded that the 4-item data matrix was suitable for factor analysis. Examination of the item factor load value presented in Table 4 demonstrated that the load values of the items in the Parents' Modeling for Reading-Writing Habits Scale ranged from 0.686 to 0.730 and the cut-off value for the load values of all items was over 0.50.

In addition, it was observed that the Parents' Modeling for Reading-Writing Habits Scale had a single dimension greater than 1 with an eigenvalue of 2.003, and the scale explained 51% of the total variance. In addition, examination of the scree plot presented in Figure 6 shows that the scale items were collected under a single factor.

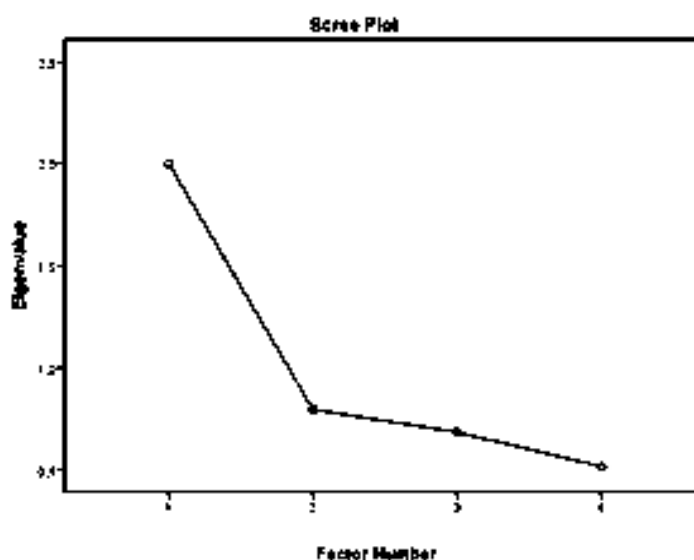


Figure 6. Parents' Modeling for Reading-Writing Habits Scale Scree Plot

The single-factor structure of Parents' Modeling for Reading-Writing Habits Scale obtained because of the EFA result was examined by CFA in the second sample of the remaining 140 people as a result of the assumption test. According to Table 4, the standardized factor load (λ_i) values obtained as a result of the confirmatory factor analysis of Parents' Modeling for Reading-Writing Habits Scale varied between 0.506 and 0.752. The goodness of fit indices for the scale were evaluated as follows: the ratio of χ^2 / df was found to be 1.18 ($\chi^2/df=2.362/2$), CFI= 0.99, TLI= 0.98, RMSEA= 0.035, SRMR= 0.024. These fit values show that the single-factor structure was a perfect data fit for the model. In other words, it can be argued that the

single factor structure of the Parents' Reading and Writing Habits Scale was verified in the secondary data set.

Table 4 presents the correlation coefficients between the scores obtained from all items and the scores obtained from the scale. The item test correlation coefficients of the Parents' Modeling for Reading-Writing Habits Scale were found to range from 0.434 to 0.588. Item total correlations of the scale were above the acceptable value of 0.20 (Kalaycı, 2010). These coefficients were validity coefficients for the discrimination of all items and showed consistency of items with the whole scale.

Table 4. Descriptive Statistics, Factor Loads (λ_i), Fit Indices and Item Total Correlation Values of Parents' Modeling for Reading-Writing Habits Scale

Reading-Writing Habits Scale							
Items			EFA (<i>λ</i> _i)	CFA (<i>λ</i> _i)	Mean	Sd.	Item Total Correlation
Parents' Modeling for Reading-Writing Habits Scale							
How often does your child see you reading print books, magazines, or articles at home?			0.688	0.506	4.75	1.3	0.434
How often does your child see you reading books, magazines, or articles using electronic devices at home?			0.686	0.650	4.13	1.5	0.515
How often does your child see you writing at home using a pen/pencil and paper (e.g., making hand-written lists, writing reminders, birthday or thank-you cards, etc.)?			0.725	0.610	4.32	1.4	0.518
How often does your child see you writing at home using electronic devices (e.g., typing on a computer/laptop, creating social media posts, sending emails, etc.)			0.730	0.752	4.69	1.4	0.588
<i>Scale 6.1. Fit Values</i>							
χ ²	Sd	χ ² /df	CFI	TLI	SRMR	RMSEA (90% CI)	
2.362	2	1.18	0.996	0.988	0.024	0.035[0.000, 0.170]	

SHARED BOOK READING ACTIVITY SCALE

The factor structure of Shared Book Reading Activity Scale in the Parent-Child Shared Book Reading Inventory developed to measure the parent-child shared book reading activities was determined by exploratory factor analysis performed on the data set collected from the first sample. Observations of 12 missing data in the response pattern of the Shared Book Reading Activity Scale were removed from the data set.

Since all of the standard scores of the scale items were observed to be within the ± 3 z score range (Tabachnick & Fidel, 2007), no univariate outlier was found in the data set. As a result of the multivariate

outlier analysis, 4 observations exceeding MI value $\alpha = 0.001$ and critical $\chi^2 = 24.32$ at 7 degrees of freedom were removed from data set (Tabachnick & Fidell, 2007). Since item skewness coefficients of the scale were between -2.303 and -0.309 (Chou & Bentler, 1995) and kurtosis coefficients ranged from -1.320 to 5.216, the assumption of univariate normality was met. As depicted in Figure 7, the scatter plot of the scale shows a linear structure, hence, the assumption of multivariate normality was also met (Alpar, 2011). The CI value for the variables below 30, VIF value less than 10 or tolerance values around .10 or above was considered as an indication that there was no multi-collinearity problem in the data set (Hair et al, 1998). When the pair wise correlations of the items were examined, it was seen that their correlations were below the critical value of $r = 0.85$. Therefore, it can be argued that these items did not have a singularity problem (Kline, 2005). When the item total correlations were examined, no pairwise correlation was observed below 0.30.

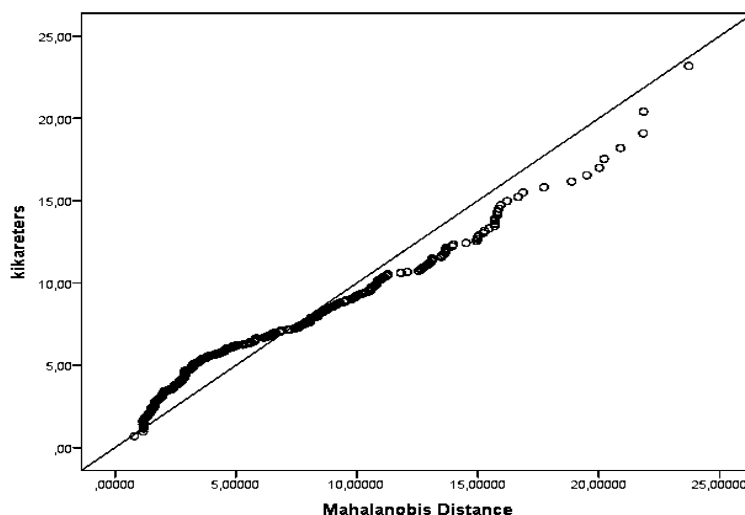


Figure 7. Shared Book Reading Activity Scale Scatter Plot

As a result of the assumptions test, 16 observations were removed from the first sample consisting of 332 observations and EFA was performed on a 7-item response pattern of 316 parents. As a result of the factor analysis of the Shared Book Reading Activity Scale, the KMO value was found to be 0.83; and Bartlett test result was $\chi^2 = 774.043$; $df = 21$ ($p = 0.000$). According to KMO value and Bartlett test results, it was concluded that the data matrix consisting of 7 items in the Shared Book Reading Activity Scale was suitable for factor analysis. As a result of the factor analysis, a two-factor structure with an eigenvalue over 1.00 was observed. The first factor consisted of three items with factor loads ranging between 0.632 and 0.870 measuring the status of undertaking a joint activity. This factor, called as “*Doing an Activity Together*” had an eigenvalue of 3.479 and it explained 50% of the total variance. The second factor consisted of four items with factor loads ranging between 0.631 and 0.724 measuring behaviors in regard to modeling reading and writing. This factor, called as “*Being a Model for Reading and Writing*” had an eigenvalue of 1.143 and it explained 16% of the total variance. Together, these two factors explained 66% of the Shared Book Reading Activity Scale. Examination of the scree plot provided in Figure 8 shows that the items of Shared Book Reading Activity Scale were collected under two factors. Based on EFA results, the Shared Book Reading Activity Scale was found to constitute a two-factor structure consisting of 7 items in total.

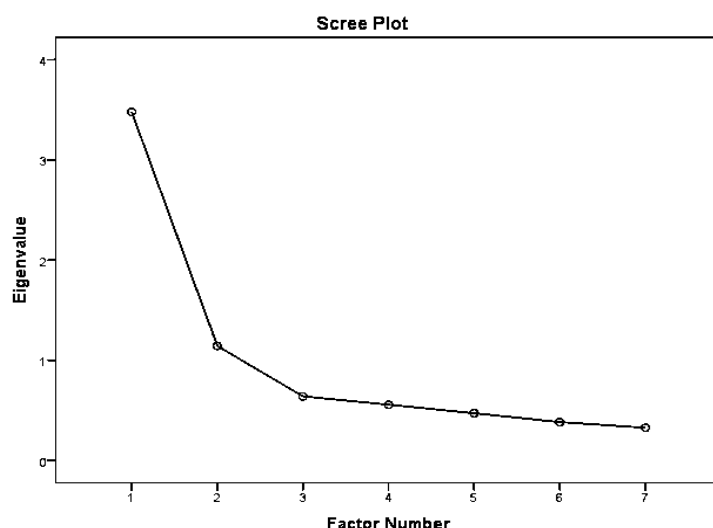


Figure 8. Shared Book Reading Activity Scale Scree Plot

The two-factor structure of Shared Book Reading Activity Scale obtained as a result of the EFA result was examined by CFA in the second sample. Confirmatory factor analysis was performed on the response pattern of the remaining 134 people in the second sample of 157 people in the data of the scale based on factor analysis assumptions test. According to Table 5, the standardized factor load (λ_i) values obtained as a result of the confirmatory factor analysis of Shared Book Reading Activity Scale varied between 0.655

and 0.884 in *Doing an Activity Together* factor and between 0.484 and 0.691 in the *Being a Model for Reading and Writing* factor. The goodness of fit indices for the scale were found to be as follows: the ratio of χ^2/df was 1.32 ($\chi^2/df=17.119/23$), CFI= 0.98, TLI= 0.97, RMSEA= 0.049, SRMR= 0.040. These fit values show that the two-factor structure of the scale was a perfect data fit for the model. In other words, it can be argued that the two-factor structure of the Shared Book Reading Activity Scale was verified in the secondary data set.

Table 5 presents the correlation coefficients between the scores obtained from all items and the scores obtained from the scale. The item test correlation coefficients of the Shared Book Reading Activity Scale were found to range from 0.456 to 0.608 in *Doing an Activity Together* factor and from 0.456 to 0.625 in the *Being a Model for Reading and Writing* factor. Item total correlations of the scale were above the acceptable value of 0.20 (Kalaycı, 2010). These coefficients were validity coefficients for the discrimination of all items and showed consistency of items with the whole scale.

Table 5. Descriptive Statistics, Factor Loads (λ_i), Fit Indices and Item Total Correlation Values of Shared Book Reading Activity Scale

Items	EFA (λ_i)		CFA (λ_i)		Mean	Sd.	Item-Total Correlation
	Factor 1	Factor 2	Factor 1	Factor 2			
How often do you sing or recite rhymes to your child??	0.632	0.391	0.655		5.14	1.1	0.456
How often do you tell tales/stories to your child?	0.766	0.531	0.772		5.08	1.1	0.588
How often do you play with your child?	0.870	0.495	0.884		5.53	0.9	0.580
How often do you write with your child (e.g., short letters or notes, writing names, writing stories)?	0.432	0.723		0.661	4.15	1.6	0.608
How often do you read periodicals with your child? (e.g., magazines, booklets, etc.) ?	0.483	0.722		0.691	4.08	1.4	0.625
How often does your child see you writing at home using a pen/pencil and paper (e.g., making hand-written lists, writing reminders, birthday or thank-you cards, etc.)?	0.446	0.724		0.484	4.25	1.6	0.621
How often do you read books or magazines with your child using electronic devices (e.g., e-book readers, smart phones, tablets, etc.)?	0.379	0.631		0.536	3.87	1.7	0.534
<i>Fit Values</i>							
χ^2	Sd	χ^2/df	CFI	TLI	SRMR	RMSEA (90% CI)	
17.119*	13	1.31	0.982	0.971	0.040	0.049[0.000, 0.105]	

The first of the independent items in this section is related to when parents first started doing shared book reading activities with their children. Table 8 demonstrates that approximately 44% of the parents stated that they started to read a book with their children when their children were 0-6 months old followed by 24% of the parents stating that they started to read a book with their children when their children were 7-12 months old. 3.3% of the participants stated that they started these activities after the age of 3, 2.9% after the age of 4 and 1.6% after the age of 5.

SECTION 3

CHILD'S READING HABITS SCALE

The factor structure of Child's Reading Habits Scale developed to measure the child's reading habits was determined by exploratory factor analysis performed on the data set collected from the first sample. Observations of 20 missing data in the response pattern of the Child's Reading Habits Scale were removed from the data set. Since 4 of the standard scores for one of the scale items were observed to be within the ± 3 z score range (Tabachnick & Fidel, 2007), they were removed from the data set due to the existence of univariate outliers. AS a result of the multivariate outlier analysis, 2 observations exceeding MI value $\alpha =$

0.001 and critical $\chi^2 = 22.46$ at 6 degrees of freedom were removed from data set (Tabachnick & Fidell, 2007). Since item skewness coefficients of the scale were between -1.495 and 0.325 (Chou & Bentler,

1995) and kurtosis coefficients ranged from -1.463 to 0.585, the assumption of univariate normality was met. As depicted in Figure 9, the scatter plot of the scale shows a linear structure, hence, the assumption of multivariate normality was also met (Alpar, 2011). The CI value for the variables below 30, VIF value less than 10 or tolerance values around .10 or above was considered as an indication that there was no multicollinearity problem in the data set (Hair et al, 1998). When the pairwise correlations of the items were examined, it was seen that the correlations of two items (Item 31 and Item 32) were above the critical value of $r = 0.85$. Therefore, it can be argued that these items had a singularity problem (Kline, 2005). When these two items were examined, it was observed that the statements were similar in meaning (*“Item 31: How often does your child read/look at electronic books or magazines on his/her own?”*, *“Item 32: How often does your child use applications or technology on his/her own that reads books or magazines to him/her?”*). Since Item 31 foresees that the child has already acquired a reading skill, it was decided to exclude Item 31 because training for reading-writing is not provided in pre-school education in Turkey. Hence Item 32 was kept in the scale. When the item total correlations were examined, the total correlation of one item (Item 35) was observed to be below 0.30. Since the pairwise correlation of this item with the other items in the scale was below 0.20, it was decided to exclude the item from the scale before factor analysis.

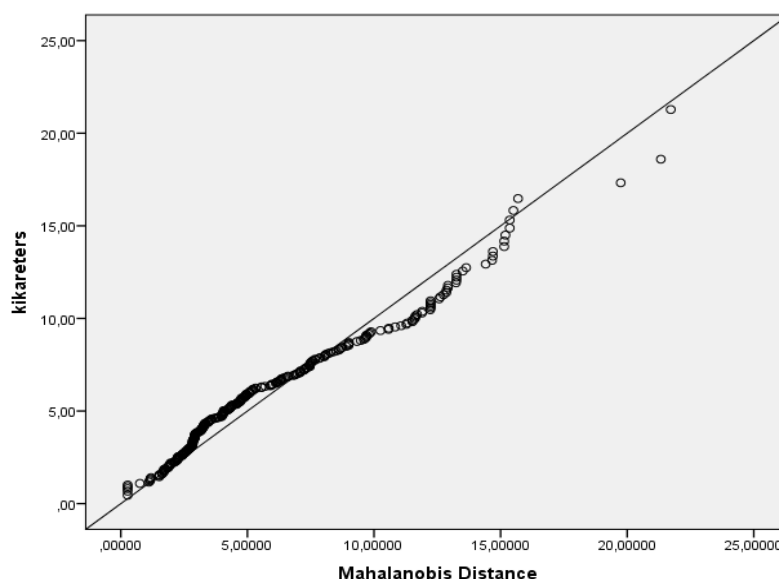


Figure 9. Child's Reading Habits Scale Scatter Plot

As a result of the assumptions test, 26 observations were removed from the first sample consisting of 332 observations and EFA was performed on a 4-item response pattern of 306 parents. As a result of the factor analysis of the Child's Reading Habits Scale, the KMO value was found to be 0.70; and Bartlett test result

was $\chi^2 = 253.377$; $df=6$ ($p=0.000$). According to KMO value and Bartlett test results, it was concluded that the data matrix consisting of 4 items in the Child's Reading Habits Scale was suitable for factor analysis. As a result of the factor analysis, a single-factor structure with an eigenvalue over 1.00 was observed. The eigenvalue of the single-factor structure of the scale was 1.655 and the single-factor structure explained 41% of the total variance. The factor loads of the scale items also varied between 0.429 and 0.853. The scree plot depicted in Figure 10 shows that the items in the Child's Reading Habits Scale were collected under a single factor. As a result of EFA, it was demonstrated that the Child's Reading Habits Scale had a single-factor structure consisting of 4 items.

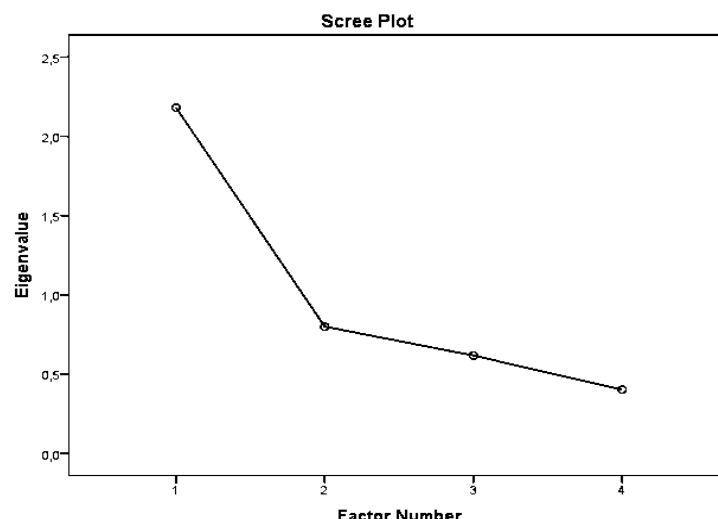


Figure 10. Child's Reading Habits Scale Scree Plot

The two-factor structure of Child's Reading Habits Scale obtained as a result of the EFA result was examined by CFA in the second sample. Confirmatory factor analysis was performed on the response pattern of the remaining 151 parents in the second sample of 157 in the data of the scale based on factor analysis assumptions test. According to Table 10, the standardized factor load (λ_i) values obtained as a result of the confirmatory factor analysis of Child's Reading Habits Scale varied between 0.350 and 0.989. The goodness of fit indices for the scale were found to be as follows: the ratio of χ^2/df was 1.17 ($\chi^2/df=2.337/2$), CFI= 0.99, TLI= 0.99, RMSEA= 0.033, SRMR= 0.029. These fit values show that the single-factor structure of the scale was a perfect data fit for the model.

Table 6 presents the correlation coefficients between the scores obtained from all items and the scores obtained from the scale. The item test correlation coefficients of the Child's Reading Habits Scale were found to range from 0.351 to 0.667. Item total correlations of the scale were above the acceptable value of 0.20 (Kalaycı, 2010). These coefficients were validity coefficients for the discrimination of all items and showed consistency of items with the whole scale.

Table 6. Descriptive Statistics, Factor Loads (λ_i), Fit Indices and Item Total Correlation Values of Child's Reading Habits Scale Items

Scale Items						
Items		EFA (<i>λi</i>)	CFA (<i>λi</i>)	Mean	Sd.	Item-total correlation
How often does your child read/pretend to read or look at paper books or magazines on his/her own?		0.853	0.989	4.94	1.3	0.667
How often does your child read or look at electronic books or magazines on his/her own?		0.429	0.350	3.07	1.7	0.351
How often does your child write on his/her own (e.g., letters, writing his/her name, “pretend writing”)?		0.575	0.473	4.77	1.4	0.438
How often does your child ask to be read to?		0.643	0.700	5.25	1.2	0.519
<i>Fit Values</i>						
χ^2	Sd	χ^2 /df	CFI	TLI	SRMR	RMSEA (90% CI)
2.337*	2	1.66	0.997	0.992	0.029	0.033[0.000, 0.169]

This section included an independent item on the number of children's books available at home, including books borrowed from the library. Table 7 shows that 24% of the participants had 51-100 children's books at their homes and 18% had 31-50 children's books. Approximately 2% of the participants did not have any children's books at home.

Table.7 Number of Children's Books at Home

Number of Books	f	%
0	9	1.9
1	2	0.4
2-5	28	5.8
6-10	37	7.7
11-20	51	10.6
21-30	74	15.4
31-50	89	18.5
51-100	117	24.3
101-200	55	11.4
201 and more	20	4.1

SECTION 4

Table 8 and Table 9 present the parents' views regarding how much they enjoyed reading books and looking at magazines with their children. Accordingly, parents stated that they enjoyed reading and looking at magazines with their children at a rate of 35%, and stated that they very much enjoyed reading and looking at magazines with their children at a rate of 64%.

Table 8. Parents' Views Regarding How Much They Enjoy Reading with Their Children

How much do you enjoy reading with your child?	f	%
I try to avoid it	1	,2
I don't enjoy it	6	1,2
I enjoy it	169	34,7
I enjoy it very much	311	63,9
Total	487	100,0

Table 9. Parents' Views Regarding How Much They Enjoy Looking at Books and Magazines with Their Children

How much do you enjoy looking at books and magazines with your child?	f	%
I try to avoid it	1	,2
I don't enjoy it	6	1,2
I enjoy it	166	34,2
I enjoy it very much	313	64,4
Total	486	100,0

Table 10 and Table 11 present children's views regarding how much they enjoyed reading and looking at books with their parents. Accordingly, parents stated that their children enjoyed reading and looking at magazines with them at a rate of 29%, and that their children very much enjoyed reading and looking at magazines with them at a rate of 67%.

Table 10. Children's Views Regarding How Much They Enjoy Reading with Their Parents

How much does your child usually enjoy reading with you?	f	%
He/she tries to avoid it	8	1,7
He/she doesn't like it	10	2,1
He/she likes it	140	28,9
He/she likes it very much	326	67,4
Total	484	100,0

Table 11. Children's Views Regarding How Much They Enjoy Looking at Books and Magazines with Their Parents

How much does your child usually enjoy looking through books or magazines with you?	f	%
He/she tries to avoid it	6	1,2
He/she doesn't like it	9	1,9
He/she likes it	142	29,5
He/she likes it very much	324	67,4
Total	481	100,

Table 12 presents parents' views regarding how much they enjoyed reading/looking at picture books activity with their children. Accordingly, approximately 31% of the parents stated that they enjoyed the shared book reading activity and 66% stated that they enjoyed it very much.

Table 12. Parents' Views Regarding How Much They Enjoyed Reading with Their Children during Shared Book Reading

How much did you enjoy reading with your child during the reading activity you just	f	%
I didn't enjoy it at all	4	,8
I mostly didn't enjoy it	12	2,5
I enjoyed it	148	30,6
I enjoyed it very much	319	66,0
Total	483	100,0

Table 13 presents the parents' views regarding how much their children enjoyed reading/looking at picture books with their parents. Accordingly, approximately 26% of the parents stated that their children liked the shared book reading activity and 66% of them stated that their children liked this activity very much.

Table 13. Children's Views Regarding How Much They Enjoyed Reading with Their Parents during Shared Book Reading

How much did your child enjoy reading with you during the reading activity you just	f	%
He/she didn't enjoy it at all	3	,6
He/she mostly didn't enjoy it	15	3,1
He/she enjoyed it	126	26,1
He/she enjoyed it very much	338	70,1
Total	482	100,0

Table 14 presents parents' views regarding the familiarity of their children with the book used for the reading activity they just completed. 70% of the parents stated that their children were very familiar with/mastered the story after the reading activity of while 29% stated that they were somewhat familiar with the story after the activity.

Table 14. Parents' Views Regarding the Familiarity of Their Children with the Book Used for the Reading Activity They Just Completed

How familiar was your child with the book used for the reading activity you just completed?	f	%
Very familiar	335	69,6
Somewhat familiar	139	28,9
Not at all familiar	2	,4
I don't know	5	1,0
Total	481	100,0

THE RELIABILITY OF THE PARENT-CHILD SHARED BOOK READING INVENTORY

The internal consistency reliability of the Parent-Child Shared Book Reading Inventory was examined with Cronbach Alpha and composite reliability values. Table 15 demonstrates that the Cronbach alpha and composite reliability values in each of scales (Reading Skills Beliefs Scale for Shared Book Reading, Parents' Reading and Writing Habits Scale, Parents' Modeling for Reading-Writing Habits Scale, Shared Book Reading Activity Scale, Child's Reading Habits Scale) were above the lower limit of 0.60 for Cronbach alpha and composite reliability values (Hair et al., 2014). In other words, the reliability of all scales in terms of internal consistency was high.

Table 15. Cronbach Alpha, Mean Variance and Composite Reliability Values of the Parent-Child Shared Book Reading Inventory

Scale		Cronbach Alpha	Composite R.
Reading Skills Beliefs Scale for Shared Book Reading		0.95	0.96
Parents' Reading and Writing Habits Scale		0.71	0.70
Parents' Modeling for Reading-Writing Habits Scale		0.72	0.73
Shared Book Reading Activity Scale	<i>Factor 1</i>	0.81	0.82
	<i>Factor 2</i>	0.68	0.69
	<i>Whole Survey</i>		0.85
Child's Reading Habits Scale		0.69	0.74

DISCUSSION AND CONCLUSION

The Parent-Child Shared Book Reading Survey developed by Cutler (2020) was adapted to Turkish and its validity and reliability studies were carried out since no comprehensive measurement tool was available in Turkey to determine the status of parent-child shared book reading activities which have important roles in the development of children and to support parents in this context.

As a result, a form consisting of five scales with 39 items were developed along with 5 independent items used to measure the characteristics of Shared Book Reading Activity Scale within Parent-Child Shared Book Reading Inventory. The validity and reliability of these scales were tested, it was demonstrated that this measurement tool is a valid and reliable inventory for measuring the characteristics of parent-child shared book reading activities.

Parent-Child Shared Book Reading Inventory is believed to be an important tool that can be used to assess the shared reading processes of parents with their children and fill the gap in preschool education in this area. Kotaman (2009) emphasizes that it is important to assess shared reading activities and argues that this assessment holds a mirror on how parents can choose books and how they can better support their children. Yılmaz, Uyar and Aktaş Arnaz (2020) also stated that home-centered reading activities affect children's ability to understand emotions. In this context, the researchers argue that ensuring a high-quality shared reading process is only possible through assessment with sound measures. Torr (2020) states that the process should be measured not only in pre-school period but also during infancy and the parent training on this issue should be supported. Cutler and Palkovitz's (2020) study on the shared reading process with fathers primarily assessed fathers' reading behaviors with their children and implemented a program to develop these skills. Principally, they cited the necessity of assessing the shared reading process and emphasized the importance of assessment in this area. In this context, literature review presents various home-based studies on shared reading which utilized different measures. It is believed that the measurement tool prepared within the scope of this study will contribute to relevant literature.

Some suggestions can be offered to researchers in the process of adapting this measurement tool. The research data were collected online during the Covid-19 outbreak during this process. It is believed that some of the parents may have changed their daily routines during the quarantine period and they may have more opportunities to spend time with their children since their children are also at home. For this reason, it is recommended to conduct comprehensive studies using the measurement tool after the epidemic. In addition, due to the online collection of data related to the measurement tool, it was determined that the data were generally provided by literate parents with a high level of education and internet access. It is recommended to use this measurement tool in studies involving different socio-economic levels and to be tested in these groups.

REFERENCES

- Ahmed Mostafa, Amaal. "The Effect of Storytelling on Increasing Arabic Vocabulary Skills in At-Risk Preschoolers". *Psycho-Educational Research Reviews*. (2016). 5 (2):61 -. <https://www.journals.lapub.co.uk/index.php/perr/article/view/138>.
- Alpar, Reha. *Çok Değişkenli İstatistiksel Yöntemler*. Ankara: Detay Yayıncılık, (2011). 286-301.
- Apaydın Demirci, Zeynep, & Arslan, Emel. "Teacher Adaptation of Child Development AssessmentScale (CDAS) intoTurkishand Evaluation of Development of 5-Years-Old Children". *Psycho-EducationalResearchReviews* (2020). 9 (2):48-66. <https://www.journals.lapub.co.uk/index.php/perr/article/view/1460>.
- Arıcı, Müberra, & Aysel Tüfekçi Akcan. "OkulÖncesiDönemde Anne-Çocuk Birlikte Hikâye Kitabı Okuma Davranışlarının İncelenmesi". *Yaşadıkça Eğitim*. (2019). 33 (1), 100-120. <https://doi.org/10.33308/26674874.201933195>.
- Barry, Elaine S. "Children's Memory: A Primer For Understanding Behavior". *Early Childhood Education Journal*, (2006). 33(6), 405-411.
- Bayraktar, Vedat. "Okulöncesi dönem çocuklarının yazı farkındalığı becerilerinin çocuk ve ebeveyn değişkenleri açısından incelenmesi". *Eğitim ve Bilim*. (2018). Cilt 43, Sayı 196, 49-65.
- Bennett, Kymberley, K., Weigel, Daniel. J. & Martin, Sally. S. "Children's Acquisition Of Early Literacy Skills: Examining Family Contributions". *Early Childhood Research Quarterly*. (2002). 17, 295-317.
- Bentler, Peter. M. & Bonett, Douglas. G. "Significance Tests And Goodness Of Fit In The Lysis Of Covariance Structures". *Psychological Bulletin*, 88(3), 588-606. (1980). <https://doi.org/10.1037/0033-2909.88.3.588>
- Bracken, Stacey. Storch. & Fischel, Janet. E. "Family Reading Behavior and Early Literacy Skills in Preschool Children From Low-Income Backgrounds". *Early Education and Development*. (2008). 19(1), 45-67. doi:10.1080/10409280701838835.
- Brown, Timothy. A. *Confirmatory Factor Analysis For Applied Research*. New York, NY: Guilford Press. (2006).

- Bulunuz, Mızrap. & Koç, Demet. "The Evaluation Of Pre-Service Preschool Teachers Experiences And Views Regarding Integrated Guided Reading Practice". *European Early Childhood Education Research Journal*. (2018). 1-13.
- Burgess, Stephen R., Steven A. Hecht, and Christopher J. Lonigan. "Relations of the Home Literacy Environment (HLE) to the Development of Reading-Related Abilities: A One-Year Longitudinal Study". *Reading Research Quarterly* 37, no. 4 (2002): 408-26. <http://www.jstor.org/stable/748260>.
- Bus, Adriana G., Marinus H. van IJzendoorn & Anthony D. Pellegrini. "Joint Book Reading Makes for Success in Learning to Read: A Meta-Analysis on Intergenerational Transmission of Literacy." *Review of Educational Research* 65, no. 1 (March 1995): 1-21. <https://doi.org/10.3102/00346543065001001>.
- Çelebi Öncü, Elif. "Etkileşimli kitap okumanın beş-altı yaş çocuklarının sosyal durumlara yaklaşımlarına etkisinin incelenmesi". *Ana Dili Eğitimi Dergisi*, (2016). 4(4), 489-503.
- Tepetaş-Cengiz, Şule. & Gönen, Mübeccel. "Kitap Okumanın Sistematiik Değerlendirilmesi (KOSD) Ölçeğinin Türkçe'ye Uyarlanması Çalışmaları". Hacettepe University Faculty of Health Sciences Journal, Uluslararası Katılımlı 3. Çocuk Gelişimi ve Eğitimi Kongre Kitabı.(2015). <https://dergipark.org.tr/tr/pub/hsbfdf/issue/7893/103881>.
- Çer, Erkan. 0-6 yaş çocuk kitaplarında çocuk gerçekliği ve çocuğa görelilik. Ankara: Eğiten Kitap.(2016).
- Chou, Chih.-Ping & Bentler, Peter. M. Estimation And Tests In Structural Equation Modeling. In R. H. Hoyle (Ed.), *Structural equation modeling: Concepts, issues, and applications* (pp. 37-55). Thousand Oaks, CA: Sage. (1995).
- Conway, James M., & Huffcutt, Allen, I. A Review And Evaluation Of Exploratory Factor Lysis Practices In Organizational Research. *Organizational Research Methods*. (2003). 6, 147- 168.
- Cutler, Laura, Palkovitz, Rob. "Fathers' Shared Book Reading Experiences: Common Behaviors, Frequency, Predictive Factors and Developmental Outcomes". *Marriage & Family Review*, (2020). 56 (2), 144-173. DOI: 10.1080/01494929.2019.1683119
- Cutler, Laura.E. Parents' Physically Performative Behaviors During Shared Book Reading: An Observational Study. Department of Human Development and Family Sciences, University of Delaware. (2020).
- DeBruin-Parecki, Andrea. Let's Read Together: Improving Literacy Outcomes With The Adult- Child Interactive Reading Inventory. Baltimore, MD: Brookes Publishing. (2007).
- DeBruin-Parecki, Andrea. The Adult/Child Interactive Reading Inventory: An Assessment Of Joint Storybook Reading Skills. Tech Report #2-004: The National Center for Improvement of Early Reading Achievement.(1999).
- Dickinson, David. K., & Tabors, Patton. O. "Early Literacy: Linkages Between Home, School And Literacy Achievement At Age Five". *Journal of Research in Childhood Education*, (1991). 6(1), 30-46.
- Dunst, Carl, Simkus, Andrew & Hamby, Deborah. "Effects of Reading to Infants and Toddlers on Their Early Language Development" *CELL reviews*, (2012) Volume 5, Number 4.
- Fabrigar, Leandre Robert, MacCallum, Wegener, Duane. & Strahan, Erin. "Evaluating The Use Of Exploratory Factor Lysis In Psychological Research". *Psychological Methods* (1999). (3). 272-299.
- Fornell, Claes & Larcker, David. F. "Evaluating Structural Equation Models With Unobservable Variables And Measurement Error". *Journal of Marketing Research*, (1981). 18, 39-50.
- Golinkoff, Roberta Michnick, Can, Dilara Deniz, Soderstrom, Melanie & Hirsh-Pasek, Kathy. "(Baby) Talk To Me: The Social Context Of Infant-Directed Speech And Its Effects On Early Language Acquisition". *Current Directions in Psychological Science*. (2015). 24(5), 339-344.
- Gonzalez, Jorge. E., Taylor, Aaron. B., Davis, Matthew. J. & Kim, Minjung. "Exploring The Underlying Factor Structure Of The Parent Reading Belief Inventory (PRBI): Some Caveats". *Early Education and Development*. (2013). 24(2), 123-137.
- Hafizoğlu Çelik Gökçe, Er, Sühendan & Yıldız Bıçakçı Müdriye. "Etkileşimli Kitabi Okuma Sürecinin Çocukların Dil Gelişimlerine Etkisi". *Ebelik ve Sağlık Bilimleri Dergisi*. (2020). 3(1):1-10.
- Hair, Joseph, Hult, Tomas M, Ringle Christian, Sarstedt Marko. *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)* (Los Angeles: SAGE Publications, Incorporated).(2014).
- Hair, Joseph. F., Anderson, Rolph. E., Tatham, R., L., & Black, William. C. *Multivariate data analysis* (Fifth edition). United States: Prentice-Hall. (1998).
- Hair, Joseph. F., Jr., Black, William. C., Babin, Barry. J., & Anderson, Rolph. E. *Multivariate data analysis (7th ed.)*. Upper Saddle River, NJ: Pearson Prentice Hall.(2009).
- Hindman, Annemarie. H., Skibbe Lori. E. & Foster, T. D. "Exploring the variety of parental talk during shared book reading and its contributions to preschool language and literacy: evidence from the early childhood longitudinal study-birth cohort", *Read Write*. (2014). 27287-313.
- Hoyne, Clara. & Egan, Suzanne M. "Shared Book Reading in Early Childhood: A Review of Influential Factors and Developmental Benefits". *An Leabhog*, (2019). 12(1), 77-92.
- Hutton, John S., Phelan, Kieran., Horowitz-Kraus, Tzipi., Dudley, Jonathan., Altaye, Mekibib., DeWitt, Tom, & Holland, Scott. K. "Shared reading quality and brain activation during story listening in preschool-age children". *Journal of Pediatrics*. (2017). 191, 204- 212. <https://doi.org/10.1016/j.jpeds.2017.08.037>
- İnce Samur, Özgül "Okuma Kültürü Edinme Sürecinde "İlkokul Dönemi (6-10 yaş)". *Ankara Üniversitesi Eğitim Bilimleri Fakültesi Dergisi*. (2015). Cilt: 50, Sayı:1, 209-230.
- İşıkoğlu Erdoğan, Nesrin. "Erken çocukluk döneminde çocuk-ebeveyn birlikte okuma etkinliklerinin incelenmesi". *Kastamonu Eğitim Dergisi*, (2016). 24(3), 1071-1086.
- Joreskog, Karl G. (1999). "How large can a standardized coefficient be". Unpublished report. SSI Central, Inc. <http://www.statmodel.com/download/Joreskog.pdf>.
- Justice, Laura M., & Ezell, Helen K. "Print referencing: An emergent literacy enhancement strategy and its clinical applications". *Language, Speech, and Hearing Services in Schools*, (2004). 35(2), 185-193. doi:10.1044/0161-1461.

- Justice, Laura M., Kaderavek, Joan N., Fan, Xitao., Sofka, Amy, & Hunt, Aileen. Accelerating Preschoolers' Early Literacy Development Through Classroom-Based Teacher-Child Storybook Reading And Explic-it Print Referencing. *Language, Speech, and Hearing Services in Schools*, (2009). 40(1), 67-85. doi:10.1044/0161-1461.
- Kalaycı, Şeref. *SPSS uygulamalı çok değişkenli istatistik teknikleri* (Vol. 5). Ankara, Turkey: Asil Yayın Dağıtım.(2010).
- Kline, Theresa. J. *Psychological testing: A practical approach to design and evaluation*. Sage Publications.(2005).
- Kotaman, Hüseyin. "Turkish Parents' Dialogical Storybook Reading Experience: A Phenomenological Study". *Journal of Instructional Psychology*, (2007). 34 (4), 200-2006.
- Lane, Holly B. & Wright, Tyran L. "Maximizing the effectiveness of reading aloud". *The Reading Teacher*.(2011). 60(7), 668-675. doi:10.1598/RT.60.7.7.
- Lovelace, Sherri, & Stewart, Sharon R. "Increasing Print Awareness In Preschoolers With Language Impairment Using Non-Evocative Print Referencing". *Language, Speech, and Hearing Services in Schools*. (2007). 38(1), 16-30. doi:10.1044/0161-1461.
- Machado, Jeanne M. *Early Childhood Experiences in Language Arts*. 7th edition. Cda: Thomson-Gelmar Learning. (2003).
- Morgan, Paul L., & Meier, Catherine. R. "Dialogic reading' spotential to improve children's emergent literacy skills and behavior". *Preventing School Failure*. (2008). 52(4), 11-16.
- Neuman, Susan B., Copple, Carol, & Bredekamp, Sue. *Learning To Read And Write: Developmentally Appropriate Practices For Young Children*. Washington, DC: National Association for the Education of Young Children. (2000).
- Noble, Claire., Sala, Giovanni, Peter, Michelle, Lingwood, Jamie, Rowland, Caroline, Gobet, Fernand. & Pine, Julian. "The impact of shared book reading on children's language skills: A metalysis". *Educational Research Review*. (2019). "Volume 28.
- Nunnally, Jum. & Bernstein, Ira. *Psychometric Theory*. (3rd ed.). New York: McGrawHill.(1994).
- Okuy, Özlem. & Kandır, Adalet. "The Impact of Interactive Storybook Reading Programme On Scientific Vocabulary Acquisition By Children", *Early Child Development and Care*, (2019). vol. 1, no. 1, pp. 1-11, Oct.
- Özbek Ayaz, Ceylan, Güleç, Havise & Şahin, Çavuş. "Ailelerin çocuklarıyla birlikte gerçekleştirdikleri okuma aktivitelerinin düzeyini belirleme". *Ahi Evran Üniversitesi Kırşehir Eğitim Fakültesi Dergisi (KEFAD)*, (2017). Cilt:18, Sayı: 1, 1-19.
- Robertson, Sarah-Jane, & Reese, Elaine. "The Very Hungry Caterpillar Turned Into A Butterfly: Children's And Parents' Enjoyment Of Different Book Genres". *J. Early Child. Lit.* (2015). doi: 10.1177/1468798415598354.
- Rosenkoetter, Sharon. & Barton, Lauren. "Bridges To Literacy: Early Routines That Promote Later School Success. Bridges To Literacy: Early Routines That Promote Later School Success". *Zero to Three*, (2002). 22(4), 33-38.
- Şahin, Yağmur Esin, Çelik, Gamze & Çelik, Burcu. "Anne-Babaların Çocuk Edebiyatı Kavramına İlişkin Görüşleri (Çanakkale örneği)". *Çanakkale Araştırmaları Türk Yılığı*. (2012). Yıl:10, Bahar, S.12, 109-125.
- Sawyer, Walter. E Growing up with literature (4.ed). New York: Thomson Delmar Learning.(2004).
- Sever, Sedat. *Çocuk ve edebiyat*. Ankara: Tudem.(2017).
- Sloat, Elizabeth. A., Letourneau, Nicole. L., Joschko, Justin. R., Schryer, Erin. A., & Colpitts, Jennifer. E. "Parent-Mediated Reading Interventions With Children Up To Four Years Old: A Systematic Review". *Issues in Comprehensive Pediatric Nursing*, (2015). 38(1), 39-56.
- Snow, Pamela. C., Eadie, Patricia. A., Connell, Judy, Dalheim, Brenda., McCusker, Hugh. J. & Munro, John. K. "Oral Language Supports Early Literacy: A Pilot Cluster Randomized Trial In Disadvantaged Schools". *International Journal of Speech-Language Pathology*, (2014). 16(5), 495-506. doi:10.3109/17549507.2013.845691.
- Suzanne E. Mol, Adriana G. Bus, Maria T. de Jong & Daisy J. H. Smeets. "Addedvalue of dialogicparent-child book readings: A metalysis". *Early Education and Development*. (2008). 19, 7-26.
- Tabachnick, Barbara. G., & Fidel, Linda. S. *Using Multivariate Statistics*. USA: Person Education Inc.(2007).
- Tetik, Gamzegül. Diyaloga dayalı hikâye okuma tekniği ile okunan öykülerin 4-5 yaş (48-60 ay) çocukların dil gelişimine etkisi. Yayımlanmamış yüksek lisans tezi. Pamukkale Üniversitesi Eğitim Bilimleri. Enstitüsü.(2011).
- Tezel, Merve, Arslan Çiftçi, Hande & Uyanık, Gülden "Annelerin okul öncesi dönem çocuklarına kitap okuma ve almaya ilişkin görüşlerinin incelenmesi". *Mersin Üniversitesi Eğitim Fakültesi Dergisi*, (2019). 15(3): 741-759.
- Torr, Jane. "How Shared Reading: Book Focused Infant-Educator Interactions in Long Day-Care Centres". *Journal of Early Childhood Literacy*, (2020). 20 (4), 815-838.
- Troseth, Georgene. L., Strouse, GabrielleA. I. Flores, Z.D. Stuckelman, C.R. Johnson. An enhanced eBook facilitates parent-child talk during shared reading by families of low socioeconomic status". *Early Childhood Research Quarterly*, (2020). 50 (P1) 45-58, 10.1016/j.ecresq.2019.02.009.
- Tucker, Ledyard. R., & Lewis, Charles. "A Reliability Coefficient For Maximum Likelihood Factor Analysis". *Psychometrika*, (1973). 38(1), 1-10.
- Uyumaz, Gizem & Sırgancı, Gözde. "Doğrulaıcı Faktör Analizi için Gerekli Örneklem Büyüklüğü Kaç Kişidir?: Bayes Yaklaşımı ve Maksimum Olabilirlik Kestirimi". *OPUS Uluslararası Toplum Araştırmaları Dergisi*, (2020). 16 (32) , 5302-5340. DOI: 10.26466/opus.826895.
- Van Vechten, Dianna. Impact of homeLiteracyEnvironments On StudentsFromLowSocioeconomicStatusBackgrounds. MastersThesis. St. John Fisher College, School of Arts and Sciences, New York. (2013).
- Veldhuijzen Van Zanten, Sephanie, Coates, Chrystal, Hervas-Malo, Marilou, & McGrath, Patrick. J. "Newborn Literacy Program Effective In Increasing Maternal Engagement In Literacy Activities: An Observational Cohort Study. *BMC Pediatrics*. (2012). 12(1), 100-120.
- Veziroğlu, Mefharet. (2009). Resimli çocuk kitaplarının MEB okul öncesi eğitim programındaki kazanımlara uygunluğunun incelenmesi. (Yüksek lisans tezi).

- Whitehurst, Grover. J., Arnold, David. H., Epstein, Jeffery. N., Angell, Andrea. L., Smith, Meagan, & Fischel, Janet E. A Picture Book Reading Intervention In Daycare And Home For Children From Low-Income Families. *Developmental Psychology*, (1994). 30, 679–689.
- Yavuzer, Haluk. Çocuk eğitimi el kitabı. (Dördüncü basım), Remzi Kitabevi, İstanbul, 30-35.(2003).
- Yıldız Bıçakçı, Müdriye, Er, Sühendan, & Aral, Neriman. “Etkileşimli Öykü Kitabı Okuma Sürecinin Çocukların Dil Gelişimi Üzerine Etkisi”. *Kastamonu Eğitim Dergisi*, (2018). 26(1).
- Yıldız Bıçakçı, Müdriye. & Aral, Neriman. “Dil Gelişimi”, Eğitim Psikolojisi, ed. N. Aral ve T. Duman, 115-130. Kriter Yayınevi, İstanbul.(2009).
- Yılmaz, Melek Merve, Özen Uyar, Rabia & Aktaş Arnas, Yaşare. “Assessment the Affect of Home-Based Interactive Book-Reading on the 49-60 Months Old Children’s Emotional Understanding”, *Mehmet Akif Ersoy Üniversitesi Eğitim Fakültesi Dergisi*, (2020). 56, 159-181.
- Yumuş, Melike. Paylaşımlı kitap okuma müdahale programının ebeveynlerin deneyimlerine bebeklerin dil gelişimlerine ve erken okuryazarlık becerilerine etkisi. Yayımlanmamış Doktora Tezi, Hacettepe Üniversitesi, Ankara.(2018).
- Zucker, Tricia.Allison, Ward.Justice, Laura .M. “Print referencing during great-alouds: a technique for increasing emergent readers’ print knowledge”. *The Reading Teacher*. (2009). 63 (1), 62-72. DOI:10.1598/RT.63.1.6.

THE EFFECT OF A COOPERATIVE ARGUMENTATION MODEL ON LISTENING AND INQUIRY SKILLS AND ARGUMENT LEVEL

Abstract: The aim of this study was to determine the effect of a cooperative argumentation model on the listening and inquiry skills and argument level of pre-service science teachers (PSTs). A mixed method was used. The sample consisted of 54 pre-service science teachers. Two experimental groups were studied and the study was conducted in the Special Issues in Biology course. Co-learning of the cooperative learning model was used in the experimental group (CLG, n=31). Argumentation and co-learning of the cooperative learning model were used in the other experimental group (CLAG, n=23). To collect data, the Listening Skills Scale (LSS), Inquiry Skills Scale (ISS), and written arguments were used. For analyzing the quantitative data the independent samples t test and Mann–Whitney U test were applied. To analyze the qualitative data content analysis was used. A significant difference was found in favor of the CLAG in terms of listening skills ($p<.05$). However, there was no significant difference between the groups in inquiry skills. When the written arguments created by PSTs are examined in terms of inquiry types, they mostly used inquiry based on experimental data, inductive reasoning, inquiry based on values, and inquiry within the framework of an economics perspective. In addition, the levels of arguments formed by the PSTs developed throughout the process.

Keywords: Argumentation, argument level, cooperative learning, inquiry skills, listening skills

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INTRODUCTION

Socioscientific issues (SSIs) are among the important topics in science education, because SSIs focus on social issues in science and these issues concern both society and science (Sadler, 2004; Topçu, 2017). SSIs are open to discussion and, unlike the basic scientific issues that have been verified, these issues cannot be dealt with in a simple way and an SSI does not have a single solution. In this respect, different solutions are explored in understanding SSIs, and opinions about them may differ from person to person (Christenson, Rundgren & Zeidler; Sadler & Zeidler, 2005). In addition, SSIs pose some legal, ethical, and moral dilemmas (Kolsto, 2001, Okumuş, 2020; Topçu, 2017; Walker & Zeidler, 2007). Understanding SSIs can help students to solve daily life problems and overcome dilemmas and play a role in helping them make the right decisions by encouraging them to think within the framework of science (Kolsto, 2006; Van der Zande, 2009). For this reason, more emphasis should be placed on them and their importance in science education should not be overlooked (Grooms, Sampson & Golden, 2014).

SSIs include biotechnology applications like stem cell studies, genetically modified organisms (GMOs), organ transplantation, genetic replication, gene therapy, and environmental issues like the greenhouse effect, biodiversity, global warming, and nuclear energy (Klop & Severiens, 2007; Sturgis, Cooper & Fife Schaw, 2005). These issues concern both science and society. For this reason, SSIs make it easier for students to better associate everyday life problems with science. In the literature, in the studies about SSIs, researchers stated that students and pre-service science teachers (PSTs) have difficulty in understanding SSIs (Chabalengula, Mumba & Chitiyo, 2011; Lamanauskas & Makarskaite-Petkevičienė, 2008; Steele & Aubusson, 2004; Türkmen, Pekmez & Sağlam, 2017) and they have difficulties in making decisions concerning dilemma issues (Dawson, 2007; Dawson & Soames, 2006). Moreover, the PSTs' anxiety rates about SSIs were high (Tekin & Aslan, 2019; Topçu, 2011). In addition, according to the literature, science teachers have difficulties related to teaching SSIs (Chen & So, 2017; France, 2007). Therefore, science teachers have low self-efficiency to teach them (Lee, Abd-El-Khalick & Choi, 2006). The rapid advancement of science and technology in the 21st century has increased the importance of SSIs (Christenson et al., 2014; Çetin, Doğan & Kutluca, 2014; Foog & Daniel, 2103), because innovations and changes affect not only science but also humanity and direct social life. In this context, using teaching models that make SSIs easier to understand and require discussion will be effective in science teaching.

Argumentation is one of the models that enable understanding of SSIs. Argumentation is the process of supporting and validating claims with data by providing justifications (Toulmin, 1958; Wang & Buck, 2015). Arguments are formed by the participants to include the ideas put forward in the argumentation process. Argument development and the argumentation process aim to improve students' high-level cognitive skills (Kuhn, 2016). Argumentation is a suitable model for teaching both scientific issues and SSIs. Socioscientific argumentation refers to students' in-depth discussions when they encounter an SSI by working on the claims they have made for the solution of this issue (Hefter et al., 2014; Topçu, 2017). Students' skills to think like scientists develop and their inquiring competencies increase with argumentation (Kınık Topalsan, 2020; Mello, Natale, Marzin-Janvier, Vieira & de-Almeida, 2021; Sönmez, Kabataş Memiş & Yerlikaya, 2021). Furthermore, argumentation improves students' critical thinking (Jiménez-Aleixandre & Puig, 2012; Katchevich, Hofstein & Mamlok-Naaman, 2013; Sönmez et al., 2021; Trouche, Johansson, Hall & Mercier, 2016). Argumentation is an effective way to teach SSIs (Belova, Eilks & Feierabend, 2015; Dawson & Venville, 2010, 2013; Hefter et al., 2014; Ozturk, Bozkurt Altan, Yenilmez Turkoglu, 2021), because SSIs include issues open to discussion and this makes it easier for students to participate in the argumentation process. Since argumentation involves claim support and rejecting the counter claim, it is a hard-to-apply model (Ault, Craig-Hare, Frey, Ellis & Bulgren, 2015; Okumuş, 2020). Therefore, students have difficulties with the process. In addition, the students and the PSTs could not form arguments at the desired level and they could not defend their own claims according to the opposing claims in the literature (Dawson & Venville, 2009; Jiménez-Aleixandre, Rodríguez & Duschl, 2000). For this reason, using a different teaching method that will actively add the student to the process besides argumentation would be effective for the teaching of SSIs. One of these is cooperative learning.

Cooperative learning is a student-centered model that requires students to work in cooperative heterogeneous groups (Bayrakçeken, Doymuş & Doğan, 2013; Johnson & Johnson, 2014; Jones & Jones, 2008; Kuuk & Arslan, 2020). Cooperative learning is an effective way for students to gain conceptual understanding (Özdilek, Okumuş & Doymuş, 2018) and social skills (Johnson & Johnson, 1999; Slavin,

1996) as well as to advance their academic achievement (Doymuş, 2007; Gündoğdu, Ozan & Taşgın, 2013; Oyarzun & Morrison, 2013). To integrate argumentation into the cooperative learning process is easy, as it is also used in groups during the argumentation process. In the present study argumentation is integrated into cooperative learning in the teaching of SSIs. The cooperative learning model involves many methods used in classroom applications. In the present study co-learning was used. This method was chosen because it is easy to integrate into the argumentation process and simple to implement.

In science teaching programs developed within the framework of 21st century skills, producing students with high inquiry skills is aimed, not students who accept scientific knowledge as it is. Therefore, it is recommended to use inquiry-based models for science teachers (Ministry of Education [MoE], 2018). Argumentation is one of the recommended models for science learning, because, in the argumentation process, students question their claims using reasoning processes to provide valid reasons and to refute opposing claims. Argumentation is effective to gain inquiry skills (Mello et al., 2021; Sönmez et al., 2021). Evoagorou & Osborne (2013) state that argumentation is a social process and requires cooperation. Therefore, it was considered appropriate to integrate argumentation with cooperative learning. Cooperative learning is a constructivist model that provides active learning among students in heterogenic groups. In addition, cooperative learning supports face to face interaction. Therefore, the discussion process can be generally effective in cooperative learning. This situation affects the inquiry process, because students can discuss, interact, and express their opinions in cooperative learning. Therefore, argumentation and cooperative learning were used in cognition for the development of inquiry skills in the present study.

Communication is explained as the process of exchanging feelings and thoughts between people with symbols that they give common meanings to (Hançerlioğlu, 1993). Since humans are social creatures, they are in constant communication with each other. It is important for people to listen to each other to ensure effective communication. The skill of listening can be defined in two ways. The first is that the listener can hear, repeat, and understand information. According to this perspective, listening is handled by a cognitive approach. The scales developed in this direction have a cognitive nature. The other definition is that the individual's attitudes towards listening affect their listening behaviors. In this framework, listening is not only a cognitive process, but is also related to behaviors and attitudes (Bostrom, 1990, 1997; Cihangir Çankaya, 2015). Active listening facilitates the learning and communication process (Doyle, 2019; Xiao, Zhou, Chen, Yang & Chi, 2020). In this respect, using models including active listening in science teaching will also increase communication skills. Argumentation can be an important way to improve listening skills, because it is a discussion process in itself and the participants must listen to each other during the process. Similarly, cooperative learning necessitates interaction as it is a model that requires working together. Therefore, in cooperative learning, it is important for students to learn to listen to each other effectively while working together. Therefore, argumentation and cooperative learning may improve PSTs' listening skills in the present study.

In addition, the reason for working with PSTs in the present study was to train teachers who have high questioning skills, are willing to discuss, and have advanced listening skills. The aim of this study was to determine the effect of a cooperative argumentation model on the skills of listening, inquiry, and argumentation of PSTs. The research questions are as follows:

1. Do cooperative argumentation practices have an effect on the PSTs' listening skills?
- 2a. Do cooperative argumentation practices have an effect on the PSTs' inquiry skills?
- 2b. How do cooperative argumentation practices affect the PSTs' inquiry skills?
3. How do cooperative argumentation practices affect the PSTs' argumentation skills?

METHOD

RESEARCH MODEL

An intervention mixed design was used. This is a mixed research design in which quantitative and qualitative designs are applied simultaneously. According to this design, the qualitative approach may accompany the quantitative approach before, during, and after implementation (Creswell, 2015). In this study, qualitative data were collected during the application in support of the quantitative research data. The study was conducted with two experimental groups and conducted for one semester within the framework of the Special Issues in Biology (SIB) course. The quantitative data were collected with pre-

and post-tests. The qualitative data were obtained from the written arguments and discussion records created by the PSTs during the lesson. The research design is presented in Figure 1.

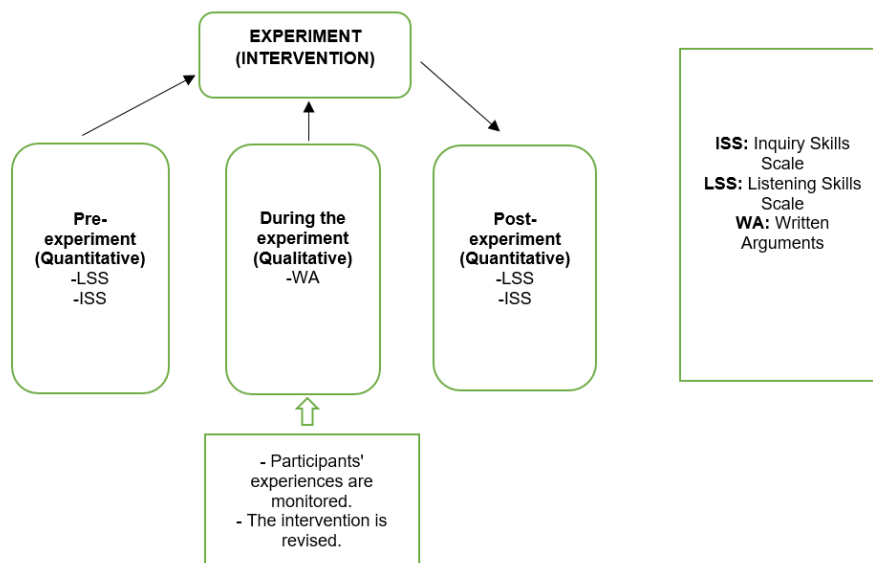


Figure 1. Research design

SAMPLE

The study was conducted with 54 PSTs (46 females, 8 males) who were studying in the fourth year of the Science Teaching Program and attending the SIB course. Two experiments were conducted, with the first experimental group (CLG, $n=31$; 25 females, 6 males) in which the cooperative learning method was applied and the second experimental group (CLAG, $n=23$; 21 females, 2 males) in which the cooperative learning and argumentation were applied together. The sample was expressed based on the PSTs who participated in the last application of the Listening Skills Scale (LSS) and Inquiry Skills Scale (ISS) according to the attendance status of the PSTs; this is the reason for the change in the pre- and post-test. Convenient sampling was used in sample selection, which requires the selection of the sample that prevents loss of time, money, and workforce and is the most suitable for the conditions in terms of applicability (Büyüköztürk, Kılıç Çakmak, Akgün, Karadeniz & Demirel, 2012). Convenient sampling was chosen as it was studied with PSTs at the university where the researcher was assigned.

DATA COLLECTION

The LSS and ISS were used to collect quantitative data in the study. In addition, written arguments were used for qualitative data.

LISTENING SKILLS SCALE (LSS)

The LSS is a five-point Likert-type scale developed by Cihangir Çankaya (2012). Scale items were scored as 1 = never, 2 = occasionally, 3 = sometimes, 4 = often, 5 = always. The LSS consists of 15 items; seven of these items are scored in reverse (1, 3, 4, 6, 7, 10, and 12). The highest score that can be obtained from the LSS is 75. Cihangir Çankaya (2012) determined the reliability of the LSS as $\alpha = .84$. In the present study, the reliability of the LSS was re-calculated after the pilot study with 81 PSTs and was determined as $\alpha = .82$. This ratio shows that the scale is highly reliable. Permission was obtained from the owner of the scale.

INQUIRY SKILLS SCALE (ISS)

The ISS is a five-point Likert-type scale developed by Aldan Karademir and Saracaloğlu (2013). Scale items were scored as 1 = never, 2 = rarely, 3 = occasionally, 4 = mostly, 5 = always. The ISS consists of 14 items and includes three sub-factors: Information Acquisition (IA), Knowledge Control (KC), and Self-Confidence (SC). The highest score that can be obtained from the scale is 70. In the reliability analysis performed by Aldan Karademir and Saracaloğlu (2013), the Cronbach-alpha reliability coefficient of the ISS was determined as .82. In the present study, the reliability of the ISS was re-calculated after a pilot study with 80 PSTs and was determined as $\alpha = .87$. This ratio shows that the scale is highly reliable. Permission was obtained from the owner of the scale.

WRITTEN ARGUMENTS

Written arguments were obtained by PSTs' writing their discussions in the argumentation practices during the course. The PSTs had group discussions during the weeks when the argumentation activities were performed, and each group expressed their opinions in writing. Written arguments were used to reveal how the PSTs' inquiry and argumentation skills changed during the process. Written arguments were collected with working papers created by the researcher. In the study, six written arguments were formed by each group over 15 weeks. The written arguments created every week were examined in detail in the data analysis section.

PROCEDURE

Firstly, the LSS and ISS were applied as pre-tests to PSTs studying in two different branches. Later, each branch was heterogeneously divided into cooperative working groups. In both experimental groups, the applications were performed for a period and the constructivist approach was taken as a basis. In the first experimental group, the lesson was conducted with the co-learning of the cooperative learning model. In the second experimental group, co-learning of the cooperative learning model and argumentation were applied together. The application took 15 weeks for both experimental groups. Since the length of each unit in the course is different, the working time in the units also differed. The "Importance of Biology for Society, Science, and Technology", "Genetic Cloning", "Bioinformatics", "Transplantation", "Use of Nanotechnology in Biology", "Biological Sensors" and "Chemical Substances" units were run for one week. However, "Genetically Modified Organisms", "Stem Cells", and "Medicines and Cosmetic Products" units were run for two weeks. The research process is shown in Table 1.

Table 1. Research Process

Process / Units	Period
Importance of Biology for Society, Science, and Technology	1 week
Genetically Modified Organisms	2 weeks
Genetic Cloning	1 week
Stem Cells	2 weeks
Midterm	1 week
Bioinformatics	1 week
Transplantation	1 week
Use of Nanotechnology in Biology	1 week
Biological Sensors	1 week
Medicines and Cosmetic Products	2 weeks
Chemical Substances	1 week
Final exam	1 week
Total	15 weeks

After the in-class applications were completed, the LSS and ISS were applied to all groups as post-tests at the end of the semester.

PROCESS IN THE COOPERATIVE LEARNING GROUP (CLG)

In the CLG, the PSTs were divided into seven heterogeneous study groups, primarily considering the class size. While creating the groups, the scores that the PSTs got when taking the LSS and ISS as pre-tests were considered, and a heterogeneous distribution of the PSTs into the groups according to these scores was ensured. The SIB course was structured in a learner-centered way, taking the constructivist approach into consideration. For this, cooperative learning was applied. Accordingly, the topic of each week was firstly divided among the group so that each member took a certain part of the topic. Later, each member worked on his/her own topic and then explained the subject to the other members of his/her group. The researcher described the subject in general and explained the parts that the PSTs did not understand. The PSTs tried to increase their understanding by researching the specific parts of each topic with the other members of their group. For evaluating, the researcher asked questions to the PSTs using the question/answer technique to provide a general summary of the subject. In this section, to ensure positive dependence, which is one of the main features of cooperative learning, positive/negative points are given for the answers they gave to the PSTs. If a member in a group answers the question correctly, all group members gain a point; if they

answer incorrectly, all group members lose a point. In this way, an attempt was made to achieve positive dependence. Positive and negative points were added to midterm and final grades. After all applications were completed, the LSS and ISS were applied again as post-tests.

PROCESS IN THE COOPERATIVE LEARNING-ARGUMENTATION GROUP (CLAG)

In the CLAG, the PSTs were divided into six heterogeneous study groups, primarily considering the class size. In the CLAG, co-learning of cooperative learning was applied as in the CLG, and additional argumentation applications were used. For this purpose, after the groups were formed, the PSTs were informed about what the argument and argumentation model is, and they were able to examine the worksheets containing sample applications and perform argumentation activities. Later, in-class studies were started. Argumentation activities were conducted in the elaborate and evaluate parts of the course. The PSTs were asked to discuss the arguments in the argumentation materials given to them and to reach a common decision as a group. They were asked to write these decisions on the working papers provided to them. Then the opinions of each group on the subject were obtained and discussions were held with other groups. Scientific discussions in the CLAG were conducted with six activities within the scope of the units open to discussion. The applications are shown in Table 2.

Table 2. Argumentation Applications

Unit	Application	Application week
Genetically modified organisms	Theories that compete with stories	Week 3
Genetic cloning	The table of statements	Week 4
Stem cells	Evidence cards	Week 6
Transplantation	Theories that compete with cartoons	Week 8
Use of nanotechnology in biology	Competing theories	Week 9
Medicines and cosmetic products	V diagram	Week 11

Then, as in the CLG, the lessons ended with the question/answer phase. After all applications were completed, the LSS and ISS were applied as post-tests.

DATA ANALYSIS

For the analysis of the quantitative data, normality tests were performed on the data obtained from the LSS and ISS. According to this, Shapiro–Wilk normality tests were performed in groups with a sample less than 30, and Kolmogorov–Smirnov normality tests were performed in groups with a large number of samples. To determine whether there were significant differences between the groups, if the data fitted the normal distribution, the independent samples t test, a parametric test, was used, while the Mann-Whitney U test, a nonparametric test, was used if the data did not fit the normal distribution.

To determine whether the data obtained by applying the LSS as a pre-test conform to the normal distribution or not, the Shapiro–Wilk test was used in both groups because the sample was less than 30 people. Accordingly, the data in the CLG ($p = .582$; $p > .05$) and CLAG ($p = .466$; $p > .05$) showed normal distribution. The Kolmogorov–Smirnov test was used, since the sample in the CLG was more than 30 people, to determine whether the data obtained by the application of the LSS as a final test conform to the normal distribution or not. In the CLAG, the Shapiro–Wilk test was used because the sample was less than 30 people. Accordingly, the data in the CLG ($p = .132$; $p > .05$) and CLAG ($p = .986$; $p > .05$) showed normal distribution. Since the pre-test data of both groups were compatible with the normal distribution, the independent samples t test was used for significance.

The Shapiro–Wilk test was used to determine whether the data obtained by applying the ISS as a pre-test conformed to the normal distribution or not, since the sample was less than 30 people in both groups. Accordingly, the data in the CLG ($p = .449$; $p > .05$) conformed to the normal distribution and the data in the CLAG ($p = .009$; $p < .05$) did not fit the normal distribution. The Kolmogorov–Smirnov test was used, since the sample in the CLG was more than 30 people, to determine whether the data obtained by the application of the ISS as a final test conform to the normal distribution. In the CLAG, the Shapiro–Wilk test was used because the sample was less than 30 people. Accordingly, the data in the CLG ($p = .112$; $p > .05$) and CLAG ($p = .438$; $p > .05$) showed normal distribution. Since the pre-test data of the CLAG did not

fit the normal distribution, the Mann–Whitney U test was applied to the pre-test data of the ISS. Since the post-test data of both groups were compatible with the normal distribution, the independent samples t test was used for significance.

Content analysis was performed on the qualitative data. Content analysis is the systematic summing up of some parts of a text in smaller and fewer words (Büyüköztürk et al., 2012). Content analysis was performed on the data obtained from the written arguments created by the PSTs in the cooperative argumentation model process applied in the CLAG.

For the analysis of the data obtained from the written arguments, the types of reasons that the PSTs used during the argumentation process were examined. This was done to reveal the change in the inquiry skills of the PSTs during the process. During the content analysis process, the discussions held every week were analyzed according to themes and codes. In the content analysis, first six themes were created and then the codes for each theme were determined. The codes created by the researcher were then re-coded by an expert. The percentage of agreement between the researcher and the expert was calculated by Miles and Huberman's (1994) formula $[\text{Reliability} = \text{consistency} / (\text{consistency} + \text{disagreement}) \times 100]$. The consistency was calculated as 96.7%. The themes were created according to the arguments that the PSTs formed while examining their inquiry skills, according to the explanation type of scientific knowledge, inquiry type, emotional point of view, and pragmatist perspective. Accordingly, five themes and nine codes were created. The themes and codes used in the data analysis are given in Table 3.

Table 3. Themes and Codes Used in the Content Analysis

Theme	Code
Scientific Knowledge (SK)	Experimental (EX)
	Theoretical (TH)
	Observational (OB)
Inquiry (IQ)	Reasoning-Induction (RI)
	Reasoning-Deduction (RD)
Emotional (E)	Beliefs (BE)
	Values (VA)
Pragmatist (P)	Economic (EC)
	Political (PO)

In the *Scientific Knowledge* (SK) theme it is stated on what basis the written arguments are explained. Accordingly, the PSTs construct arguments based on “Experimental (EX)”, “Theoretical (TH)”, and “Observational (OB)” information. In the theme of Inquiry (IQ), it is expressed what kind of reasoning is used in the process of creating arguments. Accordingly, “Reasoning-Inductive (RI)” and “Reasoning-Deductive (RD)” processes are coded. In the Emotional (E) theme, in the process of creating the arguments, which emotional arguments the PSTs deal with are explained. This theme is classified according to “Beliefs (BE)” and “Values (VA)”. The Pragmatist (P) theme explains what benefits are gained in the argument formation process. Accordingly, “Economic (EC)” and “Political (PO)” coding is performed.

Moreover, in the analysis of the written arguments formed by the PSTs, each argument was analyzed by considering the levels of argument expressed by Erduran, Osborne, and Simon (2004). Accordingly, a discussion levels score table was created. According to this score table, the lowest score that can be obtained from discussions is 3, while the highest score is 16. The simplest argument, which consists only of claims, is important in terms of making a difference at the beginning of the discussion, although it is not important in making a judgment. For this reason, the claims were given 3 points. Discussions supported by rebuttal are of higher quality than other arguments. The use of rebuttal at the argument levels at the highest level of argument shows that refuting a scientific debate is a complex and difficult skill, because refuting a scientific debate enables the verification of the original theory by comparing both the correct theory and the false theory (Kuhn, 1991). For this reason, weak rebuttals were given 3 points, 5 points were given to rebuttals, and 7 points were given to multiple rebuttals. The discussion levels score is given in Table 4.

Table 4. Discussion Levels Score

Argument level	Explanation	Level score	
		Score	Total score
Level 1	Claim only	Claim (3)	3
Level 2	Claim, data, warrants, or backings	Claim (3) Data (1) Warrant (3) Backing (2)	9
Level 3	A series of claims or counter-claims, data, warrants, or backings with the occasional weak rebuttal	Claim (3) Data (1) Warrant (3) Backing (2) Weak rebuttal (3)	12
Level 4	A series of claims or counter-claims, data, warrants, or backings and a clearly identifiable rebuttal	Claim (3) Data (1) Warrant (3) Backing (2) Rebuttal (5)	14
Level 5	A series of claims or counter-claims, data, warrants, or backings, and more than one rebuttal	Claim (3) Data (1) Warrant (3) Backing (2) More rebuttal (7)	16

Then, using the score given in Table 4, the discussion levels of the PSTs for each activity were determined and scored. While determining the levels of discussion, to ensure rater reliability, the written discussions were evaluated independently by the researcher herself and a science educator who was knowledgeable about the scientific debate. The researchers who analyzed the scientific discussions evaluated the scientific discussion items in the same discussions according to Miles and Huberman (1994) and the agreement rates were examined. The consistency analysis showed the agreement percentage to be 89.3%. According to Miles and Huberman (1994), correlation values of 80% and greater indicate reliability. Therefore, in the present study, the analyses conducted by the two researchers for the discussions of the PSTs can be considered reliable and consistent with each other. After determining the level of discussion, the discussion levels and discussion skills of the PSTs were examined in each activity.

FINDINGS

FINDINGS REGARDING LISTENING SKILLS

The results of the independent samples t test performed on the data obtained by applying the LSS as a pre- and post-test are given in Table 5.

Table 5. Independent Samples Test Results of the LSS

LSS	Groups	n	X	SD	t	p
Pre-test	CLG	24	54.46	7.813	-.031	.976
	CLAG	25	54.52	6.286		
Post-test	CLG	33	50.48	6.190	-2.587	.014
	CLAG	24	56.21	9.464		

According to Table 5, there was no significant difference between the groups in terms of listening skills in the pre-test ($p > .05$). Accordingly, the listening skills of the PSTs in the experimental groups can be regarded as close to each other before practicing. In the post-test, a significant difference was obtained between the groups in terms of listening skills ($p < .05$). The effect size was determined as $d = .69$. Green and Salkind (2005) stated that the effect size d would be interpreted as a small effect between 0 and 0.2, medium effect between 0.2 and 0.5, and large effect between 0.5 and 0.8. Accordingly, a high effect can be assumed. The PSTs in the CLAG increased their listening skills more than the other group after the application.

FINDINGS REGARDING INQUIRY SKILLS

Since the pre-test data of the CLAG did not fit the normal distribution, the Mann–Whitney U test was applied to the pre-test data of the ISS. Table 6 shows the results of the Mann–Whitney U test.

Table 6. Mann–Whitney U Test Results of the pre-ISS

ISS	Groups	n	Mean Rank	Sum of Rank	U	p
Pre-test	CLG	24	26.04	625.00	275.00	.616
	CLAG	25	24.00	600.00		

According to Table 6, there was no significant difference between the groups in terms of inquiry skills in the pre-test ($p > .05$).

Since the post-test data of both groups were consistent with the normal distribution, the independent samples t test was applied to the post-test data. In Table 7, the independent samples t test results for the post-test data of the ISS are given.

Table 7. Independent Sample t Test Results of the post-ISS

ISS	Groups	n	X	SD	t	p
Post-test	CLG	31	53.90	8.615	.196	.846
	CLAG	23	53.43	8.764		

According to Table 7, there was no significant difference between the groups in terms of inquiry skills in the post-test ($p > .05$). The effect size was set at 0.05. From this, it can be inferred that the effect size is very small. In addition, no significant difference was determined between groups in the sub-factors of the ISS (for IA $p > .05$; $p = .88$, for KC $p > .05$; $p = .37$, for SC $p > .05$; $p = .23$).

Moreover, the data obtained from the written arguments were subjected to content analysis to determine how the inquiry skills of the PSTs changed in terms of different characteristics throughout the process. Table 8 shows the change in PSTs' inquiry skills.

According to Table 8, while the PSTs' inquiry based on observations (code OB) in the first activity for the classification of scientific knowledge related to SSIs is higher, in all other activities inquiry based on experimental data (code EX) is more prominent. Inductive inquiry is higher in all activities in terms of inquiry style. In the emotional analysis of the written arguments, while no data were obtained for the 5th and 6th activities (*Use of Nanotechnology in Biology* and *Medicines and Cosmetic Products*), values more prominent for other activities were observed. When the written arguments are examined according to the pragmatist theme, the economic perspective is more prominent. However, no data were obtained for this theme in the 3rd and 4th activities (*Stem cells* and *Transplantation*).

Table 8. Analysis of PSTs' Inquiry Skills

Theme	Code	Activities (%)						Examples
		A1	A2	A3	A4	A5	A6	
SK	EX	32.9	60.5	62.5	57.1	53.3	43.8	"The reason for aging is the shortening of telomeres located at the ends of chromosomes. The shortening of telomeres also shortens the life span. Dolly was born at the Roslin Institute in 1996 and lived for only 6 years. The reason for premature aging in Dolly is the telomeres in the chromosome ends. This is because the somatic cell taken from the mature creature united with the host and was placed in the uterus of the carrier female and came into the world. This is why Dolly's telomeres are congenitally old as they have short cells." G3, A2
	TH	32.9	26.3	25	14.3	26.7	22.9	"GMOs are not harmful to human health. Through GMOs, higher quality, developed, large nutrients are created. GMOs improve people's quality of life." G1, A1
	OB	34.2	13.2	12.5	28.6	20	33.3	"Organ donation is beneficial for the society. If organs that will only become dust after death are donated, other people's lives will be saved. After a while, the body begins to decompose." G3, A4
IQ	RI	61.7	61.3	71.4	66.7	100	70.8	"In general, nanotechnology is the arrangement of atomic-sized structures to serve a commercial purpose. Nanomaterials and -structures provide high efficiency in energy storage systems. By using nanomaterials and nanostructures, the efficiency of solar cells has been increased up to 40% in the laboratory environment.

								Solar cells are produced on flexible materials such as polymers and fabrics. Therefore, nanotechnology contributes to obtaining cheap, reliable, and renewable energy sources." G2, A5
	RD	38.3	38.7	28.6	33.3	0	29.2	"Medicines are needed to cure diseases. Without medication, some diseases cannot be treated and the effect of the disease cannot be eliminated. For example, it is not possible to cure cerebellitis, but the effect of the disease can be minimized with medications." G4, A6
E	BE	0	25	14.3	40	0	0	"Human cloning is unethical. The first reason why people are opposed to cloning is that it is contrary to the idea of creation. The second reason is that humans will be used as guinea pigs and physical and mental disorders may occur in humans after cloning." G2, A2
	VA	100	75	85.7	60	0	0	"Stem cell studies conducted on the embryo are unethical. Because the embryo loses its vitality after it is taken for the stem cell. The embryo is also alive and should be respected like a human." G6, A3
P	EC	71.4	50	0	0	69.2	100	"Human cloning is not ethically appropriate, because when people are cloned, some malicious people can make financial profit by selling people's organs." G5, A2
	PO	38.6	50	0	0	30.8	0	"Transgenic agricultural products adversely affect the country's economy. International companies use terminator technology for the transgenic plants they produce. This means that the plant does not give seeds. That is, the plant yields abundantly but cannot produce productive seeds." G2, A1

Scientific knowledge (SK), Experimental (EX), Theoretical (TH), Observational (OB), Inquiry (IQ), Reasoning- Induction (RI), Reasoning-Deduction (RD), Experience-based inference (EBI), Emotional (E), Beliefs (BE), Values (VA), Pragmatist (P), Economic (EC), Political (PO)

Graphics showing the change in the process were prepared for each theme. The graphic prepared for the scientific knowledge theme is given in Figure 2.

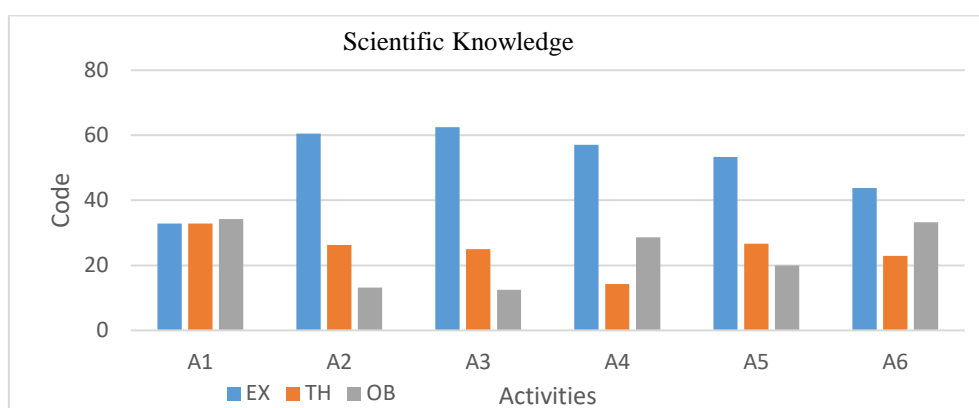


Figure 2. Analysis of the scientific knowledge theme

According to Figure 2, the SSIs classified in the scientific information theme are generally discussed based on experimental information. However, when based on experimental data, the inquiry has slightly decreased towards recent activities. The graphic prepared for the inquiry theme is given in Figure 3.

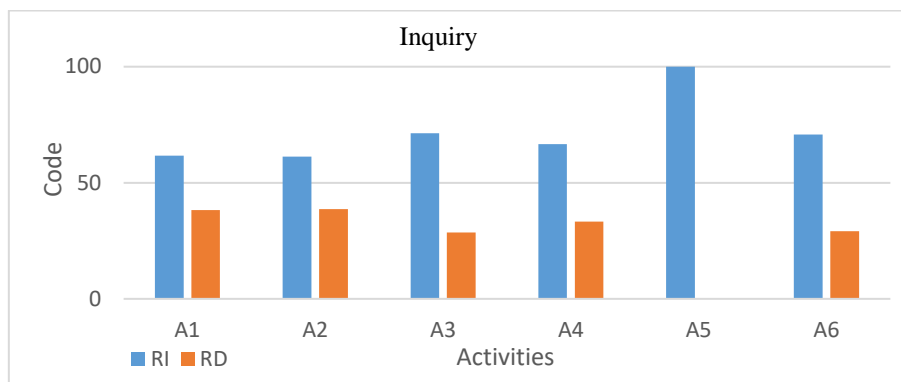


Figure 3. Analysis of the inquiry theme

According to Figure 3, the PSTs use inductive reasoning more in the argument formation process. However, inductive reasoning does not tend to increase continuously in the process. The graphic prepared for the emotional theme is given in Figure 4.

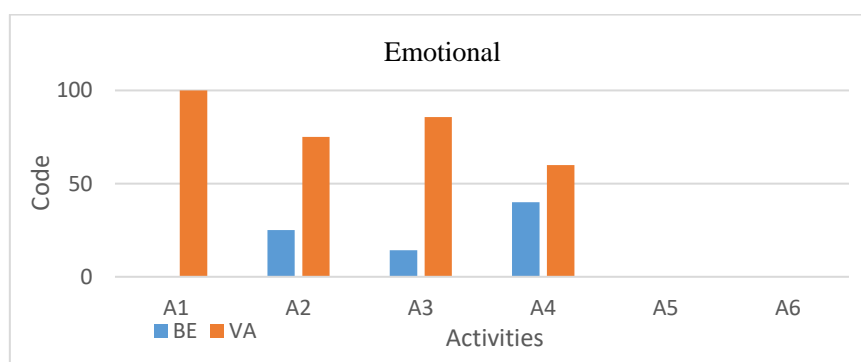


Figure 4. Analysis of the emotional theme

According to Figure 4, when the arguments created in the SSI are examined emotionally, they are based more on values. However, some PSTs associated them with belief. The PSTs did not create arguments for the emotional theme in the A5 and A6 subjects (*Use of Nanotechnology in Biology and Medicines and Cosmetic Products*). The graphic prepared for the pragmatist theme is given in Figure 5.

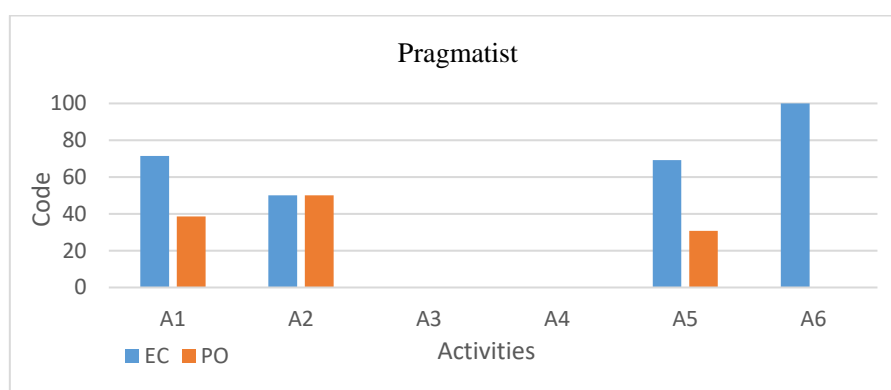


Figure 5. Analysis of the pragmatist theme

According to Figure 5, the PSTs looked at the issues more economically within the pragmatist theme in the written arguments. The PSTs did not create arguments for the pragmatist theme in the A3 and A4 issues (Stem cells and Transplantation).

FINDINGS REGARDING ARGUMENT LEVELS

Written arguments created by the PSTs during the process are presented by Erduran et al. (2004) analyzed according to their level. Accordingly, the argument levels in each activity are given as percentage values in Table 9.

Table 9. Argument Levels in Activities

Argument level	A1 (%)	A2 (%)	A3 (%)	A4 (%)	A5 (%)	A6 (%)	Example
Level 1	2.1	2.8	-	-	-	-	"Transgenic seeds are more resistant to weather conditions" G2, A1
Level 2	75	69.4	16.7	16.7	-	28.6	"The reason for aging is the shortening of telomeres located at the ends of chromosome. Warrant: telomeres are larger in younger cells; as the cell ages, the telomeres shrink". G1, A2
Level 3	12.5	16.7	-	16.7	-	26.2	"If organs that will only become dust after death are donated, other people's lives will be saved. Because after a person dies, soft tissues and organs rot. Organ donation is ethical because the donor died during this time. It is religiously permissible." G6, A4
Level 4	10.4	11.1	50	50	50	35.7	"Nanotechnology will contribute to obtaining cheap, safe, and renewable energy sources. With nanotechnology, many products that will make life easier and increase living standards can be produced at low cost. People's dependence on fossil fuels to produce energy creates environmental and consumption problems. These problems make it necessary to find new methods in the fields of energy production, transport, and consumption. At this point, nanotechnology finds solutions to energy problems. In addition, the fact that developed countries support nanotechnology applications shows that this area is beneficial in terms of energy resources." G3, A5
Level 5	-	-	33.3	16.7	50	4.8	"Stem cell studies performed on the embryo are unethical. The embryo has the potential to grow and become an adult person. Therefore, it should be respected like a human. Using the embryo as a stem cell interferes with life. Also, stem cells taken from a random person are likely to be rejected by the body." G2, A3

A: Activity, G: Group

According to Table 9, most arguments are created at level 2 in the first activity. In the following activities, higher level arguments were started to be formed. It can be considered that there has been progress in terms of argument levels in the process. In the examples given for the argument levels, the arguments formed by the PSTs evolve from the simple argument consisting of the claim to the complex arguments supported by justification, data, and rebuttal. The graph of argument levels is given in Figure 6.

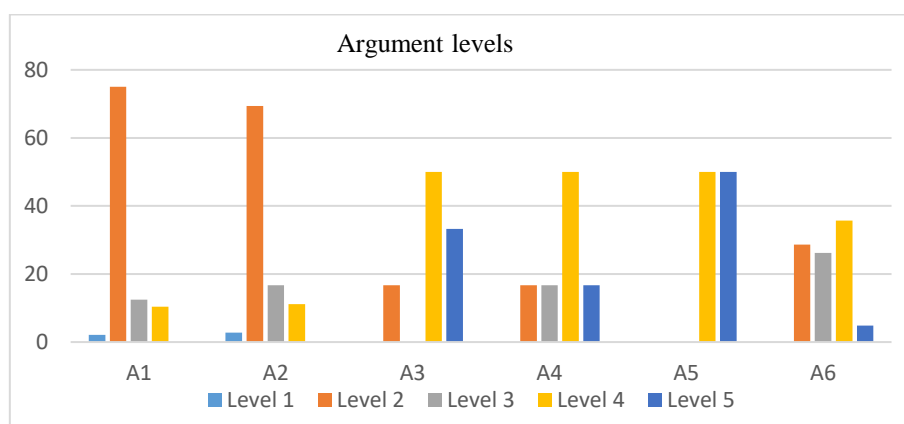


Figure 6. Argument levels

According to Figure 6, an increase in argument levels is observed throughout the process. The PSTs formed stronger arguments in the last weeks. In Figure 7, a graph showing the change in arguments created by the PSTs as a whole during the entire process is given.

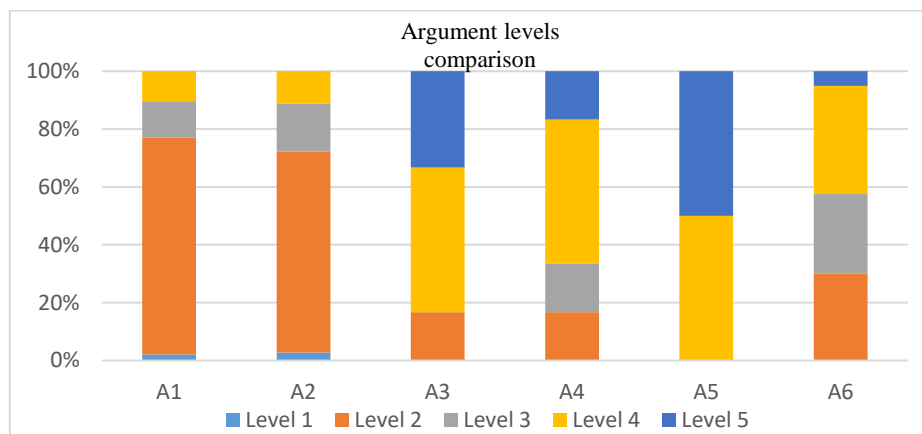


Figure 7. Argument level comparison

According to Figure 7, while the arguments produced at level 2 were more in the first weeks, the arguments produced at level 4 increased in the following weeks. In addition, significant progress was made in level 5. The argument levels that increased as originally targeted during the process were determined.

DISCUSSION AND CONCLUSION

The aim of the present study was to determine the effect of a cooperative argumentation model on the listening and inquiry skills and argument level of PSTs. First of all, their listening skills were compared. Accordingly, no significant difference was found between the groups in the pre-test ($p > .05$). The fact that the PSTs show similarities in terms of educational background, department they read, and class factor may have been influential in the emergence of this situation. In the post-test, the listening skills in the CLAG differed significantly compared to those in the CLG ($p < .05$). This may have been due to the nature of the argumentation, because argumentation is a model that is completely based on discussion and for the discussions to be effective individuals must listen to each other. In this process, it is important not only to listen in terms of hearing, but also to make sense of the sentences expressed by the other party. In this context, argumentation can be required for effective listening. Listening skills are a subject studied in a very large sample. In fact, there are studies that try to improve students' listening skills (Cihangir, 2000; Doveston, 2007), as well as those that measure the listening skills of employees in the sales sector (Drollinger, Comer & Warrington, 2006) and investigate the patient–doctor relationship in terms of listening skills (Brown et al., 2002). Examination of listening skills on such a wide scale is due to the fact that it is one of the basic skills used in interpersonal relationships in daily life. For effective communication, the person should listen to the other person and try to understand him/her. In this context, listening skills are a very important concept for the school environment. For this reason, to use teaching models such as argumentation that improve listening skills and allow students to share their knowledge in a discussion environment is recommended. Firetto et al. (2019) emphasize that argumentation skills are important for learning and communicating academically in various fields. They state that effective learning is important for the communication process and it includes students' criticizing the learning texts and evaluating the arguments expressed in these texts. For this, individuals with improved listening skills will also have better communication. In parallel with the results of the present study, Yeşildağ Hasaңebi and Kınır (2012) stated that listening skills developed positively during the argumentation process.

When the inquiry skills of the PSTs were compared, no significant difference was found between the groups in the pre- and post-tests ($p > .05$). Similarly, no significant difference was found in the sub-factors ($p > .05$). However, although there was no significant difference between the groups, the inquiry skills of the PSTs in the pre- and post-tests were good. Inquiry is very important in science; science progresses by inquiry. Providing students with inquiry skills has a positive effect on their understanding of the nature of science (Stott & Hattingh, 2020), developing scientific process skills (Kar & Çil, 2019; Mutlu, 2020; Ülger & Çepni, 2020), scientific attitude (Kiernan & Lotter, 2019; Rohaeti, Prodjosantoso, & Irwanto, 2020), concept learning process (Bezen & Bayrak, 2020; Sotáková, Ganajová & Babinčáková, 2020), and academic achievement (Jerrim, Oliver & Sims, 2019; Wen et al., 2020). Therefore, the importance of inquiry skills cannot be denied. Argumentation is an important application that increases inquiry skills

(Anderson Quarderer & McDermott, 2020). The argumentation process is also an inquiry process, as it involves developing evidence to validate their claims. Accordingly, an increase in the inquiry skills of the PSTs was expected in the present study. However, this hypothesis was not confirmed. In this respect, this study differs from the literature. The lack of a significant difference between the experimental groups in terms of inquiry skills can be explained by the fact that cooperative learning also contributes to the inquiry process.

In the present study, the arguments formed by the PSTs were also examined in terms of inquiry types. Accordingly, in the Scientific Knowledge type, most of the questions were formed based on experimental data, and it was seen that the inquiry was higher based on Observations only in the first activity. Experimental information is very important for the basis of science. Science progresses through experiments and observations. According to this, the fact that PSTs start from empirical evidence when creating arguments makes sense. Since the cloning, stem cell, transplantation, and nanotechnology issues include more scientifically experimental evidence, it is considered preferable to question them based on experimental data. Pallant and Lee (2015), in their study on how middle and high school students formed arguments about SSIs in the model-based argumentation process, determined that students benefited from experimental information, but the rate was low.

In terms of the form of inquiry, Inductive Reasoning (IR) is used more in discussions. Reasoning can be described as a cognitive process by which people receive information and make an inference based on the data (Johnson-Laird, Legrenzi, Girotto & Legrenzi, 2000; Kurtz Genter & Gunn, 1999). Lawson (2004) emphasized that reasoning is a hypothetical deductive or hypothetical predictive process that includes the processes of assimilation and adaptation that Piaget put forward in learning, from the processing of data in the external world to daily life, from scientific thinking to the learning process. While deductive reasoning usually involves formal reasoning (Sadler, 2004), the reasoning used for SSIs is generally handled within the framework of inductive reasoning (Secor, 1987). Induction involves going from parts to the whole, and since it involves the process of synthesis it is a more difficult process than deduction. In addition, the results achieved in inductive reasoning may not always be correct. Even if the person makes correct associations, his/her general judgment may not be correct (McFarland & Parker, 1990; Perkins, Faraday & Bushey, 1991). In formal reasoning (deductive), the justification supports the result, but in informal reasoning (induction) the justification supports or refutes the result (Zohar & Nemet, 2002). When it is considered in terms of science learning, what is important here is that the student can direct the synthesis process. Argumentation is thought to help students in this context, because, in the argumentation process, they need to prove their claims to the other party (Wang & Buck, 2015). This requires them to gather the data they have about their claims and reach a conclusion. However, not only inductive reasoning is used in the argumentation process. Deductive reasoning is also an important way of thinking. By deducting, it is possible to obtain specific information from the general information available on the subject. In this context, deduction is also very important for making inferences, because the proofs in scientific studies are obtained by deductive reasoning.

When the arguments formed by the PSTs are handled emotionally, values come to the fore more. Values are an important factor when making decisions about SSIs, as they include both social and scientific issues, because SSIs both affect the social life of humanity and are important in making scientific decisions. Studies on SSIs have recently accelerated. Especially with the rapid advances in the field of medicine and biotechnology, the impact of new technologies on human life and the rapidly polluted environment have increased (Foong & Daniel, 2013). As a result of this, the effects of scientific and technological developments on human health, social life, and the change in value judgments have also gained importance. It is important for the PSTs to mention these points in their arguments. Looking at the arguments created, the PSTs attach more importance to values especially in subjects such as transplantation, stem cells, and cloning, which concern life. Moreover, some of the PSTs evaluated transplantation, stem cell, and cloning issues within the framework of their beliefs. Considering that these issues have a sociological structure, it can be considered natural to look at them within these frameworks.

When the arguments formed by the PSTs are handled according to a pragmatist view, the issues are discussed more economically in the discussions. This was especially seen about GMOs, nanotechnology, and medicines and cosmetic products, which concern the country's economy, and economic inquiry about human cloning, which is thought to cause organ trafficking by some of the PSTs. Similar to the present

study, Baytelman, Iordanou, and Constantinou (2020) asked university students to create arguments of different types (e.g., social, ethical, economic, scientific, and ecological) related to SSIs, and compared both the types and qualities of the arguments with the students' prior knowledge. They found that students with strong prior knowledge produced more diverse and higher quality arguments.

In addition, the levels of the arguments formed by the PSTs were determined by analysis of the written arguments in the present study. Accordingly, the PSTs increased their argument skills throughout the process. There were more level 2 arguments in the first weeks. This is thought to be due to the fact that the PSTs encountered the argumentation and argument formation process for the first time. Considering that the argumentation model is a difficult model that requires high-level thinking skills (Aullt et al., 2015), the arguments created by the PSTs in their first encounter with the model were at a very high level, which was not expected. In the following weeks, what was desired in the study was achieved, especially with the creation of level 4 and 5 arguments. Written arguments are an important way of improving students' skills in the argument-forming process (Baytelman et al., 2020; Kuhn, Goh, Iordanou, & Shaenfield, 2008; Wu & Tsai, 2011). Consistent with the results of this study, Evagorou and Osborne (2013) found that students formed high-level written arguments in their cooperative argumentation practices they conducted with 12-13 age groups. In addition, Pink, Halim, and Osman (2020) and Uzuntiryaki-Kondakci, Tuysuz, Sarici, Soysal, and Kilinc (2021) determined that argumentation skills increased during the process.

According to the results obtained from the present study, cooperative argumentation was effective in developing listening skills. In this framework, using argumentation with different models to improve listening skills will be effective. However, in this study, cooperative argumentation was not effective enough in developing inquiry skills. According to this, it will be effective to integrate reasoning practices that increase inquiry skills into argumentation for future studies. In addition, the PSTs started out from various bases (scientific knowledge, inquiry, emotional, and pragmatist) during the inquiry process in the present study. This is thought to be important in developing different perspectives. Looking at the levels of argumentation, the desired progress was made in the process. Considering that argumentation skills are important in establishing correct arguments, studies to improve argument levels in this area will contribute to the literature.

REFERENCES

- Aldan Karademir, Çiğdem, & Saracaloğlu, Asuman Seda. "The development of inquiry skills scale: reliability and validity study". *Asian Journal of Instruction*, 1 (2), (2013): 56-65.
- Anderson Quaderer, Nathan & McDermott, Mark A. "Examining science teacher reflections on argument-based inquiry through a critical discourse lens." *Research in Science Education*, 50, (2020): 2483-2504.
- Ault, Marilyn, Craig-Hare, Jana, Frey, Bruce, Ellis, James D. & Bulgren Janis. "The effectiveness of reason racer, a game designed to engage middle school students in scientific argumentation". *Journal of Research on Technology in Education*, 47 (1), (2015): 21-40.
- Bayrakçeken, Samih, Doymuş, Kemal & Doğan, Alev. *İşbirlikli öğrenme modeli ve uygulanması*. Ankara: Pegem Akademi Yayıncılık, 2013.
- Baytelman, Andreani, Iordanou, Kalypso, & Constantinou, Constantinos P. "Epistemic beliefs and prior knowledge as predictors of the construction of different types of arguments on socioscientific issues." *J Res Sci Teach*, (2020): 1-29. Doi:10.1002/tea.21627
- Belova, Nadja, Eilks, Ingo & Feierabend, Timo. "The evaluation of role-playing in the context of teaching climate change." *International Journal of Science and Mathematics Education*, 13(Suppl 1) (2015): S165-S190.
- Bezen, Sevim, & Bayrak, Celal. "Teaching mechanical waves by inquiry-based learning." *Journal of Baltic Science Education*, 19 (6), (2020): 875-892.
- Bostrom, N. R. "Listening skills: Measurement and application." New York: Guilford, 1990.
- Bostrom, N. R. The process listening. In *The handbook of communication skills* (Eds). O. Hargie. London: Roudge, 1997.
- Brown, Rhonda, F., Butow, Phyllis N., Henman, Michael, Dunn, Steward M., Boyle, Francis, & Tattersall, Martin H.N. "Responding to the active and passive patient: Flexibility is the key." *Health Expectations*, 5, (2002): 236-245.
- Büyükoztürk, Şener, Kılıç Çakmak, Ebru, Akgün, Özcan Erkan, Karadeniz, Şirin, & Demirel, Funda. *Bilimsel araştırma yöntemleri* (geliştirilmiş 13. baskı). Ankara: Pegem Akademi Yayıncılık, 2012.
- Chabalengula, Vivien Mweene, Mumba, Frackson & Chitiyo, Jonathan. "Elementary education preservice teachers' understanding of biotechnology and its related processes." *Biochemistry and Molecular Biology Education*, 39 (4), (2011): 321-325.
- Christenson, Nina, Rundgren, Shu-Nu Chang, & Zeidler, Dana L. "The relationship of discipline background to upper secondary students' argumentation on socioscientific issues." *Research in Science Education*, 44 (4), (2014): 581-601.

- Cihangir, Zeynep. “Üniversite öğrencilerine verilen etkin dinleme becerisi eğitiminin başkalarını dinleme becerisine etkisi. Yayımlanmamış yüksek lisans tezi, Ankara Üniversitesi, Ankara, 2000.
- Cihangir Çankaya, Zeynep. “Reconsideration of the listening skill scale: comparison of the listening skills of the students of psychological counseling and guidance in accordance with various variables” *Educational Sciences: Theory & Practice*, 12 (4) (2012): 2370-2376.
- Cihangir Çankaya, Zeynep. *Kişilerarası iletişimde dinleme becerisi (3. baskı)*. Ankara: Nobel Yayıncılık, 2015.
- Creswell, John W. *A concise introduction to mixed methods research*. Sage Publications, 2015.
- Dawson, Vaille. “An exploration of high school (12–17 year old) students' understandings of, and attitudes towards biotechnology processes.” *Research in Science Education*, 37 (1), (2007): 59-73.
- Dawson, Vaille, & Soames, Christina. “The effect of biotechnology education on Australian high school students' understandings and attitudes about biotechnology processes.” *Research in Science & Technological Education*, 24 (2), (2006): 183-198.
- Dawson, Vaille, & Venville, Grady Jane. “High school students' informal reasoning and argumentation about biotechnology: An indicator of scientific literacy?”. *International Journal of Science Education*, 31 (11), (2009): 1421-1445.
- Dawson, Vaille, & Venville, Grady, Jane. “Teaching strategies for developing students' argumentation skills about socioscientific issues in high school genetics.” *Research in Science Education*, 40 (2), (2010): 133-148.
- Dawson, Vaille, & Venville, Grady Jane. “Introducing high school biology students to argumentation about socioscientific issues.” *Canadian Journal of Science, Mathematics and Technology Education*, 13 (4), (2013): 356-372.
- Doveston, Mary. “Developing capacity for social and emotional growth: An action research project.” *Pastoral Care in Education*, 25 (2), (2007): 46-54.
- Doyle, Alison “Important active listening skills and techniques.” *The Balance Careers*. (2019): <https://www.thebalancecareers.com/active-listening-skills-with-examples-2059684>
- Doymuş, Kemal. “Effects of a cooperative learning strategy on teaching and learning phases of matter and one-component phase diagrams”. *Journal of Chemical Education*, 84 (11), (2007): 1857-1860.
- Drollinger, Tanya, Comer, Lucatte. B., & Warrington, Patricia T. “Development and validation of the active empathetic listening scale.” *Psychology & Marketing*, 23 (2), (2006): 161-180.
- Erduran, Sibel, Simon, Shirley, & Osborne, Jonathan. TAPping into Argumentation: Developments in the application of Toulmin's Argument Pattern for studying science discourse. *Science Education*, 88 (6), (2004): 915-933.
- Evagorou, Maria & Osborne Jonathan. “Exploring young students' collaborative argumentation within a socioscientific issue.” *Journal of Research in Science Teaching*, 50 (2), (2013): 209-237.
- Firetto Carla M., Murphy, P. Karen, Greene, Jeffrey A., Li, Mengyi, Wei, Liwei, Montalbano, Cristin, Hendrick, Brendan, & Croninger, Rachel M. V. “Bolstering students' written argumentation by refining an effective discourse intervention: negotiating the fine line between flexibility and fidelity”. *Instructional Science*, 47 (2019): 181-214.
- Foong Chan-Choong & Daniel Esther G. S. “Students' argumentation skills across two socio-scientific issues in a confucian classroom: Is transfer possible?”. *International Journal of Science Education*, 35 (14), (2013): 2331-2355,
- Green, Samuel B., & Salkind, Neil J. *Using SPSS for Windows and Macintosh: analyzing and understanding data* (4th edition). New Jersey: Pearson, 2005.
- Grooms, Jonathon, Sampson, Victor & Barry, Golden. “Comparing the effectiveness of verification and inquiry laboratories in supporting undergraduate science students in constructing arguments around socioscientific issues”. *International Journal of Science Education*, 36 (9), (2014): 1412-1433,
- Gündoğdu, Kerim, Ozan, Ceyhun & Taşgın, Adnan. “The effect of the jigsaw technique implementation on prospective teachers' academic achievements”. *Journal of Psycho-Educational Sciences*, 2 (3) (2013): 60-72.
- Hançerlioğlu, Orhan. *Ruhbilim sözlüğü*. İstanbul: Remzi Kitabevi, 1993.
- Hefter, Markus H., Berthold, Kirsten, Renkl, Alexander, Riess, Werner, Schmid, Sebastian & Fries, Stefan. “Effects of a training intervention to foster argumentation skills while processing conflicting scientific positions”. *Instr Sci*, 42, (2014): 929-947.
- Jerrim, John, Oliver, Mary, & Sims, Sam. “The relationship between inquiry-based teaching and students' achievement. New evidence from a longitudinal PISA study in England.” *Learning and Instruction*, 61, (2019): 35–44.
- Jiménez-Aleixandre, Maria Pilar, & Puig, Blanca. “Argumentation, evidence evaluation and critical thinking.” In *Second international handbook of science education* (pp. 1001-1015). Springer, Dordrecht, 2012.
- Jime'nez-Aleixandre, Maria Pilar, Bugallo Rodri'guez Anxela & Duschl, Richard A. ““Doing the lesson” or “doing science”: Argument in high school genetics” *Science education*, 84 (6), (2000): 757-792.
- Johnson, David W., & Johnson, Frank P. *Joining together: group theory and group skills*. Englewood Cliffs, NJ: Prentice-Hall, 1999.
- Johnson, David W., & Johnson, Roger T. “Using technology to revolutionize cooperative learning: An opinion.” *Frontiers in Psychology*, 5, (2014): 1-3.
- Johnson-Laird, P. N., Legrenzi, Paolo, Girotto, Vittorio, & Legrenzi, Maria S. “Illusions in reasoning about consistency. *Science*, 288 (5465) (2000): 531-532.
- Jones, Karrie A. & Jones, Jennifer L. “Making cooperative learning work in the college classroom: an application of the “five pillars” of cooperative learning to post-secondary instruction.” *The Journal of Effective Teaching*, 8 (2), (2008): 61–76.
- Kar, Hazel, & Çil, Emine. “The effects of visual art supported inquiry based science activities on 5th grade students' scientific process skills.” *Pegem Eğitim ve Öğretim Dergisi*, 9 (2), (2019): 351-380

- Katchevich, Dvora, Hofstein, Avi, & Mamlok Naaman, Rachel. "Argumentation in the chemistry laboratory: Inquiry and confirmatory experiments." *Research in Science Education*, 43 (1), (2013): 317-345.
- Kınık Topalsan, Ayşegül. "Development of scientific inquiry skills of science teaching through argument-focused virtual laboratory applications." *Journal of Baltic Science Education*, 19 (4), (2020): 628-646.
- Kiernan, Daniel, & Lotter A., Christine. "Inquiry-based teaching in the college classroom: The nontraditional student". *The American Biology Teacher*, 81 (7), (2019): 479-484.
- Klop, Tanja & Severiens, Sabine. "An exploration of attitudes towards modern biotechnology: A study among Dutch secondary school students." *International Journal of Science Education*, 29 (5), (2007): 663-679.
- Kolsto, Stein Dankert. "'To trust or not to trust,...'-pupils' ways of judging information encountered in a socio-scientific issue." *International Journal of Science Education*, 23, (2001): 877-901.
- Kolsto, Stein Dankert. "Patterns in students' argumentation confronted with a risk-focused socio-scientific issue." *International Journal of Science Education*, 28 (14), (2006): 1689- 1716.
- Kuhn, Deanna. "A role for reasoning in a dialogic approach to critical thinking." *Topoi*, 2016. Doi 10.1007/s11245-016-9373-4
- Kuhn, Deanna, Goh, Wendy, Iordanou, Kalypso, & Shaenfield, David. "Arguing on the computer: A microgenetic study of developing argument skills in a computer-supported environment." *Child Development*, 79 (5), (2008): 1310-1328.
- Kurtz, Kenneth J., Gentner, Detre, & Gunn, Virginia. Reasoning. In *Cognitive science* (pp. 145-200). Academic Press, 1999.
- Kutluca, Ali Yiğit, Çetin, Pınar Seda & Doğan, Nihal. "Effect of content knowledge on scientific argumentation quality: Cloning context." *Necatibey Faculty of Education Electronic Journal of Science and Mathematics Education*, 8 (1) (2014): 1-30.
- Kuuk, Özlem & Arslan, Ali. "cooperative learning in developing positive attitudes and reflective thinking skills of high school students' in English course". *International Journal of Psycho-Educational Sciences*, 9 (1) (2020): 83-96.
- Lamanauskas, Vincentas & Makarskaitė-Petkevicienė, Rita. "Lithuanian university students' knowledge of biotechnology and their attitudes to the taught subject." *Eurasia Journal of Mathematics, Science & Technology Education*, 4 (3), (2008): 269-277.
- Lawson. Anton E. Reasoning and brain function. In *The nature of reasoning*. (Eds). (Leighton. J.P. Sternberg. R.J.) USA: Cambridge University, 2004.
- Lee, Hyunju, Abd-El-Khalick, Fouad, & Choi, Kyunghye. "Korean science teachers' perceptions of the introduction of socioscientific issues into the science curriculum." *Canadian Journal of Science, Mathematics, and Technology Education*, 6 (2), (2006): 97-117.
- McFarland, Thomas D. & Parker, Reese. *Expert systems in education and training*. Englewood Cliffs, NJ: Educational Technology Publications, 1990.
- Mello, Paula Seixas, Natale, Caio Cotta, Marzin-Janvier, Patricia, Vieira, Leda Quercia & -de-Almeida Daniel Manzonii. "Inquiry-based learning in immunology: analysis of scientific argument construction by undergraduate students in biological science and health care classes." *Journal of Biological Education*, (2021): Doi: 10.1080/00219266.2021.1877778
- Miles, Matthew B., & Huberman, A. Michael. *Qualitative data analysis: An expanded sourcebook*. Sage publications, 1994.
- Ministry of National Education [MoE]. (2018). Science course curriculum (primary and secondary school 3, 4, 5, 6, 7 and 8th grades). MoE Publications, Ankara.
- Mutlu, Ayfer. "Evaluation of students' scientific process skills through reflective worksheets in the inquiry-based learning environments." *Reflective Practice*, 21 (2), (2020): 271-286.
- Okumuş, Seda. "Argümantasyon destekli işbirlikli öğrenme modelinin akademik başarıya, eleştirel düşünme eğilimine ve sosyobilimsel konulara yönelik tutuma etkisi." *Ondokuz Mayıs Üniversitesi Eğitim Fakültesi Dergisi*, 39 (2), (2020): 269-293.
- Oyarzun, Beth Allred & Morrison, Gary R. "Cooperative learning effects on achievement and community of inquiry in online education." *The Quarterly Review of Distance Education*, 14 (4), (2013): 181-194.
- Özdilek, Zehra, Okumuş, Seda, & Doymuş, Kemal. "The effects of model supported cooperative and individual learning methods on prospective science teachers' understanding of solutions." *Journal of Baltic Science Education*, 17 (6), (2018): 945-959.
- Öztürk, Nurhan, Bozkurt Altan, Esra, & Yenilmez Türkoğlu, Ayşe. "discussing socio-scientific issues on twitter: the quality of pre-service science teachers' arguments." *Journal of Education in Science Environment and Health*, 7 (1), (2021): 72-85.
- Patrick, Michael D. The art of digital storytelling. In D. R. Stukus, M. D. Patrick & K. E. Nuss (Eds.), *Social media for medical professionals* (pp. 83-100). Springer, 2019.
- Perkins, David N., Farady, Michael, & Bushey, Barbara. Everyday reasoning and the roots of intelligence. In J.F. Voss, D.N. Perkins, & J.W. Segal (Eds.), *Informal reasoning and education* (p. 83-105). Hillsdale, NJ: Erlbaum, 1991.
- Ping, Irene Lue Leh., Halim, Lilia, & Osman, Kamisah. "Explicit teaching of scientific argumentation as an approach in developing argumentation skills, science process skills and biology understanding." *Journal of Baltic Science Education*, 19 (2), (2020): 276-288.
- Rohaeti, Eli, Prodjosantoso, Anti Kolonial, & Irwanto. "Research-oriented collaborative inquiry learning model: improving students' scientific attitudes in general chemistry." *Journal of Baltic Science Education*, 19 (1), (2020): 108- 120.
- Sadler, Troy D. "Informal reasoning regarding socioscientific issues: A critical review of research." *Journal of Research in Science Teaching*, 41 (5), (2004): 513- 536.
- Sadler, Troy D., & Zeidler, Dana L. "The significance of content knowledge for informal reasoning regarding socioscientific issues: Applying genetics knowledge to genetic engineering issues." *Science Education*, 89 (1), (2005): 71-93.
- Sotáková, Ivana, Ganajová, Mária, & Babinčáková, Mária. "Inquiry-based science education as a revision strategy." *Journal of Baltic Science Education*, 19 (3), (2020): 499-513.

- Secor, Marie J. "Recent research in argumentation theory". *The Technical Writing Teacher*, 15 (3), (1987): 254-337.
- Slavin, Robert E. "Research on cooperative learning and achievement: what we know, what we need to know." *Contemporary Educational Psychology*, 21, (1996): 43-69.
- Sönmez, Elif, Kabataş Memiş, Esra, & Yerlikaya, Zekeriya. "The effect of practices based on argumentation-based inquiry approach on teacher candidates' critical thinking." *Educational Studies*, 47 (1), (2021): 59-83.
- Steele, F., & Aubusson, Peter. "The challenge in teaching biotechnology." *Research in Science Education*, 34 (4), (2004): 365-387.
- Stott, Angela, & Hattingh, Annemarie. "Pre-service teachers' views about the nature of science and scientific inquiry: The South African case". *South African Journal of Education*, 40 (1), (2020): 1-12.
- Sturgis, Patrick, Cooper, Helen & Five-Schaw, Chris. "Attitudes to biotechnology: Estimating the opinion of a better-informed public." *New Genetics and Society*, 24 (1), (2005): 31-56.
- Tekin, Nurcan, & Aslan, Oktay. "Öğretmen adaylarının sosyobilimsel konulara yönelik tutumlarının çeşitli değişkenler bakımından incelenmesi." *Fırat Üniversitesi Sosyal Bilimler Dergisi*, 29 (1), (2019): 133-141.
- Topcu, Mustafa Sami. "Turkish elementary student teachers' epistemological beliefs and moral reasoning." *European Journal of Teacher Education*, 34 (1), (2011): 99-125.
- Topçu, Mustafa Sami. *Sosyobilimsel konular ve öğretimi (güncelleştirilmiş ve genişletilmiş 2. baskı)*. Ankara: Pegem Akademi Yayıncılık, 2017.
- Toulmin, Stefan. *The uses of argument*. Cambridge: Cambridge University Press, 1958.
- Trouche, Emmanuel, Johansson, Petter, Hall, Lars, & Mercier, Hugo. "The selective laziness of reasoning." *Cognitive Science*, 40 (8), (2016): 2122-2136.
- Türkmen, Hakan, Pekmez, Esin, & Sağlam, Murat. "Fen bilgisi öğretmen adaylarının sosyo-bilimsel konular hakkındaki düşünceleri." *Ege Eğitim Dergisi*, 18 (2), (2017): 448-475.
- Uzuntiryaki Kondakçı, Esen, Tüysüz, Mustafa, Sarıcı, Esra, Soysal, Ceren & Kılınç, Selcuk. "The role of the argumentation-based laboratory on the development of pre-service chemistry teachers' argumentation skills." *International Journal of Science Education*, 43 (1), (2021): 30-55.
- Ülger, Bestami Buğra, & Çepni, Salih. "Evaluating the effect of differentiated inquiry-based science lesson modules on gifted students' scientific process skills." *Pegem Eğitim ve Öğretim Dergisi*, 10 (4), (2020): 1289-1324.
- Van der Zande, Paul. Health-related genomics in classroom practice. D. J. Boerwinkel, ve A. J. Waarlo (Eds.). *Rethinking Science Curricula in the Genomics Era* (82-89). FISME series on Research in Science Education, Utrecht: CD-β Press, 2009.
- Walker, Kimberly A., & Zeidler, Dana L. "Promoting discourse about socioscientific issues through scaffolded inquiry." *International Journal of Science Education*, 29 (11), (2007): 1387-1410.
- Wang, Jianlan & Buck, Gayle. "The relationship between Chinese students' subject matter knowledge and argumentation pedagogy." *International Journal of Science Education*, 37 (2), (2015): 340-366.
- Wen, Cai-Ting, Liu, Chen-Chung, Chang, Hsin-Yi, Chang, Chia-Jung, Chang, Ming-Hua, Chiang, Shih-Hsun Fan, Yang, Chih-Wei, & Hwang, Fu-Kwun. "Students' guided inquiry with simulation and its relation to school science achievement and scientific literacy". *Computers & Education*, 149 (2020): 1-14.
- Wu, Ying-Tien, & Tsai, Chin-Chung. "High school students' informal reasoning regarding a socio-scientific issue, with relation to scientific epistemological beliefs and cognitive structures." *International Journal of Science Education*, 33 (3), (2011): 371-400.
- Xiao, Ziang, Zhou, Michelle X., Chen, Wenxi, Yang Huahai, & Chi, Changyan. "If I hear you correctly: Building and evaluating interview chatbots with active listening skills." In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems* (pp. 1-14). 2020, April.
- Yesildağ Hasançebi, Funda & Kingır, Sevgi. "Overview of obstacles in the implementation of the argumentation based science inquiry approach and pedagogical suggestions." *Mevlana International Journal of Education*, 2 (3), (2012): 79-94.
- Zohar, Anat & Nemet, Flora. "Fostering students' knowledge and argumentation skills through dilemmas in human genetics." *Journal of Research in Science Teaching*, 39, (2002): 35-62.

RESEARCH METHOD TRENDS RELATED TO COGNITIVE DEVELOPMENT IN 3-6 AGES BETWEEN 2008-2018 YEARS IN TURKEY

Abstract: The individual's learning process begins with birth and continues with discoveries in the living spaces. The curiosity-driven learning process is the basis of cognitive development, and nowadays, much research is being done to understand this development field. Determining the focal point of research on cognitive development in preschool in Turkey has shed light on the work to be done later. This study consists of theses and articles written in development and education related to the field of cognitive development in children aged 3-6. The study consists of 53 studies chosen randomly from the scientific research published between the years 2008-2018 within the field of cognitive development in 3-6 aged children. The keywords of "cognitive development, mental development, cognition" were applied while searching through the Higher Education Council Theses Center and The Turkish Academic Network and Information Center (ULAKBIM). Twenty-four theses that have been in Higher Education Council Theses Center and 29 articles in The Turkish Academic Network and Information Center (ULAKBIM) were reviewed using content analysis through a form that includes subject areas, data collection tools used in the research, data analysis methods, references, and sample characteristics. In this study, it was found that academic studies of early childhood were focused on 60-72 months. It has been observed that there has been an increase in the number of studies conducted on children aged 0-2 years. The increase in the number of new academic studies on this period, which is critical for brain development, will also prepare a strong ground for understanding and developing the later stages of early childhood.

Keywords: Cognitive development, mental development, cognition, pre-school, child development.

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INTRODUCTION

Individuals' learning process begins with birth and continues with explorations in their living spaces. As Demirci and Arslan (2020, p.49) point out that the development for of children is not at the same speed. The learning process fed by curiosity, which is the basis of cognitive development and much research has been carried out to understand this development area. Determining the focal points of the research on the cognitive development in the preschool period in Turkey have shed light on future studies.

Cognition is related to the internal process or products of the mind that enable "knowing". It includes all mental activities such as attention, remembering, symbolizing, classification, planning, reasoning, problem-solving, creating, and dreaming. Our cognitive powers are essential for our survival. People rely on cognition in adapting to their environment and changing and transforming it (Berk, 2013). On the other hand, the cognitive development area is a development area that includes all mental processes in the stages of storing, interpreting, rearranging and evaluating information as a result of the interaction of our cognitive powers with the environment starting from birth (MoNE [MEB], 2014). Early childhood is when the child develops the fastest, and two-thirds of the development of the brain structure and functions are completed. Especially children between the ages of three and six become very advanced in their thinking and reflect on the problem before acting. They begin to use a compelling and fascinating new way of reasoning (Santrock, 2016).

According to Piaget, when we examine the points emphasized by cognitive development theorists on children's reasoning processes, preschool years are a transition period in cognitive development. In this period, they can think deeply beyond objects and people that are not in front of their eyes and make predictions about things they cannot influence (Trawick- Smith, 2014). Mental activity cannot be separated from the whole action of the organism. Hence the mental process is considered to be the specific type of biological action. It explains the process by which the organism adapts to the environment and organizes life with schema, assimilation, regulation, and balancing (Wadsworth, 2015). Vygotsky defines cognitive development as "the product of the child's interaction with more experienced and knowledgeable individuals". The four basic principles of his cognitive development system; "The child constructs knowledge, development cannot be considered separate from the social context, learning leads development, and language has an important place in mental development" (Bodrova & Leong, 2010). According to Gagne, the child comes with the innate ability to learn. He learns by processing information. Information is processed and recorded in special areas of the mind. Gagne draws the boundaries of cognitive development as learning signs, learning the stimulus-behaviour relationship, chaining, verbal linking, learning to discriminate, learning concepts, learning principles and problem-solving. The instructive individual should shape the child's learning step by step. In this guiding situation, teachers, parents, and all members of society are responsible for the improvement of cognitive development (cited in Arslan, 2011).

According to Cüceloğlu (1996), it is difficult to research children's cognitive development because of the unobservable processes. Researchers must infer cognitive abilities and changes by observing children's behaviour over time. More studies are needed to increase the methods to facilitate research and understand the early childhood characteristics in-depth and comprehensiveness (Bee & Boyd, 2009). The purpose of this study is to analyze the theses and articles published between the years of 2008-2018 related to cognitive development in children of the 3-6 age group in Turkey. The following sub-problems have been used to reach more detailed information for this aim. Thus, this study is essential to provide anticipation for future research about early childhood.

METHOD

This qualitative study used document analysis. Document analysis is a qualitative technique that includes written materials having information on specific events, people, and phenomena. In this study, theses and articles, written on cognitive development of children aged 3-6 published between 2008-2018, were analysed by using the content analysis method to gather similar data within the framework of specific or hidden concepts and themes and to interpret them in a way that the reader can understand (Gülbahar & Alper, 2009; Yıldırım & Şimşek, 2016). Through content analysis, it is aimed to identify the data and

reveal it. The study is limited to development and educational theses and articles published between the 2008-2018 period.

SCOPE OF THE RESEARCH

The scope of the research consists of theses and articles written in the field of development and education related to the field of cognitive development in children aged 3-6. Fifty-three publications chosen randomly among the published theses and articles between the years 2008-2018 were surveyed by using the keywords of "cognitive development, mental development, cognition" in Higher Education Council (HEC) Theses Center and The Turkish Academic Network and Information Center (ULAKBIM).

DATA COLLECTION AND ANALYSIS

Each of the 53 academic studies was analyzed using the form entitled 'Academic Study Review Form' that the researcher developed. The form consisted of "type of academic study", "type of article", "year of publication", "purpose of the study", "subject", "methods and techniques used", "data collection tool", "sample group" and "age ranges". In the research, articles and theses published between the period of 2008-2018 according to selected criteria were examined within the framework of this form. The data obtained are divided into categories and subcategories. These categories and sub-categories are given in Table 1.

Table 1. Categories of the Academic Study Review Form

Categories	Sub-categories		
1. Type	1.1. Thesis		1.2. Article
2. Years	2.1. 2008-2010	2.2. 2011-2014	2.3. 2015-2018
3. Article Type	3.1. Research		3.2. Theoretical reviews
4.Aim	4.1. Thought / Perception Review 4.2. Practice 4.3. Program Review/Evaluation 4.4. Literature/document Review 4.5. Comparative Description		
5.Research topics	5.1. Cognitive Development and Learning 5.2. Rhythm Training and Cognitive Skills 5.3. Cognitive Based Social Skills Training 5.4. Cognitive Style and Play 5.5. Parental Attitudes and Cognitive Development		
6.Research methods and designs	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <u>6.1. Qualitative</u> 6.1.1. Content Analysis 6.1.2. Descriptive Analysis 6.1.3. Frequency Analysis </div> <div style="width: 45%;"> <u>6.2. Quantitative</u> 6.1.4. Percentage / Frequency / Average / Standard Deviation 6.2.1. Correlation 6.2.2. T- Test 6.2.3. ANOVA/MANCOVA 6.2.4. Factor Analysis 6.2.5. Regression 6.1.5. Non-Parametric Tests <u>6.3. Mixed</u> 6.1.6. 6.3.1. Explanatory Sequential 6.4. Review </div> </div>		
7. Data collecting tools	7.1. Observation 7.2. Interview 7.3. Achievement Test 7.4. Documents 7.5. Personal Information Forms		
8. Sample	8.1. Preschool Pupils	8.2. Parents	8.3. Teachers
9. Age	9.1. 36-48 Month	9.2. 48-60 Month	9.3. 60-72 Month

FINDINGS

In this study, 53 publications consisting of articles and theses were analyzed. The distribution of the studies is given in Figure 1. The publications consist of 24 theses and 29 articles. 22 of the theses are master's and 2 of them are doctoral dissertations. The articles were evaluated according to 3 criteria; Articles published

in international refereed journals (20), national refereed journals (7) and national journals (2).

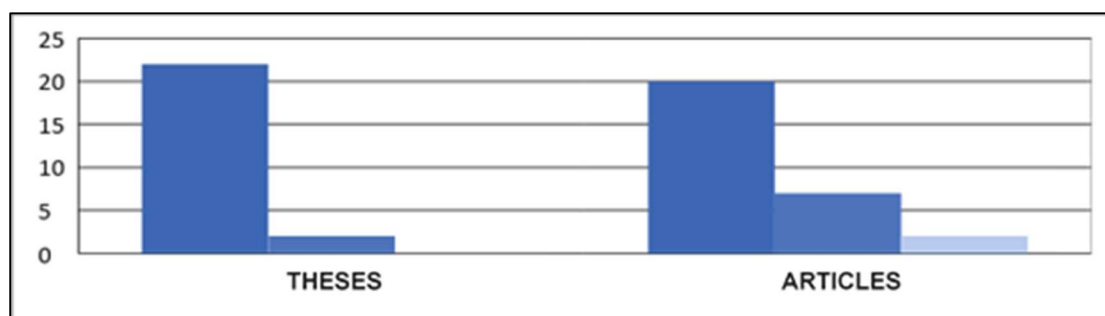


Figure 1. The Distribution of Publication Types

The results obtained through the analysis according to the years of publication shows that the number of studies published between 2008-2010 is 13, between 2011-2014 is 15, and between 2015-2018 is 25, as was seen from the Figure 2.

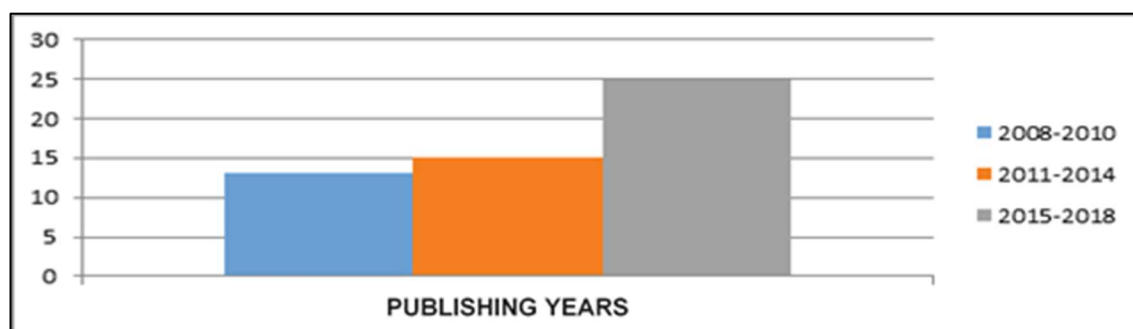


Figure 2. The Distribution of Publication Year Range

It is seen that research increased the most between the years of 2015-2018. It is seen that recent research on cognitive development area period of 3-6 years is interesting and developing in Turkey. No content analysis studies examining the studies on cognitive development in early childhood have been found in the literature. Some studies generally examine studies on early childhood. In the study conducted by Bertan et al. Between 2000 and 2007, which included the compilation of studies on early childhood development, 6.1% of 326 studies included the 3-4 age group and 44.1% included the 5-6 age group (Bertan et al., 2009). Aksoy & Koran (2016) analyzed 40 studies about infancy in Turkey; 29 (72.5%) of them carried out between 2010-2014 and 11 (27.5%) of them between 2004-2009. Metin and the others analyzed 85 theses related to 0-3 years age children in Turkey between the years 1994-2016. It was determined that the most research was 60 master theses (36.5%) between 2005-2009. Also, it was seen that there were few doctoral dissertations for children aged 0-3. In the relevant research, it was stated that 21 master theses and four doctoral dissertations were conducted between the years 2010 and 2016 (Metin et al., 2017). It is observed that there has been an increase in academic studies on early childhood in Turkey in recent years. However, this increase is weak in terms of in-depth and longitudinal studies. It is thought that studies that include different dimensions of early childhood and show a holistic approach will contribute to interdisciplinary research.

It can be seen in Figure 3 that there are 22 research articles and seven theoretical/ review articles. In this study, it was seen that the articles published on cognitive development in children aged 3-6 mainly were research articles. Likewise, Bertan et al. investigated the studies on early childhood development between 2000 and 2007, and it was determined that 107 of 326 studies were research articles and 52 were review articles. Research articles start with the aim of solving a problem and end with report writing. It is necessary to collect, analyse, interpret, and evaluate the data in a systematic and planned manner to move from the current situation to the desired state (Karasar, 2006). Review studies are also needed to define the overall tendencies of research and to make general inferences. The increasing number of review studies will create an effective reference list to apply more systematic analysis on early childhood

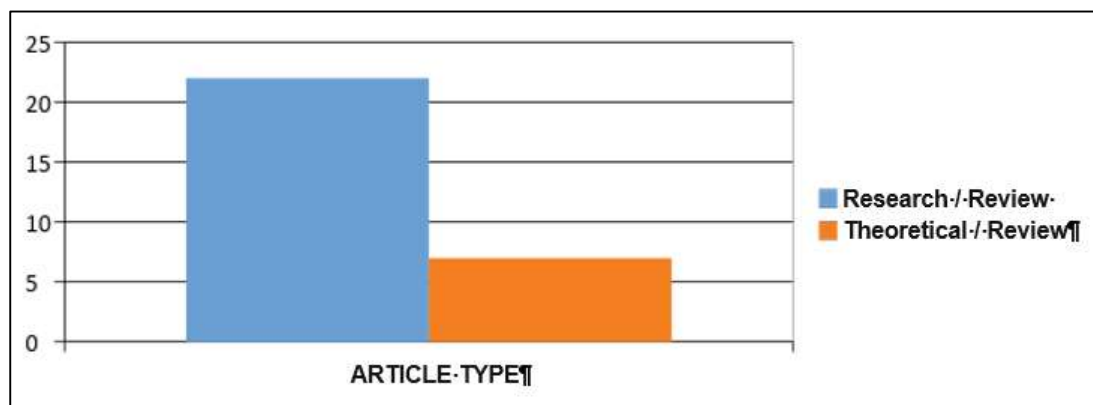


Figure 3. Distribution of the Articles According to Research Types

In Figure 4, it is seen that there are 5 thought/perception studies, 40 practical studies, 3 literature/document reviews, 2 comparative descriptions and 3 other studies (scale development, software development, etc.).

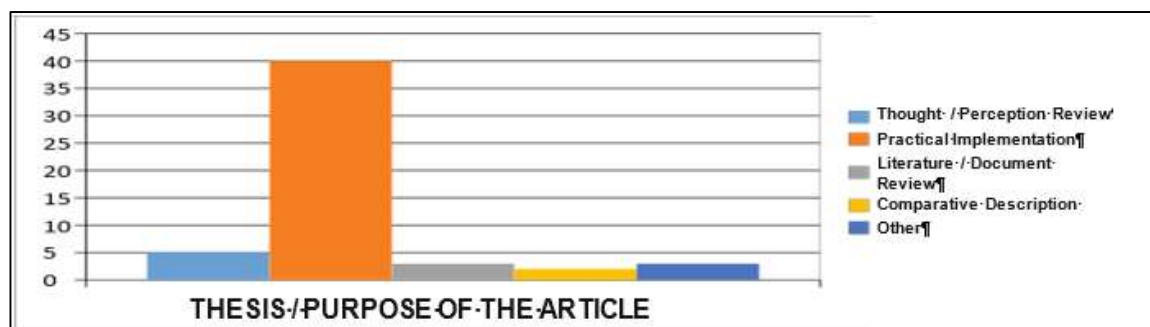


Figure 4. Distribution of Publications According to the Aims

Figure 5 shows that researchers studied subjects of cognitive development and learning (30), rhythm training and cognitive skills (1), cognitive-based social skills training (9), cognitive style and play (7), and parental attitudes and cognitive development (6). It was stated in the study conducted by Bertan et al. that 200 of the 326 studies were related to education and 126 were related to health issues (Bertan et al., 2009). Aksoy and Koran declared (2016) in their study examining the infancy research in Turkey that 18 of research subjects (45%) related to the development areas. When the development areas are examined in detail, it is noticed that there are five research on social-emotional development (attachment), two research on language development, two research on physical development, two research on motor development, two research on all development areas, one research on neurological development, one research on personality development, one research on physical, psychological and mental development, one research on cognitive and language development, 1 research on motor and cognitive development.

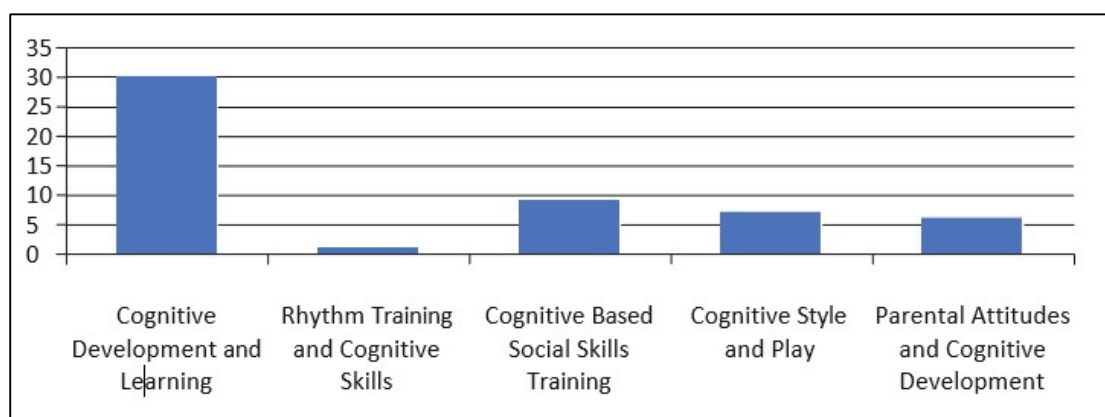


Figure 5. Distribution of Publications According to Their Subjects

As shown in Figure 6, the quantitative, qualitative and mixed-method categories were created in the research method and design theme. There are 42 studies conducted through the quantitative method, seven

studies with the qualitative method, and 1 with the mixed method. Also, there are three review studies. Most of the studies in the field of cognitive development in 3-6 age period in Turkey between the years 2008 and 2018 have been done by quantitative research method, which is similar to the research of Aksoy and Koran (2016). According to the study results, it was determined that 28 (70%) of the research were done by quantitative method and 12 (30%) of them were conducted as review studies. In addition, Metin et al. (2017) analysed 85 theses related to 0-3 years of age children in Turkey between the years 1994-2016. It was observed that screening (82.4%) and experimental (63.2%) designs were primarily used in master's theses, while experimental method (36.8%) was used in doctoral dissertations in their research. Experimental method tries to reach scientific information most objectively; thus, it is indispensable for qualified academic studies.

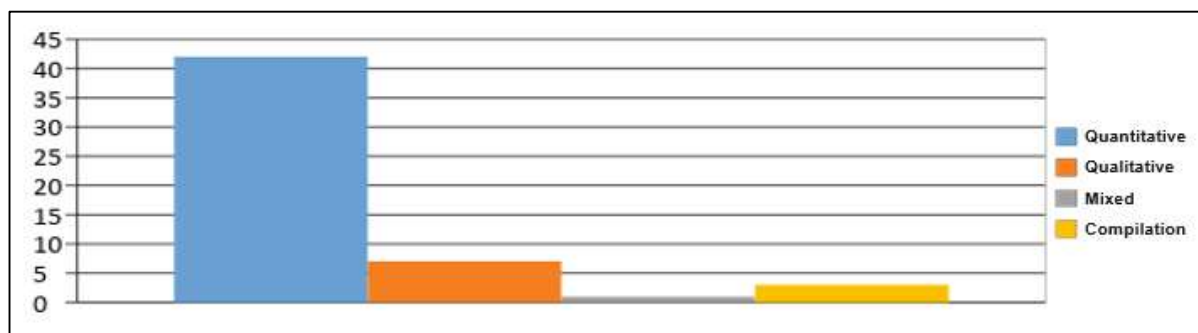


Figure 6. Distribution of Publications According to Their Methods and Designs

It was seen in Figure 7 that the pre-experimental designs were used in 16 of the studies, correlational survey designs were used in 19 of the studies, and descriptive survey designs were used in 7 of them.

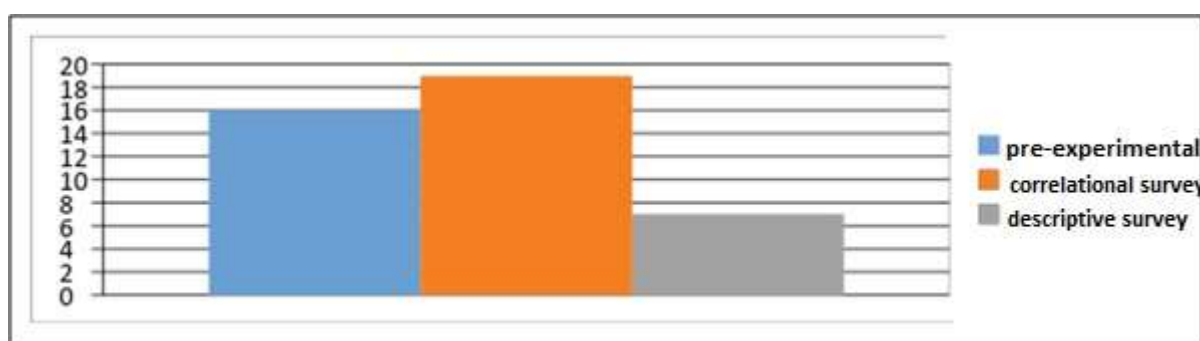


Figure 7. Distribution of Quantitative Designs

It was determined that three phenomenology studies, three case studies and one concept analysis study were administered in qualitative designs (Figure 8). In the study conducted with the mixed method (1), the "sequential explanatory mixed method" (Creswell, 2003) was used, in which the quantitative study was performed first, and then these data were supported with qualitative data.

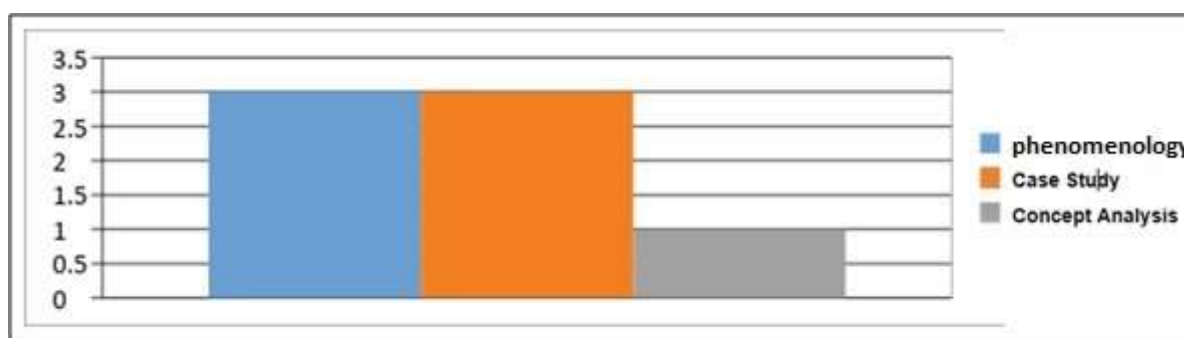


Figure 8. Distribution of Qualitative Designs

According to the data collection tools shown in Figure 9, it was seen that the observation technique (1) was performed as "non-participant observation", and the interviews were conducted using the "structured"

(1) and "semi-structured" interview (2) techniques in the studies. It was observed that achievement tests are also conducted in open-ended (13) and closed-ended (20) forms. It was determined that attitude/perception/personality/ability tests were also performed with open-ended forms (8) or recording the answers given to the questions asked by the researchers or recording the responses to the comments made on the pictures (6). In addition, it was determined that the data were also collected by using various documents (portfolios etc.) (6), and personal information forms (22).

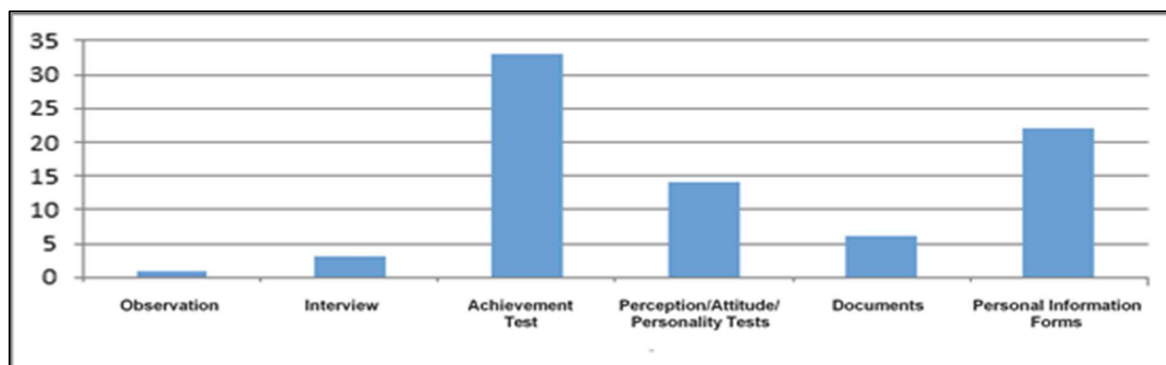


Figure 9. Distribution of Data Collection Tools Used in Studies

Figure 10 shows that 37 studies were conducted with preschool children, 7 with parents, and 9 with teachers.

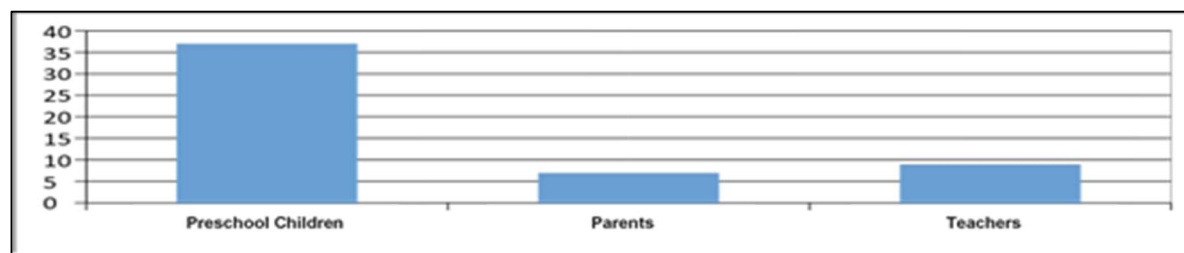


Figure 10. Distribution of Sample/study Groups

According to the data analysis methods in the study, it was stated that the quantitative analysis methods were listed as follows: Percentage/frequency/mean/standard deviation 32, correlation 11, t-test 18, ANOVA/MANCOVA 14, factor analysis 2, regression 3, and non-parametric tests 17 (Figure 11).

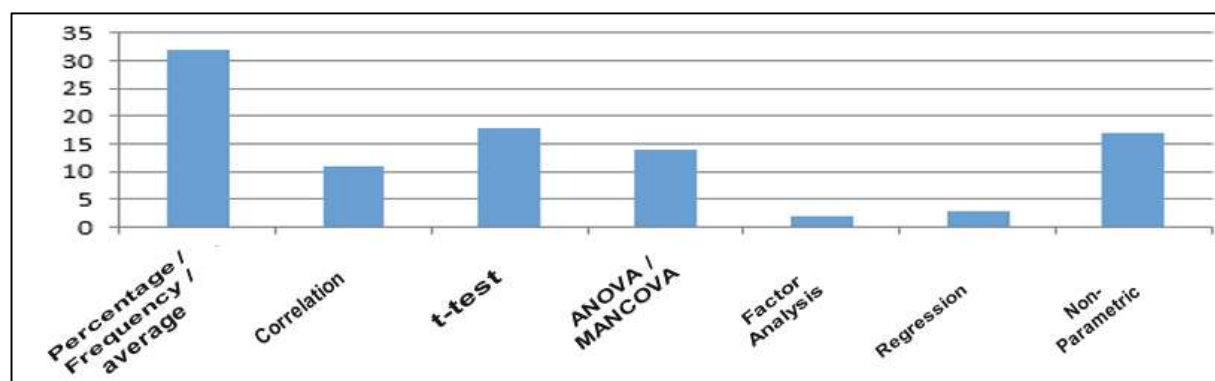


Figure 11. Distribution of Data Analysis Methods in Quantitative Studies

The following methods were used in qualitative data analysis; Content analysis 6, descriptive analysis 3 and frequency analysis 1 (Figure 12).

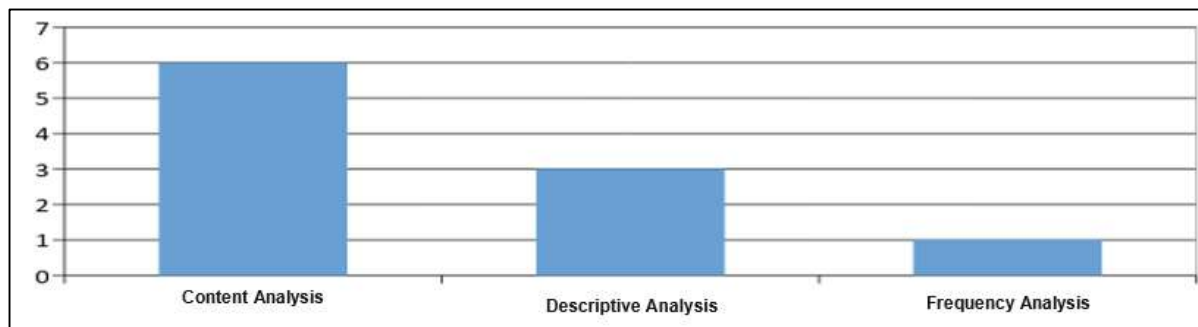


Figure 12. Distribution of Data Analysis Methods in Qualitative Studies

Finally, the age ranges in academic studies are listed as follows; 6 studies with 36-48 months, 16 studies with 48-60 months, 29 studies with 60-72 months (Table 13). The most intensely researched period was identified as 60-72 months. Studying cognitive development in children is difficult because it involves unobservable processes. Researchers must observe children's behaviour over time and infer cognitive abilities and changes (Cüceloğlu, 1996). According to Berk (2013), children aged 5-6 (60-72 months) have self-awareness of speaking about their personal experiences and inner mental life. Therefore, it may be thought that the 5- 6 age period is more preferred by researchers to collect reliable data. It has been determined that age of 3-4 is the least preferred period in the academic studies reviewed. However, the age of 3-4 is the process in which the neural connections of the brain are formed and organized by the experiences gained through stimuli in the first years of life (Metin et al., 2017). Research to be conducted with children in this period will provide insight in terms of supporting all developmental areas and raising them in accordance with their existing potential.

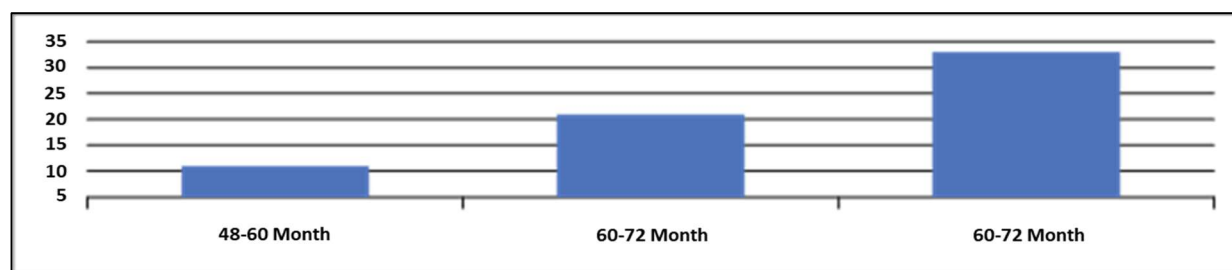


Figure 13. Distribution of Age Periods of 3-6 Years Old Children

DISCUSSION AND CONCLUSION

The scope of the research consists of theses and articles written in development and education related to the field of cognitive development in children aged 3-6. The sample consists of 53 studies chosen randomly from the scientific research published between the years 2008-2018 on the cognitive development field in children aged 3-6, as a result of the search with the keywords "cognitive development, mental development, cognition" on the HEC Thesis Center, ULAKBİM and HEC Academic web pages. It is seen that academic studies increased between the period of 2015-2018 gradually. This situation suggests that cognitive development in the 3-6 age period is interesting in recent studies and follows an ongoing process in Turkey. No content analysis studies are examining the studies on cognitive development in early childhood in the literature. However, some studies examine studies on early childhood in general (Aksoy & Koran, 2016; Bertan, 2009; Metin, 2017). According to the article types, it was found that there were 22 research articles and seven review articles. It has been observed that studies on cognitive development in children aged 3-6 are mostly research articles. Studies in a research article begin with the aim of solving a problem felt and end with writing a report. A research article begins with the aim of solving a perceived problem and ends with the writing of a report. It is necessary to collect, analyze, interpret and evaluate data in a systematic and planned manner against problems in order to move from the current situation to the desired state (Karasar, 2006). There is a need for review studies in order to define the general tendencies of research studies and to reach general inferences. An increasing number of review studies will play an active role in the systematic realization of early childhood research. In the study, subjects of cognitive development and learning (30), rhythm training and cognitive skills (1),

cognitive-based social skills training (9), cognitive style and play (7), and parental attitudes and cognitive development (6) were studied by researchers. Quantitative, qualitative, and mixed-method titles were created in the context of the research design/article method. Forty-two of the investigated studies were made using the quantitative method, seven were qualitative, one was mixed-method, and three were reviewed. Most of the studies in the field of cognitive development in 3-6 age period in Turkey between the years 2008 and 2018 have been done by quantitative research method.

It has been found related to the mostly studied topics in the literature were cognitive development and learning (20), rhythm study and cognitive skills (1), cognitive-based social skills training (9), cognitive style and play (6), parental attitudes and cognitive development (6). Kırman and Doğan (2017) conducted a study in which they organized their studies on mother-father-child relationships. In this study, they observed that mostly focused studies were found under the headings of scale development and validity-reliability studies on parent-child relationships, communication among parents and children, the relationship between children with social skills, behaviours and behavioural problems, and factors affecting parent-child relationships. In Yalçın and Dede's (2018) similar studies, it was concluded that the theses about parents and children in early childhood are mostly based on the parent-child relationship, parent views, parent and teacher relationship. In addition, Çifçi and Ersoy (2019), in their analysis study related to research orientations in preschool education, found that the mostly studied research topics were education and training problems, developmental areas, teaching materials, teacher education, family participation, curriculum studies, activity types, learning models, values education, environmental education, games, special education and mathematics education.

Within the scope of the study, quantitative, qualitative and mixed-method titles were created by considering the research design/method. While 42 of the investigated studies were conducted using quantitative methods, seven were qualitative, one was a mixed-method, and three were reviews. Academic studies done within 3-6 years of cognitive development between 2008-2018 in Turkey were performed through quantitative research methods intensely.

The meta-analysis studies realized by Koç and Saranlı (2017), Yalçın and Dede (2018) on academic publications in early childhood and Çifçi and Ersoy's study (2019) on research orientations in preschool education were examples of the studies supporting this result. It was determined that quantitative research methods were generally preferred in theses, and articles in early childhood and non-experimental survey models were used. On the other hand, recent studies have generally been done using a mixed-method in line with the general academic trends.

Finally, the age ranges in academic studies are listed as follows; 6 studies with 36-48 months, 16 studies with 48-60 months, 29 studies with 60-72 months. The most intensely researched period was identified as 60-72 months. Studying cognitive development in children is difficult because it involves unobservable processes. Researchers must observe children's behaviour over time and infer cognitive abilities and changes (Cüceloğlu, 1996). According to Berk (2013), children aged 5-6 (60-72 months) have self-awareness of speaking about their personal experiences and inner mental life. Therefore, it can be thought that researchers more prefer the 5-6 age period to collect reliable data. It has been determined that the age of 3-4 is the least preferred period in the academic studies reviewed. However, the age of 3-4 is how the neural connections of the brain are formed and organized by the experiences gained through stimuli in the first years of life (Metin et al., 2017). Research to be conducted with children in this period will provide insight into supporting all developmental areas and raising them under their existing potential.

SUGGESTIONS

Thesis and articles published between the years 2008-2018 related to cognitive development in children of 3-6 age group in Turkey were discussed. Future studies can be conducted by examining theses and articles on different developmental areas in early childhood.

It has been observed that the quantitative method is generally preferred in the academic studies examined within the scope of the research. The mixed method was defined by Creswell (2003) as follows: "mixed method was used in the field of health, social and behavioural sciences where the researcher integrates two data sets in which he collects both quantitative data (closed-ended) and qualitative data (open-ended) to understand research problems, and then draws conclusions using the advantages of integrating these two data groups". Although these advantages, mixed method was preferred less. Thus, the intensity of

using mixed methods should be increased in order to obtain more reliable findings in future studies. In this study, it was found that the 60-72 months period was emphasized in the academic studies examined on early childhood. Recently, there has been increasing in the number of studies on children aged 0-2 compared to the past. Therefore, increasing researches on this period, which is essential for brain development, will prepare a solid ground for understanding and developing the later stages of early childhood from different perspectives.

REFERENCES

- Aksoy, Ayşe-Belgin and Koran, Nihan. "Türkiye'de bebeklik dönemi ile ilgili yapılan araştırmaların analizi (2004-2014) (Analysis of research on infancy in Turkey (2004-2014))". *Türkiye Sosyal Araştırmalar Dergisi*, (2016): 364-374.
- Apaydın- Demirci, Zeynep and Arslan, Emel. "Teacher adaptation of child development assessment scale (CDAS) into Turkish and evaluation of development of 5-years-old children" *Psycho-Educational Research Reviews*, (2020): 49-66.
- Arslan, E. "Erken çocukluk döneminde gelişim (Development in early childhood)". M.Engin Deniz (Eds.), *Erken çocuklukta bilişsel gelişim (Cognitive development in early childhood)*, (pp.3-23). Ankara: Pegem Akademi, 2011.
- Bee, Helen and Boyd, Denise. "Çocuk Gelişim Psikolojisi (Child Developmental Psychology)". İstanbul: Kaknüs Yayınları, 2009.
- Berk, Laura. "Çocuk Gelişimi (Child Development.)". A. Dönmez (Translator) Ankara: İmge Kitapevi, 2013.
- Bertan, Münevver, Haznedaroğlu, Dilek, Kolh, Paul &Yurdakök, Kadriye. "Ülkemizde erken çocukluk gelişimine ilişkin yapılan çalışmaların derlenmesi 2000-2007 (Compilation of studies on early childhood development in our country 2000-2007)". *Çocuk Sağlığı ve Hastalıkları Dergisi*, (2009):52.
- Bodrava, Elena and Leong,Deborah. "Zihin Araçları (Mind Tools)". G. Haktanır (Eds.), *Erken çocukluk eğitiminde Vygotsky yaklaşımı (Vygotsky approach to early childhood education)*. Ankara: Anı Yayıncılık, 2010.
- Cüceloğlu, D. "İnsan ve davranışı (Human and behavior)". İstanbul: Remzi Kitapevi, 1996.
- Creswell, J. W. Researchdesign. "Qualitative, quantitative, andmixedmethodsapproaches" (2nd ed.). *Thousand Oaks, CA: Sage*, (2003).
- Gülbahar,Yasemin and Alper, Ayfer. "Öğretim Teknolojileri Alanında Yapılan Araştırmalar Konusunda Bir İçerik Analizi ("A Content Analysis on Researches Made in the Field of Instructional Technologies)". *Ankara Üniversitesi Eğitim Bilimleri Fakültesi Dergisi*, 42 (2) (2009): 93-111.
- Güral, Melda. "Okul Öncesi Eğitimi Anlamak (Understanding Preschool Education)". Z.Seçer (Eds.), *Okul Öncesi Eğitime Giriş (Introduction to Preschool Education)* (pp.1-22). Ankara: Eğiten Kitap, 2017.
- Koç, Fatma and Saranlı, Adile. "Erken çocukluk dönemindeki üstün yetenekli çocuklara ilişkin Türkiye'de gerçekleştirilen lisansüstü çalışmaların çok boyutlu analizi (Multi-dimensional analysis of postgraduate studies conducted in Turkey on gifted children in early childhood)". *Mehmet Akif Ersoy Üniversitesi Eğitim Fakültesi Dergisi* , 1 (41) (2017): 163-183 .
- Karasar, Niyazi. "Bilimsel araştırma yöntemi (Scientific research method)". Ankara: Nobel Yayıncılık, 2006.
- [MEB]. "Çocuk gelişimi ve eğitimi mesleki rehberlik kitabı 8 Child development and education vocational guidance book)". Ankara: Temel Eğitim Genel Müdürlüğü, (2014).
- Metin, Sermin, Akbaş, Ufuk Yıldız, Hatice& Özaydın, Latife."Türkiye'de 0-3 yaş çocuklara yönelik gerçekleştirilen lisansüstü tez çalışmalarının gözden geçirilmesi (A review of postgraduate thesis studies conducted for 0-3 year old children in Turkey)". *Uluslararası Erken Çocukluk Eğitimi Çalışmaları Dergisi*. 2 (1) (2017):39-59.
- Oktay, Ayla. "Yaşamın sihirli yılları: Okul öncesi dönem (The magic years of life: Preschool)". İstanbul: Epsilon, 2004.
- Trawick, Smith Jeffrey." Erken çocukluk döneminde gelişim (Development in early childhood)". B.Akman (Eds). Ankara: Nobel Akademik Yayıncılık, 2014.
- Uzun, Halil., Yalçın, Vakkas., & Dede, Hülya. "Türkiye'de erken çocukluk döneminde ebeveynler ile ilgili yapılan lisansüstü tezlerin incelenmesi: Bir meta-analiz çalışması (Examination of postgraduate theses about parents in early childhood in Turkey: a meta-analysis study)". *Uluslararası Eğitim Araştırmacıları Dergisi*, 1(1) (2018): 1-12.
- Wadsworth, Barry." Piaget'in duyuşsal ve bilişsel kuramı (Piaget's affective and cognitive theory)". Z. Selçuk (Translator) Ankara: Pegem Akademi, 2015.
- Yıldırım, Ali and Şimşek, Hasan." Sosyal bilimlerde nitel araştırma yöntemleri (Qualitative research methods in the social sciences)". Ankara: Seçkin Yayıncılık, 2016.