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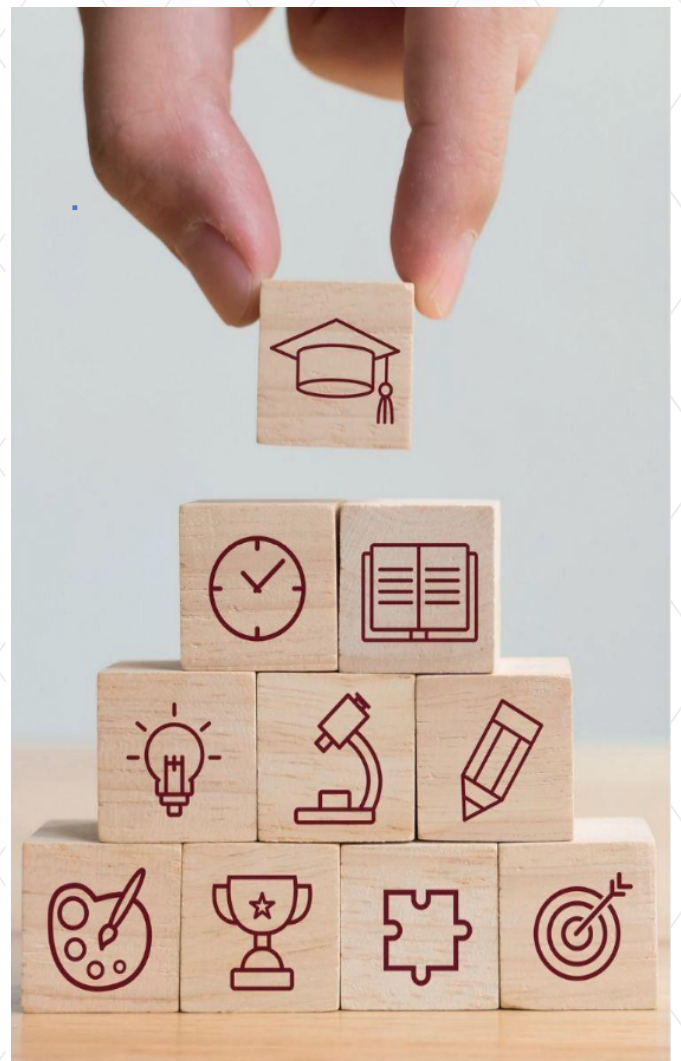
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RESEARCH
REVIEWS**

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abdulkadirpalanci.29@gmail.com
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Suad.Sakalli-gumus@smwc.edu
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Affiliation: Biruni University (Faculty of Education) Istanbul, Türkiye
10. Yıl Caddesi, Protokol Yolu No: 45, 34010 Topkapı, İstanbul
Email: biruniuniv@hs01.kep.tr
Phone: 444 8 276 (BRN)
Fax: +90 212 416 46 46

Direct Contact at Biruni University
Prof. Dr. Adnan Ömerustaoğlu
Biruni University, Faculty of Education, Türkiye
aomerustaoglu@biruni.edu.tr

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CONTENTS

Page

Research Articles

1. Evaluation of Practice Schools and Teachers within the scope of Teaching Practice Lesson through Web Diaries by Pre-service Teachers
Emine Akkaş Baysal, Gürbüz Ocak 1-21
2. You Are Welcome Here: What Campus Resources Are Needed to Recruit, Retain, and Graduate International Students at Large Universities?
Kasım Kıroğlu, Michael Kung 22-33
3. Pre-school Teacher Candidates' Use of Mathematical Concepts in Daily Life
Mustafa Albayrak, Nurullah Yazıcı 34-49
4. Do Teachers Experience Social Anxiety When Using Social Media?
Mustafa Demir, Seda Aktı Aslan, Okay Demir 50-68
5. Culturagram of the Development and Education Processes of Children in Seasonal Agricultural Worker Familie
Emine Saraç, Mustafa Kale, Nurgül Özpoyraz 69-80
6. Development and Testing of an EPSS for Secondary School Teachers to Develop Contents and Material
Cemre Arıkaya, Recep Çakar 81-104
7. An Adaptation Study of the Components of Emotion Understanding Test-24 (CEUT-24) to Turkish Context: An Investigation of the Internal Structure of the CEUT-24 at Item Level
Mehtap Sezgin, Johnny Fontaine 105-117
8. Uncovering Turkish Science High School Students' Learning Strategy, Inquiry-Oriented Self-efficacy, Task Value, Achievement Goals: A Structural Equation Modelling Analysis
Burak Feyzioğlu, Barış Demirdağ 118-133
9. Safety Problems at Schools According to School Administrators' Opinions
Halil Karadaş, Başak Coşkun, Sevda Katıtaş 134-150
10. Response to Intervention: What do Elementary School Teachers of Students with Specific Learning Disabilities in Inclusive Classrooms in Türkiye Know?
Macid Ayhan Melekoglu, Asuman Sağlam Ak, Sultan Kaya, Murat Ballıoğlu 151-170
11. Analysis of Dialogic Reading's Effects on Primary School 4th Graders' Views on Values Education and Attitudes towards Reading
Ergün Yurtbakan, Onur Batmaz 171-184
12. Examining the Relationship between Mother-Child Attachment Styles and Creativity
Ayşe Alptekin, Ayşegül Sarıkaya, Mustafa Güler 185-195
13. Opinions and Experiences of Social Studies Pre-service Teachers on Web 2.0 Tools
Ceren Utkugün 196-216
14. Factors Affecting Vocational College Instructors' Usage of LMS in the Post-Pandemic Normal
Umut Birkan Özkan, Harun Çiğdem, Gökhan Yarar 217-236
15. Psycho-Educational Effect of Motivational Interviewing on School Burnout
Yunus Hastunç, Fuat Tanhan 237-248

16. Predictive Roles of Language Learning Strategies, Academic Self-concept, Gender and Grade Level in English Language Learning Achievement 249-272
Cemal Bıyıklı
17. Effects of Using Virtual Tour Applications in Social Studies on Academic Achievement, Motivation, and Attitude 273-288
İskender Daşdemir, Nusret Koca
18. The Effect of the Flipped Classroom Model on Students' Achievement, Problem-Solving Skills and Attitudes towards Physics Lesson 289-305
Özlem Koray, Veli Çakar, Abdullah Koray


Review Articles


19. General Trends in Research on the Fact of Migration in Turkish and Social Studies Education 306-320
Ebru Demircioğlu, İlke Altuntaş Gürsoy
20. An Evaluation of the Studies on Self-Regulated Learning in Primary Education: A Bibliometric Mapping Analysis 321-337
Yavuz Sökmen, Yasemin Taş, İsmail Sarıkaya
21. An Investigation of Variables Predicting the Reading Literacy in Pisa 2018 338-349
Savas Pamuk, Devrim Alıcı, Mehtap Aktaş, Hüseyin Selvi, N. Bilge Uzun

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Evaluation of Practice Schools and Teachers within the scope of Teaching Practice Lesson through Web Diaries by Pre-service Teachers

Emine Akkaş Baysal, Assist. Prof. Dr., Afyon Kocatepe University, Türkiye, akkasemine85@hotmail.com
 0000-0002-5711-0847

Gürbüz Ocak, Prof. Dr., Afyon Kocatepe University, Türkiye, gocak@aku.edu.tr
 0000-0001-8568-0364

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Abstract

This study aimed to evaluate practice schools and teachers through web diaries and teaching practice scale by pre-service teachers who attended pre-service teacher training certificate program which was put into practice in 2021-2022. The research was carried out with the exploratory sequential design, one of the mixed research designs. The study's qualitative data were collected from 30 pre-service teachers through structured web diaries. The quantitative data were obtained from 200 pre-service teachers using the "Opinion Scale on School Experience and Teaching Practice Course". As a result of the research, the pre-service teachers welcome the weight of the new pre-service teacher training certificate program put into practice. The pre-service teachers stated that they could easily interact with their teachers in practice schools and the lecturers from whom they took theory courses, and they could benefit from their experiences. This gives an idea about the effectiveness and sustainability of the new pre-service teacher training certificate program.

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INTRODUCTION

Since the Republic of Turkey was established, it has a rich history of teacher education in terms of the institutions that provide teacher training, the programs offered in these institutions, and the criteria used to select teacher candidates. Village Institutes, Teachers' Schools, Education Colleges, Education Institutes, Higher Teacher's Schools, and Education Faculties have played an important role in teacher training since the first years of the the Republic of Turkey (Bilir, 2011). Along with the teacher education programs implemented in universities in the 1980s and 1990s to meet the increasing demand for teachers, teaching certificate programs were also developed for students who studied subjects other than those included in these programs and wished to become teachers (Kavcar, 2002). Accordingly, the pre-service teacher training certificate program, approved by the Turkey Higher Education Council in 2009, is not a new practice in teacher education.

The pre-service teacher training program refers to a training program that offers a certificate on completion of vocational training within the faculties of education to students or graduates whose original academic degree was not in the field of education (YOK, 2017). As part of the Pre-Service Teacher Training Certificate Program in Turkey, students represent a demographic that did not initially choose the teaching profession but decided to become a teacher for various reasons. The term "pre-service teacher training knowledge," which gives the program its name, refers to the in-depth knowledge of learning and teaching methods and processes that a teacher possesses. By gaining this knowledge, a teacher can understand how students acquire and construct knowledge and how to develop positive attitudes toward the learning process (Koehler & Mishra, 2009). Therefore, a teacher in any teaching field must possess this pedagogical knowledge (Shulman, 2000). As a profession that has the potential to influence society in all fields, the teaching profession requires teachers to possess cognitive, affective, and psychomotor qualities. The level of these qualifications influences pre-service teachers' success in the profession. The importance of a positive attitude towards the profession cannot be overstated in teacher training.

Education faculty training activities are based on theoretical and practical foundations (Kavak, 2009). School Experience and Teaching Practice courses provide the application dimension of teacher training in faculties (MEB, 1998). According to the Ministry of National Education education and training institutions teaching practice directive, The School Experience course is defined as a course in which pre-service teachers can get to know the school, observe the education and training process, participate in extracurricular activities, observe experienced teachers on the job, and gain short-term teaching experience. On the other hand, a teaching practice course is defined as a course in which practice activities are discussed and evaluated, which prepares pre-service teachers to teach a specific lesson or lesson group in a planned manner and to gain teaching skills in the classroom at the level of instruction. Teachers teaching in the practice schools are responsible for the practical component of the teaching practice course, while instructors in the faculties are responsible for the theoretical component. In the theoretical courses carried out in the faculties, the practice instructor and the pre-service teacher review the developments related to the activities and practices carried out in the practice schools. During the practice hours, practice teachers provide the pre-service teachers with the opportunity to participate in the training and education process actively. This process enables pre-service teachers to acquire the skills necessary to prepare lesson plans, develop lesson content, apply special and general teaching methods, and develop basic educational technologies, which constitute the qualifications of a teacher (YOK, 2007). Within the scope of the teaching practice course, pre-service teachers gain the qualifications that will improve the qualifications of the teaching profession by enabling them to understand the curriculum in their field, evaluate the course content, and carry out assessment and evaluation activities (Azar, 2003; Wong & Tsui, 2007).

Pre-service teacher training education has been a topic of discussion in many respects, including the suitability and method of the program employed, as well as the professional competencies of

novice teachers and their attitudes toward the profession (Eraslan & Çakıcı, 2011). Some people think that granting the right to be a teacher to graduates from outside the Faculty of Education harms the social status of the teaching profession. However, maintaining the programs despite ongoing problems and limitations in teacher employment continues (Öztürk Akar, 2018). The Pre-service Teacher Training Certificate Program continues in the universities approved by the Council of Higher Education in Turkey. To gain teacher competencies, students in the Pre-service Teacher Training Certificate Program take courses parallel to those in the education faculty programs. These lessons are; 'Introduction to Education,' 'Developmental Psychology,' 'Program Development and Teaching,' 'Assessment and Evaluation,' 'Classroom Management,' 'Learning, Teaching Theories and Approaches,' 'Counselling,' 'Special Teaching Methods,' 'Instructional Technologies and Material Design' and 'Teaching Practice.'

In the research on pre-service teacher training certificate programs, which have been increasing since 2010, it is seen that the reasons for the intense interest in these programs are indirectly questioned. In these researches, primarily motivation related to the teaching profession (Altınkurt, Yılmaz & Erol, 2014; Nayır & Taneri, 2013); opinion (Aykaç, Bilgin & Toraman, 2015; Çiçek Sağlam, 2015), perception and attitude (Bal, 2017; Demirtaş & Aksoy, 2016), perceptions of self-efficacy (İpek & Demirel, 2016; Yazıcı & Kalkavan, 2016), learning styles (Güneş & Gökçek, 2012); and social competence levels (Türkçapar, 2016) were examined. These issues can be associated with courses other than pre-service teachers' practice. No studies evaluated the practice schools of pre-service teachers and the practice instructor in the practice school, in other words, the implementation process. In the academic year 2021-2022, the Education Cooperation Protocol was signed between the Ministry of National Education (MEB) and the Council of Higher Education (YOK). In this framework, the teaching practice to be carried out by the students who continue to the Pre-Service Teacher Training Certificate Program or the Teaching Profession Knowledge Master's Program without Thesis has been extended to two terms by adapting it to the current practice in education faculties. Pre-service teacher training students are required to participate in teaching practices to be carried out in schools, just as in education faculties, for a total of 144 lessons, 72 hours each semester. The old certificate program only required the practice students to attend this training for one semester, while the new directive also specifies how practical training will be conducted. Under the supervision and guidance of the practice instructor and teacher, students should perform the activities specified in the activity plan. In addition, they will prepare a working report for each activity and deliver it to the practice instructor.

The practice students in the Pre-Service Teacher Training Certificate Program are required to deliver lectures under the supervision of the practice teacher from the sixth week of the first semester onwards. Students whose lecture hours are between 1-2 hours on the weekly course schedule of the relevant course are expected to have at least ten lectures, and those with three or more lectures are expected to have at least 20 lectures. Evaluation of the initial effectiveness and sustainability of this program, which includes changes in the implementation process, is vital in terms of the program's quality. Furthermore, it is believed that this study, carried out immediately following the application that began that academic year, will provide valuable information for future research. In this respect, this study is original. In this study, it is aimed that the pre-service teachers who benefit from the Pre-Service Teacher Training Program, which was updated and put into practice in the 2021-2022 academic year, evaluate the practice process, practice schools and teachers through the web diaries prepared by the researchers and the measurement tool developed by Özçelik (2012) for the application courses. So, the main research question of the study is determined as "What are the opinions of pre-service teachers who receive pre-service teacher training program about practice schools and practice instructor?". The sub-questions sought to be answered within the framework of the purpose of the research are as follows:

QUALITATIVE RESEARCH QUESTIONS

1- What are the opinions of the pre-service teachers about the preparation process, lesson planning, time management, and the supply and use of tools and equipment?

2- What are the opinions of the pre-service teachers about the teaching process, classroom management, teaching methods and techniques, suitability for the level, time management, use of tools and materials, and student-teacher interaction in the lessons they practice?

3- What are the opinions of the pre-service teachers about the evaluation process in the lessons they practice, the summary of the lesson, the evaluation studies, and the assignment process?

4- What are the opinions of the pre-service teachers about the contribution of the theoretical knowledge they received in the pre-service teacher training program courses to the application process?

5- What are the difficulties pre-service teachers face in the theoretical and practical courses they take in pre-service teacher training program courses?

QUANTITATIVE RESEARCH QUESTIONS

6- What are the opinions of the pre-service teachers regarding the practice course they have participated in as part of the pre-service teacher training program?

7- Do pre-service teachers' experiences during the pre-service teacher training program differ significantly according to gender?

METHOD

RESEARCH DESIGN

The research was conducted using an exploratory sequential design, one of the mixed research designs. Since the mixed research method requires a researcher to have a good knowledge of quantitative and qualitative research methods, it can be considered a higher-level design than these two methods. In mixed research, the data collection process is intensive, data analysis is more complex, and sometimes the research may require teamwork (Creswell & Plano Clark, 2011). Data were collected during both autumn and spring education terms in which pre-service teacher training program was conducted. In the exploratory sequential design, the researcher first collects qualitative data and then obtains quantitative data. In this mixed method design, qualitative data is collected first to discover a phenomenon, then quantitative data is collected to explain relationships revealed by qualitative data.

SAMPLE

Research sample was selected using the purposeful sampling method, which is one of the non-random sampling methods. The study sample consists of 200 pre-service teachers enrolled in the Pre-Service Teacher Training Certificate Program at Afyonkarahisar Kocatepe University Faculty of Education in 2021-2022. The quantitative data of the study were obtained from these pre-service teachers. Pre-service teachers receive pre-service teacher training in various departments. During both semesters of the 2021-2022 academic year, they took theoretical courses at the faculty and had the opportunity to practice in practice schools. Pre-service teachers started to practice from the sixth week of the first semester in practice schools. The participants applied the knowledge they gained in theory in practice at the institutions they worked at. In order to reveal the experiences of the pre-service teachers in the teacher training process, web diaries were filled with 30 pre-service teachers among the participants. Within the scope of the teaching practice course, both the first and second semesters of qualitative data collection continued. While the participants had a longer observation period in the practice schools within the scope of Teaching Practice I course, they made more practices within the scope of Teaching Practice II course. Table 1 presents data on the 200 participants from whom

quantitative data were collected. Additionally, Table 2 presents other data on the 30 participants from whom qualitative data were collected:

Table 1. Quantitative Data on Participants

<i>Variables</i>		<i>N</i>	<i>Percentage</i>
Gender	Female	111	%55.5
	Male	89	%44.5
Practice School	Preschool	13	%6.5
	Primary school	22	%11
	Secondary school	87	%43.5
	High school	78	%39

Table 2. Qualitative Data on Participants

<i>Participant</i>	<i>Participant Code</i>	<i>Gender</i>	<i>Major</i>
Pre-service Teacher 1	PT1	Female	Biology
Pre-service Teacher 2	PT2	Female	Biology
Pre-service Teacher 3	PT3	Female	Biology
Pre-service Teacher 4	PT4	Female	Biology
Pre-service Teacher 5	PT5	Male	Biology
Pre-service Teacher 6	PT6	Male	Biology
Pre-service Teacher 7	PT7	Female	Philosophy
Pre-service Teacher 8	PT8	Female	Philosophy
Pre-service Teacher 9	PT9	Female	Philosophy
Pre-service Teacher 10	PT10	Female	Philosophy
Pre-service Teacher 11	PT11	Male	Philosophy
Pre-service Teacher 12	PT12	Male	Philosophy
Pre-service Teacher 13	PT13	Male	Philosophy
Pre-service Teacher 14	PT14	Male	Philosophy
Pre-service Teacher 15	PT15	Female	Sociology
Pre-service Teacher 16	PT16	Female	Sociology
Pre-service Teacher 17	PT17	Male	Sociology
Pre-service Teacher 18	PT18	Male	Sociology
Pre-service Teacher 19	PT19	Male	Sociology
Pre-service Teacher 20	PT20	Female	History
Pre-service Teacher 21	PT21	Female	History
Pre-service Teacher 22	PT22	Female	History
Pre-service Teacher 23	PT23	Male	History
Pre-service Teacher 24	PT24	Male	History
Pre-service Teacher 25	PT25	Male	History
Pre-service Teacher 26	PT26	Female	English
Pre-service Teacher 27	PT27	Female	English
Pre-service Teacher 28	PT28	Female	English
Pre-service Teacher 29	PT29	Female	English
Pre-service Teacher 30	PT30	Male	English

As seen in Table 1, 111 (%55.5) female and 89 (%44.5) pre-service teachers participated in the research for the quantitative data. Additionally, 13 (%6.5) pre-service teachers went to the preschools for practicing, 22 (%11) pre-service teachers went to the primary schools, 87 (%43.5) went to the secondary schools and 78 (%39) pre-service teachers went to the high schools for practicing. According to Table 2, the study's qualitative data were obtained from 17 female (57.9%) and 12 (42.1%) male pre-service teachers. All the pre-service teachers participating in the research attended the practical courses in public high schools in the city center.

DATA COLLECTION TOOLS

As this is a mixed-patterned study, the data collection process was conducted in two stages. During the first phase of data collection, qualitative data were collected employing structured web diaries developed by the researchers. The creation of structured diaries begins with the research of the subjects that will serve as the basis for the research, such as diaries, lesson plans, activity plans, implementation processes, the essential elements of curriculum and courses were examined, the concepts relevant to the research problem and the codes which will be used to include these concepts were identified. Afterward, categories were identified that would provide in-depth information regarding the relevant codes, and open-ended questions were developed regarding these categories. A Literature Teacher corrected the questions as necessary to ensure the construct validity of the questions and the suitability of the questions in terms of language expression. To ensure the content validity of the diaries, a field expert from Afyon Kocatepe University examined the relationship between the codes and categories in the diaries and the questions. After these examinations, it was thought that focusing on the introduction-development-result sections of a course flow would be more effective in practice rather than the objectives, content, learning experience, and evaluation processes, which are the basic elements of a curriculum. For this reason, categories were determined in line with the codes of "Introduction Section, Development Section, Conclusion Section, Conveniences, Difficulties." Following a preliminary application with six pre-service teachers from different branches, the diaries were finalized after necessary changes were made. A holistic approach was attempted by combining the questions in each category into a single question body. The codes, categories, and questions regarding the blogs are given in the table below (Table 3).

Table 3. Creating Questions in Web Diaries

<i>Theme</i>	<i>Category</i>	<i>Interview Questions</i>
Introduction Section	Lesson Preparation	Observation Process: Evaluate the practice teacher's preparation process, lesson planning, time management, and equipment supply during the 1-5 weeks you are at the practice school. If you were the practice teacher, what would you do? Please explain in line with the gains you have obtained during the formation process. Practice Process: How did you prepare for the lesson and the lesson planning during the 6-10 weeks you were in the practice school? How would you rate your time management? How did you obtain the course equipment? Did you have a preparation process? Explain in light of your observations in the previous weeks and the gains you have made during the formation process.
	Lesson Planning	
	Time Management	
	Supply of Tools	
Development Section	Teaching Process	Observation Process: Evaluate the lessons you observed in the 1-5 weeks regarding the teaching process, classroom management, teaching methods and techniques, suitability for student level, time management, use of tools and materials, and student-teacher interaction. How would you carry out the teaching process?
	Classroom Management	
	Teaching Methods and Techniques	Practice Process: How did you plan the teaching process in the practice course you held in the 6-10 weeks of the practice? What methods and techniques did you use? What did you experience in classroom management? Evaluate your practice lesson in terms of student-teacher interaction. Please explain in line with your observations in the previous weeks and the achievements you have obtained during the formation process.
	Level Eligibility	
	Time Management	
	Use of Tools	
Conclusion Section	Evaluation Process	Observation Process: Evaluate the evaluation process, time management, lesson summarizing, evaluation studies, and assignment process in the lessons you observed. How would you carry out the evaluation process?
	Time Management	
	Summarizing	
	Evaluation Studies	

	Assignment Process	Practice Process: In the lesson, you practice and evaluate the assessment process, time management, lesson summarization, evaluation studies, and homework process. Explain in light of your observations in the previous weeks and the gains you have made during the formation process.
Conveniences	Theory+Practice Opportunities	Observation and Practice Process: What achievements have you made this week at practice school and during practice lessons? What achievements during the formation process made the process easier for you? Please explain.
Difficulties	Theory+Practice Challenges	Observation and Practice Process: What challenges did you face in practice school and practice class this week? How can these difficulties be overcome? Please explain.

In the second stage of data collection, the "Opinion Scale on School Experience and Teaching Practice Course" developed by Özçelik (2012) was used. Pre-service teachers completed the scale after completing their practices in practice schools. The scale was prepared to reveal the opinions of pre-service teachers studying at Gazi University, Faculty of Education, Department of Foreign Languages Education, English, French, German, and Arabic Teaching Programs regarding School Experience and Teaching Practice Courses. The scale consists of a single factor. The explained variance rate of the scale is 36%. It consists of 29 items, with a Cronbach Alpha of 0.93, a KMO coefficient of .87, and a Barlett test value of 2839.

DATA COLLECTION AND ANALYSIS

Participants in the study were selected before the data collection process began. Participation in the study was entirely voluntary. In the evening of the day, before the participants went to the practice school, web diaries containing the questions listed in Table 3 were sent to the participants from whom qualitative data were collected. As a result, pre-service teachers could preview the questions that would be used to fill out their diaries in advance. Pre-service teachers also developed an understanding of what they should pay attention to in the practice school activities that will take place the following day. In the evening of the day they participated in the practice school; pre-service teachers filled out their diaries. Thus, possible data loss has been prevented. Researchers checked whether the pre-service teachers' web diaries were completed at the scheduled time. By contacting the pre-service teachers who did not submit their web diaries on time, the web diaries were ensured to be submitted on time. The content analysis method was used in the analysis of qualitative data.

The data were analyzed in line with the themes and categories determined before the research. Direct quotations from the views of the participants supported the results obtained. Since the data were collected through qualitative data collection tools, descriptive analysis, one of the qualitative data analysis methods, was used in accordance with the data collection tool. Since the purpose of descriptive analysis is to summarize the event as it is, quotations are also included (Yıldırım & Şimşek, 2013). Generally speaking, it is crucial to provide information on who stated what on what theme in the interview transcripts without commenting with direct quotations, and at the same time, it is necessary to analyze the participants' views regarding the relevant theme with the direct quotations related to that theme in order to increase the internal validity of the research by relating these to the collected documents (George, 1959). The "Opinion Scale on School Experience and Teaching Practice Course," which contributed to the collection of quantitative data for the research, was completed via

Google Forms by 200 participants who participated in the Pre-service Teacher Training Certificate Program. A suitable statistical program analyzed the obtained data.

VALIDITY AND RELIABILITY

Guba (1981) proposes the reliability criterion in qualitative research against the reliability criterion of positivism. The reliability criterion means that the findings and interpretations of the research are the product of a consistent process. The process by which the findings are obtained should be as clear and reproducible as possible. This issue is closely related to the flexibility of qualitative research designs. Due to this reason, in the present study, it was attempted to ensure that the data collection process was clearly explained by providing detailed information about the development of the data collection tool, providing direct quotations from the views of the participants, and referring to the opinions of students, teachers, and data regarding the same subject. According to Merriam and Tisdell (2015), credibility is the equivalent of internal validity in the positivist paradigm of qualitative research. Internal validity refers to the consistency of the findings with reality. Credibility is defined by Shenton (2004) as long-term contact in the research environment. This research provided credibility through in-depth examinations of the study group and pre-service teacher training certificate program, the collection of in-depth data with web diaries, and frequent communication. The Cronbach Alpha coefficient was used for the reliability of the quantitative data.

FINDINGS

The findings obtained from qualitative and quantitative data will be presented concerning the research questions in this section. In the study, the first sub-problem was described as follows: "What are the opinions of the pre-service teachers about the preparation process, lesson planning, time management, and the supply and use of tools and equipment?". Findings related to this sub-problem are given in the table below (Table 4).

Table 4. Findings Regarding the Introduction of the Course

Theme	Category	Code	Frequency
Introduction Section	Lesson Preparation	Meeting and greeting students	28
		Taking attendance	29
		Short review of the previous lesson	17
		Attracting attention and motivation	11
		Preparing the materials to be used	10
		Giving information about the new topic	9
		Determining the introductory-development-concluding parts of the lesson	7
		Additional readings and identification of additional resources by the Teacher	6
		Checking the classroom, course equipment, and materials before the lesson	3
	Lesson Planning	Adherence to annual and daily plans	17
		Informing the class about the process at the beginning of the lesson	16
		Continuing the course without sticking to the annual plan	13
	Time management	Preparing a game activity before the lesson	10
		Using lesson time effectively	21
		When the lesson is over, the subject is delayed to the next week	9
		When the bell rings, the subject prolongs to the second lesson (in 2-hour lessons)	9
		Assigning students to different activities during homework control	18
		Delayed start to the lesson by waiting for students who came to class late	6
Skipping the "assessment" part of the lesson in order to use time effectively	5		
Loss of time due to not checking course materials before starting the course	5		

Supply of tools and equipment	Smartboard and interactive board	28
	Coursebooks	28
	Supplementary books and sample books	20
	Internet and digital content	20
	Maps	7
	Whiteboard and board markers	15
	Pictures and photos	11
	Reproducible activity sheets	10
	PC, tablet, graphic tablet, laser pointer, USB	17
	EBA	8
	Digital applications	9

Table 4 summarizes the emerging themes in the introduction section of the course. Sample expressions from the opinions of the participants regarding the nine codes that emerged in the "Lesson Preparation" category are given below:

"This week, our practice teacher came to the lesson prepared and planned and showed me where and what to say with certain lines. In a nutshell, she repeated the topics she discussed in the previous weeks. Using his time efficiently, she completed the lesson on time. Before moving on to the new topic, she reviewed the topics she had discussed and made connections with the new topic....." (PT3)

"The Teacher came to the lesson prepared. Initially, she summarized the topics covered previously and discussed the topics that will be covered in subsequent sections. She taught her lesson in the form of a lecture method. Using a board and constant notes, she maintained discipline in her classroom. She continued the lesson in a planned manner....." (PT7)

In Table 4, four codes are identified as belonging to the "Lesson Planning" theme. Sample expressions from the participants' views on these themes are given below:

"The practice teacher prepared the lesson plan after the activity on a topic in the classroom as requested in the united annual plan. As part of this activity, crossword puzzles will be used to answer questions regarding the subject. The practice teacher brought the puzzle activity sheets ready to be performed in the classroom during the preparation process for the lesson....." (PT8)

"My practice teacher has completed the course preparation process. Based on the lesson planning, he followed the lesson. Despite differences between classes, classroom management was effective. In the educational process, older, medium, and younger classes had different interests, knowledge, abilities, and preparations....." (PT9)

According to Table 4, seven codes related to the "time management" category emerged. Sample expressions from the participants' views on this theme are given below:

"...The lesson is finished at the lesson time that is supposed to end according to the plan. Topics that should be covered do not extend to the next week's lesson ..." (PT3)

"...The practice teacher used slides again this week as he did last week. Time management was very good and efficient....." (PT12)

The last category determined for this sub-problem is the supply of equipment. It is noteworthy that eleven codes emerged in this category. Sample expressions taken from the opinions of the participants are given below:

".....The practice teacher had already come to the lesson with slides and other materials as tools before the lesson..." (PT18)

"...He used a smart board textbook as a tool. In the first lesson, he lectures, and in the second lesson, he does various activities. In order to reinforce the subject matter, he provides students with the opportunity to solve tests. (PT14)

The second sub-problem of the research is expressed as "What are the opinions of the pre-service teachers about the teaching process, classroom management, teaching methods and techniques, suitability for the level, time management, use of tools and materials, and student-teacher interaction in the lessons they practice?". Findings related to this sub-problem are presented in the table (Table 5).

Table 5. Findings Regarding the Development Part of the Course

Theme	Category	Code	Frequency
Development Part	Teaching Process	An attempt to establish a teacher-student relationship	20
		A student-centered learning environment	8
		A teacher-centered learning environment	16
		Making the lesson interesting	14
		Using a reinforcer	13
		Achieving active participation	12
		Gathering students' attention at regular intervals	12
		A repeat of the previous subject	14
		Intermittent repetitions during the lesson	9
		End of lesson summary	10
	Classroom Management	Respect for the Teacher	11
		Not collecting phones	25
		Controlling students in the classroom by asking them to take notes	18
		Making eye contact with students	14
		Addressing students by their names	15
		Teacher's walking between the desks	11
	Teaching Methods and Techniques	Lecture method	26
		Question answer method	18
		Discussion	9
		Sampling	20
		Inquiry-based learning	9
		Note-taking	19
		Brainstorming	4
		Station technique	2
	Jigsaw puzzle technique	1	
	Level Eligibility	Teaching suitable for grade level	27
		Teaching that is not appropriate for the grade level	3
		Teaching related to achievements	18
	Time management	Allocating sufficient time to the development part of the lesson	26
		Allocating sufficient time for student participation	5
Use of tools	Effective use of smart board	24	
	Effective use of the whiteboard	15	
	Limited material use	7	
	Use of tools and equipment related to the subject	5	

The development part of the course was divided into six categories before collecting research data. Table 5 presents the codes obtained for these categories. In this title, "teaching process" is considered the second sub-problem of the study. Ten codes emerged in this category. The participants

evaluated different scenarios related to the teaching process they learned in the theoretical trainings within the program's scope for the pedagogical formation and encountered in the practice schools from various perspectives. Sample expressions from the participants' views on this theme are given below:

".....He had prepared a slide to attract the students' attention following the subject. He introduced himself to the students before starting his lesson. He explained how the subjects were important in the exam and encouraged students to pay attention to them. He asked questions to reveal his prior knowledge. Then, at the end of the lesson, he explained what subjects the students would learn and informed the students about the target. He made coding on his slide to draw the students' attention to the subject. In this way, he prevented the subject from being boring and made it more appealing to them. This coding made the subjects more memorable for the students. He also wrote on the board to highlight the critical points and asked the students to write the notes in their notebooks. In this way, he also prevented students from diverting their attention to other things."(PT25)

"...The mentor teacher, who pays attention to the students' readiness during the lesson, briefly repeats the previous subject matter, moves on to the new subject matter, and then takes the lecture notes. Using the Ministry of Education's student/teacher system, he demonstrated the cartesian philosophy and reinforced the subject with narration from that system."(S17)

The second category in Table 5 is about "classroom management." Six codes were identified in this category. Sample expressions from the participants' views on these codes are given below: *"...In terms of the student teacher, our teacher interacts with the students very well, addresses the students by their names, which increases the motivation of the student." (PT8)*

"...The Teacher wanders around the classroom and provides icebreaker exercises for distracted students. He asks them questions to engage them in the lesson and makes them read. Thus he creates an interactive environment....." (PT29)

"...While teaching the subject, he made eye contact with the students. The only negative aspect I observed was that he did not move around in the classroom. Apart from that, he came to the lesson well-planned and well-executed. The subject was taught in a timely manner, and at the end of the lesson, he asked the students questions to reinforce the subject....." (PT30)

The third category in Table 5 is "Teaching Methods and Techniques." Nine codes emerged in this category. Participants evaluated some learning strategies as a method or technique in this topic. Due to its relevance to the functioning of the course, it is discussed in this title. Below are some examples of opinions expressed by participants:

"First, he gave information about the subject he was going to talk about. In order to determine whether the student remembered the previous lesson, he asked questions regarding it. He also prevented the students from becoming distracted by asking questions during the lesson. He used the presentation method. For the student to achieve permanent learning, he made him take notes." (PT4)

"...In terms of teaching techniques, my trainee teachers used expository teaching methods. They used question-and-answer and discussion methods primarily in this technique. Question-answer is a method that corresponds to Bloom's second level, comprehension. Students' explanations of the questions asked revealed their level of understanding. The discussion method improved the students' critical thinking skills and taught them to respect different viewpoints. Therefore, there has been intense verbal communication between the student and the Teacher in expository teaching...."(PT16)

Another category in Table 5 is "level eligibility." Three codes emerged in this category. Sample expressions from the participants' views on the codes are given below:

"...I think the courses are very suitable for the level of the student. In order to make the lesson more concrete, we give plenty of examples from daily life. We make it easier for students to associate with themes." (PT27)

"...In the lesson, our Teacher explained the subject quickly so that it was over immediately. He did not involve the students in the subject and could not use the time efficiently. There was little interaction between him and the students...." (PT15)

The fifth category in Table 5 is "time management." Sample expressions from the participants' views on the emerging codes are given below.

"...In terms of time management, we can process and finish the lesson on time. ..." (PT6)

"...Time management was good and sufficient. Based on the student's level of understanding, he taught the subjects in a manner that was understandable to them...." (PT8)

The last category of the development section is the use of tools and equipment. Sample expressions from the participants' views on the codes emerging in this category are given below.

"...Throughout the lesson, he used a variety of tools, such as a board and a textbook, and he taught the subject matter in a way that is far from monotonous by establishing a conversational atmosphere....." (PT22)

"...He used an interactive board and MEB textbook as tools. Additionally, he used a source he said was his own. I observed that this resource could also be useful for students. By asking questions about the subject, he provided students with the opportunity to repeat it."(PT17)

According to the research, the third sub-problem relates to the conclusions of the course and is titled "What are the opinions of the pre-service teachers about the evaluation process in the lessons they practice, the summary of the lesson, the evaluation studies, and the assignment process?".

Table 6 presents the findings related to this sub-problem.

Table 6. Findings Regarding the Conclusion Part of the Course

Theme	Category	Code	Frequency
Conclusion Part	Evaluation process	Allocate one part of the lesson to the assessment	17
		Not including the assessment section in the course	13
		Inability to make effective assessments due to the students dropping out of the lesson at the end of the lesson.	25
		The Teacher's awareness of the importance of the evaluation step	6
	Time management	Allocate sufficient time for the assessment-evaluation of the course	13
		Allocate little time for assessment-evaluation of the course	17
		Allocate time for summarizing and assignment	14
	Summarizing	Make a brief summary of the lesson	15
		Have students summarize the lesson	8
		Not including the summary section in the lesson	15
	Evaluation Studies	Evaluating the lesson through the question-answer method	18
		End-of-topic evaluation questions	11
		Evaluation through play	8
Evaluation through competition		7	

Assignment Process	Assignments related to the topic covered	15
	Homework on the topic of the next lesson	3
	Making inappropriate assignments (which can be completed in a short time, far from the achievements, unrelated to the content, etc.)	12
	Assignment from the textbook	15
	Research homework	3
	Written assignment	8
	Assigning reading homework	6

Table 6 presents the codes associated with the categories related to the conclusion of the course. There are five categories under this heading. The first of these is the "evaluation process" category. Four codes emerged in this category. Sample expressions from the opinions of the participants are given below.

"...There was little assessment at the end of the course. Time management could have been more planned. There was no homework assigned by the teacher...." (PT10)

"...The lecture period and time management of the course were divided into three stages. These are the Introduction, the development, and the result.... The topic covered in the course is briefly summarized at the end. At this point, the students were again asked questions, and it was stated, "If you have any questions, please ask." Therefore, the question marks in the students' minds were attempted to be removed. It is recommended that students review the end of the unit in the course book concerning homework at the end of the course....." (PT17)

The second category under the Conclusion Section is "time management." Three codes emerged under this category. Sample expressions from participant opinions are given below:

"...Since group work was done in the classroom, there were deficiencies in terms of time management. It is possible to observe how this affects the evaluation process and the reflections that result from it. Due to a lack of time, the Teacher could not review the lesson again and briefly summarize it at the end of the lesson. The students took part in the discussion since the discussion method was used. Even though it was an effective lesson, I still think that the Teacher should have summarized the subject as a whole....." (PT25)

"...The lecture lasted for 30 minutes. The evaluation process included a discussion of where the problem of the covered subject originated by reconciling it with other narratives. The remaining time was spent by the students discussing how their exams had gone and the exam questions since they had just completed the exam. Then the bell rang....." (PT28)

"...Since a considerable amount of time was spent on the Introduction, there was not enough time to summarize and evaluate the course. I think the Introduction should have been shorter, and the evaluation time should have been longer. There should have been an opportunity to ask questions to the students and get their opinions on the subject. ..."(PT30)

The third category in Table 6 is "summarizing." There are three codes in this category. Sample expressions from participant opinions are given below.

"...The method of question and answer used by the Teacher in the lesson increased the students' focus on the lesson and allowed the Teacher to determine whether the students understood the subject. Since the Teacher had difficulties planning the lesson, she could not provide a complete summary. Summing up and reviewing was too short. I would plan the lesson better myself and do the summary assessment correctly....." (PT2)

"...My practice teacher completed the lesson by making general comments on the short summaries at the beginning. At the end of the unit, students were asked a series of questions as an

evaluation. This provided a means of assessing whether the students understood the subject. Those who made mistakes were given low marks. Moreover, at the end of the lesson, the students were assigned to work on the new unit....." (PT5)

The other category in Table 6 is "evaluation studies." Four codes emerged under this category. Sample expressions from participant opinions are given below.

"..In the evaluation part, questions about the lesson were asked, and I observed that some students did not listen to the lesson carefully and did not understand the subject, but some of them listened carefully and answered the questions....." (PT6)

"..I had the students complete the concept map, which I had prepared at the end of the slide, in the form of a competition. Seeing the subject I explained as a whole, made it easier for them to learn. Using the time correctly, I finished the class before the bell and made a general round-up. By directing the tests I had prepared about the subject to the students, I saw how much learning took place. ..."(PT11)

The last category under this heading is "assignment process." There are seven codes in total here. Sample expressions from the opinions of the participants are given below.

"...Instead, some things that were said from time to time were repeated or asked the students. No assignments have been made ..." (PT5)

"...The homework is given on time and is checked on time. Some places are requested to be written and come to their homework so that they can pre-study next week's topic" (PT12)

"...As part of the homework process, Hüseyin Teacher reminded the students that they were responsible for reading the book and bringing the summary that was provided to them at the beginning of the semester. Specifically, he reminded the students that they must present any tests and test solutions given to their teachers....." (PT15)

"..In the assignment process, the teacher assigned points based on what the students wrote in their notebooks. Participation in the lesson was very important...." (PT17)

The fourth sub-problem of this study is formulated as "What are the opinions of the pre-service teachers about the contribution of the theoretical knowledge they received in the pre-service teacher training program courses to the application process?". The themes, categories, and codes related to this sub-problem are given in Table 7.

Table 7. Conveniences Encountered in Theory and Practice Courses

Theme	Category	Code	Frequency
Conveniences	Theory+Practice Opportunities	Having information about written exams applied in schools	25
		Learning to use course materials	26
		Establishing an effective student-teacher relationship	22
		Ensuring classroom discipline	25
		Coming to class with preparation	19
		The Teacher's role as a guide in the classroom	17
		Adjusting the tone during the lesson	18
		Gaining practice on pre-repeat, mid-repeat, and end-of-course summary	17
		Using the right amount of reinforcement at the right time	16
		Applying the methods and techniques learned in theory	21
		Establishing a value system between students and Teachers	18
		Identifying students' needs and wishes	20
		Evaluating exam papers - Preparing answer keys	27
		Learning the intricacies of preparing course material, especially slides	24
		Gaining practice in the step of drawing attention at the entrance to the lesson	14
Controlling excitement and anxiety during the class	28		

Table 7 gives an overview of the theoretical lessons that the participants took within the framework of the pre-service teachers training program and the advantages they gained from their practical lessons. Sample expressions from the participants' views on these codes are given below:

"...This week, we went to school to help our practice teacher with the exam. It was new to me that exams were conducted this way, but I learned it, organized the files, and organized the class question papers. It was explained to me by the practice teacher....." (PT2)

"...first of all, I made a gain in how I should adjust my tone and how my pronunciation should be. At the same time, I learned about topics such as addressing the class and providing self-control....." (PT7)

"...During the formation process, the special teaching techniques course and the guidance of the practice teacher made this process easier for me." (PT11)

"...Our practicing teacher integrates the theoretical knowledge with his own experience very effectively. Observing our teacher, I believe that we will have the necessary equipment in this regard." (PT17)

"...In addition to overcoming my excitement, I am getting used to the teaching profession. Although the contribution of the teachers in the formation lessons and practice is undeniable, I can say that seeing the changes in the school environment and students motivates me more....." (PT21)

Table 8 summarizes the disadvantages of the theoretical courses participants took within the framework of the pre-service teachers training certificate program and the practical courses in which they applied them. The following table contains the research findings related to the fifth sub-problem.

Table 8. Difficulties Encountered in Theory and Practice Courses

Theme	Category	Code	Frequency
Difficulties	Theory+Practice Challenges	The situation in what is learned in theory does not affect the emotional state in practice (excitement, anxiety, etc.)	15
		Difficulties in classroom management	11
		Difficulties in teacher-student communication	9

Based on the results of the theory courses as well as the practice courses, Table 8 shows the codes associated with the difficulties encountered by the participants. Although the participants took courses on solving these problems in theory courses, they faced these problems in practice. Below are some examples of opinions expressed by participants:

"...We had difficulties in classroom management ..."(PT9)

"...Among the challenges I faced, this week was when a student interrupted the lesson by over-talking, continuing to do so even though I told her to be quiet and not interrupt the lesson. Behaving this way negatively affected the class, causing other people to be distracted, and I had difficulty maintaining self-control. Gains about how I should approach such students without offending them, how I should treat them, and how I can manage the process in such events can be included....." (PT15)

"...I see that I have deficiencies in practice courses such as Theory and Practice. I expected that they would show us the practice part more actively during the formation process...." (PT17)

"...I think the time in practice schools should be shorter. During the pandemic process, the conditions become even more difficult when formation students are in classes with many students. The application course can be divided into half theoretical and half practice hours. Animated lessons can be taught to high school students, and topics such as behavior, speech, gestures, and facial expressions can be explained theoretically. Although we learn these skills from our practice teacher through observations, I believe they should be emphasized much more actively and practically....." (PT27)

The sixth sub-problem of the research has been determined as "What are the opinions of the pre-service teachers about the practice course they have participated in as part of the pre-service teacher training program?". In this sub-problem, the quantitative data of the research were collected.

Table 9. Descriptive Statistics of Preservice Teachers' Opinions on the Practice Course

Scale	Sub-Dimensions	N	Number of Items	X	SS	X/MS
Opinion Scale on School Experience and Teaching Practice Course	1. Practice Process	200	10	40,91	4,39	4,09
	2. Practice Academician	200	6	25,41	4,28	4,23
	3. Practice Teacher	200	8	34,67	4,47	4,33
	4. Practice Class/School	200	5	19,91	3,47	3,98

There are descriptive statistics in Table 9 concerning pre-service teachers' views regarding the process, instructor, practice teacher, and practice class/school. According to the results, the mean of the dimension, which includes items covering the opinions of preservice teachers regarding the "implementation process," is (X=40.91), with opinions ranging between 4.09 and "I agree." Among preservice teachers, the mean of their opinion in the dimension of "practice academician" (X=25.41) ranged from 4.23 to "Totally Agree." While the average is (X=34.67) in the third subdimension, "Practice Teacher," it is evident that the opinions of teachers remain in the "Totally Agree" range. "Practice Class/School" is the last sub-dimension of the scale. Among the preservice teachers, the average is (X=19.91), with a range of opinions between 3.98 and "I agree."

In Table 10, the findings related to the last sub-problem are presented.

Table 10. T-test Results of Preservice Teachers' Practice Lesson

Scale	Sub-Dimensions	Gender	N	X	SS	t	p
Opinion Scale on School Experience and Teaching Practice Course	1. Practice Process	Female	109	40,3945	4,32268	-1,843	,067
		Male	91	41,5385	4,32268		
	2. Practice Academician	Female	109	25,5046	4,06344	,341	,733
		Male	91	25,2967	4,55459		
	3. Practice Teacher	Female	109	34,9174	4,35492	,838	,403
		Male	91	34,3846	4,62065		
	4. Practice Class/School	Female	109	20,0367	3,29682	,540	,593
		Male	91	19,7692	3,70008		

Based on Table 10, the first dimension of the scale, "in the process of practice," was found to be (t=-1.843; p>.05). The opinions of participants regarding the practice process do not differ significantly by gender in this dimension. It is seen that it is in the second sub-dimension of the scale (t=.341; p>.05). In terms of gender, there is no difference in the views of participants in the sub-dimension "Practice Academician." The third sub-dimension of the scale includes items related to "Practice Teacher." This sub-dimension appeared as (t=.838; p>.05), and there is no difference in this dimension regarding the gender variable. The last sub-dimension is about "Practice Class/School." In this sub-dimension, the t-value (t=.540) and the p-value (p=.593) were calculated as p>.05. This sub-dimension does not differ according to gender.

DISCUSSION, CONCLUSION AND IMPLICATIONS

After being removed from practice at various intervals in recent years, put back into practice again, and causing controversy from time to time, the pre-service teacher training certificate program has been reinstated by changing its content in the 2021-2022 academic year in Turkey. One of the most

significant changes is the requirement that the program is completed within two semesters. In addition, it is another significant change that pre-service teachers put into practice after the first six-week observation period. Pre-service teachers are able to practice more in practice schools as a result of these changes. Through web diaries and application evaluation scales, this study aims to reveal the opinions of pre-service teachers about the pre-service teacher training program, which was implemented in the 2021-2022 academic year with some innovations.

Thus, the first research question pertains to the introduction part of the course, which includes the preparation process for the course, planning of the course, time management, and the use of equipment. This sub-problem revealed nine codes in the category of "course preparation." In practice teaching, most pre-service teachers stated that they learned how to make the first entrance to a lesson and how to greet students. In theoretical lessons, classroom management and lesson planning are explained in the introductory part of the lesson; however, in practice, issues such as signing the course schedule and taking attendance become more understandable. In this sub-problem, "lesson planning" was identified as the second category. Four codes emerged in this category. Pre-service teachers reported following annual plans and lesson plans both in their observations and in their teaching. However, some of the pre-service teachers noted that the annual plan and lesson plan were not followed exactly. This situation shows that pre-service teachers know about planning and can see to what extent practice teachers follow the plans. The third category is "time management." Seven codes emerged in this category. In their observations and practices, the majority of pre-service teachers found that the lesson time could be used more effectively. In fact, this is closely related to planning. It is evident that there is no problem with time management when the annual and lesson plans are adhered to. The last category of this sub-problem is "tools and equipment." As part of the course equipment, pre-service teachers mentioned a variety of tools. During the theory courses, the students learned the types of tools and materials that can be used in learning environments, and in the practice lessons, they learned how and when to use these tools. So, it can be said that pre-service teachers are positive in terms of school practice. Additionally, they find the theoretical and practical parts of school practice consistent. Because they didn't have the chance to practice more before. They generally observed the courses taught by practice teacher.

The second sub-problem of the research focused on the development part of the course. Under this title, the first category was "teaching process." Ten codes emerged under this category. This situation indicates that pre-service teachers understand the details of the course's development component. The second category is "classroom management." Six codes emerged under the category. The participants are found to have a good understanding of classroom management, to be able to provide solutions to problems that may arise and to be able to identify issues that may pose problems in the classroom. The third category is "teaching methods and techniques," and nine codes emerged. As can be seen from the results, participants were capable of identifying the teaching methods and techniques used most often in practice classes, and they were able to suggest alternative approaches. Although pre-service teachers learn teaching methods and techniques that can bring the student to the center in theoretical lessons, it is seen that a very limited number of methods and techniques are mentioned in practice classes. This may be due to the fact that the practice teachers did not use too much student-centered techniques in the process of observing. The other category is "level eligibility." Three codes emerged in this category. The pre-service teachers stated that while some of the lessons taught in the practice classes were appropriate for the students' level and that the lessons were handled in accordance with their achievements, some of them stated that they preferred teaching that was not appropriate for the class. Other categories within the development section include "time management" and "tool use." A total of six codes emerged in these categories. A number of pre-service teachers indicated that they learned how to use time effectively in the main part of the lesson and how to use the lesson tools and equipment by relating them to the lesson, especially in practice classes. Yalçın and Akay (2015), in their study on pre-service teachers, determined that they considered

themselves competent in the areas of "teaching and learning process" and "monitoring and evaluating learning and development." In the study conducted by Akyıldız (2017), it was concluded that the teaching practices carried out in schools contributed to the pre-service teachers' self-efficacy in the dimensions of planning, implementation, and evaluation of the teaching process. It is clear from this example that both previous pre-service teacher training programs and new one contribute to the gains that pre-service teachers need to be successful during the practice phase.

The third sub-problem of the research aims to reveal opinions about the conclusion part of the courses. A total of five categories and twenty-one codes emerged under this title. The majority of pre-service teachers reported that they did not see in practice the measurement-evaluation activities that they learned in theory. This is because teachers in practice schools do not give much space to the evaluation step. Practice teachers may skip this step with the concern of covering all the subjects in the curriculum. This indicates the presence of another problem. The study by Erdoğan and Kurt (2012) found that teachers' perceptions of assessment and evaluation efficacy are generally at a moderate level.

In the fourth and fifth sub-problems of the study, the pre-service teachers were asked about the convenience and difficulty of the subjects they saw in theory within the context of pedagogical formation lessons in practice schools. Even though most pre-service teachers attended lessons on test development techniques in theory, they stated that they saw detailed information about preparing written tests in practice schools. In addition, pre-service teachers stated that they learned many subjects, such as learning the effective use of course materials, establishing an effective student-teacher relationship, ensuring classroom discipline, using reinforcement, and time management during practice. In light of this situation, it can be seen that pre-service teachers possess some scientific knowledge in theory courses but have acquired many new skills and qualifications during practice. Many of the pre-service teachers stated that the courses they took, in theory, were not sufficient to prepare them for the anxiety and excitement they experienced during classroom practice. This may be because pre-service teachers do not speak much in theory lessons, lack active participation and theoretical practices, and have inadequate demo presentations. In the study conducted by Öztürk Akar (2018), which is related to the previous pre-service teacher training program, it is seen that some participants stated that the pre-service teacher training program was long, and some participants stated that it was short. Apparently, due to the intense execution of the program in a relatively short period, all the necessary applications could not be completed by the participants.

Along with the time limitations, the participants' responses indicate that the instructors' attitudes and approaches contributed to the inability to submit applications. This situation is likely related to the research context as well as to the individual preferences of the instructors. However, the pre-service teachers in this study did not report any difficulties regarding practice times following the change of the preparation program. This situation indicates the adequacy of the theoretical and practice periods of the program, which have been extended to two terms.

This study's sixth and seventh sub-problems pertain to the questions that were asked to collect quantitative data. Upon review of the theoretical courses they have taken within the context of the pre-service teacher training program and the practices they have carried out in the practice schools, it can be seen that pre-service teachers have acquired gains in several sub-dimensions. In particular, pre-service teachers achieved success regarding the implementation process through their activities in practice schools. Again, the statements of the pre-service teachers show that the practice instructor and the practice teacher contribute to the pre-service teachers in obtaining the fundamental values of the teaching profession. Within the scope of the pre-service teacher training program, there is no significant difference based on gender in the theoretical and practical training received by pre-service teachers. In other words, female and male pre-service teachers benefited similarly from the pre-service teacher training program. In the study conducted by İlğan, Sevinç, and Arı (2013), it was concluded that there was no difference in the attitudes of pre-service teachers towards the teaching

profession in terms of gender variable. Many studies reach similar conclusions on this subject. The study by Öztürk Akar (2018) also found another complaint about the instructors regarding the teaching practice course. Some participants reported that the instructors did not provide adequate guidance during the internship. Considering the number of students attending the program, it is not surprising that instructors cannot physically follow the teaching practice experience of these students. This situation points out the necessity of reducing the program quotas and downsizing the groups, which the participants emphasized regarding the improvement of the pedagogical formation certificate program applications. In this way, negative experiences encountered in the interaction between the student and the instructor can be avoided. Similarly, Aslan and Sağlam (2018) stated that pre-service teachers have some expectations from the instructor, including following the process and providing feedback, accompanying them to school at the beginning of the application process, and maintaining positive relations with the school administration; however, these expectations were not met. The renewed program appears to have partially eliminated these negative aspects. The practice instructor is responsible for observing each student at least twice a semester. Since the practices began in the sixth week and continued throughout both terms, the pre-service teachers will likely be able to benefit from the instructor's experience. The results of these studies indicate that students' attitudes toward teaching were largely positive, and there was no significant difference based on gender, age, education type, marital status, or employment status. Only the fields in which the students graduated or are enrolled made a difference in attitudes toward the teaching profession. Many studies have revealed that the gender factor alone is not influential on the attitude towards the teaching profession (Erden, 1995; Gürbüz & Kışoğlu, 2007; Sayın, 2005; Şimşek, 2005; Tanel, Kaya & Tanel, 2007; Yüksel, 2004). However, there are studies showing that there is a difference (Erdem, Gezer & Çokadar, 2005). This may be due to the field differences in the pedagogical formation programs of preservice teachers.

As a result, pre-service teacher training programs should be taken very seriously in terms of both theory and practice courses. As part of this study, the contributions and shortcomings of the pre-service teacher training program, which was implemented in 2021-2022, were analyzed in various dimensions through web diaries and measurement tools. It is apparent that pre-service teachers benefit from the various titles of the renewed teacher education program. It is evident that they view this as an opportunity, especially since the theoretical knowledge they have acquired can be put into practice in a short period of time, such as six weeks while continuing to take theoretical courses on the one hand and practicing on the other. This is a long-term study conducted by collecting weekly data from preservice teachers during the fall and spring semesters of pre-service teacher training program. The measurement tool used in the program evaluations is considered important in the context of preservice teachers' weekly practice experiences. Detailed information is provided regarding the operation and continuity of the renewed program. In addition, the study was limited to pre-service teachers who participated in pre-service teacher training programs and participated voluntarily. In future studies, the views of each branch can be evaluated separately, and the program's functioning in various parts can be evaluated.

AUTHOR CONTRIBUTION

- First author made substantial contributions to introduction part, conception and design, acquisition of data, analysis and interpretation of data.

-The second author made substantial contributions to data analysis, findings, discussion and conclusion.

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You Are Welcome Here: What Campus Resources Are Needed to Recruit, Retain, and Graduate International Students at Large Universities?

Kasım Kiroğlu, Prof. Dr., Ondokuz Mayıs University, Türkiye, november@omu.edu.tr

 0000-0001-5711-9182

Michael Kung, Dr., University of Florida, Gainesville, USA, mkung@ufl.edu

 0000-0002-0155-7201

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Abstract

As globalization in education spreads, students will be more likely to study abroad; these international students are integral to institutional reputation and cultural enrichment. As such, educational institutions need to better understand what is necessary to recruit international students, provide them with a successful educational experience, and facilitate their path to graduation. In this study, an exploratory survey was distributed to international students at two large universities (>50,000 students) in the US and Turkey. The survey yielded n=182 responses. After analyzing the participant responses, their primary experiences fell into three themes: expectations, challenges, and needed improvements. Overall, the international students appeared satisfied with their educational experiences, but highlighted areas of improvement. Universities will need to create an action plan to help work with students during the recruiting process, during their time at the university, and during their final semesters when they prepare to graduate and look for a job.

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INTRODUCTION

Globalization has transformed the national boundaries of the educational territory across the world, especially within higher education institutions. In 2017, about 5.3 million students studied or pursued an international education experience compared to 2.1 million students in 2001 (Institute of International Education, 2017; UNESCO Institute for Statistics, 2020). Therefore, international students are one of the important issues that need to be emphasized. For this study, international students from a university in the US and a comparable university in Turkey were examined.

While the overall trend of globalization has been increased numbers, the past few years have shown a decrease in numbers of international students in the US. In 2018-2019, there were 1,095,299 international students, which was a 0.05% increase over the previous year although this was due to an increase in international students participating in Optional Practical Training; when examining only new international students, there was a -3.3% change in 2016/2017 compared to the previous year, a -6.6% change in 2017-2018, and a -0.9% change in 2018-2019 (Institute of International Education, 2019). In Turkey, however, the number of international students has been steadily increasing from 48,000 in 2013 to over 200,000 in 2020 (Yükseköğretim Bilgi Yönetim Sistemi, 2021). The country's target is to have 250,000 by 2023.

An ongoing goal of both universities in this study is to increase the number of international students and international engagements given the current trends of increasing student mobility. This study examines the challenges facing current students and explores what campus resources are needed to help recruit, retain, and graduate these students. In order to obtain this information, an online survey was made available to all international students at a large university (>50,000 students) in the United States and in Turkey who had a large international student population (>5,000 international students). The results revealed the factors that influenced an international student's decision to attend a particular university and what was needed to recruit, retain, and graduate international students at large universities.

LITERATURE REVIEW

Some of the literature also highlights the vulnerability of international students to exploitation and falling prey to phishing scams, fraudulent check scams, or phone scams. Phone scams have particularly been effective towards international students since the scammer will usually impersonate a government agency, such as the IRS, or law enforcement officer threatening to deport the student unless the scammer is paid.

When international students adjust to the country's life they study in, they deal with a period that may be difficult for them to overcome. This period has been called different names by various researchers. Some of these names are, transition shock (Bennet, 1998), culture shock (Zhai, 2002), and cultural differences (McLachlan & Justice, 2009). Whatever the name is, it is the term used by the researchers to explain the problems that an individual faces when they encounter a culture different from their own culture, including difficulties in adapting to a different education system and differences in host culture (Olivas & Li, 2006; Smith & Khawaja, 2011; UKCISA, 2012; Zhai, 2002).

International students are confronted with many problems because they do not know the language of the country they are studying or the language of education. Due to language deficiency, students experience various problems such as social isolation, loneliness and depression (McLachlan & Justice, 2009; Smith & Khawaja, 2011). The common difficulties experienced by international students based on various researchers are summarized in the Table 1. Table 1 lists the problem category (culture shock, homesickness and loneliness, emotional outcomes, community and support), then further breaks these categories down into sub-problems (e.g., academic and social differences, food differences, weather, etc.) and provides a brief explanation of the problem described.

Table 1. *The difficulties experienced by international students*

<i>Main Problem</i>	<i>Sub-problem</i>	<i>Content</i>
Culture shock	Academic and social differences	In some cultures, academic achievement is perceived as a social pressure. Success and failure bring disgust and shame not only to the international student but also to the family in the country. In this way, international students experience even more difficulties (Hannassab & Tidwell, 2002). Additionally, teaching and learning styles can significantly differ between countries. For instance, some international students are accustomed to being lectured by the professor and not having a class discussion where the students share their own opinions (Kung, 2017).
	Food differences	Some students have difficulty adjusting to the food and cuisine of the host country (McLachlan & Justice, 2009).
	Weather differences	Some students struggle with the weather differences in the host country (He-Chen, 2009; Hess & Linderman, 2002; McLachlan & Justice, 2009)
Homesickness and Loneliness	Distressed by loneliness	The inability to speak enough English, which is a major challenge for international students, has a significant impact on the ability to communicate effectively and establish friendships with their faculty and classmates. This situation leads them to lonely, isolated, and alienated (Haydon, 2003; Kung, 2017; Trice, 2003).
	Pressured to perform	For an international student, there are ideals and concerns about the future, such as having a good occupation or status. This complicates efforts to adapt to a new academic and social environment. In fact, sometimes with the accumulation of problems seen as simple, can lead to the emergence of increasingly effective serious problems (UKCISA, 2012).
	Isolated by language	International students who are not confident in English speaking have a serious disadvantage in adapting to the host country. This leads them to a serious process that can lead them to hate the host country (Brown, 2008). In addition, although some international students have mastered the English language and succeeded in the exams, they have difficulty in communication because they do not have knowledge about the historical, cultural values of the host country, and they do not understand what the meaning lies behind even though they know the words in the class jokes (Yue, 2009).
Emotional Outcomes	Overwhelmed by high expectations	International students receiving scholarships are overwhelmed by academic workloads and expectations due to fear of losing scholarship (McLachlan & Justice, 2009; Yeh & Inose, 2003).
	Reluctance to seek help	The vast majority of international students are particularly reluctant to receive help with mental health counseling (Arthur, 1997; Mori, 2000; Poyrazli & Grahame, 2007).
Community and support	Mentors	It is seen that the students who meet a new social environment or a family with the help of the experts in the faculty, staff, or other students experience problems less often; however, the international students that do not receive support from faculty experts experience more problems (Kung, 2017; McLachlan & Justice, 2009).
	Fast friendships	International students are more likely to establish friendships with students from their own countries who speak the same language to make friends quickly. This extends their social integration process (Poyrazli & Grahame, 2007).
	Local friends	International students think that establishing friendships with the students of the host country is slow, and sometimes frustrating (Poyrazli & Grahame, 2007).

Navigating academic culture in a foreign country is another area that presents an obstacle for international students. Some advisors are inexperienced when working with international students, although studies have revealed that having a strong relationship with an advisor can lead to a variety of benefits such as timelier graduation, increased research collaboration, improved sense of belonging, and decreased stress and attrition (Marijanovic, Teague, & Means, 2021). The matching of an international student with an advisor is more complex than many assume and can lead to significant changes in an international student's progress. With the correct, experienced advisor, an international student can have an engaging and effective learning experience. However, a mismatched advisor creates a toxic relationship that can cause the international student to feel more stressed and to develop increased anxiety, disengagement, and depression (Marijanovic, Teague, & Means, 2021). For instance, international students have reported occurrences of racism, stereotyping, and hostility with their advisor (Glass et al., 2015).

As a result of the studies conducted to find solutions to the problems experienced by international students, some results have been reached. In some universities in the US, two different and innovative programs have been implemented for international students that have led to positive results:

- a) Speaking partner: International students are matched with faculty, staff, or students to increase the language competence of international students and to assist in the cultural adaptation process (Zhai, 2002).
- b) Cultural sharing model: International students are matched with American students as friends (Shigaki & Smith, 1997).

International students tend to have difficulties adjusting particularly from a social perspective. Many international students report being unsatisfied or partly satisfied with the quality of friendships in the US, with students from East Asia having few to no American friends (Glass et al., 2015). Thanks to these two models, some international students have the opportunity to interact with American hosts and to receive coaching on cultural rules and social skills. Thus, those international students experience less culture shock in America (Shigaki & Smith, 1997; Chapdelaine & Alexitch, 2004).

As a result of the fact that international students do not always adequately understand the language of education or the spoken language of the country where they are studying, they confront many problems. For instance, in Japan, the ability of international students to learn Japanese is considered within the national policy framework and is considered among the country's priorities. Language learning centers have been professionalized so that the Japanese language can be learned correctly and quickly (McLachlan & Justice, 2009; Smith & Khawaja, 2011).

Another example is the national advisory body called the UK Council for International Student Affairs (UKCISA), which serves international students and the benefits of those who care about them. The purpose of this board is: to increase the support given to international students; to raise awareness in the society about the benefits of international education to the country; to contribute to the professional development of the staff working in the relevant units; and to identify and eliminate the factors that negatively affect the international student flow. In addition, this committee closely follows the policies of the government relating to the international students and tries to direct these policies in line with the benefits of the students through the publications and lobbying carried out by them (Özoğlu, Gür, & Coşkun, 2012).

In the UK, a central application system (UCAS) has been developed to facilitate the application of international students to universities and to reduce the workload for universities. Through this system, students can apply to as many universities as they want via a single web page and track the results of the application.

GLOBALIZATION TRENDS

General globalization and internationalization of education have pushed students to study abroad (Altbach & Knight, 2007; Brooks & Waters, 2011; Gürüz, 2011). The decision to select a destination country or institution is generally influenced by a number of factors that drive international students to leave their home countries to pursue an education abroad (Banjong & Olson, 2016). When participants decide to go abroad for education, the prestige of a foreign diploma, finding a job easily in their home country, finding better educational opportunities, learning a foreign language, and the instrumentalization of higher education to go abroad are among the pulling factors at work, whereas personal development, personal and professional interests and the role of peer social capital constitute the pushing factors (Boyacı & Oz, 2019). Additionally, cost of living; health, and safety; quality of education; scholarship and post-graduation employment opportunities are other factors affecting international students' decision (Ammigan, 2019).

There has been an unprecedented growth of international students in recent times, and the numbers are forecasted to increase (Chaney, 2013; Bordia et al., 2018). The number of international students has risen from 800,000 in the mid-1970s to over 3.5 million in 2009 (British Council, 2012) and it was more than 5 million in 2018 (Institute of International Education, 2018a). This number is expected to exceed 8 million by 2025 (UNESCO, 2015). The global education industry is not only one of the largest sectors worldwide but also one of the fastest developing (Euromonitor International, 2017). Boyacı & Oz (2019) stated that the volume of the global education sector would reach \$568 billion dollars in 2025.

When the country preferences of international students are examined, the USA is the most preferred country by international students (OECD, 2018). The United States hosts about 22% of all international students, and this figure points to more than twice the number of international students in the U.K., which is the second most popular destination (Institute of International Education, 2018a). The number of international students in the U.S. grew from 723,277 in 2010 to 1,078,822 in 2016, indicating an increase of 49% in enrollment over just 6 years (Ammigan, 2019), and in the 2018-2019 academic year, it was stated that the number of international students studying in the USA was 1,095,299 (Institute of International Education, 2019).

When the regions where international students come from are examined, it is stated that the highest number of students come to U.S.A. from the Asian continent (n=758,076) and China (n=363,341) takes the lead by country (Institute of International Education, 2018b). China is followed by India (n=196,271) and South Korea (n=54,555) (Institute of International Education, 2018b). The Institute of International Education's (IIE) report also contains information on students who are American citizens and international students in other countries. In the 2016-2017 academic year, 332,757 American students were enrolled outside the U.S as an international student, with 65% of these students with short-term student mobility in the countries they travel to, and only 2% of the students have a long period of time, such as one academic year or more.

BENEFITS OF INTERNATIONAL STUDENTS

International students are extremely vital to US higher education for both academic prestige and financial benefits (Altbach & Knight, 2007). When the 2017 and 2018 reports of the IIE are analyzed (Open Doors), more than 65% of international students are provided with educational funds from outside the United States and these funds were recorded as input to the American economy. International students contributed about US\$45 billion to the local economy in 2018 and they played a major role in innovation (Institute of International Education, 2019; NAFSA, 2019). In the case of Turkey, over 170,000 international students at 206 universities contribute about \$1 billion to the economy, according to the International Education Fairs of Turkey (Daily Sabah, 2019).

For decades, universities around the world have been intellectually, culturally, and educationally enriched by the enrollment of international students, who bring a plethora of experiences, perspectives, and skills to host country institutions (Martirosyan, Bustamante, & Saxon, 2019). International students have impacted universities and colleges positively by contributing to research efforts, bringing diverse perspectives to the classroom, and providing opportunities for domestic students to develop cross-cultural competence, especially for those who have not had the opportunity to study abroad (Urban & Palmer, 2014). They contribute to the diversity and internationalization of their classrooms, campuses, and communities (Wu, Garza & Guzman, 2015). International students offer different and diverse views; they have better academic performances; they bring global perspectives to class discussions and assignments; and they contribute to campus multilingualism (Jin & Schneider, 2019). Namely, these students bring new divergent ways of thinking and catalyze academic competition (Wu, Garza & Guzman, 2015).

International students are of great benefit not only to their host country but also to their own country. It is known that the contributions of different perspectives to their countries as well as the innovations made in their own countries are great. For example, in 2013, China became the country that sent the largest number of international students worldwide and at the same time, they held about one third of the 2.6 million patents received in the same year (UNESCO, 2015). Parallelism between the number of international students and the number of patents obtained by China is remarkable; while other factors may need to be considered, it appears that for China, the high number of students sent abroad has resulted in greater prestige and benefits for the host country.

METHOD

The researchers in this paper are both employed at large universities and interact with international students regularly. They chose to employ a survey with open ended questions to answer three research questions: (RQ1) What is needed to recruit, retain, and graduate international students at large universities?; (RQ2) What are common challenges international students face?; and (RQ3) How can the university address these concerns? The target population of the study were international students (undergraduate and graduate) who were attending the target universities and had studied there for more than one semester. This study was held at two large universities (>50,000 students), one in the United States and one in Turkey. The survey questions and study were approved by the university institutional review board, and participants were provided with an informed consent before completing the survey.

DATA COLLECTION

Survey questions to learn about the international students' experiences were created based on existing literature of common international student challenges as well as personal interactions with international students by the researchers. As an exploratory study, the researchers decided to create a short survey with 11 questions in order to attract more participants, as the survey could be completed in 2-3 minutes. The survey was first created in English and a version of the survey was translated into Turkish by a translator fluent in both English and Turkish. The only difference between the survey questions was the reference to the university. The survey was distributed using the online survey software Qualtrics. Participants in the American university received the English version, and participants in the Turkish university received the Turkish version of the survey.

The survey was open for three weeks, during which time the survey was advertised through social media, email list-servs, and posters hung at locations where international students tended to congregate. After the survey was closed, basic statistical analyses were performed on the quantitative portions of the survey to produce a summary of the results. Qualitative analysis was conducted by reading all the results and performing a word frequency count and thematic analysis by both researchers. Thematic analysis followed the steps described by Braun and Clarke (2006) including: (1)

familiarizing yourself with the data, (2) generating initial codes, (3) constructing themes, (4) reviewing themes, (5) defining and naming themes, and (6) producing the report.

LIMITATIONS

The researchers acknowledge that the data may not be entirely generalizable since they focused only on two universities and the participants may not be fully representative of the entire international population. However, based on the number of countries represented by the student responses (50 countries), the data would serve as a good starting point. Many international students go through the same experiences, regardless of country of origin, as demonstrated by the student responses.

FINDINGS

In all, the survey yielded 182 responses total with n=133 from the US university and n=49 from the Turkish university (Table 2). The participants came from 50 different countries, with the most respondents from India (n=36), China (n=27), and Turkmenistan (n=17). Of the participants, n=75 were female and n=107 were male. Regarding academic program, 123 were graduate students, 52 were undergraduate, 6 were other, and 1 did not reply. When asked how many years they had been at their respective institutions, 14 had been there less than a year, 24 had been there one year, 42 had been there for between 1 and up to and including 2 years, 37 had been there between 2 and up to and including 3 years, 40 had been there between 3 and up to and including 4 years, and 25 had been there over 4 years. Finally, of the participants, when asked how they first heard about their university, 10 students heard from an education fair or campus recruiter, 77 heard from friends or family, 36 heard from school/university advisors, 16 hear from social media or an advertisement, and 43 heard from another source. Finally, about 71% (n=130) of respondents were satisfied with the support they received from their university’s international center, while 27% (n=49) were unsatisfied; three participants did not answer this question.

Table 2. Participant Demographics and Survey Results

Question	n	Question	n
Location of Student		Number of Years at Institution	
USA	133	x < 1 year	14
Turkey	49	1 year	24
Home Country		1 < x ≤ 2	42
India	36	2 < x ≤ 3 years	37
China	27	3 < x ≤ 4 years	40
Turkmenistan	17	x > 4 years	25
Other	49		
Gender		Hearing about university source	
Male	107	Friends / family	77
Female	75	School / university advisors	36
		Social media / ad	16
		Another source	43
Current Academic Program Level		International center satisfaction	
Graduate	123	Satisfied	130
Undergraduate	52	Unsatisfied	49
Other	6		

N=182; question replies voluntary

Based on the survey results, international students tended to select their university mostly based on rank, quality academics/faculty, potential research opportunities, tuition and attractive scholarships or assistantships, and pleasant location and living conditions. Some additional unique

reasons included having friends currently attending, following their professor from another university, having family members previously attending, having an easier application process, and being the only university with the desired major. After analyzing the participant responses, their primary experiences fell into three themes: expectations, challenges, and needed improvements.

Regarding expectations, about one-third of the respondents said they had no expectations coming in, one-third said their expectations were met, and one-third said their expectations were not met. Students who said their expectations had been met mentioned common themes such as receiving a good education and academic support (excellent instructors, lab facilities and school facilities - gyms, friendly people) and enjoying the campus (beautiful campus, good social environment, nice weather). Students whose expectations were not met mentioned themes such as not having enough funding, not being able to find internships/jobs, and not being provided with necessary support/resources for international students when facing a problem. Student expectations are a good indicator of what is needed to recruit, retain, and graduate them (RQ1). Even if universities fail to meet expectations, they can become aware of what is important for international students and focus their efforts on providing ways to meet the expectations. Students who had their expectations met enjoyed their educational experiences more and were more likely to want to choose to stay with their current university

When it came to challenges (RQ2), the participants described difficulties adjusting to culture shock (such as language and food), teaching style/assessment student, not receiving enough academic and cultural support, transportation, discrimination and feeling unwelcome, loneliness, and limited jobs available for international students. These were expected based on previous literature and experiences working with international students. One interesting observation was that the respondents in the US tended to focus more on finding jobs and less about language when compared to participants from Turkey. This may be due to different end goals, as well as difference language admission requirements. When an international student pursues a degree at a foreign university, it is natural to face multiple challenges. What seems to make a difference for the international student is how much support they receive when facing these challenges. If a university is able to acknowledge that international students face additional challenges than when compared to domestic students, the international students feel more welcome and are more likely to succeed and continue with their studies as well as go on to become recruiters for other potential international students.

Finally, one of the best ways for universities to maintain and even grow their international students is to ensure that their international center is well-trained to assist the students. The participants provide many useful suggestions on how to improve an international center (RQ3). The majority of the suggestions mentioned improving the number of advisors/staff to make it easier to reach someone and to get quicker responses, improving the attitude of the staff (such as hiring international staff or having staff members participate in a study abroad experience), and increasing international student appreciation by hosting more cultural appreciation and awareness events. Communication is a major challenge for international students, and when the international center does not reply in a timely manner, they often feel discouraged. Similarly, if the international students receive rude replies or do not feel welcome, they will not enjoy their educational experience and be more likely to transfer or to discourage other potential students from applying to that university. One way to make the international students feel more welcome is to offer more cultural appreciation and awareness events. For example, many commemorative months and events already exist in the US (e.g., Asian Pacific Heritage Month in May, International Education Week in November, etc.), and these times are ideal opportunities to make the international students feel welcome.

To sum up the international students' experiences, the final survey question asked whether the participants would still attend the same university, given everything they have experienced and now know about it. This question was designed to find out what would be necessary to for universities to do, as well as what to avoid, to try to recruit, maintain, and graduate their international students (RQ1, RQ3). The students who would choose to come back described their current university as having a

good academic program that met their needs, as being in a good location, having good friends and professors, and as imparting a strong sense of belonging. Students who would not choose to come back to the same university described problems with limited funding, being located away from a major city (which meant less nearby job opportunities as well as cultural activities), and unfairness/unhelpfulness towards international students.

DISCUSSION, CONCLUSION AND IMPLICATIONS

Based on the responses, most of the international students appeared satisfied with their educational experiences, but there is room for improvement. In order to better recruit, retain, and graduate international students (RQ1), universities need to come up with an action plan to help work with students during the recruiting process, during their time at the university, and during their final semesters when they prepare to graduate and look for a job. For instance, the participants mentioned choosing a specific university since they have friends and family affiliations; if universities were to expand their recruitment strategies to improve relationships with alumni, this could lead to an increase in new students (RQ3). Local recruiting by current students or alumni are an ideal way to find more students as hearing about the experiences first-hand is often more convincing for potential students. During their time at the university, several students reported not being able to get the assistance they needed from the department and international center (RQ2). Universities should try to improve international student staff support, such as providing better training of staff members, increasing the number of available staff, improving the response time, and teaching the staff to be more empathetic towards the international students (RQ3). Funding (RQ2) is also a critical issue for students, especially international students, and if universities are able to provide more tuition support or even support for finding and filling out scholarships, they might be able to retain more students (RQ1, RQ3). Finally, the main reason many international students want to have an international educational experience is to help provide them with a better career. Many universities have a career resource and connection center but having a dedicated team to work just with international students would be helpful, since international students have different needs (RQ3).

Globalization is occurring more and more, especially in higher education institutions. If universities would like to continue to successfully attract, maintain, and graduate their international students, they must be aware of the international student needs.

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AUTHOR CONTRIBUTION

First author has made substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data. The second author has been involved in drafting the manuscript or revising it critically for important intellectual content and have given final approval of the version to be published.

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Pre-school Teacher Candidates' Use of Mathematical Concepts in Daily Life

Mustafa Albayrak, Assoc. Prof. Dr., Bayburt University, Türkiye, albayrak1957@gmail.com

 0000-0002-3788-5717

Nurullah Yazıcı, Assist. Prof. Dr., Tokat Gaziosmanpaşa University, Türkiye, yazicinurullah@gmail.com

 0000-0002-5594-8347

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Abstract

In this study, pre-school teacher candidates' use of mathematical concepts that are frequently used in daily conversations was examined. To achieve this, a sequential explanatory pattern, one of the mixed method designs, was used. The research was carried out with two study groups. The first study group consisted of 114 pre-school teacher candidates while the second study group consisted of eight teacher candidates who were selected by considering their success level among these teacher candidates. The purpose of determining the second study group was to focus on classroom activities within the scope of teaching practice. The teacher candidates were asked two questions related to comparison, classification, ordering and matching, which are among the mathematical concepts that are frequently used in daily conversations. Descriptive analysis techniques were used in the analysis of the research data. As a result of the research, the success of the teacher candidates in using the concepts indicating quality, quantity, position and contrast in mathematics was found very low. In addition, it was observed that teacher candidates mostly exhibited erroneous usage regarding the use of words "more" and "most".

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INTRODUCTION

Previous studies stated that mathematics learning activities begin in informal education and are shaped in the formal education process (Bailey et al., 2014; Firat, 2016; Gürgah Oğul & Aktaş Arnas, 2020; Karakuş, 2015; Starkey et al., 2004; Taşkın, 2013). Supporting this statement, it is commonly acknowledged that students learn some of the mathematical concepts (e.g., counting, comparison, sequencing) through family experiences or environmental factors before they start schooling (Aslan & Aktaş Arnas, 2015; LeFevre et al., 2010). In addition, the preschool period is considered as an opportunity to establish the foundations of mathematics education, as it is the period in which students' mental development shows the fastest growth (Günindi, 2010). In this context, it is necessary for preschool teachers to approve the concepts that students use correctly, to fill in the missing concepts if there are deficiencies in the students, and to correct the misuse if there is a misuse in the students. For this reason, it is important to determine the use of these mathematical concepts by pre-school teacher candidates before carrying out the teaching profession.

THEORETICAL FRAMEWORK

MATHEMATICAL TALKS IN PRESCHOOL EDUCATION

It is an undeniable fact that the mathematical thinking skills that teachers can develop in students during the early childhood years can help students the later formal mathematics learning process (National Council of Teachers of Mathematics [NCTM], 2000; Peter-Koop & Scherer, 2012; Umay, 2003). It is also known that an important part of the behaviors that will be gained by students in pre-school education consists of the ability to express the positions of the objects and assets in the environment and to express the qualities and quantities according to their external appearance (Kazu, & Is, 2018; LeFevre et al., 2010). The basic skills to be acquired in the pre-school education period include matching, classification, comparison, and sequencing skills. For example, children should be able to distinguish the words "less", "more" and "same" before the schooling period starts. When children understand the concept of "same", they can make one-to-one matching. Because matching is seen as a prerequisite skill in the acquisition of number conservation (Sperry Smith, 2006). Classification is the separation of objects according to their attributes and then grouping them together according to their common characteristics. It is a basic method that children use to organize objects and events (Lind, 2005; Reys et al., 2014). In the social environment they live in, students hear the words to compare objects according to their specific characteristics (length-shortness, greatness-smallness, weight-lightness, near-far, high-low, first-last) more or less. When children's observation skills develop, they can naturally distinguish differences, contrasts and similarities from each other, and the process of children's comparison begins with their observation skills (Bağcı & İvrendi, 2016). Teachers should ensure that children use these words by using terms such as "few, less, much, more" both formally and informally in their classroom activities (Boonen et al., 2011). In addition, comparison activities can be conducted by using contrasting expressions (hot-cold, big-small, long-short, etc.) (Aktaş Arnas, 2013). Sorting can also be carried out when one object has a distinctive feature (large-small, long-short, more-less, light-heavy) compared to another. Therefore, the concepts used for sequencing must be intelligible and understandable by children. Furthermore, the differences regarding the listed features should be clearly revealed (Dinçer & Ergül, 2015). The word "more" (less, better, longer, shorter, heavier, lighter, etc.) is used in ordering/comparing objects (Aktaş Arnas, 2013; Charlesworth, 2015). While the word "most" is used in ordering four objects, ordinal numbers are used as "first, second ..." in ordering more than four objects (Korkmaz, 2003). Using mathematical expressions in gaining these skills can be considered as the first step of starting mathematics education.

TEACHER TRAINING IN PRE-SCHOOL EDUCATION

Teachers who will carry out the teaching process of mathematics need sufficient information about content knowledge, pedagogical knowledge, that is, the way of teaching knowledge, and the

cognitive development of students during the planning and implementation stages of instruction (Ball et al., 2008; Coddington, 2014; Even, 1993; Shulman, 1987; Yazıcı & Albayrak, 2022). In studies conducted with preschool teachers, it has been observed that teachers have deficiencies about the basic competencies and concepts that preschool mathematics education should incorporate (Aydın, 2009; Chen et al., 2014; Çelik, 2017; Fırat & Dinçer, 2018; Giren & Erdoğan, 2015; Lee & Ginsburg, 2007; Umay, 2003). In the study conducted by Fırat and Dinçer (2018) with preschool teachers, it was determined that teachers did employ a small amount of mathematical conversations in the classroom teaching process. In addition, they also found that teachers generally made speeches in the categories of counting, number, and measurement. It is considered that the speaking performance of the teachers regarding the mathematical language during the teaching process is effective in the development of mathematical concepts in children (Boonen et al., 2011; Erdoğan & Baran, 2003). Therefore, it is obvious that teachers' lack of pedagogical content knowledge about teaching mathematical concepts, as well as deficiencies in the content of basic competencies and concepts, might potentially cause difficulties in the teaching process (Aydın, 2009; Lee & Ginsburg, 2007; Tarım & Bulut, 2006).

PURPOSE OF THE RESEARCH

It is thought that the speaking performance of the teachers regarding the mathematical language during the teaching process is effective in the development of mathematical concepts in children (Boonen, et al., 2011). For the child to understand the mathematics that he will use in his future life, basic mathematical knowledge and skills must be acquired in the preschool period (Akman, 2002; Balfanz et al., 2003; Charlesworth, 2005; Greenes et al., 2004; Hachey, 2013; Jackman, 2005). School is the second most important environment apart from the home environment affecting the development of children. It is thought that the use of the language of mathematics by teachers at school and their inclusion of mathematical activities throughout the day and within the framework of the program will help children's mathematical development. In this regard, pre-school teacher candidates should have acquired the competencies related to the skills that should be acquired in the pre-school period in the undergraduate education before starting the profession. Within this context, the purpose of this research is to evaluate the instructional explanations of pre-school teacher candidates about the mathematical skills that should be acquired in preschool. In line with the purpose of the research, the research problem and research questions were determined as follows:

Problem: How do pre-school teacher candidates use mathematical concepts in the teaching process?

Research questions:

- 1) How do pre-school teacher candidates use concepts of short-long, large-small?
- 2) How do pre-school teacher candidates use concepts of heavy-light, less-more?
- 3) How do pre-school teacher candidates use concepts of location (place)?
- 4) How do pre-school teacher candidates use ordinal numbers?

METHOD

RESEARCH MODEL

This research was conducted with a sequential explanatory design, one of the mixed method designs. In this design, qualitative data is collected after quantitative data is collected and analyzed. Qualitative data are obtained to refine and augment quantitative data (Creswell & Plano Clark, 2017). Data analysis is interrelated. Therefore, quantitative, and qualitative data are combined in the findings and discussion sections of the research (Creswell, 2013). In the study, firstly, pre-school teacher candidates' use of mathematical concepts in daily life was categorized as true-false-no answer on a

larger sample. Afterwards, in-depth observations and interviews were made, and the approaches of the pre-school teacher candidates were evaluated. Within the scope of the research, observations and interviews were conducted in order to observe the pre-school teacher candidates' use of mathematical concepts in their daily conversations and to determine their level of knowledge about the concepts they will teach in mathematics education activities.

STUDY GROUP

The research was carried out with two study groups. The first study group of the research consists of 114 pre-school teacher candidates studying in the last year of the undergraduate education program of a university in the Eastern Anatolia Region of Turkey in the 2020-2021 academic year. Table 1 shows the distribution of pre-school teacher candidates participating in the research by gender. When Table 1 is examined, 58% of the participants are female (f=66) and 42% are male (f=48). Therefore, it can be said that the distributions by gender are close to each other. In addition, pre-school teacher candidates participating in the research are studying in the third and fourth years of undergraduate education and have completed the "Early childhood mathematics education" course.

Table 1. Distribution of pre-school teacher candidates by gender

	<i>f</i>	%
Male	48	42
Female	66	58
Total	114	100

The second study group consists of eight teacher candidates determined according to their success level among 114 teacher candidates. In the determination of these eight teacher candidates, undergraduate grade point average was used as a criterion. The purpose of determining this second study group is to focus on classroom activities within the scope of teaching practice. Table 2 shows the undergraduate grade point average of all teacher candidates participating in the research.

Table 2. *The Undergraduate Grade Point Average of Pre-School Teacher Candidates*

	<i>f</i>	%
I have a very good average. (Between 4.50 and 5.00 average score)	8	7
I have a good average. (Between 3.50 and 4.50 average score)	24	21.10
I have a medium average. (Between 2.50 and 3.50 average score)	82	71.90
I have a low average. (2.50 and below average score)	0	0
Total	114	100

Table 2 contains data on undergraduate grade point average of preschool teacher candidates. These data were determined by taking the average of pre-school teacher candidates' report card scores related to academic record. In Table 1, it is seen that the grade point averages of the pre-school teacher candidates are 3.50 points and above. In the research, instead of using the names of the pre-school teacher candidates, codes such as TC1 (Teacher Candidate 1), TC2, ..., TC114 were used to anonymize the participants. In addition, TCV1, ..., TCV8 coding was used for eight teacher candidates whose in-class activities were observed within the scope of teaching practice. For this, teacher candidates from all levels were selected according to their grade point average. Namely, TCV1, TCV2 and TCV3 have a very good average, TCV4 and TCV5 have a medium average, TCV6, TCV7 and TCV8 have a good average.

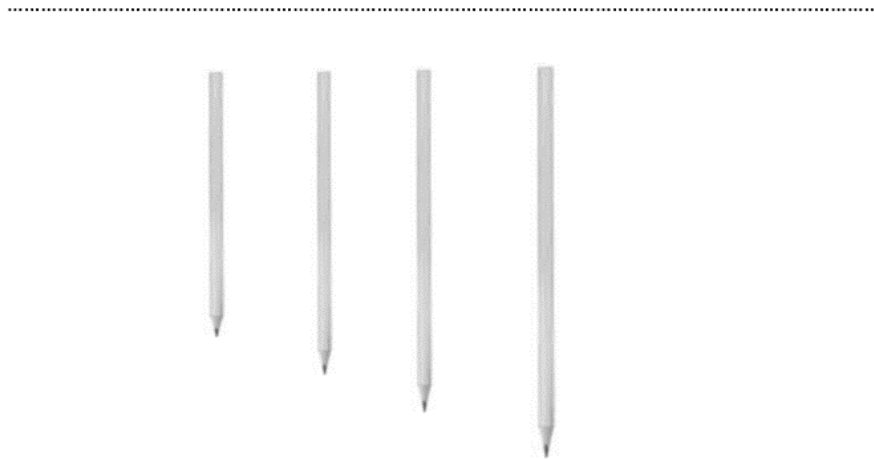
DATA COLLECTION TOOLS AND PROCEDURE

In order to collect research data, semi-structured interview form, observation form, voice recorder and structured interview form were used. A semi-structured interview form consisting of 11 open-ended questions and allowing partial exchange of views between the participants and the researchers was prepared. The first three questions in the interview form were for collecting

information about the candidate. The other eight questions were about the "position, quality, quantity, and ordering" of objects, in relation to the "comparison, classification, ordering, and matching" often used in everyday conversation. Two questions were asked for each situation. One of the questions in the semi-structured interview form is included as an example.

Figure 1. The Comparison Question in the Semi-structured Interview Form

1. The picture below shows four pencils of different lengths. Let's say you sort these pencils by length (from shortest to tallest). How do you do your ranking?



During the preparation of the semi-structured interview form, the basic principles and aims of pre-school education and speaking Turkish properly were determined as the basic criteria. At this stage, a total of two expert opinions from childhood development and Turkish Language and Literature areas, were applied. In line with the expert opinions, use of adjectives and a particular Turkish grammar rule were paid attention to in the formation of the questions in the interview form. In other words, based on expert opinions, the concept of "adjective" was thought to be important within the scope of this research. For this reason, the following features regarding the concept of "adjective", which is taken as a basis within the scope of the research, are included: The words that come before the nouns and describe them show their manner or indicate other aspects (quantity, place, etc.) are called adjectives (Turkish Language Society [TLS], 2020). The degree of superiority of the adjectives (indicating that the quality of one being is more, superior, less, or lower than another being or assets) is made by using the word "more". The degree of superiority (indicating the highest level of the attribute in terms of function) is also made with the word "most". Ordinal number adjectives (adjectives that show the number of degrees in entities and objects) were used as "first, second, ..." (Korkmaz, 2003).

The content of the lesson observation form was arranged to focus on daily conversations during the implementation of the activities. The course observation form included three levels as insufficient, partially sufficient, and sufficient. In determining the levels, it was taken as a criterion that the pre-school teacher candidates included daily mathematical conversations in language integrity during the activities. The activities to be used within the scope of teaching practice were identified by the researchers in a way that would serve the same purpose as the questions did in the interview form. In addition, the activities were selected from the Education Information Network [EIN] (2022) preschool activity pool in accordance with the purpose of the research. Each activity was implemented by two teacher candidates. By doing so, four activities in total were implemented by eight teacher candidates.

In the research, structured interviews were conducted with five teacher candidates selected on a voluntary basis among 114 teacher candidates. During the interview, the participants were asked, "Do you think the questions in the semi-structured interview form have anything to do with the mathematics course?" A single question was asked orally, and verbal responses were received from

the participants. There was no time limit for responses. The responses were recorded and transcribed by the researchers.

DATA ANALYSIS

Research data were analyzed in the context of sequential explanatory design. In other words, firstly, quantitative data was analyzed, and then qualitative data was analyzed. All the analyzed data were then interpreted together. In the research, firstly, the data obtained from the teacher candidates (n=114) were analyzed within the scope of the semi-structured interview form. Then, the data obtained from eight pre-school teacher candidates whose activities in the teaching practice process were followed with the lesson observation form (LOF) and voice recordings were analyzed. Regarding the recordings, the first audio recordings were transcribed. At this stage, the researchers particularly focused on the parts of daily conversations. While analyzing the audio recordings, it was checked by continuous comparison with the LOF. Descriptive analysis technique was used in the analysis of the data of the research. For this purpose, the questions in the semi-structured interview form were analyzed in three categories as true answer-wrong answer-no answer. The data obtained as a result of the analysis are presented using percentage-frequency tables. The questions asked to the participants in the interview form and the correct answers to the questions were added to each table in the presentation of the findings in a short and concise manner in order to inform the reader. Immediately after giving the quantitative data in tables, five of the wrong answers of the participants related to each research problem are included. Afterwards, some sections of the activities of the pre-school teacher candidates whose in-class activities were followed were included. In this way, it is aimed to support quantitative data with qualitative data. Table 3 shows a sample analysis table regarding the data analysis process. Although the third stage of data analysis was theoretically expressed in Table 3, it was not included in the table in detail in order to avoid repetition in the presentation of the findings.

Table 3. Stages of the Data Analysis Process

<i>Theme of the research</i>	<i>Codes (sub-problems of the research)</i>	<i>Analysis Categories</i>	<i>Data Analysis Process</i>
Use mathematical concepts in the teaching process	Qualitative concepts	True	In the first stage, the explanations (codes) written by the pre-service teachers to the questions in the semi-structured interview form for each determined code were analyzed under the categories determined by percentage-frequency techniques.
	Quantitative concepts	Wrong answer	
	Concepts of location	Wrong answer	In the second stage, the data regarding the teaching processes of these pre-service teachers were transcribed in order to compare the data obtained from the pre-service teachers whose in-class teaching activities were followed with the semi-structured interview form data.
	Ordinal numbers	No answer	
			In the third stage, quantitative and qualitative data were interpreted together by giving quotations.

A data analysis sample

Question 1 - Qualitative concepts

First stage:

“...Let say you sort these pencils by length (from shortest to tallest). How do you do your ranking?”

Short-tall-taller-the tallest (True answer)

The shortest - short - tall - very tall (Wrong answer)

Very short - short - tall - very tall (Wrong answer)

Second stage:

...TCV4: Yes, when we put this sock next to the other socks, we sort from the shortest socks to the longer ones. Now let's say the length of the socks again: (showing the socks)

Short socks - long socks - longest socks (Wrong answer)

In order to increase the reliability of the research data, triangulation was made. Triangulation is the comparison of the results of two or more data collection methods (for example, interviews and observations) or two or more data sources. In this way, the weaknesses of one of the methods can be compensated by the strengths of the other method (Creswell, 2013). In this study, triangulation was made using semi-structured interview, lesson observation form and direct quotations to ensure reliability. Therefore, various data were compared with each other. Thus, the reliability was tried to be increased.

ETHICS

Based on the Bayburt University Ethics Committee's letter numbered 79126184-050.099/23654, this research was decided to comply with the ethical principles. It was earlier stated that the research would be carried out on a voluntary basis and that personal information would not be shared by third parties or institutions in any way other than the purpose of the research. No visuals were included during the implementation of classroom activities. In addition, attention was paid to the rules of scientific writing and citing references in the research.

FINDINGS

In this section, the findings obtained in line with the research questions are written in order. First, the findings of the interview form and then the findings of the teaching practice and lesson observation form were included. In Table 4, the answers written by the candidates to the two questions on short-long, large-small concepts are demonstrated.

Table 4. Use of Concepts (short-long, large-small)

<i>To be able to sort the four pencils in order of height (short, tall, taller, the tallest or short-long-longer-the longest)</i>		
	<i>f</i>	<i>%</i>
True	34	29.80
False	72	63.20
No answer	8	7
Total	114	100
<i>To be able to rank the four animals "elephant, lamb, rabbit, bird" from largest to smallest (large, small, smaller, smallest)</i>		
	<i>f</i>	<i>%</i>
True	37	32.50
False	69	60.50
No answer	8	7
Total	114	100

When Table 4 is examined, more than half of the candidates provided wrong answers for both questions. Some of the wrong answers of the teacher candidates are given below:

TC1: Short - tall - too tall - the tallest.

TC17: The shortest - short - tall - very tall.

TC 21: Very short - short - tall - very tall.

TC 35: Very large - slightly large - large - small.

TC 50: Very small - small - large - largest.

When the wrong answers of the teacher candidates were examined, it was seen that the teacher candidates did not know at what level the words "more" and "most" would be used while ranking. In addition, it has been observed that they use the word "many" instead of these words. However, teacher candidates experience deficiencies in grading levels while ranking. For example, while TC17

was ranking, she/he rated the word short twice and the word long twice consecutively. If the sorting was started from the shortest item, it was not sorted as short-long-longer-longest. The ranking continued as shortest-short-long-very long.

It was observed that TCV1 and TCV4, whose activities within the scope of teaching practice were recorded and followed up with LOF, included the use of qualifying concepts at a partially sufficient level. Below is a section of the activity carried out by TCV4, one of the teacher candidates, in the classroom:

Activity Name: I'm Learning with Socks (EIN, 2022)

The socks requested on the previous day are opened in the classroom and the socks are talked about. Then, the students are asked to divide into groups of two. At this stage, the game of putting on the socks and then removing the socks is played, accompanied by music. After the game, the socks are lined up side by side to talk about their length:

TCV4: Come on guys, what can we say about the lengths of these two socks that we put side by side?

Students: This is small ... This is long ... very big ...

TCV4: Okay. Let's rank them together by length. Let's start with the short one first. This sock is the shortest. Let's put this first. Yes. Since that sock (pointing to the sock) is a little longer, we put it right next to it. Are there any socks that are longer than these socks? Let's look at him. Who tells?

...

TCV4: Yes, when we put this sock next to the other socks, we sort from the shortest socks to the longer ones. Now let's say the length of the socks again: (showing the socks)

Short socks - long socks - longest socks.

When TCV4's expressions in the activity were examined, he used the word "the most" incorrectly as a rating expression even though he had two socks in his hands during the first stage of the activity. In addition, it was observed that he used the word "the most" when he should have used the word "the more" while listing the three socks at the end of the activity. Similar errors were also encountered in TCV1.

In Table 5, the answers written by the teacher candidates to the two questions on heavy-light, less-more concepts are demonstrated.

Table 5. Use of Concepts (heavy-light, less-more)

<i>To be able to sort the four objects (row, bag, notebook, pen) from heavy to light (heavy, light, lighter, lightest).</i>		
	<i>f</i>	<i>%</i>
True	38	33,30
False	70	61,40
No answer	6	5,30
Total	114	100
<i>To be able to sort four marble groups of different numbers from least to most (less, more, better, most).</i>		
	<i>f</i>	<i>%</i>
True	34	29,80
False	77	67,60
No answer	3	2,60
Total	114	100

When Table 5 is examined, more than half of the teacher candidates gave wrong answers for both questions. When the wrong answers of the teacher candidates were examined, similar to the results in the previous Table 3, the teacher candidates made mistakes regarding the use of the words "more" and "most". Therefore, teacher candidates experienced deficiencies in using the level grading adjectives. Some of the wrong answers of the teacher candidates are given below:

TC31: Heavy – light – lighter – very light.

TC42: Lightest – very light – lighter – light.

TC57: Heaviest – heavy – light – lightest.

TC81: At least – less – much – most.

TC93: At least – much less – more less – less.

It was observed that TCV2 and TCV3, whose activities within the scope of teaching practice were recorded and followed up with LOF, included the use of quantitative concepts at a partially sufficient level. Below is a section of the activity carried out by TCV3, one of the teacher candidates, in the classroom:

Activity Name: My Colored Stones (EIN, 2022)

Four stones of different sizes, collected from the garden with the children, are brought together in the middle of the classroom. The children are asked to examine the collected stones. Ask the children to weigh the stones with their hands and estimate their weight. After giving the estimates, it is stated that which stones are heavy and which ones are light, and that they can be found with the help of a balance.

TCV3: Come on guys, let's look at these two stones (showing the stones) together. Ali, you tell me. First, put these two stones in your right and left hand. Now can you tell which of these stones is the heaviest?

Student (Ali): ... (pointing to the stone) this is the heaviest stone.

TCV3: Yes, let's compare other stones now. So which of these two stones (pointing to the stones) could be heavier or lighter? Who wants to guess?

Students: ... (pointing to the stone) this stone is lighter. this is the very heavy one.

At this stage, ÖV3 chooses the heavier ones from the two groups of stones they are comparing and again asks the students to find the heavier one among these stones. After comparing the remaining stones, a general comparison is made by ranking the stones from the heaviest to the lightest.

TCV3: You can see the stones in my hand right now. Who wants to determine which of these stones is the heaviest?

Students: He/she takes the stones. Then showing the stones: This stone is the heavy one.

TCV3: Yes, that's right. Now we have determined the heaviest stone. So who wants to find out which of the two remaining stones is heavier?

Student: ...(pointing to the stone) this is the heavy one...

TCV3: Yes, now let's compare the stones in order from the heaviest to the lightest. ... (pointing to the stone) this heavy stone, this light stone, this lighter stone, this very light stone...

When the activity of TCV3 was examined, he/she compared two stones at the beginning of the activity by using the word "the most". In other words, he/she was expected to make only a heavy-light comparison at this stage. However, at the end of the activity, when comparing the four stones with each other, he/she misused the word "many" instead of using the word "the most".

In Table 6, the answers written by the teacher candidates to the two questions on locative concepts are expressed.

Table 6. Use Of Locative Concepts

To be able to arrange the objects in the picture (row, teacher's desk, blackboard, flag) from high to low as "the flag is highest, the blackboard is low, the teacher's desk is lower, the desk is the lowest".

	<i>f</i>	<i>%</i>
True	32	28
False	74	65
No answer	8	7
Total	114	100

In the picture, the students to the right of the teacher (Erkul, Onur, Sema, Vildan, respectively) and to the left (Ayşe, Ali, Ömer, Zehra, respectively) are "Erkul on the teacher's right, Ayşe on the teacher's left, Vildan on the teacher's far right, Zehra on the teacher's far left" sorting as.

	<i>f</i>	<i>%</i>
True	52	45,6
False	58	50,9
No answer	4	3,5
Total	114	100

When Table 6 is examined, the answers written by the teacher candidates to the two questions on locative concepts are expressed. As can be seen from the data, the success of the teacher candidates in these questions was very low. However, a significant increase was observed in the success of teacher candidates in positioning right-left ($f_{\text{number of correct answers}}=52$) compared to other tables. Some of the wrong answers of the teacher candidates are given below:

TC18: The flag is too high - under the blackboard - the teacher's desk is low - the desk is too low.

TC28: The flag is high - the blackboard is low - the teacher's desk is even lower - the desk is very, very low.

TC39: The flag is too high - the blackboard is low - the teacher's desk is too low - the desk is much lower.

TC78: There is Erkul to the right of the teacher, Onur and Sema to the far right, and Vildan to the right of the teacher. We can sort the left in the same way.

TC102: There is Erkul on the right side of the teacher and Ayşe on the left. There are other students to the right and left of the teacher.

When the wrong answers of the teacher candidates were examined, it was observed that they made more mistakes in the use of the concepts describing the position as low-high than the concepts describing the position as right-left.

It was observed that TCV5 and TCV8, whose activities within the scope of teaching practice were recorded and followed up with LOF, included the use of quantitative concepts at a partially sufficient level. Below is a section of the activity carried out by TCV5, one of the teacher candidates, in the classroom:

Activity Name: Hang out the laundry (EIN, 2022)

Clotheslines are tied in the classroom, one high and the other low. Children are told to hang the laundry in the basket on these ropes. With the instructions given, children try to hang the laundry by first attaching them to the low rope and then to the high rope with pegs. The children are asked on

which rope they hang the laundry more easily, on which rope they have difficulty hanging the laundry, and the reasons are discussed. Then, the dialogue continues in the classroom about which objects are high and which objects are low.

TCV5: Come on guys, let's find three items that are higher than the teacher's desk and tell them their names?

Students: Blackboard, projection, portrait...

TCV5: Well, which of these items is located very high?

Students: Projection.

TCV5: Then which one is the highest?

Students: Portrait...

TCV5: Then which one is the lowest compared to the others?

Students: The board...

TCV5: Now, let's list them from highest to lowest.

The projector is at the highest. The portrait is lower than the projection. The board is even lower. The table is the lowest.

When the effectiveness of TCV5 is examined, it is observed that there are deficiencies due to the misuse of the words "more" and "most" in the sentence. To put it more clearly, TV4 used the word "many" instead of "more" when ranking opposite concepts. In addition, it was observed that he/she could not use the grading adjectives correctly. That is, he/she made a wrong order as highest-low-even lower-lowest. Similar errors were also encountered with the responses of TCV8. In Table 7, the answers written by the teacher candidates to the two questions about ordinal numbers are shown.

Table 7. Use of Ordinal Number

<i>The order of paying the cashier in a market is (Ahmet, Betül, Fatma, Ali, Osman). Sorting the status of customers according to the cash register as first, ..., last.</i>		
	<i>f</i>	<i>%</i>
True	32	28
False	79	69,3
No answer	3	2,7
Total	114	100
<i>To be able to list the animals (Elephant, Cow, Lamb, Rooster, Bird) expressed with pictures, from light to heavy "1st Bird, 2nd Rooster, 3rd Lamb, 4th Cow, 5th Elephant".</i>		
	<i>f</i>	<i>%</i>
True	14	12,3
False	77	67,6
No answer	23	20,1
Total	114	100

When Table 7 is examined, the success of the teacher candidates in these questions was lower than the data in the other tables. Some of the wrong answers of the teacher candidates are given below:

TC51: Ahmet is in the front, Betul is in the back, Fatma is behind her, Ali and Osman are at the very back.

TC72: Ahmet ranks first, Betul second, Fatma third, Ali fourth, Osman last.

TC98: The heaviest elephant, then the cow, then the lamb, then the rooster and the lightest bird.

TC102: The bird is the lightest. The rooster is heavier than the bird. The lamb is heavier than the rooster. A cow is heavier than a lamb. The elephant is the heaviest of them all.

TC114: If we were to sort, I would sort by bird, rooster... up to the elephant.

When the incorrect answers of the teacher candidates regarding the use of antonym concepts are generally interpreted, it is observed that the teacher candidates' mistakes regarding the ordering increase as the grade/level increases. That is, it was determined that the teacher candidates used the words "later, afterwards" and "after" instead of making the order as first, second...

It was observed that TCV6 and TCV7, whose activities within the scope of teaching practice were recorded and followed up with LOF, included the use of quantitative concepts at a partially sufficient level. Below is a section of the activity carried out by TCV6, one of the teacher candidates, in the classroom:

Activity Name: Mind and Intelligence Games (EIN, 2022)

*Five cards of red, blue, green, yellow and white are placed on a flat surface. How many cards of each color are found with the students? The table consisting of 25 (5*5) boxes is placed on the table. Boxes are counted with children. From left to right, from top to bottom, the first, second, third and fourth boxes are studied. Sudoku game is reminded with colors previously played with four colors. In this activity, it is aimed to use ordinal numbers such as first, second, third, while ordering objects.*

TCV7: Come on guys. Let's count together how many of each of the red, blue, green, yellow, and white cards I have in my hand?

Students: Count the cards and state the results. (There are five cards each.)

TCV7: Yes, we will now place these cards on the table. And together we will find the rank of the cards. Cards are placed on the table. And the students are asked in which rank the red card occupies on the table.

Students: Second from left to right. When we list it from top to bottom, it is in the last place...

TCV7: Yes, that's right guys. Likewise, can you tell me where the yellow card is?

Students: Ranks first when we list them from top to bottom. Fourth from left to right...

TCV7: Yes, that's right. Now let's look at the other cards. (Similarly, the places of the other cards are determined by the students.)

After this stage, the teacher reaches all sorting situations together with the students. Then, by placing the cards side by side on the table in different colors, he deals with the cards and the order together.

TCV7: Come on guys, now let's list the places of the cards together.

Red card in first place, yellow card in second place, green card in third place, blue card in fourth place and white card in last place...

When the in-class activity of TCV7 was examined, it was observed that instead of using the ordinal numbers as "first, second, third, fourth, fifth", he/she used "initial, second, third, fourth, last". While TCV7 was expected to sort by using ordinal numbers according to the number of objects, he/she displayed incorrect usage by using the words "first" and "last". Similar errors were also observed with the answers of TCV6.

In the research, the data obtained in the interview with five teacher candidates are presented as follows:

TC10: I don't know how the concepts are classified.

TC25: These are things that happen in our daily life. The conversations we have without paying attention. I don't know their relationship with mathematics.

TC40: If the lengths of the pencils are considered as length, a relationship can be established with the length measurements. The weight of the items (table, bag, notebook, pen) can also be related to the weight measure. The presence of more or less balls may also be related to counting. I have no idea about the other questions.

TC77: If we are interested in these in the mathematics education activities, it means that they have something to do with mathematics, but I do not know.

TC95: I understood that my mathematical knowledge was superficial, that is, what I learned was learning by rote. I started to think that I would have a lot of difficulty in teaching these concepts.

When the statements of the teacher candidates were analyzed from a general perspective, the teacher candidates stated that they actually used these concepts incorrectly in daily life and that they could not adequately understand the relevance of classification with mathematics.

DISCUSSION, CONCLUSION AND IMPLICATIONS

In this research, the data obtained from the teacher candidates who were interviewed and whose teaching practice and classroom activities were followed up showed parallelism with each other. When the research findings are examined in general, it was seen that the teacher candidates had enough mathematical knowledge to teach the subjects in the pre-school mathematics curriculum; however, they did have conceptual deficiencies in this knowledge. It can be thought that the reason why the teacher candidates cannot make instructional explanations and re-adapt a situation is that they do not know the relationship between concepts and mathematics. However, it was observed that teacher candidates could not make instructional explanations due to their inadequacy in using concepts and adapting them to different situations. Especially, the success of the teacher candidates in using the concepts indicating quality, quantity, position and contrast in mathematics was found very low. In addition, it was observed that teacher candidates mostly exhibited erroneous usage regarding the use of words "more" and "most". These results are equivalent to the results of previous research in this field (Chen et al., 2014; Çelik, 2017; Kim, 2013; Tarım & Bulut, 2006; Umay, 2003).

The research findings also showed evidence on that the teacher candidates have deficiencies in the use of the concepts of "most" and "more", which are frequently used in the use of concepts that indicate quantity, location and antonym situations. This finding is particularly striking in the use of concepts such as "longer, longest" or "smaller, smallest", and in cases related to the place of "more" and "most" in the ranking. In other words, it was observed that the teacher candidates were deficient in the ranking of the concepts of "more" and "most". In addition, it was determined that teacher candidates had uncertainty about how and where they should start ranking. This result is frequently encountered in the use of the concepts of position and antonym (opposite) situation. Aktaş Arnas (2013) mentioned the importance of teachers' correct use of the concepts of "sequencing" and "comparison" in classroom activities. This is due to the fact that the correct use of technical terms included in these activities is significant for learning the language correctly (Charlesworth, 2015; Dinçer & Ergül, 2015; Korkmaz, 2003). In teaching positional concepts, a fixed place must first be determined (e.g. door, teacher's desk). Next, it is necessary to sort by the distance between the objects (near, far, farther, farthest). In preschool children, the ability to position in place is expressed by distance from other objects and position or it can also be expressed with descriptive concepts. Knowing the location in the space enables children for movement, body orientation, distance perception, spatial and three-dimensional thinking (Giren & Erdoğan, 2015). It was observed that the pre-service teachers, who were followed up with the lesson observation form, were insufficient in terms of developing positioning skills in the teaching of the activities. As a matter of fact, pre-service teachers adopted a more rote

teaching style during the activities and applied to a spoken language that is far from mathematical language. In other words, during the activities, pre-service teachers did not perform adequately in the discourses about developing the skill of emphasizing a fixed object and positioning it on that object.

In the interview findings of the study, it was observed that the teacher candidates stated that they had deficiencies in the use of the concepts of quantity, location and antonym situation in mathematics. Moreover, teacher candidates stated that they did not know that these concepts were related to mathematics and that they used these concepts by heart in daily life. From this point of view, it is thought that teacher candidates may have difficulties in completing the deficiencies of students' concept use or correcting the misuse in the teaching process. This result is similar to many other studies (Charlesworth, 2015; Aktaş Arnas, 2013). Therefore, it can be said that the inadequacies of pre-school teacher candidates in the teaching process will negatively affect the process of using their field-specific pedagogical knowledge (Even, 1993; Yazıcı & Albayrak, 2022).

RECOMMENDATIONS

In order to prepare teacher candidates for teaching in line with the purposes of pre-school mathematics education, their prior mathematical knowledge can be transformed into conceptual level. For this reason, it is highly recommended to organize the content of mathematics education courses in the undergraduate program in this direction. It is also recommended that undergraduate programs should be shaped in order to determine the deficiencies in the teaching of concepts and the way they are used in daily life, what the concepts do, how they are related to the courses, and how they can be adapted to new situations. It is recommended that pre-service teachers focus on sequencing, comparison, classification and contrast activities in the teaching process. In addition, during these activities, it is recommended that students correct the incorrect usages correctly.

LIMITATIONS

The application step (in-class activities) of this research was carried out with a limited participant group due to its nature. Different findings that could not be obtained in this study can be reached with different participant groups. In addition, this study, which was carried out with pre-service teachers, can be conducted with teachers who continue their profession, and findings in different dimensions can be revealed.

AUTHOR CONTRIBUTIONS

Both authors contributed equally contributed to the creation of the literature, the collection of data, the analysis of the data, the revealing the findings and the writing of the results.

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Do Teachers Experience Social Anxiety When Using Social Media?


Mustafa Demir, Assist. Prof. Dr., Bayburt University, Türkiye, mustafademir82@hotmail.com

 0000-0002-0159-8986

Seda Aktı Aslan, Assist. Prof. Dr., Firat University, Türkiye, sedakti86@gmail.com

 0000-0001-9345-6194

Okay Demir, Dr., Ministry of National Education, Türkiye, okay4425@gmail.com

 0000-0001-8033-3355

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Abstract

This study aims to investigate teachers' social media usage purposes and the association between these purposes and the social anxiety they experience while visiting social media platforms. In the study, a correlational research design and causal-comparative research design were employed. The participants of the study consisted of 322 teachers. Data were collected online during the 2021- 2022 academic year due to the Covid-19 pandemic. Two data collection tools were administered; the usage purposes scale of social networks and the social anxiety scale for social media users. The results reveal that teachers visited social media sites in order to mainly conduct research, partly to cooperate, to communicate, and to maintain communication, and to a lesser extent to share content and to entertain. In addition, teachers reported that they had mostly privacy anxiety and less anxiety caused by the shared content and self-evaluation while using social media. In addition, as teachers' use of social media purposes increased, their social anxiety increased. Another critical finding of the study is that teachers' education level is a significant predictor of their social anxiety.

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INTRODUCTION

The use of social media has increased significantly in recent years and has become an important part of individuals' social lives. Previously, people engaged in one-way communication technologies such as radio, television, and newspapers. With the emergence of the social media concept, they shifted to two-way communication technologies. This shift is considered to be a revolution in communication processes (Kross et al., 2013). Boyd and Ellison (2007) define social media as web-based services where individuals can create profiles within a system, access user lists in the system, and share their connections. Social media is defined as the whole of internet services that allow individuals to create a public or semi-public profile to build a network with other users with whom they share a common link, to give a list of interacted people, to see other users' listed links and to navigate between these links (Büyükşener, 2010). Individuals use social media to introduce themselves to others (Vural & Bat, 2010), to communicate with other users and to maintain this communication (Ellison, Steinfield & Lampe, 2007), to share various content (for example, photos, videos) (Kim, Jeong & Lee, 2010), to contact old friends or to make new friendships (Wang, Moon, Kwon, Evans, & Stefanone, 2010), and/or to gather around certain ideas or passions (Richardson, 2009).

Shirky (2011) claims that social media has become a part of our lives because it attracts many people, non-governmental organizations, state institutions, and communication institutions. More specifically, the fact that mobile technologies have a large user base from all age groups also increases the use of social media platforms (Aslan, Turgut, Göksu, & Aktı Aslan, 2019). Through social media, which is a new type of online media, people share texts, images, and voice recordings without time or location limitations. Due to this sharing feature, social media environments are defined as multimedia environments (Vural & Bat, 2010). Various types of social networking sites exist; Facebook, Flickr, YouTube, LinkedIn, Twitter, and so on. In the era of Web 1.0, individuals were not able to express and share their opinions on the internet as they do today (Horzum, 2010). However, individuals have not only become consumers, but also active producers through the widespread use of Web 2.0 technologies (Yeşim, 2017). Therefore, the Web 2.0 technology has started to be used in many platforms by prioritizing social interaction, sharing and cooperation and social networking sites have begun to be seen as important components of this technology (Karal & Kokoç, 2010). With the spread of the Web 2.0 technology, social networks defined as new media such as facebook, twitter, and Instagram create an internet-based global interaction environment around the world (Kaplan & Haenlein, 2009; Konuk, 2019). Additionally, one of the different definitions of social media in the literature is that social media is expressed as "an internet-based group of applications that are built on ideological and technical foundations of Web 2.0 and allow the creation and exchange of user-generated content" (Kaplan & Haenlein, 2009). Billions of people around the world interact with each other through social networks (Whiting & Williams, 2013). According to the November 2020 report published by We are Social (2020), the top three social network sites were YouTube (36.4B), Facebook (25.3B), and Instagram (5.2B).

Widespread use of social media also resulted in innovations in educational environments (Baloğlu, 2015). Students' attempts to learn via social media platforms (SMP) encouraged educators to benefit from those sites. The dynamic structure of social networks, which allows communication, sharing, and cooperation, indicates that they can be used as an educational tool (Yamamoto, Demiray & Kesim, 2010), which encouraged educators to create learning opportunities in online environments (Vu, Cao, Vu, & Cepero, 2014). Studies reveal that educators create their own learning communities via social networking sites including Twitter, Facebook, and blogs (Huei-Tse Hou, Kuo-En Chang & Yao-Ting Sung, 2009; Prestige, 2009; Ranieri, Manca, & Fini, 2012). Specifically, Baran and Correia (2014) state that educators frequently use SMP in order to communicate with their colleagues, share their ideas with them, and reach out to more followers. In addition, educators use social media in order to continue their professional development, to reach various educational content, to share their

classroom activities with their students and other people, and to work with their colleagues in projects (Hanraets, Hulsebosch & Laat, 2011; Kim, Miller, Herbert, Pedersen & Loving, 2012; Prestige, 2019; Twinning, Raffaghelli, Albion and Knezek., 2013; Veletsianos, 2012).

People have the opportunity to meet new people, exchange ideas, and ask questions to experts through social media platforms (SMP) (Seren, Çelik, Özgeldi, & Dumankaya, 2018). In addition to these things, they may access unlimited information, spend their free time, play games, develop content, share their ideas, conduct activities with groups, and improve their professional skills while visiting SMP (Binark, Bayraktutan-Sütçü & Buçakçı, 2009). More specifically, Magsamen-Conrad and Greene (2014) state that SMP encourage users who cannot communicate with people, avoid face-to-face communication, or are shy to make friends and share. Certain studies even reveal that people feel relief with the use of social media and consider it as an escape from their real lives (Cengizhan, 2005; Turel & Serenko, 2010). All of these are among the advantages of social media. However, people may be unintentionally exposed to various forms of information while billions of data are stored in social media accounts every day (Seren et al., 2018). Along with spending excessive time on social networks and being exposed to various forms of inaccurate information, physical and health problems may also arise (Eijnden, Lemmens, & Valkenburg, 2016; Fu, Xu, Zhao, & Yu, 2017; Zaharmand, 2010; Zenelaj, 2014). Those who spend excessive time in SMP may escape from real life (Argın, 2013). In addition to these things, there are other possible disadvantages due to using social media, including privacy violation, various addictions, anxiety disorder, emergence of illegal behavior, and an occurrence of gambling habits (Aslan & Karakuş Yılmaz, 2021; Binark et al., 2009; Turgut & Kurşun, 2020).

Despite the fact that social media and the internet ease people's lives, they bring out certain problems as well (Aslan et al., 2021; Turgut & Kurşun, 2020). One of the disadvantages of social media usage is the anxiety people experience as they visit these sites. The reason is that people who tend to avoid social interaction in face-to-face environments or who are shy have the opportunity to communicate with other people via social media and the Internet (Magsamen- Conrad & Greene, 2014). With technological developments, this situation, which is considered to be social anxiety, was transferred from physical environments to online environments and social networks (Aktan, 2018). Social anxiety, which is a critical problem for people (Alimoradi et al., 2019), is defined as an individual's fear of being criticized, teased, and humiliated by others (Nepon, Flett, Hewitt & Molnar, 2011). In other words, it is as a state of anxiety arising from the possibility of individuals being criticized by different people in a real or virtual social environment (Leary, 1983). When the symptoms of social anxiety are examined, it is primarily seen that there are three basic fears. Firstly, it is the fear of being exposed to the gaze of other people; that is, it is the fear of being the center of attention and being scrutinized. Secondly, it is the fear of situations in which they may be judged or criticized negatively. Thirdly, it is the fear of embarrassment and being considered worthless in society (Beck, 2005). These fears are manifested in individuals as a behavioral avoidance of one or more social situations (Leary, 1983). According to Aktan (2018), communication in social media environments may lead to an increase in people's anxiety levels compared to communication in real environments. The reason is that people take risks in order to get social acceptance and continue their existence in social media environments (Erol, 2019). These and similar situations may cause social anxiety (Wakefield & Wakefield, 2018). Lanier and Saini (2008) found that people have concerns regarding personal privacy, which triggers social anxiety. On the other hand, the Internet environments sometimes cause less anxiety for people with social anxiety and those people tend to spend more time in social media environments (Zorbaz, 2013). It is attractive to interact in social media environments, especially for a number of people who have social anxiety and problems in their interactions (Weidman & Levinson, 2015).

The literature has shown that the great influence of social media should not be ignored while arranging education and training environments (Sarsar, Başbay & Başbay, 2015). The unique features and possibilities of social media help students find active and cooperative learning opportunities in the

education process (Gülbahar, Kalelioğlu & Madran, 2010) and to develop projects by interacting with each other (Poore, 2013). Social media environments are ideal for students to create personal learning environments that support their own learning (Laird, 2014). Furthermore, it can be seen that social media which makes students active, is effective in increasing student motivation (Öztürk & Talas, 2015). The fact that students communicate with their teachers outside of school via social media and that they can easily access course materials whenever they want affects their educational activities positively. In addition, besides student success, teachers get pleasure from social media environments and they get positive results in the professional and personal development (Sarsar et al., 2015). That is, teachers also use social media for various purposes such as rapid communication, disseminating good practices, following new approaches, informing parents, exchanging ideas with colleagues, and assigning and following students' homework (Arkan & Yünter, 2018). Therefore, under today's conditions, it is not possible to separate social media from education despite certain risks. Teachers have a great role in helping students remove the negative effects of social media. If teachers include students' use of social media in educational activities, they can spend more quality time in these environments and protect them from its risks. Therefore, it is important for teachers to be aware of what happens in the digital world and to consider the competencies and behavior patterns of the new generation (Arslan, 2015). Despite these features, teachers may experience various concerns in the use of social media. In this direction, teachers' anxieties on social media may also affect their reasons for using social media. Therefore, it is thought that the reasons teachers use social media, and the revealing of their concerns in these environments will contribute to educational environments.

Studies have examined a number of different areas: The factors affecting social anxiety (Lanier & Saini, 2008); the association between personality types and social anxiety (Magsamen- Conrad & Greene, 2014); the association between social anxiety in online environments and real life (Yen et al., 2012); the association among loneliness, social anxiety, and problematic internet usage (Bonetti, Campbell & Gilmore, 2010; Caplan, 2006); and the effects of depression on social anxiety (Selfhout et al., 2009). However, the relationship between social media usage purposes and social anxiety of teachers, who are an important role model for students, was not investigated. Considering that the use of social media in educational environments has many positive contributions, it can be said that teachers' staying away from these environments will create disadvantages for students. This is because in today's education system, the way to provide twenty-first century skills for students is to be able to use digital technologies interactively. In this century, which is called the age of information and technology, digital technologies and social media have reshaped the learning-teaching process as well as interpersonal interaction. At the same time, the majority of social media users are young people and students. Therefore, it is important to use these environments for educational purposes. The importance of social media environments in the lives of students of all age groups has aroused great interest among educators (Selwyn, 2009). Teachers' anxiety while using social media environments may lead to a decrease in the bond between them and their students and communication problems may arise. In some studies, it has been observed that anxiety, restlessness and worry have become common among social media users (Lin et al., 2017; Wakefield & Wakefield, 2018).

It is seen that teachers who use social media experience anxiety in social media in terms of some situations such as privacy of private life and loss of classroom authority (Demir, 2018). It is thought that this social anxiety experienced in social media will also affect teachers' purposes of using social media. However, when the literature is examined, it is seen that there is no research on the purposes of teachers' use of social media and the social anxiety they experience in social media. This study fills the gap in the literature. Therefore, this study aims to investigate teachers' social media usage purposes and their association with teachers' social anxiety. The following research questions are addressed:

1. What is the distribution of teachers' social media usage purposes?

2. What is the distribution of teachers' perceptions regarding their social anxiety experiences in SMP?

3. Do teachers' perceptions about social anxiety experiences on social media differ significantly in terms of the following variables?

- a. gender,
- b. type of institution they work for,
- c. teaching experience,
- d. education level,
- e. grade level, and
- f. daily social media usage duration

4. Is there any significant relationship between teachers' social media usage purposes and their social anxiety?

5. Do the following variables significantly predict teachers' perceptions about social anxiety experiences in SMP?

- a. gender,
- b. daily social media usage duration
- c. social media usage purposes

METHOD

A correlational research design and causal-comparative design were employed in order to examine the association between teachers' social anxiety levels in SMP and their social media usage purposes. In the correlational research design, the relationship between two or more variables is examined without intervention. To examine the correlations among variables (Punch, 2011), a correlational research design was also employed. In the causal-comparative research design, the factors that may cause the observed differences in the dependent variable are examined comparatively. (Büyüköztürk, Çakmak, Akgün, Karadeniz & Demirel, 2014); therefore, in order to determine teachers' social anxiety levels in SMP and their social media usage purposes and to examine these in terms of various variables, a causal-comparative research design was chosen for this particular part of the study.

UNIVERSE AND SAMPLE

The universe of this research was determined to be all teachers who worked in different education levels and who were social media users in Turkey, during the 2021-2022 academic year. To examine the relationship between teachers' use of social media and their social anxiety, the teachers were contacted by way of teacher platforms from Turkey where teachers interact in social media. For this reason, the platforms created by the teachers were determined as the universe and the sample was chosen from there. The sample of the study consisted of 322 teachers who were recruited using the convenience sampling method by way of popular SMP, since schools were closed and there was no opportunity to reach teachers in person due to the pandemic and governmental decisions taken to prevent the spread of the epidemic. The sample of the study was voluntary based. The teachers who agreed to participate were sent two forms through the Internet in January of 2021. The first form related to obtained permission, the purpose of the study, and confidentiality and privacy issues. The second form included the data collection tools. Demographic information about the participants is provided in Table 1.

Table 1. Demographic information about the sample

Variable	Group	f	%	Variable	Group	f	%
Gender	Female	164	50.9	Faculty graduated from	Faculty of Education	243	75.5
	Male	158	49.1		Others	79	24.5
	Total	322	100		Total	322	100
Education level	Undergraduate	259	80.4	Social media usage duration	1-60 minutes	73	22.7
	Master's degree	56	17.4		61-120 minutes	94	29.2
	Doctorate degree	7	2.2		121-180 minutes	77	23.9
	Total	322	100		181 < minutes	78	24.2
Grade level	Elementary school	81	25.2	Teaching experience	Total	322	100
	Middle school	184	57.1		<1 year	14	4.3
	High school	57	17.7		2-5 years	35	10.9
	Total	322	100		6-10 years	76	23.6
School type	State	292	90.7	11-20 years	150	46.6	
	Private	30	9.3	21< years	47	14.6	
	Total	322	100	Total	322	100	

DATA COLLECTION TOOLS

The first data collection tool was the usage purposes scale of social networks (UPS-SN) developed by Koçak Usluel, Demir and Çınar (2014). The seven-point Likert type scale consists of 26 items with seven factors: conducting research, collaboration, initiating communication, communicating, maintaining communication, sharing content, and entertainment. The score that participants may get varies between 26 and 182. The Cronbach's alpha reliability coefficient value was calculated to be .92. A number of the items in the scale are given below.

"I use social networks to find solutions to any problem."

"I use social networks to communicate with my friends with whom I am not intimate."

"When I am unhappy, I use social networks to get away from the factors that make me unhappy."

The second data collection tool was the social anxiety scale for social media users (SAS-SMU) developed by Alkış, Kadirhan and Sat (2017). The five-point Likert type scale consisted of 21 items with four factors including shared content anxiety, privacy anxiety, interaction anxiety, and self-evaluation anxiety. The Cronbach's alpha reliability coefficient value in terms of factors ranged between .80 and .92 and its structure was confirmed through confirmatory factor analysis (NFI = .93; CFI = .95; TLI = .95; RMSEA = .05). A number of the items in the scale are given below.

"On social media I feel anxious about the fact that others might find my actions awkward."

"On social media I am concerned about being ridiculed by others for the content I have shared"

"On social media I feel anxious about making a negative impression on people"

DATA ANALYSIS

Before the analysis, the data were reviewed to ensure that it was normally distributed. To this end, a normality test was run for variables. The kurtosis and skewness values were calculated. Since these values were between -1 and +1, and the mean, mode, and median values of the scores obtained from the female and male participants were close to each other, the data were considered as normally distributed (Seçer, 2013; Tabachnick & Fidell, 2013). Similar steps were followed for the other variables. It was also found that the data were normally distributed. A one-way analysis of variance (ANOVA) was used to determine whether the scales significantly differed in terms of factors. In addition, in order to determine whether there is an association between teachers' social anxiety levels

and their social media usage purposes, Pearson's product– moment correlations were calculated. According to Büyüköztürk (2011), the coefficient value refers to low correlation if the value is between 0 and .30, moderate correlation if between .30 and .70, and high correlation if higher than .70. Moreover, a multiple regression analysis was conducted. In multiple regression, the multi-collinearity problem was examined and it was determined that the VIF, CI and tolerance values were within acceptable limits. In this direction, it was seen that there was no multi-collinearity problem among the variables and the analysis was started. In a multiple regression analysis, the standardized regression coefficient value β (Beta) or β^2 is examined regardless of the sign of it rather than the regression coefficient values in order to determine the importance of independent variables for the dependent variable. The value of β^2 shows the contribution of each independent variable in predicting the dependent variable (Büyüköztürk, 2011). Therefore, the multiple regression analysis was used in order to determine whether gender, daily social media usage duration, conducting research, collaboration, initiating communication, communicating, maintaining communication, sharing content and entertainment predict teachers' social anxiety.

ETHICS

Necessary permission (29.12.2020 / Number: 2020/183) was obtained from the Social and Human Sciences Ethics Committee of Recep Tayyip Erdogan University before creating the necessary working group to collect data in the study.

FINDINGS

FINDINGS RELATED TO THE FIRST RESEARCH QUESTION

The first research question was related to teachers' social media usage purposes. The mean scores and standard deviation values are provided in Table 2.

Table 2. Descriptive Results for UPS-SN (n=322)

<i>Factors</i>	\bar{X}	<i>Ss</i>	<i>Agreement level</i>
Conducting research	5.45	1.43	Agree
Collaboration	4.93	1.33	Somewhat agree
Initiating communication	2.43	1.41	Disagree
Communicating	5.01	1.66	Somewhat agree
Maintaining communication	4.48	1.66	Somewhat agree
Sharing content	3.65	1.49	Neutral
Entertainment	3.95	1.59	Neutral

According to the findings provided in Table 2, teachers reported that they chose “agree” for conducting research (\bar{X} = 5.45), “somewhat agree” for collaboration (\bar{X} = 4,93), communication (\bar{X} = 5.01), and maintaining communication (\bar{X} = 4.48), “neutral” for sharing content (\bar{X} = 3.65) and entertainment (\bar{X} = 3.95), and “disagree” for initiating communication (\bar{X} = 2.43). According to the results, it can be seen that the teachers mostly used SMS for research, collaboration, communication, and maintaining relationships purposes.

FINDINGS RELATED TO THE SECOND RESEARCH QUESTION

The second research question was about teachers' perceptions about their social anxiety experiences in SMP. The descriptive results are provided in Table 3.

Table 3. Descriptive Results for SAS-SMU

<i>Factors</i>	\bar{X}	<i>Ss</i>	<i>Agreement Level</i>
Shared content anxiety	2.31	1.04	Rarely
Privacy anxiety	3.79	1.15	Often
Interaction anxiety	3.17	1.19	Sometimes
Self-evaluation anxiety	2.45	1.09	Rarely

The results reveal that teachers reported that they chose “rarely” for the shared content anxiety factor (\bar{X} = 2.31) and the self-evaluation anxiety factor (\bar{X} = 2.45), “often” for the privacy anxiety factor (\bar{X} = 3.79), and “sometimes” for the interaction anxiety factor (\bar{X} = 3.17). The results reveal that the teachers mostly experienced privacy and interaction anxiety when they visited SMP.

FINDINGS RELATED TO THE THIRD RESEARCH QUESTION

The third research question was about whether teachers' perceptions regarding social anxiety experiences on social media differ significantly in terms gender, type of institution they work for, teaching experience, education level, grade level they teach, and daily social media usage duration. For data analysis, an independent samples t-test (see Table 4 and 5) and a one-way variance analysis (ANOVA) (see Table 6, 7, 8, and 9) were conducted.

FINDINGS RELATED TO GENDER

Whether teachers' perceptions regarding social anxiety experiences on social media differ significantly in terms gender was investigated. An independent samples t-test was employed and the results are shown in Table 4.

Table 4. Results of the independent samples T-test Based on Gender

<i>Scale</i>	<i>Gender</i>	<i>N</i>	\bar{X}	<i>Sd</i>	<i>df</i>	<i>t</i>	<i>p</i>
SAS-SMU	Male	158	2.85	.76	320	1.622	.106
	Female	164	3.00	.87			

No significant difference was found between the female and male teachers’ social anxiety levels when they visited SMS ($p>.05$, $t = 1.622$). This reveals that the male and female teachers experienced social anxiety at a similar level.

FINDINGS RELATED TO TYPE OF INSTUTION

Whether teachers' perceptions about social anxiety experiences on social media differ significantly in terms of type of institution teachers work for was investigated. There were two types of schools; state schools and private schools. Since there were two categories, an independent samples t-test was run. The results are shown in Table 5.

Table 5. Results of the Independent samples T-test Based on Type of Institution

<i>Scale</i>	<i>Type of institution</i>	<i>N</i>	\bar{X}	<i>Sd</i>	<i>df</i>	<i>t</i>	<i>p</i>
SAS-SMU	State school	292	2.90	.828	320	-1.84	.069
	Private school	30	3.18	.682			

According to the results, the difference between teachers who work for state schools and private schools was not significant ($p>.05$, $t = -1.84$). This reveals that teachers who work for state schools and teachers who work for private schools had similar social anxiety when they visited SMP.

FINDINGS RELATED TO TEACHING EXPERIENCE

In order to determine whether the teachers' perceptions regarding social anxiety experiences on social media differ significantly in terms their teaching experience, a one-way variance analysis (ANOVA) was conducted. The results are shown in Table 6.

Table 6. Results of the ANOVA Based on Teaching Experience

Scale	Teaching experience	N	\bar{X}	Sd	Source of variance	Sum of squares	df	Mean square	F	p	Difference
SAS-SMU	<1 year	14	3.16	.674	Between groups	2.944	4	.736	1.098	.357	-
	2-5 years	35	2.84	.665	Within groups	212.395	317	.670			
	6-10 years	76	2.85	.770	Total	215.339	321				
	11-20 years	150	3.00	.887							
	21< years	47	2.80	.801							
	Total	322	2.92	.819							

According to the results, although teachers with less than one-year teaching experience had a higher mean score (\bar{X} =3.16), the mean scores for the other groups were close to each other. The ANOVA results revealed that no significant difference was observed in the teachers' social anxiety levels in terms of teaching experience [$F(4-317) = 1.098$; $p = .357 > .05$]. In other words, teaching experience did not cause any significant effect on teachers' social anxiety levels.

FINDINGS RELATED TO EDUCATION LEVEL

In order to determine whether teachers' perceptions regarding social anxiety experiences on social media differ significantly in terms their education level, one-way variance analysis (ANOVA) was conducted. The test results are shown in Table 7.

Table 7. Results of the ANOVA Based on Education Level

Scale	Education level	N	\bar{X}	Sd	Source of variance	Sum of squares	df	Mean square	F	p	Difference
SAS-SMU	Bachelor's degree	259	2.87	.800	Between groups	4.794	2	2.397	3.632	.028*	2-1
	Master's degree	56	3.19	.881	Within groups	210.545	319	.660			
	Doctorate degree	7	2.91	.626	Total	215.339	321				
	Total	322	2.92	.819							

* $p < .05$

According to the findings, teachers with Master's degrees had the highest mean score (\bar{X} = 3.19) compared with the other teachers. In addition, a significant difference in teachers' social anxiety levels was observed among groups in terms of their education level [$F(2-319) = 3.632$; $p = .028 < .05$]. In order to determine which group the significant difference favored, the Scheffe test was performed based on the equality of variances. The significant difference was between teachers with Bachelor's degrees (\bar{X} = 2.87) and teachers with Master's degrees (\bar{X} = 3.19) was in favor of teachers with Master's degrees. It can be said that the reason why the social anxiety of Master's degree graduates is higher than that of Bachelor's degree graduate results from their high level of awareness concerning the dangers that may be experienced in social media. In Anova, the most frequently used statistic is the eta-square (η^2) coefficient to make the results of the statistics and analyzes more understandable. In this respect, in this study, the eta-square (η^2) coefficient was calculated in order to determine how significant the difference was that emerged after the group averages were compared in practice. Based on the calculated effect size value ($\eta^2 = 0.02$), 2% of the variance observed was based on education level. Based on these effect size values, it can be said that the effect of the education level for the anxiety experienced by the teachers when using social media is within the medium level limits.

FINDINGS RELATED TO GRADE LEVEL

There were three school types the teachers served: elementary school, middle school, and high school. In order to determine whether the teachers' social anxiety mean scores differed in terms of

their grade level, a one-way variance analysis (ANOVA) was performed. The results are shown in Table 8.

Table 8. Results of the ANOVA Based on Grade Level

Scale	Grade level	N	\bar{X}	sd.	Source of variance	Sum of squares	df	Mean square	F	p	Difference
SAS-SMU	Elementary school	81	3.00	.760	Between groups	.957	2	.478	.712	.492	-
	Middle school	184	2.92	.829	Within groups	214.382	319	.672			
	High school	57	2.83	.868	Total	215.339	321				
	Total	322	2.92	.819							

According to the results, teachers teaching at different grade levels had a similar mean score in terms of their social anxiety levels. Among them, teachers who taught at elementary level had the highest mean score (\bar{X} =3.00). However, there was no significant difference among teachers in terms of their grade level [F (2-319) =.712; p=.492>.05]. In other words, the teachers teaching at different grade levels had a similar social anxiety level.

FINDINGS RELATED TO DAILY SOCIAL MEDIA USAGE DURATION

In order to determine whether teachers' perceptions regarding social anxiety experiences on social media differed significantly in terms their daily social media usage duration, a one-way variance analysis (ANOVA) was conducted. The results are shown in Table 9.

Table 9. Results of the ANOVA Based on Daily Social Media Usage Duration

Scale	Duration (min.)	N	\bar{X}	Ss	Source of variance	Sum of squares	sd	Mean square	F	p	Difference
SAS-SMU	<60 min.	73	2.88	.896	Between groups	4.196	3	1.399	2.107	.099	-
	61-120 min.	94	2.81	.849	Within groups	211.142	318	.664			
	121-180	77	2.91	.769	Total	215.339	321				
	181< min.	78	3.11	.730							
	Total	322	2.92	.819							

According to the findings, teachers who spent more than 181 minutes daily on SMS had the highest mean score (\bar{X} =3.11). No significant difference was observed among the teachers in terms of their daily social media usage durations [F (3-318) =2.107; p=.099>.05]. This reveals that the teachers had a similar social anxiety level regardless of the time they spent on social media.

FINDINGS RELATED TO THE FOURTH RESEARCH PROBLEM

The fourth research question was about whether there is an association between teachers' social anxiety levels and their social media usage purposes. In order to answer this research question, Pearson's product-moment correlations were calculated (p<.01). The findings are presented in Table 10.

Table 10. Correlation Results (n = 322)

	1	2	3	4	5	6	7	8
Social anxiety (1)	1							
Conducting research (2)	.167*	1						
Collaboration (3)	.198*	.530*	1					
Initiating communication	.275*	.025	.229*	1				
Communication (5)	.332*	.293*	.412*	.231*	1			
Maintaining	.320*	.186*	.343*	.398*	.630*	1		
Sharing content (7)	.257*	.371*	.547*	.431*	.400*	.461*	1	
Entertainment (8)	.239*	.211*	.243*	.409*	.399*	.460*	.525*	1

According to the results, there was a positive and low correlation between the teachers' social anxiety levels and five of the social media usage purposes including conducting research ($r=0.167$), collaboration ($r=0.198$), initiating communication ($r=0.275$), sharing content ($r=0.257$), and entertainment ($r=0.239$). A positive and moderate correlation was found between the teachers' social anxiety level and communication ($r=0.332$) and maintaining communication ($r=0.320$). These results reveal that as the scores of the teachers' purpose of using social media increase, their level of anxiety in social media also increases or vice versa.

FINDINGS RELATED TO THE FIFTH RESEARCH PROBLEM

The last research question was regarding whether gender, social media usage duration and social media usage purposes predict the teachers' social anxiety as they visit SMP. Therefore, a multiple regression analysis was performed (see Table 11).

Table 11. The Results of a Multiple Regression Analysis

Variable	B	Standard error _B	β	t	p	Bilateral r	Partial r	
Constant	1.870	.275	-	6.792				
Gender	-.104	.092	-.063	-1.124	.262	-.090	-.064	
Daily Usage Duration	.026	.064	.023	.409	.683	.130	.023	
SAS-SMU	Conducting research	.036	.037	.064	.979	.328	.167	.055
	Collaboration	-.007	.043	-.012	-.168	.866	.198	-.010
	Initiating	.106	.036	.183	2.901	.004	.275	.162
	Communication	.089	.035	.182	2.557	.011	.332	.143
	Maintaining	.052	.036	.105	1.435	.152	.320	.081
	Sharing content	.005	.042	.010	.125	.900	.257	.007
	Entertainment	.012	.034	.023	.348	.000	.239	.020
	R= 0.411, R ² = 0.169, F _(6,315) = 7.57, p= 0.000							

According to an examination of the bilateral and partial correlations between the predictor variables and the dependent variable, it was found that there was a low negative ($r = -.90$) relationship between the gender of the teacher and the SMA score, and when the other independent variables were checked, the relationship between the two variables was calculated to be $r = -.064$. Moreover, there was a low level ($r = .130$) relationship between a teacher's social media usage duration and the SMP score, and when the other independent variables were checked, the relationship between the two variables was calculated to be $r = .023$. It was found that there was a low level ($r = .167$) relationship between conducting research and the SMA score, and when other independent variables were checked, the relationship between the two variables was calculated to be $r = .055$. It was obtained that there was a low level ($r = .198$) relationship between collaboration and the SMA score, and when other independent variables were checked, the relationship between the two variables was calculated to be $r = -.010$. It was found that there was a low level ($r = .275$) relationship between initiating

communication and the SMA score, and when other independent variables were checked, the relationship between the two variables was calculated to be $r = .162$. It was found that there was a low level ($r = .332$) relationship between communicating and the SMA score, and when other independent variables were checked, the relationship between the two variables was calculated to be $r = .143$. It was found that there was a low level ($r = .320$) relationship between maintaining communication and the SMA score, and when other independent variables were checked, the relationship between the two variables was calculated to be $r = .081$. It was found that there was a low level ($r = .257$) relationship between sharing content and the SMA score, and when other independent variables were checked, the relationship between the two variables was calculated to be $r = .007$. It was found that there was a low level ($r = .239$) relationship between entertainment and the SMA score, and when other independent variables were checked, the relationship between the two variables was calculated to be $r = .020$.

It was observed that there was a small and significant association between the teachers' SAS scores and the variables including gender, daily social media usage duration, conducting research, collaboration, initiating communication, communicating, maintaining communication, sharing content and entertainment ($R = 0.411$, $R^2 = 0.169$, $p < 0.05$). All of these variables explained 16.9% of the variance in the SAS scores. According to the standardized regression coefficient (β), among the variables, initiating communication, communicating and maintaining communication were found to be more important than the others. When the t-test results regarding the significance of the regression coefficients were analyzed, initiating communication, communicating and entertainment were found to be a significant predictor of the SAS scores. The regression equation for the prediction of the SAS scores is given below:

$$\text{Social Anxiety in SMP} = 1.870 - 0.063. (\text{Gender}) + 0.023. (\text{Daily SMP usage duration}) + 0.064. (\text{conducting research}) - 0.012. (\text{collaboration}) + 0.183. (\text{initiating communication}) + 0.182. (\text{communicating}) + 0.105. (\text{maintaining communication}) + 0.010. (\text{sharing content}) + 0.023. (\text{entertainment})$$

DISCUSSION, CONCLUSION AND IMPLICATIONS

The rapid changes in technology have created an environment for people to interact with each other even they are not together. In these virtual environments people are able to share different kinds of information about themselves as well as other information or to exchange information. One of these environments is social media sites. Through SMS, people can reach other people, interact with them, and share information regardless of their cultures, locations, and ages. With the development of technology, the use of SMS has increased. Specifically, the widespread use of smartphones prompted this increase. It is almost impossible to find a person who does not have a social media account. Srivastava (2012) claims that a number of users cannot imagine a life without the Internet and social media.

The widespread use of social media among people makes social media and social networking an indispensable part of our education system. It can be seen that almost all educational institutions integrated social media through different applications. With the interaction of learners outside of school and the widespread use of the internet, the learning process can continue to exist independently of places such as the classroom (Erdoğan, 2008). In this regard, teachers' use of social media enables the education process to be carried out of classrooms and contributes to the improvement and development of students' learning by giving students the opportunity to reflect on their learning (Zgheib & Dabbagh, 2013). This situation has made it necessary for teachers to use social media. In this respect, teachers also took steps to create their own learning opportunities in online environments (Vu, Cao, Vu & Cepero, 2014) and created their own learning and collaboration communities through various social networks (Hou, Chang & Sung, 2009; Prestridge, 2019). Teachers

also benefit from social media by collaborating with their colleagues, sharing their practices (Prestige, 2019; Veletsianos, 2012), and enhancing their own professional development (Huei-Tse et al., 2009). In this study, teachers' social media usage purposes and their social anxiety while using SMS are investigated. The results reveal that teachers visited SMS in order to mainly conduct research, partly to cooperate, to communicate, and to maintain communication, and to a lesser extent to share content and to entertain. There are studies in the literature reporting that teachers use social media for communicating, spreading effective practices, collaborating with colleagues (Uslu & Hamarat, 2016) and conducting research on new approaches (Gülbahar et al., 2013; Menteşe, 2013; Tiryakioğlu & Erzurum, 2011), which are parallel to the findings of this particular study. Teachers' use of social media in order to advance their professional skills and collaborate with colleagues may reflect positively on the quality of classroom practices (Akbay & Kanadlı, 2019). Therefore, their social anxiety should not prevent them from visiting SMP. It is suggested that teachers should advance their knowledge regarding how to use social media effectively in terms of educational purposes.

However, despite its advantages technology has disadvantages as well. The frequent use of social media and the resulting information pollution and excessive loss of time in social networks bring about various physical and psychological health problems (Zenelaj, 2014). In addition, it is possible to list disadvantages such as violation of privacy, the formation of various addictions, anxiety disorders, the fear of being harmed by interaction, the emergence of illegal behavior, and the prevalence of gambling and betting games (Binark et al., 2009). Therefore, it is an expected outcome that teachers avoid use of social media due to the disadvantages, which result in anxiety. According to the findings of this study, the teachers involved report that they often experience privacy anxiety and sometimes communication anxiety. They also state that they experience anxiety caused by shared content and self-evaluation less than others. The fact that communication anxiety is high in individuals also negatively affects their harmony with their environment. Individuals should first reduce the level of communication anxiety by interacting safely with their environment in the family, school and work environment. Responsible legal institutions, on the other hand, need to ensure greater internet security. In addition, it is very important for individuals to pay attention to the privacy and security settings in their digital accounts on social media. Alrashedi (2020) focusing on the concerns and difficulties experienced by teachers working in Saudi Arabia determines that teachers experience various difficulties and concerns in social networks, especially in education, technical issues, security, and official laws, and accordingly suggests more technical and hardware support to educational institutions and the development of legal protocols. Manprasert (2018) examining teachers' perceptions of social media, reveals that teachers especially have security concerns and that it is beneficial to supervise children's use of social media by teachers and parents, especially those who have not reached the age of maturity. In addition, Fox and Bird (2017) examining teachers' use of social media in England, show that teachers cannot remain unconcerned to social media, and that teachers have anxiety regarding professionalism and safety in their use of social media. Studies focusing on social media and anxiety reveal that teachers have anxiety due to the possibility of privacy violation, emergence of the internet and social media addiction, harm due to interaction and posts/sharing via social media (Aslan & Karakuş Yılmaz, 2021; Binark et al., 2009; Demir, 2018; Turgut & Kurşun, 2020). In this respect, the findings of this study also support the findings of studies in the literature. The study also reveals that the teachers involved generally had more concerns about privacy when they visit SMP. In order to reduce such concerns, SMP provide privacy settings for their users. Therefore, teachers must review and make necessary changes to protect their privacy.

Another important finding of this study is that no significant difference was observed in teachers' social anxiety levels as they visit SMS in terms of gender, type of institution, teaching experience, grade level, and daily social media usage duration. In other words, teachers' anxiety levels were at a similar level in terms of these variables. Although Aktan (2018) found no gender effect on social anxiety level, Doğan and İlçin Tosun (2016) reveal that female high school students had a higher

level of social anxiety than male high school students. In this study, only the education level variable was found to have an effect on teachers' social anxiety. According to the results, teachers with Master's degree had significantly higher social anxiety levels compared to teachers with an undergraduate degree. One possible explanation is that those teachers are expected to be more sensitive than other teachers certain on issues such as research and ethics due to their graduate education. Ramazanoglu and Toytok (2018), on the other hand, in their study in which they examined the anxiety levels of teacher candidates on Facebook, found that the anxiety levels of teacher candidates were high while using Facebook, and that Facebook usage anxiety did not differ significantly according to the independent variables of class and age. However, they determined that there was a significant difference in favor of women according to gender. At this point, it could be thought that similar studies should be conducted on different samples.

A positive association between teachers' social anxiety and their social media usage purposes was another finding of the study. This result implies that as teachers' use of social media increases, their social anxiety levels also increase or vice versa. The common view is that the use of social media by individuals increases anxiety, but unlike this view, people may prefer to use social media to cope with their problems or to ignore their problems. More studies should be done to determine this in particular for teachers. However, in both cases, it seems possible to talk about the existence of a strong relationship between these variables. Therefore, it will be useful to examine both the direction of the relationship and the interaction of other possible variables with new studies. Similar results were found by other studies in the literature (Doğan & İlçin Tosun, 2016; Ko, Yen, Yen, Chen & Chen, 2012; Weinstein & Lejoyeux, 2010). However, it is suggested that teachers should avoid excessive use of social media in order to benefit from them. Additionally, Ramazanoglu and Toytok (2018) investigating the anxiety levels of pre-service teachers on Facebook, show that the anxiety levels of pre-service teachers are high while using Facebook, and that the anxiety of Facebook usage does not differ significantly according to the independent variables as class and age. However, they determine that there is a significant difference in favor of women according to gender, so it can be thought that similar studies should be conducted on different samples.

According to the standardized regression coefficient (β), the relative importance order of predictor variables on social anxiety experienced by teachers on social media is as follows: gender; daily social media usage duration; conducting research; collaboration; initiating communication; communicating; maintaining communication; sharing content and entertainment. However, among these variables, initiating communication, communicating and entertainment were the significant predictors of teachers' social anxiety. The other variables did not have a significant effect on it. Communicating with individuals on social media, maintaining this communication in a healthy way and choosing entertainment may not always be easy. It is expected that this situation will cause anxiety in individuals and therefore in teachers. Since it can be seen that teachers have more concerns about privacy in general with the use of social media, social media accounts offer their users options regarding privacy settings in order to overcome this concern. Therefore, teachers should consider these settings. The efficient and effective use of social media should be encouraged in order to enable teachers to develop professionally and to cooperate with their colleagues. In this respect, the anxieties experienced by teachers in social media should not be perceived as an obstacle for teachers, considering the advantages of using social media. In this direction, training on the use of social media could be organized at regular intervals in order to eliminate the anxieties of teachers in the use of social media.

LIMITATIONS

There are two limitations of the current study. The first limitation is about the sample and the sample size. This study was conducted with the participation of 322 teachers. Future research must consider conducting the study with a larger sample size in order to learn more about teachers' social media usage purposes and their association with teachers' social anxiety. The second limitation is

related to the number of variables used in the research. In this study, only two variables were considered; teachers' social media usage purposes, and their social anxiety. Therefore, more research is needed by including different variables in order to obtain more detailed information regarding teachers' and students' social anxiety in SMP, and their social media usage purposes.

AUTHOR CONTRIBUTION

All authors contributed equally to the manuscript development and preparation.

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Culturagram of the Development and Education Processes of Children in Seasonal Agricultural Worker Families*


Emine Saraç, Lecturer, Çağ University, Türkiye, eminesarac@cag.edu.tr

 0000-0002-4503-0217

Mustafa Kale, Assoc. Prof. Dr., Çağ University, Türkiye, mustafakale@gmail.com

 0000-0002-1764-2224

Nurgül Özpoyraz, Prof. Dr., Çağ University, Türkiye, nurgulozpoyraz@cag.edu.tr

 0000-0003-2007-4165

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Abstract

This study aimed to determine the Culturagram of Seasonal Agricultural Worker (SAW) families and their children through their daily life processes. In the study, the ethnography method was used to determine the physical and social factors affecting the daily life processes of SAW families and their children and to create a detailed culturagram. When the findings are evaluated in terms of culture, it was determined that the seasonal agricultural workers faced problems in terms of meeting basic needs, such as shelter, health and nutrition in the agricultural areas where the families migrated to. The family structure in such regions was different from the original place of residence, and the families used different languages in the public sphere and at home. The priority of these families was agricultural work because it was their livelihood. The migration of the families and their children from different regions that have different lifestyles also caused discrimination in their social lives.

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INTRODUCTION

The workforce's replacement by machines in the agricultural sector, changes in agriculture and soil policies, and agricultural practices related to these changes have directly affected the lifestyles of families whose primary source of income is agricultural work. These effects have led to fundamental changes, especially for families who do not own land but work as workers on agricultural land belonging to others. These families migrate seasonally from one region to another, live in different regions, and even go to different countries in order to work in the agriculture sector and to earn a living for their family. Such migration processes and unfavorable conditions in the region of migration force families, especially children, to live in unsuitable conditions (Walsh, 2016). The term Seasonal Agricultural Worker refers to people whose primary livelihood is agriculture and who make intercity and intercountry changes to work in agricultural areas in different regions due to seasonal transitions (Arcury & Quandt, 2007).

From a historical perspective, the origin of seasonal agricultural labor dates back to ancient times, both in Turkey and worldwide. However, while the phenomenon of seasonal agricultural work is frequently addressed in terms of the labor force in the field of agriculture and agricultural economy, families and children working in this field as the primary source of labor are often ignored (Baş, 2019). Recently, although there has been an increase in SAW families, these families and their children are considered to be disadvantaged groups with low social visibility. Seasonal agricultural workers are divided into two groups, local and mobile. In the relevant literature, local workers can be defined as local SAWs. In contrast, mobile workers can be defined as SAWs outside the region. Local SAWs work harvesting vegetables and fruits in their locations or their immediate surroundings, depending on wages determined hourly, daily, or by business unit. On the other hand, itinerant workers are agricultural workers who continue to live in villages and migrate to different cities and countries alone or with their families and who have lost or cannot own their own land due to expropriation (Özbekmezci & Sahil, 2004).

Today, seasonal agricultural work is typical in many countries where agricultural production is intense. However, the use of human labor is low in agriculture. In Turkey agriculture continues throughout almost all four seasons of the year, as a consequence of the different climatic conditions in different regions. The labor force working in agriculture in rural areas of Turkey has decreased gradually due to the effect of migration from rural areas to the cities, as in all parts of the world. This situation has made seasonal agricultural work a necessity as different regions depend on the agricultural sector workforce. Landless agricultural families, particularly those living in the eastern and southeastern regions of Turkey, are forced into migrating seasonally to the regions where agricultural production is intensive in order to work in agricultural areas for planting and harvesting (Semerci et al., 2014). In every region of intensive agricultural production it is possible to come across migrant and temporary agricultural labor groups or tents which are set up in vacant areas. When the literature on SAW families in Turkey and elsewhere in the world is examined, it is seen that the visibility of these families is too low socially and scientifically. Studies on SAW families are mainly focused on agriculture and the agricultural economy (Baş, 2019). However, studies on worker families and children as the most important agricultural sector actors are limited (Oto & Gündoğdu, 2022; Marshall, 2015). Studies on SAW families and children include the social conditions and welfare of SAW families and their children in social life (Henderson, 2004) and adaptation to the region they migrate to, the problems experienced by temporary agricultural workers (Marshall, 2015; Ziebarth, 2006), and the housing conditions and health and cultural adaptation problems of families (Hovey and Magana, 2002). When relevant current studies are evaluated, it can be seen that the living conditions of SAW families and children and their physical and social conditions in Turkey and the world need to be examined descriptively. For this purpose, in this study, the daily life processes of SAW families and children were examined through use of the culturagram as a family assessment tool.

CONCEPTUAL FRAMEWORK

CULTURAGRAM

The culturagram, developed by Congress (1997), is a family assessment tool. It provides an in-depth description of the effects of the family's systems on the family in the context of culture and lifestyle. The culturagram presents a graphical view of the living conditions of particular families with low social visibility and minority families with different lifestyles affected by globalization in today's world (Congress, 1997;1994). The use of the culturagram in family research provides practitioners with the opportunity to examine families' living conditions in-depth and contributes to making necessary inferences about what early interventions families may need (Congress, 1997). The culturagram suggests that the family should be centered and examined in terms of ten specific areas. However, it emphasizes that the family is not a static system, and the culturagram may differ depending on each family's conditions, considering that each family is unique. While the culturagram examines the family, it considers all the factors affecting families. It discusses these in terms of ten dimensions (Congress, 1994). The dimensions include reasons for families to move or migrate, their legal status, the time spent in the community they live in, the language spoken in the community and at home, health beliefs and access to health services, the effects of situations of trauma and crises, cultural and religious institutions, holidays and special events, food and clothing, oppression and discrimination, values related to education and livelihoods, and family structure. In this study, the culturagram was chosen because it offers an in-depth examination of the life processes and conditions of SAW families and their children in the agricultural regions they migrate to. In this context, the aims of the present research are as follows:

- What is the family structure of SAW families?
- What is the legal status of SAW families in the country and what factors are affected by this status?
- What are the current national policies regarding SAW families and children?
- What are the sources of social support for SAW families and children?
- How do SAW families have access to health and education?

METHOD

This research was carried out as an ethnographic study, which is a qualitative research method. Ethnography refers to a research method that focuses on everyday life and culture and to a deep analysis of a cultural construct as a whole. In addition, ethnography enables to analyze, understand, interpret and describe situations, events and phenomena in a cultural community in a detailed and rich way by using cultural concepts and perspectives of the participants (Boellstorff, Nardi, Pearce, & Taylor, 2012). The focus of this research is to identify SAW families and their children along with all the systems that surround them.

For this purpose, the ethnography method was preferred in the research as it gives the opportunity to examine the daily routines and practices of families and children at home and in agricultural areas and other contexts together. Another reason why the ethnography method was preferred is that it offers researchers the opportunity to describe the factors affecting families and children in detail, using different data collection tools.

RESEARCH DESIGN

CONTEXT OF RESEARCH

This research was carried out in the agricultural areas where SAW families live intensively in Silifke district of Mersin province in Turkey. Silifke district is one of the important agricultural regions of the country, and because of its Mediterranean climate, there is continuity of agricultural production

throughout summer and winter seasons. The research context has a very homogeneous sociocultural structure in terms of local population, comprising families of Turkish origin.

The need for agricultural workers in a district is significant in the migration of agricultural workers from different regions to that region. Migrant SAW families, on the other hand, are of Kurdish origin and speak Kurdish. In addition, SAW families live with their children in tents in agricultural areas far from the living areas of the local population. Before the researchers entered the research context, information was obtained from the Arkum village headman of Silifke district in order to determine the number of SAW families, accommodation, and number of parents and children in the region. In addition, information was requested from the Mersin Directorate of Provincial Agriculture and Forestry for the official records of the families, and the SAW families were contacted and families were visited. The researchers informed the families about the purpose of the current study and how it would be conducted. In this process, four families who met the above criteria and agreed to participate were included in the study.

SELECTION OF PARTICIPANT SAW FAMILIES AND PARTICIPANTS

The families included in this study were determined by the criterion sampling method. The criteria determined for the families to be included in the study are as follows:

- Families working as seasonal agricultural workers,
- Having a child of preschool or school age in the family,
- Families living with their children.

The families included in the study were specified as SAW1, SAW2, SAW3, and SAW4, and the children were matched with their family numbers as Child1, Child2, Child3, and Child4.

Child1 is 7 years old, continues his education in primary school, and lives with his family in a house close to agricultural fields. Child1 didn't have access to pre-school education, he was enrolled in primary school because it was compulsory. Child1's mother is 38 years old and illiterate, and his father is 40 years old and a primary school graduate.

Child2 is 7 years old and continues his education in primary school. Similarly, Child 2 couldn't have access to pre-school education, since primary school is compulsory education in the Turkish education system, its participation was ensured. Child2 has two siblings, a boy and a girl. His mother is illiterate, and she is 42 years old, and his father is 45 years old and a secondary school graduate.

Child3 is 6 years old and does not attend school, although she is at pre-school education age. Her mother is 44 years old, and a primary school graduate, and her father is 47 years old and a secondary school graduate.

Child4 is 6 years old and does not attend school even though he is at pre-school education age. His mother is 33 years old, and his father is 42 years old, and both are primary school graduates.

DATA COLLECTION

DATA COLLECTION TOOLS AND DATA COLLECTION PROCESS

In the study, different data collection tools, such as researcher diary, observation, interviews, photographs, and documents, were used to describe the daily life routines of SAW families.

The interview form was designed by Tom Weisner, Professor of Anthropology, in order to gain knowledge about the daily routine. The content of the interview forms is that the researcher and participants travel together to the daily routines of a family for a day. The researcher arranged the interview questions as if following the participant through one day (Weisner, 1997). Interviews with parents were held in an environment where the participants felt comfortable, interviews with adults lasted an average of 30 minutes, and interviews with children took an average of 15 minutes. Observations were made at home and in the agricultural areas where the families and children spend

time together. During the research process, 36 descriptive observations were made, and a total of 80 pages of observation reports were kept. During the research process, 75 photographs of families and children's interaction processes and practices were taken. A researcher diary was kept by the researchers throughout the research. Also, existing policies and practices related to SAW families in Turkey were examined through official documents. During the data collection process, two of the researchers collected data in the field, while the other researcher scanned the existing documents related to SAW families. The findings obtained at the end of the data collection process were analyzed by all three researchers.

ANALYSIS OF DATA

During the analysis of the data, continuous comparison of situations was made based on the culturagram. In this way, the researchers compared the interaction situations experienced in the process in terms of participants and context through culturagram fields. These comparisons enabled the data to be re-evaluated during the coding process. While the researchers were doing the coding, they read the data obtained from the interviews, observations, and the researcher's diary, and marked notes on the text. Scattered or fragmented data were coded, similarities and differences between codes were grouped, and related codes were classified. The similarities and differences between the codes were classified, and the codes related to each other were grouped. The categories consisting of grouped codes were gathered under culturagram themes.

ETHICAL APPROVAL

Ethics Committee Approval for the present study, dated 17.11.2020 and numbered 2000004173, was obtained from the Ethics Committee of the Institute of Social Sciences of Cag University. In addition, the purpose of the research was explained to the participants of the current study, the participant consent document was presented to them, and those who volunteered were included in the study.

THE ROLE OF THE RESEARCHER

In ethnographic research, it is important for the researcher to be within the context of the research him/herself and to participate in the daily life routines of those whom s/he interacts with and does research on (Shimahara, 1984). In this study, the researchers took a participatory role by participating in the daily routines of SAW families. For this purpose, the researchers tried to be a photographer in the ethnographic photographing process and a participant observer in the process of being involved in and observing activities throughout the research process. A participant observer is someone who participates directly in the research context in which family and children live, carefully watches what participants do, and participates in their activities and interactions (Weisner, 1997). Two researchers took part in the data collection process of the study, while the other researcher took part in the classification of the data. One of the researchers involved in the data collection process worked with disadvantaged groups (family, children, and the disabled) in the research region under the Ministry of Family, Labor and Social Services. This experience facilitated their access to and interactions with the research context. The roles of the researchers in the data collection process of the study were as follows:

- Data collector by spending time with SAW families in their daily routines and participating in their activities,
- Observer - observing the daily routines of families, and family and child interactions.

In addition to these roles, one of the researchers photographed the daily interaction processes of the families in the context of the research by participating in the daily life activities of the SAW families.

RESULTS

In this section, the findings obtained from the research are presented according to the culturagram dimensions.

FINDINGS REGARDING FAMILY STRUCTURE

The SAW families involved in the current research migrated from their villages, their primary residence in southeastern Turkey, to the Mediterranean region where the research was carried out. The families spend an average of 6 months of the year in their villages in seasons when they do not engage in seasonal agricultural work.

Child3's father says: *"We live where work is, so we spend most of the year in migration. Sometimes we migrate to the Aegean region from here, but we usually return to our village, our main residence, with our earnings"*.

The family structure of SAW families changes before and after the migration; while they live as nuclear families in the region where they work in agriculture, it is seen that they are extended families in the village where they live. The population of families may vary depending on the need for workers in the region migrated to. In times of high need for workers, some families can migrate with their grandparents, children, and grandchildren and demonstrate a labor division based on a shared economy. When the structure of the division of labor of the families is examined in this study, it is seen that all family members were engaged in agricultural work. However, it was observed that women undertook additional roles and responsibilities in terms of housework.

Similarly, it is noteworthy that families share roles and responsibilities in caring for children with other families staying in the agricultural areas. When families work in agricultural fields, a group of women who is responsible for protecting children look after them in turn. SAW families often migrate to agricultural areas with their relatives for agricultural work and spend time outside of work with relatives rather than locals.

It was observed that cooperation and solidarity among the SAW families were quite strong: *"At the end of the work, it was observed that the families came together, had dinner together, and chatted together in the evenings. Similarly, it was observed that children from different SAW families spent time together"* (01.12.2020, Researcher's Diary).

When we look at the decision-making mechanism and power center in the SAW families from a gender perspective, it was observed that the women had the same say as the men. The women had very active roles in providing daily routines. The men and women participated in similar practices in the division of labor. However, the men communicated with the person referred to as the coordinating sergeant in all agricultural work. It was observed that when outside guests came to their living area, men and women hosted the guests together without gender discrimination. *"During the research process, tables were set for family members and guests from other SAW families in the home environment, and women, men and children spent time together"* (04.02.2020, Researcher Diary).

The families received their working fees daily, and the parents collected the money earned by the family members. On the other hand, the parents met all the needs of the family with these wages and saved money for the periods when they could not work with the remaining money. Child1's father stated the following about the use of economic resources: *"We spend six months of the year working here, and the remaining six months, if there is work, we will not go. Consequently, we have to return from here by making savings. Sometimes we go to work in other cities in the remaining six months, and then we can feel comfortable financially"*. Also, the families stated that they used some of the wages they earned for investment purposes.

LANGUAGE AND LEGAL STATUS

The SAW families and children spoke Kurdish while communicating with other seasonal agricultural worker families like themselves. The majority of the families could speak Turkish and Kurdish. However, the families spoke Kurdish among themselves in the research context. However, in the region where the agricultural areas are located, they spoke Turkish in order to interact with the local people and to benefit from public services. However, as the elderly family members could speak only Kurdish, it was observed that the other adults and children interpreted in their communication with the local people.

All of the families defined themselves as Kurds in terms of ethnicity and stated their legal status as Turkish citizens. Child2's father stated their legal status: *"We have been in Turkey since the day we were born, and we are Turkish citizens, but we speak Kurdish in our region. Our ethnicity is Kurdish"*.

HEALTH AND HEALTH CARE ACCESS

It can create risks for children's health and safety when accommodation areas of SAW families are in agricultural areas. Use of pesticides and transmission of pests from agricultural areas to accommodation areas are among the potential risks. Regarding this issue, Child3's mother said, *"When we go to the field, the children play at home, short distance between the house and the farmland is good for us to see them and we can be together during breaks. However, we sometimes encounter snake and scorpion bites in agricultural areas"*.

The SAW families benefited from the state hospital in the district center in cases such as emergency health problems. However, the distance of the agricultural lands from the hospital and the families not having their own vehicles caused problems in transportation. The families often needed the help of employers in the case of medical emergencies. Also, although most SAW families stated that they did not have social security and encountered some problems related to this issue, some other families stated that they had social security. They had access to health services with the support of the State.

POLICIES FOR SAW FAMILIES AND THEIR CHILDREN

Another finding of the study is the legal regulations regarding the children of the SAW families' development and education processes. In 2006, in the Social Insurance and General Health Insurance Law No.5510, jobs in the field of agriculture were defined, but SAW was not included. In 2012, business lines and persons not included in the Occupational Health and Safety Law No. 6331 were specified. Since agricultural workers were not excluded, the work and employers of SAW can be evaluated within this scope.

In addition to these legal amendments, according to the Turkish Employment Agency Law No.4904, it was included in the legislation because of providing a basis for already existing working conditions of agricultural workers. According to "Service Contract" under the title of the Code of Obligations No. 816, Articles 313-354 are applied to agricultural workers in labor relations, excluding those listed in Article 113 under the title of the Articles of Labor Law No. 4857. According to Law No. 6356 on Trade Unions and Collective Bargaining Agreement and the Supreme Court, there is no regulation that SAW cannot be a union member and cannot participate in activities. On the contrary, according to the Supreme Court's decision, it is claimed that the union membership of SAW is possible. As mentioned above, there is no prohibition regarding the unionization of public, private, permanent, seasonal, and mobile agricultural workers. Although there is no such prohibition for agricultural workers, the lack of necessary legal regulations, the difficulty of working conditions in seasonal jobs, and the length of their periods do not make it possible to organize. Child 2's father stated the following on this issue: *"As if we are aware of our rights, nobody informs us, we cannot even retire, nobody facilitates us to retire, even if they facilitated us to retire, there would not be anyone to guide us. If we participate in a union, what will happen? What is the use of all that?"*. In this case, struggles to improve

agricultural workers' security, rights, and economic welfare cannot be carried out. Although there is no legal obligation to solve SAW problems, steps have been taken due to the regulations, circulars, and Non-Governmental Organizations (NGOs).

SOCIAL SUPPORT RESOURCES IN TRAUMA AND CRISIS SITUATIONS

SAW families and their children receive social support from family and peers in case of trauma and crisis due to displacement. The families stated that they could easily talk to their relatives about their problems; they prefer spending time with them and solving their problems together. On the other hand, it was observed that children formed a social support mechanism with their siblings and peers. Families did not have information about the institutions they could apply to in order to get professional help. Child4's father stated the following on this issue: *"We want to get educational aid for children in Urfa city, it does not happen because we are not there all the time, and when we come here, we cannot get it because of residence. We do not know where to go anyway. Children of Syrian families are given aid every month, but not for our children"*. As can be understood from Child 3's father's statements, the social support mechanisms of SAW families and children constantly change or disappear due to the displacement.

DISCRIMINATION AND PREJUDICE

In the study, it was observed that the children of the SAW families faced peer bullying in their schools. Also, in the interviews with their teachers, it was stated that some of the SAW children experienced discrimination by local children due to their late starting at school and use of different dialects of Turkish.

Child2 expressed this issue as follows: *"My friends at school do not play with me and do not let me join their groups because I started school after them. When my sister does not come, I do not want to go to school either because I am left alone. Sometimes they call me dirty when my clothes are dirty"*.

Besides, it was observed that the families only interacted socially with other SAW families due to their differences in lifestyles, culture, and language in their region. *"It is observed that SAW families are isolated in a homogeneous social structure in this respect, and that this situation is also effective when families are located in areas far from the areas where local families live."* Researcher's Diary dated 10.03.2020.

DISCUSSION, CONCLUSION AND IMPLICATIONS

Although seasonal agricultural work is a phenomenon encountered in many different parts of the world, information about the living conditions of these families and their children is quite limited (Henderson, 2004). In this study, which deals with SAW families and children, migration due to agricultural labor, which is the main source of livelihood, is an important factor in determining the welfare of families and children. In particular, migration has significant effects on the family structure of SAW families. The family structure differs according to the migrated region and the region lived in before the migration. There is an extended family structure and a collective structure in the regions where families lived before migrating to agricultural areas. However, in the regions where they come for agricultural work, the nuclear family structure is seen instead of the extended family structure. This change in the family structure causes young children to be alone, especially during the period when parents work in agricultural areas. This situation also disrupts the process of supporting the care and education of children. The fact that families have an extended family structure before migration enables them to receive support from other family members in child care. In addition, considering the working time of parents in agricultural areas, the time they spend with their children is limited. However, it is a vulnerable developmental period when preschool children need parental support the most. In this respect, considering the working hours and workload of SAW families, child care in families poses an important problem. When the relevant literature is examined, child care is one of

the common problems in SAW families in different parts of the world (Baş, 2019; Henderson, 2004; Oto & Gündoğdu, 2022). However, in different parts of the world, SAW and nomadic families and their children seem to be present in their programs for SAW Children's. For example, migrant and seasonal Head Start (MSHS) programs are implemented for families and children in some countries. Similarly, families from different cultures and different lifestyles, such as Alaska Native families in the United States, are supported by Head Start programs. However, the majority of SAW families and children living in other parts of the world do not receive support for the children's development (Fishman & Wille, 2014).

Another finding of the research is the legal status and language of SAW families in the country. In the present study, all the SAW families state that they are Turkish citizens, but classify themselves as Kurds in terms of ethnicity. When other studies conducted with SAW families in Turkey are examined in general, it is seen that these families mostly come from the eastern and southeastern Anatolian regions of the country (Uzun, 2015). In this region of the country, people of Kurdish, Arab and Turkish ethnic origin live together, and Kurdish is spoken extensively. The SAW families, which is the focus of the current study, use Kurdish at home and Turkish in social life in the region they migrated to. The use of the two different languages at home and in social life negatively affects the daily lives of some family members because they cannot speak Turkish. In addition, it causes problems for parents who do not speak Turkish in supporting their children's education, and can limit their social interactions. This finding of the present study is supported by the research conducted to analyze SAW families in different regions of Turkey. In fact, it is seen that two different languages, Turkish/Arabic or Turkish/Kurdish, are used in SAW communities in different regions of the country (Semerci et al., 2014). Differences in languages spoken at home and in the community can limit the social interaction of families and children with local people in agricultural areas and in some cases cause them to be exposed to prejudiced behavior. In addition, the different languages spoken at home and in the community can cause problems for family members in accessing health, education and other services, as they cannot express themselves in Turkish. Considering the families participating in the current research in terms of health conditions and access to health services, the places where families live in agricultural areas are very risky in terms of health. The fact that the living areas of families and children are intertwined with agricultural areas can leave them vulnerable to risks and dangers. A different study conducted with SAW families who work in hazelnut harvesting, Uzundere (2015) similarly stated that families faced similar housing problems and that the housing areas were not suitable for families and children in terms of health.

In this respect, there is a need to improve the housing conditions of families in seasonal agricultural areas. On the other hand, it was seen that the families participating in the research did not have any problems in accessing health services other than the language barrier. Studies on the health status and access to health services of SAW families in different regions of Turkey reveal that they have problems in accessing health services (Özbekmezci & Sahil, 2004; Uzun 2015). However, the difference in the findings of the current study can be considered to be related to the fact that the region where the families worked in the current study is close to the city or district center.

The current study show that the social support mechanisms of the SAW families were limited to their families, relatives, and other families engaged in seasonal agricultural work. It was seen that the children were affected by the migration process because of being dependent on families in the growth and development stages of children and feeling inadequate in self-protection. The displacement of the families due to migration caused them to be separated from family members, who are their primary social support sources. The children were deprived of support provided by their grandparents, who take care of young children while the parents work in the field. However, the SAW families solved this situation by supporting each other thanks to providing supervision and care to all children in turn. It was observed that the children had difficulties adapting to the new school environment because of the migration process. Similar studies may indicate that the migration and new social environment of

migrants in SAW families have adverse emotional and social effects on family members and children (Hovey & Magaña, 2002; Oto & Gündoğdu, 2022). Anxiety/depression, hyperactivity symptoms, low self-esteem, post-traumatic stress disorder, low life satisfaction, and neurotic problems due to school failure are the most common problems of children from migrant and SAW families (Özbekmezci & Sahil, 2004). Each family may deteriorate in specific periods, depending on social, economic, cultural, political and health factors. It is unclear when crises and traumas will occur in the family life cycle, and it is a normal part of family life. However, it is crucial for families to re-balance and develop resistance from trauma and crises (Walsh, 2016). When the SAW families were examined in terms of their situation regarding trauma and crisis in their families, they had to migrate regularly every year from the regions they live in. It was observed that the families tried to maintain their cultural values in their pre-migration places of residence in the regions they came to for agricultural work and attempted to balance the two different sociocultural structures.

SAW families are in constant displacement due to migration. While extended family structures are an essential source of social support for them because they are the family structures they have in their original residential areas, some problems may arise in terms of social support networks if some family members do not come to the regions they migrated to. It is thought that the solution for having access to services, such as education, security, and health, for seasonal agricultural worker families and their children is to provide settled life (Oto & Gündoğdu, 2022). Similarly, in different areas of the world, it has been suggested that families should be settled in many intervention programs and practices for access to education (Henderson, 2004), health, and other services for culturally nomadic communities that are dependent on animal husbandry (Dyer, 2010; Wlsh, 2017). On the other hand, SAW families' semi-nomadic life, whose primary source of income is agriculture, has to continue in terms of economic inadequacy.

The SAW families have a homogeneous peer group consisting of their siblings and cousins, as their agricultural lands are far from their settlements. For children, homogeneous peer groups in agricultural areas are very active in their relations and spend time together all day long. However, when SAW children participate in school life, their peer groups are heterogeneous and consist of intensely local children who differ from their own cultures. Changing peer groups at home and school cause SAW children to be exposed to social exclusion due to reasons such as lifestyle and language differences. As it is known, life style, culture and language differences can be an important reference for the initiation and continuation of peer relations for peers. When studies on SAW families are examined, it is seen that families are generally exposed to social exclusion in the regions where they work in agricultural work due to cultural and language differences and lifestyles (Beydili Gürbüz 2017; Jackson, 2019). When this finding is evaluated in terms of discrimination, prejudice and racism, it is seen that families and children experience marginalization due to different ethnicities, lifestyles, and language differences. This finding of the study is similar to the findings of other studies. In a study by Baş (2019) on SAW families in Turkey, it was seen that the exclusion of SAW families was a reason for marginalization in the regions where they worked. Similarly, it was seen that workers working in agricultural areas in Canada were exposed to racial and economic exclusion (Jackson, 2019).

In this respect, SAW families and their children need to be supported psychosocially, economic and related educational deficiencies should be eliminated, and their living conditions, which are among the main factors in their marginalization and discrimination, should be improved.

The present study provided information on SAW families as a disadvantaged group in terms of the lives of families and children and the factors affecting their lives. It was observed that the extended family structure in local settlements turned into a nuclear family structure in agricultural areas due to the migration of the SAW family structure to agricultural areas. This change in the family structure caused the families to be separated from their family members, who are a source of social support. In addition, the absence of family members who take care of children in the large family structure in agricultural areas left the children alone and vulnerable during the working time of their parents. This

situation created a big problem, especially in terms of ensuring the safety of children. The majority of the SAW families stated that they were ethnically Kurdish and that their legal status was Turkish citizenship. The families spoke Kurdish at home and Turkish in social life. This situation partially caused problems in the education of children, especially in supporting the education of the children of the parents who could not speak Turkish, and in the process of access to health. In the SAW families, most of the family members worked without social security and rights. In addition, it was determined that the families generally faced economic problems, which created a disadvantage in terms of shelter, health and hygiene, and nutritional conditions as the basic life needs of the families and children. SAW children have problems with access to education, access and participation. In case of access to education, continuity in education cannot be ensured depending on factors such as migration, culture and language. Furthermore, the SAW families and their children were seen to be marginalized in the regions where they worked as workers due to factors such as ethnicity, lifestyle, economic status, and language differences. On the other hand, the families and children led an isolated social life in agricultural areas and therefore needed psychosocial support. In addition to all these, the illiteracy of mothers in SAW families constitutes an important obstacle in supporting their children's development and education. For this reason, it is recommended to support SAW with literacy education and parent education programs for parents.

AUTHOR CONTRIBUTIONS

The first author made significant contributions to the planning of the research, data collection, data analysis, findings, and discussion.

The second author contributed to the data analysis and discussion section and undertook the tasks of editing and translation into English.

The third author contributed to the presentation of the findings and preparation for publication.


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Development and Testing of an EPSS for Secondary School Teachers to Develop Contents and Material*

Cemre Arıkaya, Amasya University, Türkiye, cemre.emre1995@hotmail.com

 0000-0002-0693-1610

Recep Çakır, Prof. Dr., Amasya University, Türkiye, recepcaKir@gmail.com

 0000-0002-2641-5007

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Abstract

This study aims to develop an Electronic Performance Support System (EPSS) for secondary school teachers to develop contents and materials, and to determine the views of teachers. The study used a design-based research method and the data were collected through interview and observation technique. Before developing EPSS, a semi-structured interview was made with 11 teachers, out of various branch teachers working in secondary school, in order to determine the needs of teachers. After developing EPSS, a two-week process was determined for the teachers to use the platform and the teachers were monitored for whether they used this platform during this process and the technical support required for them to use the platform effectively was provided. The data collected were analyzed by Nvivo program and themes were created. According to the results; the teachers using the platform have stated that it is generally a practical system, that it provides motivation and self-confidence and makes them happy as it allows designing their own materials, and that the sources added to the platform are sufficient. Finally; it can be stated that the developed EPSS will allow performing experimental studies on teachers and that different scales can be used in future studies.

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INTRODUCTION

Technology integration is of great importance in order to adapt the information that develops and progresses over time to the needs and conditions of our age. However, different tools and software including mobile phones, computer, camera and web technologies can be exemplified as digital technology. It can be stated that digitalized technologies can actively and effectively play a role in designing the teaching environment, in student attitudes and in making regulations in education and training environments as they are present in all areas of life (Cabı, 2015).

The technologies that have developed and continue to develop create a learning environment for teachers, which complies with the needs, through online tools and software, and facilitate producing teaching materials, which may help the teaching process and is suitable for teachers and lesson process (Birişçi, Kul, Aksu, Akaslan & Çelik, 2018). In this direction, web 2.0 tools, which offer various web-based software to teachers and users (Anderson, 2007; D'Souza, 2006; O'Reilley, 2005), provide opportunities for needs such as ensuring user-oriented information production and sharing the interpersonal communication and the created content (Thompson, 2007).

The current improvements in information and communication technologies as well as the increase in the level of students and teachers to use devices included in the information technologies have led to emergence of new approaches in education (Georgiev, Georgieva & Smrikrov, 2004). One of these approaches is called as e-learning. E-learning is defined as the inclusion of information and communication technologies in education and training process (Sun, Tsai, Finger, Chen & Yeh, 2008). According to a more detailed definition, e-learning is the educational activities in which computer and communication technologies are used, the student and the teacher are located in different places and the students have right to make choices about education process (Altıparmak, Kurt & Kapıdere, 2011). E-learning has led to a change over time in the tools, materials and teaching methods, which are used while performing the teaching process (Yılmaz, 2013). Multimedia materials and options, which can meet the needs of the individual, are offered easily within e-learning approach (Gökdaş & Kayri, 2005). In order to provide an effective and active learning environment opportunity in digital learning environments, it is necessary to create digital teaching materials (assessment and evaluation tools, animations, games, presentation etc.) (Friesen, Fisher and Roberts, 2001). According to Kumar and Kumar -Kushwaha, (2010), digital materials and contents are essential components of learning.

In his study, Arslan (2011) defines the digital content concept as any kind of contents that can be produced and used in electronic environment. The digital content, one of the course materials and instruments in the teaching process of teachers, is the educational materials that can be transferred to or acquired from digital media (Bayrakçı & Demirbaş, 2013). Digital content is computer-based materials that comply with the teaching program, are supported by multimedia tools and support the scheduled courses in an asynchronous and synchronous way (MEB, 2011).

It is emphasized in the studies performed that it is effective to prepare contents and materials in education and teaching processes (Yelken, 2012). Anderson (2007) states that web 2.0 tools are composed of the expressions such as the user-specific products and the materials that users can produce, the ability to use the unity and power of community, being open source-coded etc. Web 2.0 tools include video-sharing sites (YouTube, google video etc.), RSS and instant messaging tools, the presentation program tools such as wiki, PowToon (Kavasoglu, 2020).

Teachers will show favorable reactions to educational activities and achieve the educational goals; however, it causes difficulties for them to apply their knowledge and skills in educational environments. Therefore, there is a need for switching from focused behavior to performance-oriented professional development approach. This approach requires a constant performance support for teachers (Önen, Mertoğlu, Saka & Gürdal, 2009). These supports firstly include the materials that will serve to the works which will help teachers apply what they have learned in their education in the

education environments. For example, the materials include the tutorials on how a particular strategy or a tool can be applied in a particular education environment. In addition, it is obviously known that peer learning is an effective intervention for performance improvement. In order to implement this intervention in support of teachers, there is an online forum that has the features of a performance community for sharing the good practices and finding solutions for frequently encountered problems. In order to go beyond the peer learning, the teachers will have the access to the field experts they need (Pamuk, Çakır, Ergun, Yılmaz & Ayas, 2013).

The studies also show that the current educative/in-service training programs should be organized with new technologies in order to integrate technology with education and find solutions for the technology usage, planning process and acceptance issues (Dağhan et al, 2015; Katman & Tutkun, 2015; Miller et al., 2007; Paschall, 2004). There is a lack of practice to will enable the educators to access any information whenever they need. Studies in literature show that various tools and software such as consultancy systems, professional systems, information management systems and artificial intelligence applications are used for this purpose (Akin & Usluel, 2020; Barker, Van Schaik & Famakinwa, 2007; Bayram, 2006; Chang, 2004; Çelik, 2010; Demirören, 2019; Kert, 2008; Miller, Fitzgerald, Koury, Mitchem & Hollingsead, 2007; Özyer, 2021; Park, Baek & An, 2001; Roh, Han & Yu, 2001; Van Schaik, Pearson & Barker, 2002).

Based on the statements above, the teachers play a critical role in integration of technology into education and in preparing the students to become the twenty-first century students at the most basic level. However, teachers fail to use the technologies in education environments sufficiently (Baş, Kubiato & Sünbül, 2016). It is thought that one of the approaches that can be used to meet the needs and expectations of teachers in the process of integrating technology into education can be Electronic Performance Support System (EPSS).

PURPOSE AND IMPORTANCE OF STUDY

The need of guidance in subjects such as the encounter of students with more complex and novel learning opportunities has become more important for teachers. For any need for learning, there is a need for both personal and effective guidance and the facilitation of teaching for students to achieve a higher chance of success (Hwang, 2014). The multiple studies also show that the current educative/in-service training programs should be organized with new technologies in order to integrate technology with education and find solutions for the technology usage, planning process and acceptance issues (Dağhan et al, 2015; Katman & Tutkun, 2015; Miller et al., 2007; Paschall, 2004; Seylen & Özyürek, 2015). There is a lack of practice to will enable the educators to access any information whenever they need. In addition to that, first of all, teachers need to be spiritually happy and adapted in order to perform a successful teaching (Girgin, 2010).

When reviewing the relevant literature, it is seen that EPSSs are used to support the teaching process of teachers in their courses and provide necessary assistance during this process (Akin, 2019). In their studies, Park, Baek and An (2001) created an application software called STEPS on evaluation of usefulness of an EPSS developed for increasing the teachers' performances at schools. Teachers stated that the software contained a database support to a great extent, that it had an auxiliary tool feature at a rate of 80% and a teaching feature at a rate of 40%, and that it had a positive impact on increasing their performance at school. In their studies, Chen et al. (2009) designed a mobile EPSS tool for teachers in Taiwan. While the software helps the teachers to be able to manage the knowledge of the students, it also provided an information support. As the result of the study, it was found that EPSS was useful.

Materials and current approaches seem to be highly important in education and training processes (Metin, 2018). Considering that each teacher has the ability to develop material, an application to be developed to improve their performances will affect their motivations. Likewise, the use of materials that teachers developed will increase the interest and motivation of students. The

developed system helps to find solution to the problems of the teachers by providing consultancy service to them. It has been considered that teachers are not alone in their professional development and they will be aware of the fact that they can develop their own materials.

In parallel to that, the goals of this study are to facilitate the learning and to increase the content and material development success of teachers. In addition, continuous studies are carried out to demonstrate that EPSS can be integrated into educational activities in our country and abroad in an undeniable way and to increase its efficiency (Aydın, 1999; Bayram, 2006; Chang, 2004; Çelik, 2010; Demirören, 2019; Kert, 2008; Kert & Kurt, 2012; Miller, Fitzgerald, Koury, Mitchem & Hollingsead, 2007; Mitchem, Fitzgerald, Miller & Hollingsead, 2013; Park, Baek & An, 2001; Van Schaik, Pearson & Barker, 2002) While there are studies on EPSSs in international context, it is noteworthy that few EPSS studies have been carried out in our country and the educational aspects of these practices are less and the most of the studies are generally at the information level. This study is believed to contribute to the literature in the context of the efficiency of EPSS in learning and teaching process.

It is anticipated that the EPSS developed within the scope of this study will be productive in the teaching and learning processes in the secondary school classes and that it will increase their motivation for education and training processes of teachers. In addition, it is assumed that it will be a leading study for teachers to manage their own content and material development processes and to use the contents and materials they have developed in their classes. This study was carried out to fill this gap in the literature. In this context following research questions were answered;

1. What are the main features of EPSS that is developed to enable the secondary school teachers to develop materials?

2. What are the opinions of the secondary school teachers regarding the EPSS that is developed to enable them to develop materials?

EPSS

Considering EPSSs in terms of the features they should have; Schaik, Pearson & Barker, (2002) are of the opinion that EPSSs in education and teaching environments are for the following purposes:

- EPSSs can be used as a tool to determine the subjects that are existing within the application and the individuals are performing poorly can be determined and to improve these fields.
- They can be used as a tool to improve skills and knowledge as it has the feature of supporting whenever they are needed.
- They can be used as an auxiliary tool to enable the individuals in the system to improve their performance or natural skills in any field.

In the literature, the use of EPSSs in education and training environments gradually increases. EPSSs developed by Moore, Orey and Hardy (2000) in order to assist teachers in planning subjects to help them perform their tasks more efficiently among the examples of their use in the field of education. TREE system, which has been developed in the public schools in Florida state to assist the teachers taking care of students who have difficulty in learning, are physically disabled or have mental disorders, is another example that shows the use of EPSSs in education (Miller, Fitzgerald, Koury, Mitchem & Hollingsead, 2007).

EPSS developed by Laffey and Musser (1996) in order to facilitate learning and teaching is a system that intends to teach the students by practice and experience in the out-of-class process. This EPSS can provide instant feedback on the task that the students work on to increase their performances and guidance service is provided. Despite of the fact that the use of EPSS has not reached the desired level in the education field yet, there are studies that put forward its positive effects resulting from its use for educational purposes (Clem, 2007; Davis, 1995; Juang, Liu & Chan, 2005; Hung

& Chao, 2007; Ma & Stephen, 2006; Laffey & Musser, 1996; Sheu, 2000). Let's describe some of the most recent ones with a couple of sentences.

Mitchell (2014) studied the effect of EPDS, education and the use of EPDS with education on the performance and task duration. 66 university students in total were enrolled in the study. The result of the study showed that the group receiving EPDS and education together had higher performances and shorter task durations, compared to the other groups. The study determined that the use of EPDS with education had positive effects on the task duration and task performance. In his study, Erdoğan (2015) designed and developed an EPDS specific to inexperienced instructional designers in order to support the instructional design process. The sampling of the study is consisted of 23 inexperienced instructional designers. As the result of the study, the tools, database, educations, sources, examples, interface, wizard and help are listed as the elements of an EPDS for inexperienced instructional designers. The developed EPDS had a positive effect on the performance of instructional designers. In his study entitled as A Decision Support System Suggestion in Academic Personnel Performance Evaluation, Aydemir (2019) studied the current assignment and improvement directives of universities, determined all criteria and presented the decision support system (DSS) suggestion created to evaluate these criteria. Each university will be able to enter their own parameter values according to their own criterion system via DSS, to view the scoring, and to sort on university, faculty or department basis. Moreover, each academic personnel will be able to analyze his or her score in each field and his or her status according to other section or people. In his study, Demirören (2019) developed an EPDS for research planning in educational technology. This study examined the problems that postgraduate students in the field of Computer and Instructional Technologies Education suffered in the process of preparing a thesis suggestion as well as their support requirements. The designed EPDS was called as Research Planning Support System (RPSS). According to the outcome of the study, it was found that the system was considered as usable at a rate of 74%. In their studies, Akin and Usluel (2020) shared the usability testing using paper prototypes, which is the first one of the usability studies of EPDS Designed for Kids With Special Needs, with its process and outcomes. As the result of the study, the system components (advisor/expert system, instructional system and customized tools) were identified. This study formed the basis for the design stage of the system intended to be developed about the early intervention for the early childhood special education. In their studies, Kurt and Ayvaz (2021) made the information technologies personnel performance evaluation decision support system design. For this study, a hybrid structure was created for the performance measurement of the work analysts working in the field of information technologies. As the result of the study, it was found that it provided convenience to the business processes of the executives and was usable when needed. In his study, Özyer (2021) designed an electronic performance support system for quantitative data analysis. As the result of the study, it was found that it provided support to the educational researchers who had difficulty while performing quantitative analysis, and that it was usable when needed in this regard.

These studies demonstrate that EPSS will be used commonly in the future, integrating the other teaching tools and models into its body. This study aims to develop and test an EPSS for secondary school teachers to develop contents and materials.

METHOD

This study used "design-based research method" (TTA) to develop EPSS. TTA is a systematic and flexible research method to improve design, development, implementation and evaluation processes in educational practices in cooperation with researchers and participants and in their authentic environment (Wang & Hannafin, 2005). This study used ADDIE research model, framework of which was set by analysis, design, development, implementation and evaluation steps, to develop EPSS. This research model was named after the English initials of the steps stated below.

- Analysis, Design, Development, Implementation, Evaluation

At the Analysis stage;

Environment Analysis consists of the step of determining the needs of the environment in which the system will be used, and its current status.

Content Analysis consists of the step of determining the components and materials to be used in the system; of analyzing the documents informing about the system; of determining Web 2.0 tools; of determining the evaluation tools; and of preparing the system draft.

Learner Analysis consists of the steps of determining the needs of target audience and teachers to be used in the system; and lastly, of determining the current status of teachers.

At the Design stage; the steps of deciding on the components to be used for the design of the system; of determining the content of each component and menu; of preparing the infrastructure on which the system will work; of determining the design principles to be taken as reference in design process; of preparing the contents of components and menus; and of designing the system were carried out.

At the development, implementation and evaluation stages; the steps of testing the designed system; of taking the views of the users regarding the designed system; of examining the usability of the designed system; and of implementing the improvements were carried out.

At the reporting stage; the step of reporting in detail what was performed during the process was carried out (Akin, 2019).

SAMPLING

Study group of the research is consisted of 11 secondary school teachers, including 3 Computer and Instructional Technologies teachers, 3 foreign language teachers, 2 science teachers, 2 mathematic teachers and 1 Turkish language teacher. While determining sampling, it was thought that secondary school teachers would be more eligible for the study to reach the teachers working in different branches in line with expert opinions in the first place. At the beginning of the study, the teachers were interviewed via semi-structured interview form. As the result of these interviews, teachers who wanted to participate were selected and registered in the system.

Table 1. Distributions of teachers by their branches and genders are summarized

<i>Branch</i>	<i>Female</i>	<i>Male</i>	<i>Total</i>
Computer and Instructional Technologies Education	2	1	3
Foreign Language	2	1	3
Science	1	1	2
Mathematics	1	1	2
Turkish Language	1	0	1
Total	7	4	11

DATA COLLECTION TOOLS

SEMI-STRUCTURED INTERVIEW FORM 1: 11 volunteered teachers were interviewed individually in order to examine in detail the opinions and suggestions of secondary teachers regarding development of an EPSS for them to be able to use material in the class; to carry out a needs analysis; and to evaluate the implementation processes. A semi-structured interview form was used for the interviews that take about 30 minutes. Yıldırım and Şimşek (2016) states that the semi-structured interviewed are mostly preferred by the researchers as they are standards to a certain extent and are flexible. The interview form drawn up by receiving the expert opinions consists of 11 questions.

SEMI-STRUCTURED INTERVIEW FORM 2: Following the interviews carried out for needs analysis process, 11 volunteered teachers were interviewed individually in order to examine the opinions and

suggestions of secondary school teachers regarding EPSS designed for developing contents and materials. While creating interview forms, opinions of 4 subject matter experts working in the fields of teaching technologies, qualitative studies, computer engineering and program development were received at every stage and were applied on teachers. EPSS was used to receive opinions and suggestions after designing.

OBSERVATION FORM: It was designed to make observations during the use of EPSS designed for secondary school teachers to develop contents and materials. 11 teachers were observed. According to Yıldırım and Şimşek (2016), the qualitative research is defined as “the research in which qualitative data collection methods such as observation, interview and document analysis are used and a qualitative process is followed to put forward the perceptions and events in the natural environment in a realistic and holistic way”. During the observation that takes about 1 hour, the created observation form was used. While creating the observation form, expert opinion was received at every stage. In the observation form consisting of 9 steps, teachers are expected to become a member of EPSS, to access the user screen, to access the material analysis section, to select the possibilities of the environment in which they will use the material, to select the acquisition level that they will create material, to determine the type of material they want to create, to select the software and access the documents, videos and sample materials, to create a new material, to complete the evaluation test and receive feedbacks.

DATA COLLECTION PROCESS

The secondary school teachers were accessed through teachers working at secondary schools. Data collection took about two weeks for the first application. For second and third application, it took three weeks.

DATA ANALYSIS

The qualitative data obtained by interviews and observations were analyzed and interpreted firstly by descriptive analysis and then content analysis methods. Descriptive analysis is a qualitative data analysis type that includes summarization and interpretation of the data obtained via various data collection techniques according to the pre-determined themes (Yıldırım & Şimşek, 2016). The main purpose of the content analysis is to reach the concepts and relationships that can explain the data collected. The data summarized and interpreted in descriptive analysis are further processed in the content analysis and the concepts and themes that cannot be recognized in a descriptive approach can be discovered as the result of this analysis. To this end, the data collected should be conceptualized in the first place, and then they should be organized in a logical way according to the resulting concepts, and the themes explaining the data should be identified accordingly (Yıldırım & Şimşek, 2016). The collected data were analyzed via Nvivo program. Particular themes were created and analysis results were obtained.

FINDINGS

In this section, the findings of the research were presented in accordance with the order of research problems.

CYCLE I (ANALYSIS)

Before creating the 1st EPSS, the secondary school teachers identified for cycle 1 were interviewed for analysis process of the study (needs analysis, learner analysis, environment analysis and content analysis). During the interview, they were asked how important to use materials, what kind of materials they use in their classes, what they care for while selecting or preparing the materials, whether or not they develop new materials, what content and materials they feel competent to develop, in what ways they need support or assistance while developing materials, what features they would want if there were a platform to develop materials by using web 2.0 tools. After the completion

of interviews, a document specific to each teacher was created, and analyses were carried out and themes were created through Nvivo program. While creating themes, literature search was performed and expert opinions were received. The created themes, categories and codes were presented in Table 2.

Table 2. Themes, Categories and Codes as The Result of Analysis Process

1. Use of Materials	
a) Materials Used in Professional Life) Features of the Materials Used	
<ul style="list-style-type: none"> ● Slides ● Cartoon ● Puzzles ● Games ● Videos ● Worksheets 	<ul style="list-style-type: none"> ● Materials with High Visuality ● Interactive materials ● Three Dimensional materials ● Materials on which students are active
b) Importance of Using Materials	
<ul style="list-style-type: none"> ● Active and efficient lecturing ● Making the learning clear and understandable ● Making the course interesting ● Learning by practice and experience ● Making the learning permanent 	
2. Material Development Software	3. Expectations from Material Development Platforms
<ul style="list-style-type: none"> ● Exam and Interim assessment software ● Presentation creation software ● Game creation software ● Animation creation software ● Video creation software ● Survey creation software 	<ul style="list-style-type: none"> ● Usage convenience ● Suitability to student level ● Material development convenience ● Availability ● Upgradability ● Assistance

The data were transcribed and transferred to a Word file, then the interviewed people were asked to read some of these transcripts and their approval was obtained. As the result of the analysis carried out by Nvivo program, three main themes were created. They are the Use of Materials, the Material Development Software and the Expectations from Material Development Platforms.

1. USE OF MATERIALS

Materials used in professional life; Regarding the theme of ‘materials used in professional life’, teachers generally stated that they used videos, presentations, animations and worksheets in their courses and teaching process. They have stated that they are aware of Web 2.0 tools and they also used materials created with web 2.0 tools and stated that they wanted to create more different materials via web 2.0 tools.

Teachers working at village schools stated that there was a lack of materials, however they used smart boards and made use of materials such as videos and pictures for them to be efficient in their classes, that is, in the teaching process. In addition, teachers also stated that they wanted to use three-dimensional materials and augmented reality materials in the teaching process.

A teacher expresses his/her opinions as follows: “Since I work at a village school, we do not have much access to many materials. Therefore, I try to make up for the deficiency by having my students watch videos through smart board when I have a lack of material. Apart from that, I am making use of videos through smart board, as I said, as well as pictures, available tools to make experiments and available materials to enrich the lecture.”

Importance of Using Materials; Regarding the theme of ‘importance of using materials’; teachers have stated that the use of materials appeals to more than one sense organs to materialize the learning

and ensure the active participation in the course and that it makes the lecturing more efficient and ensures learning by practice and experience. Judging by these opinions, it can be said that teachers attach importance to the use of materials and are aware of the benefits of the use of materials in their classes.

In addition, the participants stated that the use of materials attracted the attention of the students and ensured the materialization of the concepts. They also expressed that it ensured the learning by practice and experience, which made the teaching process enjoyable. Judging by the opinions of teachers regarding the theme of 'importance of the use of materials', it was generally stated that the teachers used materials actively in their courses, and that the use of materials in the teaching process made the courses more efficient for students and had a positive effect on the learning process.

Features of the Materials Used

Regarding the features of the materials used, the opinions of teachers on what they care for in selection of materials were revealed. Teachers stated that they paid attention to whether the material contributes to the course, whether it is time-efficient, the level of student, the suitability of the course to the intended accomplishments, its usefulness and the currency of material while selecting the materials. In addition, they expressed that they developed materials, but they could not reach a sufficient level, and that they wanted to develop materials at a better level.

A teacher expressed his/her opinions as follows: *"I pay attention to its compliance with the subject, the currency of the material, its suitability to the group that is educated, the fact that it provides ease of use, and the fact that it appeals to more than one sense organ. In addition, I pay attention to whether it contributes to the course, and to the fact that it saves time"*.

2. MATERIAL DEVELOPMENT SOFTWARE

Regarding the material development software, teachers stated that they generally used video development software, presentation creation software, animation creation software and exam-interim assessment software.

Judging by the opinions of teachers regarding material development software, exam and interim assessment software, presentation creation software, game creation software, animation creation software, video creation software categories were created.

3. EXPECTATIONS FROM MATERIAL DEVELOPMENT PLATFORMS

Regarding their expectations from material development platforms, teachers were asked about what kind of features they wanted in material development platforms. Participants stated that they wanted a platform that guides them with sample drafts and contents, that is easy to use, that includes the acquisitions of the course and helps them prepare the material fast, that can create material absolutely by gamification to appeal to secondary school students, that attracts the interest visually, that can create augmented reality, that contains instructions for a beginner, and that is free of charge. They expressed that the platform should be fit for every branch, be accessed by everyone conveniently, be in a way that it can monitor new developments closely and immediately reflect to its content, be a platform that enables teachers to express their requests and opinions as this is a teacher-oriented platform and these opinions are taken into consideration. In addition, teachers expressed that they needed assistance while developing materials and this assistance should be available instantly while developing materials.

Judging by the opinions of participants, it can be said that they want the material development platform to be up-to-date; they want to be knowledgeable about current software and novelties and to reflect them to the platform; and they want a platform that allows designing materials with high visual richness and tracks the material development process of teachers and communicates with

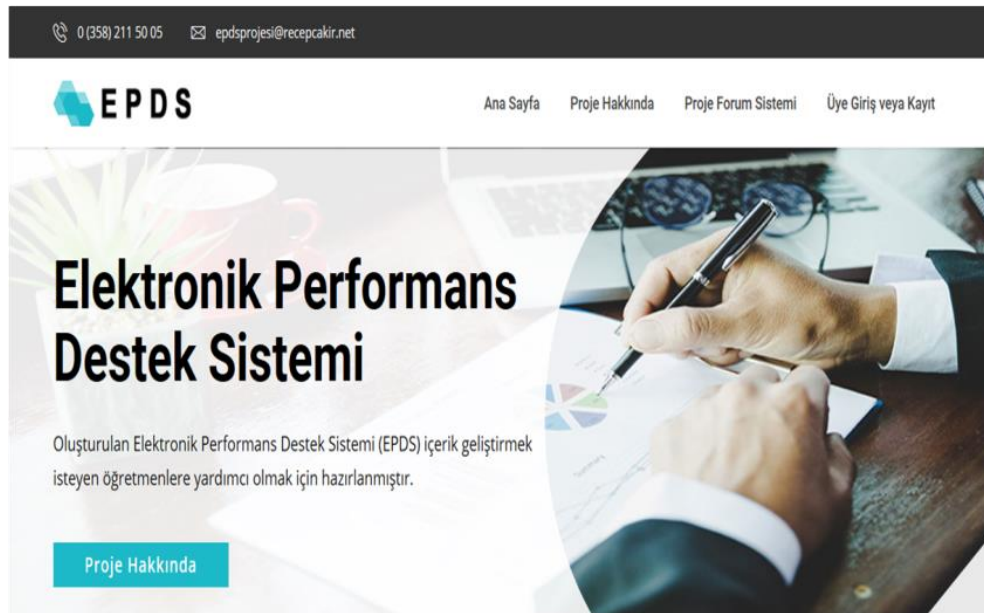
teachers about subjects they have difficulty in or need assistance, and that they can get more accurate and quick instructions. In addition, they defend the opinion that rich material development tools should be accessed and that platform should contain information on how to use them.

As the result of the interviews made in this first cycle, a design was made starting from the idea that development of an EPSS would meet the needs of teachers. While designing EPSS, demands and opinions of teachers were taken into consideration at every stage, and the menus, categories, components and contents that EPSS should contain were planned in accordance with the opinions of 4 subject matter experts working in the fields of teaching technologies, qualitative studies, computer engineering and program development. As the result of the analysis of interviews and expert opinions, menus and components within the system were determined.

EPSS

The design file was put into its final form in accordance with the interviews with teachers and the expert opinions. Figure 1 below shows the home page of the finalized EPSS.

Figure 1. EPSS Home Page



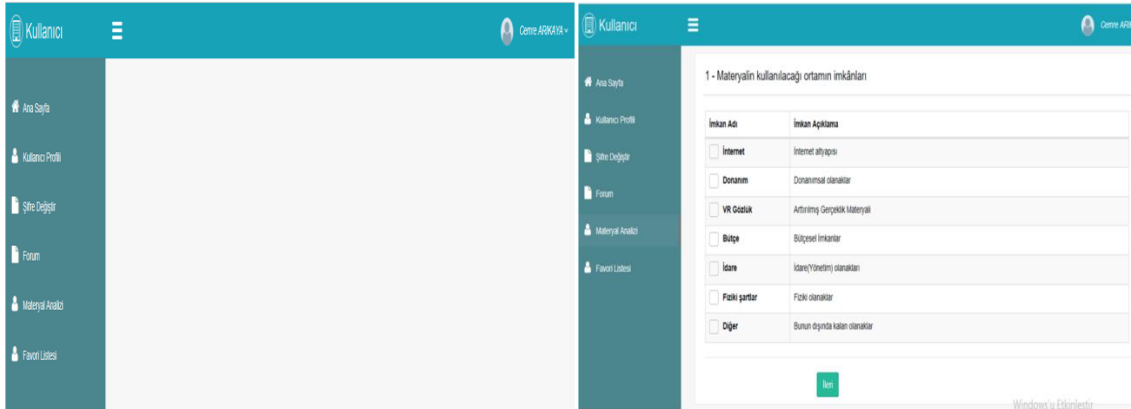
A brief information letter related to the project can be accessed via “About Project” button. “Project Forum System” button is a button to push through which the users who want to become or have already become a member can access the support when they face a problem. In addition, they can also start a discussion on Web 2.0 tool and exchange ideas with each other in this area. The screen to be accessed by pressing “Member Login or Sign In” button is as follows:

Figure 2. Login Screen

Figure 3. Sign-In Screen

Once you have become a member of platform, another screen appears. This screen is as follows:

Figure 4. Member Home Screen **Figure 5. Material Analysis 1st Screen**



In this section, User has logged in his/her page. From this page, s/he can go back to home page, carry out user name and password procedures, switch to forum screen and view the software s/he has added to his/her favorites. In Material Analysis section, s/he will encounter particular questions before starting to develop his/her material. The questions here intend to determine the needs of teacher. Material Analysis screen ensures that after teacher designs his/her material, the possibilities of the environment in which this material will be used are determined. This way, teacher can design his/her material in compliance with possibilities and present it conveniently.

Figure 6. Material Analysis 2nd Screen

Figure 7. Material Analysis 3rd Screen

In this section, the teacher was asked for which acquisition step s/he wants to design a material and asked to select the category that material s/he wants to design falls within. As the result of the category s/he has selected here, the web 2.0 tools contained in that category and registered on the platform will appear.

Figure 8. Software List

Uygulama Adı	Uygulama Açıklama	Öğren	Kullan	Değerlendir	Favorilere Al
Prezi	Web 2.0 Aracı	Video Yazılı Doküman Materyal	Kullan	Değerlendir	Favorilere Ekle
Powtoon	Web 2.0 Aracı	Video Yazılı Doküman Materyal	Kullan	Değerlendir	Favorilere Ekle
Google Slaytlar	Web 2.0 Aracı	Video Yazılı Doküman Materyal	Kullan	Değerlendir	Favorilere Ekle

This section contains the sources on software that appears as the result of the category the teacher has selected and the materials containing associated statements. Learn section contains three different buttons. “Video” button will enable the user to find an instructive video on how to design a material through software. Clicking “Written Document” button, the user can download and review a written document on how to design a material through software. “Material” button is a section by which the users can access to the area designed by the researcher and containing the materials that can be sources. “Use” section directs the users, that is the teachers, to the web site of software. “Evaluate” section is a section by which teachers access to an evaluation test that they will perform after designing their materials. This evaluation test will enable teachers to evaluate the material development software, material development process and EPSS. As the result of this evaluation, teachers have received the necessary feedbacks in a practical manner and their motivation has been attempted to increase.

In Evaluation test;

Figure 9. Evaluation Test Screen

Anket

Anket Sorusu	(1) Çok Kötü	(2) Kötü	(3) İdare Eder	(4) İyi	(5) Çok İyi
Bu Web aracını kullanarak materyalimi oluşturabildim.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
EPDS içinde bulunan araçların ve yönlendirmelerin yeterli olmadığını düşünüyorum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
EPDS'de bulunan web araçlarının eğlenceli ve basit olduğunu düşünüyorum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
EPDS'nin yetersiz bulduğunuz özellikleri nelerdir? Neler yapılabilir?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bu Web aracını kullanırken sorun yaşadım.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bu Web aracının materyalimi oluşturabileceğim uygun bir yazılım olduğunu düşünüyorum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bu Web aracının kullanışlı olduğunu düşünüyorum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bu Web aracının hedef kitleye uygun olduğunu düşünüyorum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Oluşturduğum materyali kullandım ve öğrencilerimden olumlu dönütlər aldım.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bu Web aracının içinde bulunan araçlar materyalimi oluşturmamda yeterli değildi.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
EPDS'de bulunan uygulama örnekleri ve dokümanların yeterli olduğunu düşünüyorum.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
EPDS'nin genel olarak kullanımı kolaydı.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In accordance with the purposes of study, EPSS, in which teachers can turn on the platform via their computers and mobile devices and which has been developed in a way to comply with their courses and in a supportive manner, has been introduced to teachers and second stage has been initiated.

CYCLE II

After being developed, EPSS application was made available to 11 secondary school teachers in active duty, including 3 Computer and Instructional Technologies teachers, 3 foreign language teachers, 2 science teachers, 2 mathematic teachers and 1 Turkish language teacher, and the first applications were performed. During the application, data were collected from the participant teachers via semi-structured interview form and observation form. As the result of the qualitative analyses, two main themes were found. They were called as EPSS features and EPSS evaluation. These themes and the categories and codes under each theme are given in Table 3.

Table 3. Theme, Category and Codes

1. EPSS Features	
a) Favorable Features of EPSS	b) Unfavorable Features of EPSS
<ul style="list-style-type: none"> ● Convenience in designing material ● Attracting attention of students ● Designing own material ● Assistance within the process ● Being practical 	<ul style="list-style-type: none"> ● Language of software ● Software deficiency
2. EPSS Evaluation	
<ul style="list-style-type: none"> ● Sources ● Software ● Feedbacks ● Design 	

EPSS FEATURES

FAVORABLE FEATURES OF EPSS:

Teachers have stated that EPSS they use is a practical system and that provides convenience in designing different kinds of materials and attracting attention of students. Besides, they expressed that it also assisted them with designing their own materials. They stated that determining which Web 2.0 tool they can use according to the choice of school facilities and level of acquisition shows that it is a need-oriented system. Judging by these answers, it can be said that teachers generally consider EPSS as favorable for both them and their students.

In addition to that, teachers have stated that developing a new material provides motivation, that they become happy as they are developing materials, that producing makes a person happy, and that this is fun and exciting. Judging by these answers, it can be said that designing their own material makes teachers happy in general, that it is exciting for them to design a material in EPSS, and that they are having fun while designing a material.

A teacher expresses his/her opinion as follows: *“The sense of being able to design a material really made me feel happy. I used the materials of my design in my classes and this increased my self-confidence. In addition, the fact that it has assisted and instructed me from beginning to end of the process was a plus for me”*.

UNFAVORABLE FEATURES OF EPSS:

Regarding the unfavorable features of EPSS, teachers stated that the use of software in Turkish language could be more convenient, that the software could be increased, and that the feedbacks could be detailed. Judging by the answers, it can be said that Turkish Web 2.0 software options should be added and that software options should be increased.

EPSS EVALUATION

Regarding the theme of ‘EPSS evaluation’, teachers specified the sufficient and lacking aspects of EPSS developed. Teachers have stated that it aids in general, that it provides learning by discovering, and that the learning is more permanent thanks to the sources it contains. Judging by these answers, it can be said that teachers are satisfied with the documents, videos and sample materials contained in EPSS, and that it provides assistance with learning Web 2.0 tool.

In addition to that, all participants stated that they took the evaluation test. Many participants have stated that feedbacks are not sufficient and need to be improved. Judging by these answers, it can be said that, as the result of the test, data and feedbacks should be improved and developed, and that application should be made afterwards.

And according to general suggestions of teachers regarding EPSS are examined, teachers has stated that it is generally a practical system, and it provides self-confidence and makes them happy as it allows them to design their own materials. This can be put into words as follows: Turkish software can be added, the software options can be increased in general and the feedbacks can be detailed.

Observations were also carried out in addition to interviews for the 2nd cycle of the study. An observation form consisting of 9 steps was created for observation. The observation form consisting of 9 steps contains the features such as teachers’ becoming a member of EPSS, their selection of the environment to use the material, their determination of the material type in compliance with acquisitions, their creation and use of new materials.

The following findings were obtained as the result of observation;

All steps in the applied observation form were performed successfully by teachers.

Most of the teachers made use of written documents, videos and sample materials contained in EPSS during the design process. During the observation, it was observed that teachers had been provided assistance instantly for the design process thanks to the auxiliary documents and thus, the process had taken a shorter time. As they stated in the interviews, teachers were observed to be very happy and excited while designing a new material.

After completion of material design process, an evaluation test was applied to them to find out their opinions on both EPSS and the assistance they took in the design process. Most of teachers stated at the time of observation that the feedback they received was not sufficient as the result of evaluation test.

After completion of observation period, the design-related parts and the parts that need to be organized in general have been determined.

As the result of the interviews and observation performed in Cycle II and application process, evaluations were carried out with the subject matter experts and improvements were made. Improvements made are as follows:

- Web 2.0 software with Turkish language support was included in EPSS.
- Web 2.0 software was generally upgraded in EPSS.
- Feedbacks were detailed and improved.
- Regarding the design, additions such as button addition and button change as well as page addition were made, and the design was generally rendered practical and simple.

CYCLE III

As the result of updates, the improved and upgraded EPSS has been retested for 3 weeks with the participation of secondary school teachers. At this stage, data were collected via semi-structured interview form and observation form.

Once the data obtained as the result of the applications made were analyzed, 2 main themes were found. They were formed as EPSS features and EPSS evaluation. These themes and the categories and codes under each theme are given in Table 4.

Table 4. Theme, Category and Codes

<i>1. EPSS Features</i>	
a) Favorable Features of EPSS ●Convenience in designing material ● Attracting attention of students ●Designing own material ●Assistance within the process ●Being practical	b) Unfavorable Features of EPSS ● Lack of software 2. EPSS Evaluation ●Sources ●Software ●Feedbacks ●Design

EPSS FEATURES

FAVORABLE FEATURES OF EPSS:

Regarding the favorable features of EPSS designed, teachers have stated that it is a convenient and practical system, and that it facilitates designing different kinds of materials and attracting interest of students, as they have already stated in the 2nd application. Besides, they expressed that it also assisted them with designing their own materials. They stated that determining which Web 2.0 tool they can use according to the choice of school facilities and level of acquisition shows that it is a need-oriented system. Judging by these answers, it can be said that teachers generally consider EPSS as favorable for both them and their students.

A science teacher has made a statement as follows: *“It has facilitated designing different kinds of materials and attracting interest of students. I am of the opinion that the feature of providing a step-by-step instruction and allowing the selection of the school facilities and acquisition levels is also very useful. This is because the schools we will use the material do not always have every opportunity unfortunately.”*

UNFAVORABLE FEATURES OF EPSS:

Regarding the unfavorable features of EPSS, teachers have only stated in general that more software can be added to system.

EPSS EVALUATION

Regarding the EPSS evaluation, teachers have generally given similar opinions to the opinions in the 2nd application. Participants have stated that it provides assistance in general, that it provides learning by discovering, that it provides motivation and self-confidence, and that the learning is more permanent thanks to the sources it contains. Judging by these answers, it can be said that teachers are satisfied with the documents, videos and sample materials contained in EPSS, and that it provides assistance with learning Web 2.0 tool.

In addition, an evaluation test prepared by the subject matter experts and the researcher was applied on teachers following the application. Evaluation test is an evaluation test consisting of 12 items, in which teachers can make an evaluation after examining the system and completing the material design and by which they will receive feedbacks as the result of their evaluation. As the result of analyses and evaluations, the teachers using the platform have stated that it is generally a practical system, that it provides motivation and self-confidence and makes them happy as it allows designing their own materials, and that the sources added to the platform are sufficient. They have stated that developing a new material provides motivation, that they are happy, and that it is fun and exciting. They have also stated that giving a feedback after the evaluation test is a distinctive feature from other platforms.

Opinions of teachers on the evaluation test in the system and the feedbacks given as the result of evaluation test were also taken. Teachers stated that they performed the evaluation test. Many participants have stated that feedbacks are sufficient. Judging by these answers, it can be said that the feedbacks detailed and improved at the result of 2nd cycle are sufficient. Teachers have not expressed any unfavorable situation during and after the evaluation test in the observation period.

All steps in the applied observation form were performed successfully by teachers. During the observation, it was found that sufficient amendments and additions were performed about the design and the parts that need to be arranged in general. Participants have not used any negative expressions in observation and application process. A teacher says: *“Yes, I think it is a well-prepared system. It was easy and understandable for me. The software can be increased over the time, but I have recognized that there are sufficient categories, materials and sources.”*

DISCUSSION AND CONCLUSION

This study aims to develop and test the EPSS for secondary school teachers to develop contents and materials. For this purpose, EPSS was developed through Design-Based research method consisting of 3 cycles. Needs analysis was performed in Cycle 1 and the following conclusions were reached in general: the participant teachers stated that they generally made use of videos, presentations, animations and worksheets in their classes and teaching process. Apart from that, they expressed that they were aware of Web 2.0 tools and used materials created via web 2.0 tools. Teachers working at village schools stated that there was a lack of materials, however they used smart boards and made use of materials such as videos and pictures for them to be efficient in their classes, that is, in the teaching process. Based on the opinions of teachers, it can be concluded that teachers

are knowledgeable about web 2.0 tools and use the materials created via web 2.0 tools in the teaching process. Besides, it has also been found that teachers working at village schools want to use materials in their classes, but their schools are lacking in materials. When the literature on the use of materials are examined, Özpınar and Sarpkaya (2010) have investigated in their study the problems of form teachers working at villages. The most common problems encountered by the form teachers working at villages include having difficulty in accessing materials to make experiments and applications in teaching process and while doing research. Likewise, Özer and Albayrak Özer (2017) have found in their study that prospective teachers are partly aware of the features of web 2.0. They concluded that teachers wanted to use web 2.0 tools for education but they were not sufficiently knowledgeable about it.

The participant teachers have also stated that the use of material appeals to more than one sense organs to materialize the learning and ensure the active participation in the course and that it makes the lecturing more efficient and ensures learning by practice and experience. Judging by these opinions, it can be expressed that teachers attach importance to the use of materials and are aware of the benefits of the use of materials in their classes. In addition, the teachers stated that the use of materials attracted the attention of the students and ensured the materialization of the concepts. They also expressed that it ensured the learning by practice and experience, which made the teaching process enjoyable. In the study carried out by Çiftçi, Yıldız and Bozkurt (2015), in which they investigated what the materials and the use of materials in the classes meant for secondary school mathematic teachers, teachers defined the material as the objects that materialize the abstract concepts, that facilitates understanding, that ensures that student can reflect on mathematical concepts and that brings practicality and visuality to the teaching. In addition, based on the opinions of teachers, it has been concluded that the use of materials is important in terms of “materialization, association, providing motivation, increasing permanence and developing a positive attitude”.

Another finding that has been found in the needs analysis is that teachers have stated that they pay attention to whether the material contributes to the course, whether it is time-efficient, the level of student, the suitability of the course to the intended accomplishments, its usefulness and the currency of material while selecting the materials. In the study carried out by Çiftçi, Yıldız, Bozkurt (2015), it has been found that the material usage processes of teachers are affected by the factors of attendance level of students, exam anxiety, physical conditions, lack of time, teachers’ lack of knowledge and skills. Similarly, Çakıroğlu and Yıldız (2007) have reached the conclusion in their study that teachers are not aware of how to select suitable materials for their class and how to efficiently use the materials they have selected in their class.

Teachers stated that they wanted a platform that guides them with sample drafts and contents, that is easy to use, that includes the acquisitions of the course and helps them prepare the material fast, that can create material by using tools that students will find enjoyable such as games and gamification to appeal to secondary school students, that attracts the interests visually, that can create augmented reality, that contains instructions for a beginner, and that is free of charge. In addition, teachers expressed that they needed assistance while developing materials and this assistance should be available instantly while developing materials. It is also seen in the literature that there are studies supporting this. For example, Uzun (2013) emphasized in his study that the learning environment should have the following features: The learning environment should enable students to study whenever and wherever they want; The learning environment should contain rich multimedia materials; The content should be explained in-depth and in detail; The content should include many sample applications; The learning environment should allow the students to communicate with each other and their teachers and to study individually or with their classmates.

EPSS, which has been developed by taking the opinions of teachers into consideration, is computer-assisted in this study and the task can be accessed easily. After signing up and logging in the

EPSS, directions are made through instructions. The documents and sample materials that will appeal to different sense organs have been uploaded to the system. Within the system, a consultancy service is provided through forums and mail. And the artificial intelligence allows offering options according to the preference of teachers and providing a service for needs. It is seen in the study that the EPSS developed is supported by the features in the literature. In a study he carried out, for example, Kert (2008) determined 12 features that should be present in EPSS. These include being computer-assisted, ability to access the task instantly, ability to be available in the working environment, ability to control the users, reduction of the need for orientation training, being easy to update, accessing the information rapidly, excluding the redundant information, providing information at a different level, taking the different learning patterns into consideration, the integrated information, providing consultancy and learning experiences and artificial intelligence. In his study, Bayarçelik (2020) stated that the biggest difference that occurred in the systems, in which the digital education is provided, was that all data to be used for the need analysis could be collected digitally, simultaneously and in real time, that it could be renewed very fast according to changes, and that it could determine the current situation much more rationally. In addition, the users stated that they could identify their own education and that they were advantageous because they could spare time for their education when they desired.

In the light of findings obtained from the needs analysis and in accordance with the expert opinions, the developed EPSS was put into the use of teachers and the second cycle was started. As the result of the interviews and observations, Regarding the favorable aspects of EPSS, teachers have stated that it is a practical system and that provides convenience in designing different kinds of materials and attracting attention of students. Besides, they expressed that it also assisted them with designing their own materials. They stated that determining which Web 2.0 tool they can use according to the choice of school facilities and level of acquisition shows that it is a need-oriented system. Judging by these answers, it can be said that teachers generally consider EPSS as favorable for both themselves and their students. Özgür (2013) has stated in his study that EPSSs support skills and performance of the users to eliminate the problems encountered during the implementation, rather than teaching the information and subjects, as the systems controlled by the user and providing the performance support when desired. In the study of Akın (2019), EPSS was developed to assist the teachers in the process of monitoring and reporting the development of children within the scope of early childhood special education. It has been concluded that the users have a positive attitude for the developed EPSS and EPSS contributes to motivations and performances of users. Özyer (2021) designed an electronic performance support system for quantitative data analysis. As the result of the study, it was found that it provided support to the educational researchers who had difficulty while performing quantitative analysis, and that it was usable when needed in this regard. When the factors affecting the usability of the developed system were examined, the system properties (i.e. content, visual design, guidance, organization and help) and user properties (i.e. learning style, statistics perception and attitude toward computer) came to the forefront.

In addition to that, teachers have stated that developing a new material provides motivation, that they become happy as they are developing materials, that producing makes a person happy, and that this is fun and exciting. Also during the observation period, similar findings were observed in teachers in the material development process. In his study regarding the teachers' level of developing their professional skills in instructional technologies and material development course, Saka (2005) stated that teachers wanted to design their own materials according to the environmental conditions and available opportunities in the teaching process. In his study, Duman (2013) concluded that the teaching materials should be suitable to the attendance level of students, be in compliance with individual diversity, appeal to the senses of students and ensure multiple learning opportunities, be in a way to make the student become active, be designed according to the principle of learning by practice and experience and be easy to use.

Teachers stated as unfavorable aspects that the use of Turkish software in EPSS would be more convenient and that the software could be increased. Judging by these answers and observation results, it can be said that Turkish Web 2.0 software options should be added or auxiliary materials should be prepared accordingly, and that software options should be increased. It has been found in the process of developing EPSS that literature also contains similar studies. For example, Paschall (2004) stated in his study that some components that EPSS should contain were ignored in some studies. Schmid, Miodrag and Francesco (2008) stated in their study that the interface design is important. In Akin's (2019) study, the participants were asked to perform certain tasks. In order to perform these tasks, the auxiliary tools were added to EPSS in both written and video format. Most of the participants used the auxiliary tools to complete the tasks and stated that these tools made a great contribution in completion of the tasks. As a result, it took longer for some participants to complete the tasks.

Teachers have stated that EPSS created provides assistance in general, that it provides learning by discovering, and that the learning is more permanent thanks to the sources it contains. Judging by these answers, it can be said that teachers are satisfied with the documents, videos and sample materials contained in EPSS, and that it provides assistance with learning Web 2.0 tool. Mitchem, Kight, Fitzgerald, Koury and Boonseng (2007) investigated the availability and perceived efficiency of StrategyTools™ application, an electronic performance system designed to be used independently in the classroom and home environments of incompetent secondary school students. As the result of the research, students and teachers stated that the software is beneficial. Students stated that the use of software contributed them in academic, behavioral and transition areas.

Improvements determined at the end of Cycle II were made and Cycle III was started. Regarding the theme of 'favorable features of EPSS created' at the end of Cycle III, teachers have stated that it is a convenient and practical system, and that it facilitates designing different kinds of materials and attracting interest of students, as they have already stated in the 2nd application. Besides, they expressed that it also assisted them with designing their own materials. They stated that determining which Web 2.0 tool they can use according to the choice of school facilities and level of acquisition shows that it is a need-oriented system. Judging by these answers, it can be expressed that teachers generally consider EPSS as favorable for both themselves and their students. In their studies, Kert and Kurt (2012) studied the impact of EPSS on self-regulation skill. When the study results are examined, it has been found that there is no significant difference in terms of motivational beliefs, while there is a significant difference in favor of experimental group in terms of cognitive, metacognitive and source management strategies.

Kert (2008a) stated that a performance assistance system should have particular features to be qualified as EPSS. These features include being computer-assisted, accessing the task instantly, being present in the working environment, controlling the users, minimizing the need for orientation training, being easy to update, retrieving information quickly, excluding the redundant information, presenting information at different levels, taking different learning patterns into consideration, presenting integrated information, consultancy and learning experiences and hosting artificial intelligence. EPSS created within this study has the above-mentioned features. It is computer-assisted and also the task is accessed quickly. After signing in and logging in EPSS, teachers are directed by the step-by-step instructions and their tasks for them to fulfill are delivered in this way. Teachers can access EPSS whatever environment they need. Users are controlled by the expert system. There is no need for an extra training to be able to use the system. System contains helpful descriptions. Additions and updates to the system are easily performed. Redundant information is avoided and descriptions are made with a plain language. Documents and sample materials that appeal to different sense organs are added to system. Consultancy service is provided in the system via forum and mail. The artificial intelligence makes it possible to provide options according to the choices of teachers and a need-oriented service is provided. Teachers have detailed the presence of the above-mentioned features

and the parts that particular features contributed to as they are giving their opinions on features of EPSS. Judging by the opinions of teachers, it can be expressed that they share the same opinion.

Regarding the EPSS evaluation, teachers have generally given similar opinions to the opinions in the 2nd cycle. Participants have stated that it provides assistance in general, that it provides learning by discovering, that it provides motivation and self-confidence, and that the learning is more permanent thanks to the sources it contains. In Akin's (2019) study, the participants were asked to perform particular tasks. In order to perform these tasks, the auxiliary tools were added to EDPS in both written and video format. Most of the participants used the auxiliary tools to complete the tasks and stated that these tools made a great contribution in completion of the task.

It was observed that all steps in the applied observation form were performed successfully by teachers. During the observation, it was found that sufficient amendments and additions were performed about the design and the parts that need to be arranged in general.

The teachers using the platform have stated that it is generally a practical system, that it provides motivation and self-confidence and makes them happy as it allows designing their own materials, and that the sources added to the platform are sufficient. They have stated that it is motivative to develop a new material, that they are happy, that it is fun and exciting, and that giving a feedback after the evaluation test is a distinctive feature from other platforms. Yelken's (2012) stated that the prospective teachers enjoyed the resulting product so much as it is totally the result of their own efforts and they find it comprehensive and multi-purpose. Kurt and Ayvaz (2021) designed the information technologies personnel performance evaluation decision support system. In this study, it was found that it provided convenience for business processes to the executives using the system, that it was usable when needed, and that it provided support in the management of the process.

Suggestions for future studies;

- This study used semi-structured interview form and observation form created by the researcher. For future studies, experimental studies can be carried out and different scales related to the effectiveness of EPSS and web 2.0 tools can be used.
- Sampling group of this study is consisted of teachers working within the body of National Education. The same study can be repeated with prospective teachers or teachers of different categories.
- The duration of this study was determined as three cycles within the limitations of the researcher. The study can be repeated by extending the application process.

AUTHOR CONTRIBUTIONS

This study was produced from the master thesis that has been conducted by the 1st author in company with 2nd author's academic advisor.

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An Adaptation Study of the Components of Emotion Understanding Test-24 (CEUT-24) to Turkish Context: An Investigation of the Internal Structure of the CEUT-24 at Item Level

Mehtap Sezgin, Assist. Prof. Dr. Ankara Social Sciences University, Türkiye, mehtap.sezgin@asbu.edu.tr
 0000-0003-3830-6112

Johnny R. J. Fontaine, Prof. Dr., Ghent University, Belgium, johnny.fontaine@ugent.be
 0000-0002-5684-0178

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Abstract

The generalizability across cultural groups of the construct of Emotional Intelligence (EI) and its assessments has received scant attention. Most research on ability EI is done within a Western context. This study investigates whether the same internal structure of The Components of Emotion Understanding Test short 24 item version (CEUT-24) emerges also in non-Western, Turkish context with a bipolar Emotional Understanding (EU) ability factor, a unipolar (dis)acquiescent responding factor, and scenario-specific error covariances. The sample consisted of 680 (15-32 years old) participants. Three nested models (model A with only the EU factor, model B with the acquiescence factor added to model A, and model C with the scenario-specific error covariances added to model B) have tested with Confirmatory Factor Analysis. Results showed that only model C had an acceptable to good fit. An EU ability factor, an acquiescent responding factor, and scenario-specific error covariance factor accounted for the raw item responses of CEUT-24 in Turkey in the same way as in Western contexts. The current study contributes to generalizability of the CEUT-24 beyond typical western contexts.

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INTRODUCTION

Since its breakthrough in the scientific literature about thirty years ago (e.g., Salovey & Mayer, 1990), a lot of validity evidence has been found for the construct and assessment of ability emotional intelligence (EI). The broad construct of EI was defined by Salovey and Mayer in 1990 as “the ability to monitor one’s own and others’ feelings and emotions, to discriminate among them and to use this information to guide one’s thinking and actions” (p. 189). Since, it has been observed that ability EI subtests are mutually positively correlated (e.g., Mayer, Salovey, Caruso & Sitarenios, 2003), that theoretically predicted factor structures could be identified with a (higher-order) EI factor (e.g. Rossen, Kranzler & Algina, 2008), and that there is a systematic nomological network of EI scores with EI ability for instance being positively related with intelligence (e.g. Fiori, 2015; MacCann, 2010), romantic relationship satisfaction (Jardine, Vannier & Voyer, 2022), social competence (Trentacosta & Fine, 2010), interpersonal relationships (e.g. Moeller, Robinson, Wilkowski & Hanson, 2012).

Despite this extensive empirical research on the concept of EI, the generalizability across cultural groups of the construct of EI and its assessment has received scant attention. Most of the research on ability EI is done within a Western context. This scant attention for cross-cultural generalizability could be attributed to the often limited embeddedness in emotion theorizing and the lack of replicable evidence for the internal structure of EI (sub)tests at item level. Without a clear theoretical framework about what emotions are, it cannot be hypothesized whether and to which extent the construct of emotional intelligence can be generalized across cultural contexts. Moreover, without a consistent internal structure at item level in Western populations an essential point of reference for studying generalizability of instruments is lacking. For a central facet of the EI construct, emotion understanding (EU) ability, both issues have been addressed with the development and validation of the Components of Emotion Understanding Test 24 item version (CEUT-24) (Huyghe, Hovasapian & Fontaine, 2022). The CEUT-24 is embedded in a strong emotion framework and shows a consistent internal structure in Western populations, which makes it suited for investigating generalizability to non-Western cultural contexts. As a first step in this endeavor, it is investigated in the current study to which extent CEUT-24 can be generalized to the Turkish cultural context.

THE COMPONENTIAL EMOTION APPROACH

The CEUT-24 is a short 24 item version of the Components of Emotion Understanding Test which was developed on the basis of the componential emotion approach (Sekwena & Fontaine, 2018). The componential emotion approach offers a comprehensive theoretical framework that integrates a vast array of emotion theories (Scherer, 2009). In this approach, an emotion has to be defined as a synchronized reaction to goal-relevant events. The process consists of a synchronization of activity in five human subsystems or components: appraisal (e.g., positive consequences), bodily reactions (e.g., trembling), feelings (e.g., submissive), expressions (e.g., smiling), and action tendencies (e.g., wanting to attack). In extensive psycholinguistic research in 27 countries representing 23 languages, it was indeed empirically observed that emotion terms systematically refer to changes in each of these five emotion components (Fontaine, Scherer, Roesch & Ellsworth, 2007; Fontaine, Scherer & Soriano, 2013). Based on this theoretical framework and the supporting psycholinguistic research, Fontaine (2016) proposed to redefine EU ability as the ability to understand the likely reactions in each of the five emotion components in response to concrete emotion eliciting situations. This theoretical perspective was operationalized in the CEUT-24. It consists of six scenarios that represent six very different goal-relevant episodes which typically elicit a variety of emotional processes. Per scenario participants have to rate the likelihood of four possible reactions. Across the six scenarios there are four appraisals, four action tendency, four bodily reactions, four expressions, four feelings, and four emotion term items participants have to rate on their likelihood. The instrument thus assesses understanding of all emotion components that make up the emotion process according to the componential emotion approach (Huyghe et al., 2022).

INTERNAL STRUCTURE AND SCORING OF EI TESTS

The internal structure at item level of ability EI (sub)tests has seldom been investigated, and if investigated, no consistent or difficult to interpret results have been reported (e.g., Austin, 2010; Ferguson & Austin, 2011; Gignac, 2005). However, understanding to which extent the responses to individual items are driven by the presumed EI construct is essential for determining the validity of EI instruments (e.g., Maul, 2012). The inconsistent findings with respect to the internal structure could be attributed to a scoring problem with ability EI (sub)tests. A major challenge in the EI domain is identifying what are “correct” responses. The most frequently used solution is to work with Proportion Consensus Scoring (PCS). A person’s raw item response is transformed on the basis of the proportion of participants in a norm group that gave the same response (e.g., Barchard, Hensley & Anderson 2012). According to Legree et al. (2014) PCS is sensitive to irrelevant response characteristics. The scores across items in EI (sub)tests are characterized by a score pattern, score elevation (i.e. profile means), and score scatter (i.e. within-profile variance). According to Legree et al. (2014) only the score pattern contains valid information about a person’s EI, while elevation and scatter are irrelevant interindividual differences in EI. Therefore, they propose to score EI based on the similarity between the observed and the correct response profile across items (e.g., by computing a Pearson correlation), which is not sensitive to individual differences in elevation and scatter. Profile similarities can overcome the identified scoring problems. However, as it is a Gestalt measure, they do not provide any information about the dimensionality of EI tests, nor about the psychometric quality of individual items. A consequence is that the profile similarity approach is not suitable for investigating cross-cultural generalizability. When participants in other cultural groups show a low profile similarity, it can be both due to generalizability problems with the items or because of genuine group differences in the ability to process information about emotion.

To overcome this issue Huyghe et al. (2022) identified theoretical expectations about the constructs that determine the reactions to the CEUT-24 based on work of Fontaine et al. (2022). They identified three different constructs that could account for the observed raw item scores (EU ability, acquiescent responding, and scenario specific covariance). They then tested with confirmatory factor analysis whether the a priori predicted structure could account for the observed item scores. EU ability is the target construct. Because it can be expected that the higher the EU ability, the more a participant will rate correct items as correct and rate incorrect items as incorrect, a bipolar EU ability factor was predicted with correct items loading positively and incorrect items loading negatively. Next, (dis)acquiescent responding, a response tendency to use the (lower or) higher end of the response scale independent of the content of the items (e.g. Hinz, Michalski, Schwarz & Herzberg, 2007) was also expected to play a role. In a CFA model, this can be represented by a unipolar factor with all items sharing the same item loading (as the effect is not dependent on specific items). Finally, because of the Situational Judgement Test (SJT) format of the CEUT-24 with emotion reactions being nested in specific emotion eliciting situations, design-based error covariances between the items sharing the same scenario were expected. This a priori-predicted internal structure at item level was clearly confirmed with confirmatory factor analysis in four West-European samples from the UK, Germany, Belgium, and Spain (Huyghe et al., 2022).

By demonstrating that a theoretically derived structure can be identified at item level for EU ability tests, a key source of validity evidence is added to the existing validity evidence for ability EU. It is now also possible to investigate the generalizability of EI (sub)tests beyond Western populations. It can be empirically investigated whether the same factor structures emerge in non-Western populations with a bipolar EU ability factor, a unipolar (dis)acquiescent responding factor and scenario-specific error covariances. Because the CEUT-24 was developed on the basis of a universal emotion framework which was supported in empirical psycholinguistic research with a large diversity of languages (ranging from English to Chinese), it can be expected that across cultural groups emotion understanding consists of understanding the likelihood of emotional reactions in all emotion

components when people are confronted with goal-relevant situations. The psycholinguistic research, however, does not imply that specific items would function in exactly the same way. The psycholinguistic research also demonstrated that while the overall emotion structure is very stable across cultural and linguistic groups, carefully translated individual emotion features could shift in meaning across the groups (Fontaine, Scherer, Roesch & Ellsworth, 2007; Fontaine, Scherer & Soriano, 2013). Moreover, the precision of the components of emotion may be affected by whether the culture is individualistic or collectivist. For example, in Western cultural groups, children's emotional expression may be seen and supported as a manifestation of individuality. However, in non-Western cultural groups, controlling emotions can be seen as valuable, thus, supported (Southam Gerow, 2013). On the other hand, the rules for displaying emotions may vary according to the culture. For example, in some cultures, people are expected to be sad and openly express their sadness at funerals, while in some cultures this is not expected (Smith, et al., 2003).

In the present study the expectation that an internal structure consisting of a bipolar EU ability factor, a unipolar (dis)acquiescent responding factor, and design-based error covariances between items of the same scenario also applies in non-Western cultural and linguistic groups is tested in Turkey. Moreover, it is investigated to which extent the specific emotional reactions in the CEUT-24 are to the same extent considered as likely or unlikely in a Turkish context compared to a West-European context, and thus function in the same way in a Turkish context.

METHOD

PARTICIPANTS

In the literature, a sample size of more than 500 participants is suggested to be large enough for applying the Weighted Least Squares (WLSMV) estimator in structural equation modelling (e.g. Bandalos, 2014; Nussbeck, Eid & Lischetzke, 2006; Huyghe et al., 2022). In this study, the sample consisted of 680 participants selected by simple random sampling method. The sample was robust in terms of representativeness of the Turkish context. In fact, participants were from seven regions of Turkey ($n_{\text{Mediterranean}}=213$, $n_{\text{Eastern Anatolia}}=64$, $n_{\text{Aegean}}=41$, $n_{\text{South Eastern Anatolia}}=129$, $n_{\text{Central Anatolia}}=63$, $n_{\text{Balck Sea}}=70$, $n_{\text{Marmara}}=100$) according to geographic region classification (Karcı, Üstübcı, & De Clerck, 2014). Participants over the age of 15 participated in the study, regardless of continuing their education or not. The sample age ranged from 15 to 32 years with a mean age of 20 years and with a 2.22 standard deviation, 206 (30.3%) were male and 471(69.3%) were female (3 participants are not marked their gender). With respect to educational level, 193 (28.4%) of the participants are in secondary education; 79 (11.6%) of the participants are in upper secondary education; 392 (57.6%) of the participants are in undergraduate education; 16 (2.4%) of the participants did not report their educational level.

MATERIALS

CEUT-24 is used in this study. CEUT-24 assesses emotional understanding as the ability to understand the likely emotional components in specific goal-relevant situations. These emotional components are appraisals, action tendencies, bodily reactions, expressions and subjective feelings. The CEUT-24 is an SJT based on based on a componential emotional approach in which participants rate for each of the 6 emotion eliciting scenarios (i.e. the item stems) the likelihood of four possible emotional reactions on a 5-point Likert scale ranging from (1) Very unlikely to (5) Very likely (i.e. numbers 1 to 5 being the raw item scores). CEUT consists of 24 items in total. CEUT-24 is a balanced instrument in terms of emotion components and correct/incorrect items (with score 1 and 2 being incorrect when an item is unlikely and scores 4 and 5 being correct when an item is likely). CEUT-24 was validated in West-European countries (e.g. UK, Germany, Spain and Belgium) with a newly developed model. Three nested models were tested with CFA for each country separately: model A with only the emotional understanding factor, model B with the acquiescence factor added to model A, and model C with the scenario specific error covariances added to model B. Only model C had

acceptable to good fit on all criteria in all four countries. According to results, Belgian sample with WLSMV: $\chi^2= 392.283$, $df= 215$, $\chi^2/df= 1.825$; RMSEA= .040; RMSEA 90% CI= .033-.046; CFI= .957; SRMR= .048. UK sample with maximum likelihood estimator (MLMV): $\chi^2=255.496$, $df= 215$, $\chi^2/df= 1.888$; RMSEA= .028; RMSEA 90% CI= .009-.041; CFI= .956; SRMR= .046. Germany sample with MLMV: $\chi^2= 252.649$, $df= 215$, $\chi^2/df= 1.175$; RMSEA= .029; RMSEA 90% CI= .007-.043; CFI= .952; SRMR= .049. Spain sample with MLMV: $\chi^2= 253.304$, $df= 215$, $\chi^2/df= 1.178$; RMSEA= .029; RMSEA 90% CI= .008-.042; CFI= .958; SRMR= .043. For the reliability, Mac Donald's omega, was found to be .83, .94, .89, and .93 in Belgium, UK, Germany and Spain respectively (Huyghe, Hovasapian & Fontaine 2022).

In addition, the Personal Information Form was conducted to get sociodemographic information from participants. West-European participants' CEUT-24 item score means were used as a reference to compare item score averages of the Turkish sample with West-European samples.¹

PROCEDURE

This study is conducted as a part of the ECoWeB Horizon 2020 project: Assessing and Enhancing Emotional Competence for Well-Being in the Young: A principled, evidence-based, mobile-health approach to prevent mental disorders and promote mental well-being (Newbold, et al., 2020).

The CEUT-24 English version was translated into Turkish by the Turkish and English native speaking researchers using translations and back-translations and committee discussions. After the necessary translation, first, permissions were obtained by the researchers who developed the scale, and the researcher, as a Turkish native speaker, translated the original CEUT-24 instrument from English into Turkish. Second, the control of the Turkish version of CEUT-24 instrument was done by a Turkish native speaker and an expert from the field of English Language Teaching. Third, back translation process for the Turkish CEUT-24 instrument was conducted by another Turkish native speaker from the field of English Language Teaching. Then, the translated instrument and the original instrument were checked by a native English speaker who is a psychology expert and researcher at the ECoWeB Horizon 2020 project. Next, a pilot study was conducted with a small group of 10 people. Feedback from the participants was discussed with two experts from the field of Psychology and from an expert in the field of Guidance and Psychological Counselling, who have studies on emotions and culture.

We recruited 701 participants living in Turkey in the 2019-2020 academic year. Recruitment was conducted with colleagues in other universities and high schools throughout Turkey in order to have a representative sample. Also, through social media participants were attracted. Each participant participated in an online psychological assessment through Qualtrics Research Services. This software allows one-time access to the survey when connected from the same browser. Participants between the ages of 18-35 who received the research link approved the 'Research Consent Form' before starting the research. For 15-17 year olds to participate in the research, contact information of parents was requested and 'Parent Consent Form' was obtained online. The consent form states general information about the research and that participation in the study is on a voluntary basis. In total 21 participants whose mother tongue was not Turkish and also the participant and whose parents were not born in Turkey were excluded from the dataset.

STATISTICAL ANALYSIS

The data analysis was carried out with raw item scores using the MPlus Version 8.4 (Muthén & Muthén, 2017). CFA was executed to examine the internal structure of the CEUT-24 Turkish version with WLSMV estimation because of the non-normal distribution (the pronounced skewness and

¹ West-European participants mean item scores were obtained by computing the mean item scores across the four European Countries (Belgium, UK, Germany, Spain). These mean item scores were reported in a published research supplementary material. (see <https://www.frontiersin.org/articles/10.3389/fpsyg.2022.812525/full#supplementary-material>).

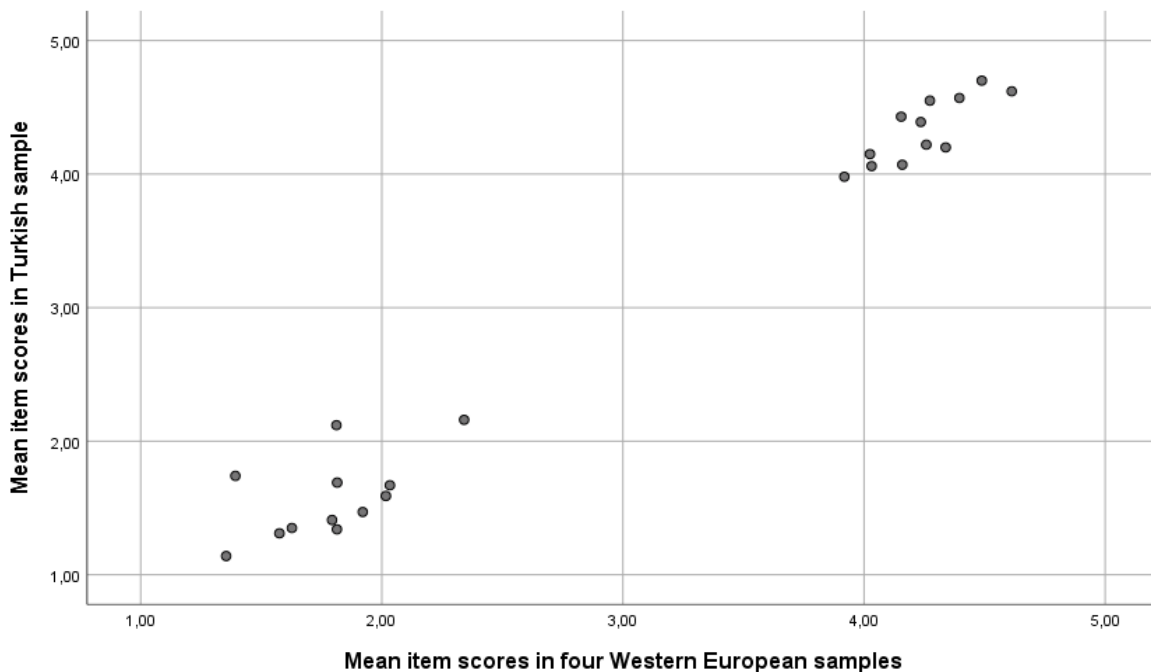
kurtosis in some items). We followed Schweizer’s (2010) criteria to examine the model fit of the proposed priori model. A normed chi-square (χ^2) less than 2, the root mean square error of approximation (RMSEA) less than .05 and a comparative fit index (CFI) range between .95 and 1.00 indicates good model fit. A normed chi-square (χ^2) range between 2 and 3, an RMSEA range between .05 and .08, and a CFI range between .90 and .95 indicates acceptable fit. Standardized root means square residuals (SRMR) should be below .10. In addition, Pearson Correlation, was implemented to compare of the Turkish item means with published research in West-European samples. These analyses were carried out to provide evidence for the validity of the CEUT-24 Turkish version. Cronbach's alpha internal consistency coefficient were utilised for the reliability of the CEUT-24 Turkish version.

FINDINGS

COMPARING AVERAGE ITEM SCORES IN THE TURKISH SAMPLE WITH WEST-EUROPEAN SAMPLES

First, we have investigated the comparability of the Turkish item means with published research in West-European samples (Huyghe et al., 2022). There was almost perfect correlation between the Turkish and West-European mean item scores ($r = .99, p < .01$). See Figure-1 for the scatter plot of this relationship.

Figure 1. Comparing Mean Item Scores of Turkish Sample with Four Western European Samples



CFA ANALYSES

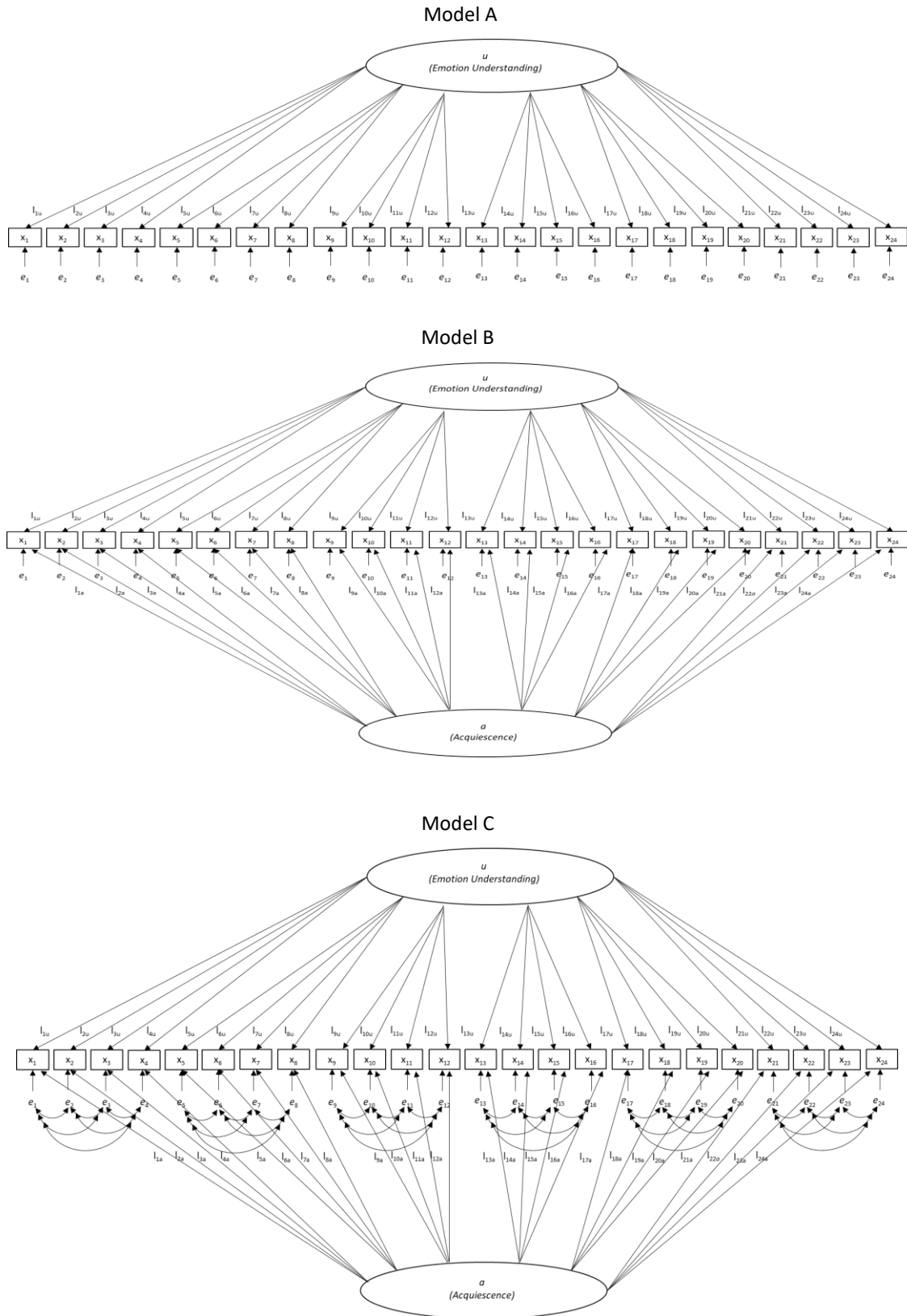
Items mean, variance, skewness and kurtosis values were examined. Most of the skewness and kurtosis values were high. See Table-1 for mean, variance, skewness and kurtosis of the CEUT-24 Turkish version Items.

Table 1. Mean, Variance, Skewness and Kurtosis of the CEUT-24 Turkish Version Items

<i>Items</i>	<i>Mean</i>	<i>Variance</i>	<i>Skewness</i>	<i>Kurtosis</i>
A1	1.349	0.606	2.594	6.720
A2	1.591	0.895	1.770	2.701
A3	1.675	1.043	1.519	1.562
A4	1.306	0.653	2.964	8.425
B1	4.197	0.735	-1.342	2.224
B2	4.216	0.772	-1.487	2.694
B3	2.159	0.931	0.769	0.429
B4	4.066	0.703	-1.008	1.605
C1	1.341	0.748	2.895	7.990
C2	1.407	0.750	2.439	5.676
C3	4.547	0.657	-2.300	5.842
C4	3.978	0.642	-0.869	1.582
D1	4.571	0.689	-2.454	6.429
D2	1.693	0.628	1.243	1.897
D3	4.062	0.723	-1.094	1.719
D4	4.388	0.620	-1.527	2.888
E1	1.144	0.303	4.669	23.907
E2	4.696	0.350	-2.646	10.078
E3	4.619	0.415	-1.983	4.909
E4	1.743	1.244	1.371	0.842
F1	4.428	0.562	-1.845	5.079
F2	4.149	0.679	-0.990	1.217
F3	2.116	1.294	0.719	-0.509
F4	1.472	0.564	1.752	3.252

Three nested models have tested with WLSMV estimator because of the pronounced skewness and kurtosis. Model A consists of only the EU factor, model B consists of the (dis)acquiescent responding factor added to model A, and model C consists of the scenario-specific error covariances added to model B. Figure-2 displays model A, model B and model C (Huyghe, Hovasapian & Fontaine, 2022).

Figure 2. These Three Nested Models (Model A, Model B, Model C) are Based on Drawings of Huyghe, Hovasapian & Fontaine (2022).



Only model C had good fit ($\chi^2=422.709$, $df=215$, $\chi^2/df=1.966$; $RMSEA=.038$; $RMSEA\ 90\% CI=.032-.043$; $CFI=.965$; $SRMR=.046$). See Table-2 for the Goodness of fit statistics of all models and see Table-3 for standardized factor loadings of the EU factor and (dis)acquiescent responding factor.

Table 2. Goodness of Fit Statistics of Model

Model	Fit Indices						
	χ^2	df	χ^2/df	RMSEA	90% CI for the RMSEA	CFI	SRMR
A	2152.515	252	8.541	.105	.101-.109	.682	.099
B	1904.647	251	7.588	.098	.094-.103	.723	.091
C	422.709	215	1.966	.038	.032-.043	.965	.046

Table 3. Standardized Factor Loadings of EU Factor and (Dis)Acquiescent Responding Factor

Scenario and items	EU factor	(dis)acquiescent responding	Scenario and items	EU factor	(dis)acquiescent responding
A1	-.46	.185	D1	.50	.185
A2	-.36	.185	D2	-.51	.185
A3	-.31	.185	D3	.41	.185
A4	-.56	.185	D4	.50	.185
B1	.43	.185	E1	-.81	.185
B2	.44	.185	E2	.63	.185
B3	-.36	.185	E3	.59	.185
B4	.37	.185	E4	-.45	.185
C1	-.52	.185	F1	.53	.185
C2	-.52	.185	F2	.50	.185
C3	.52	.185	F3	-.39	.185
C4	.38	.185	F4	-.44	.185

Note: A: Scenario 1; B: Scenario 2; C: Scenario 3; D: Scenario 4; E: Scenario 5; F: Scenario 6.

See Table 4 for the error correlations between the items of the same scenario (* $p<.05$).

Table 4. The Error Correlations between the Items of the Same Scenario.

Item	With	Estimate	Item	With	Estimate	Item	With	Estimate
A1	A2	.38 *	B1	B2	.64 *	C1	C2	.65 *
	A3	.20 *	B3		-.23 *	C3		-.60 *
	A4	.26 *	B4		.28 *	C4		-.19 *
A2	A3	.50 *	B2	B3	-.22 *	C2	C3	-.63 *
	A4	.57 *	B4		.31 *	C4		-.19 *
A3	A4	.64 *	B3	B4	-.19 *	C3	C4	.27 *
D1	D2	-.28 *	E1	E2	-.21	F1	F2	.36 *
	D3	.25 *	E3		-.37 *	F3		-.10
	D4	.33 *	E4		-.05	F4		-.35 *
D2	D3	-.25 *	E2	E3	.44 *	F2	F3	-.08
	A4	-.20 *	E4		.09	F4		-.17 *
D3	D4	.30 *	E3	E4	.14 *	F3	F4	-.01

COMPARING FACTOR SCORES WITH SCALE SCORES

We also investigated how well simple scale scores represent the EI factor scores. We estimated factor scores with Mplus and examined the correlations of the CEUT-24 scale scores with the EI factor scores and the (dis)acquiescent responding factor scores. A very high positive relationship was observed between the CEUT-24 scale scores and EI factor scores ($r=.95$, $p<.01$). No statistically significant correlation was observed between the CEUT-24 scale scores and (dis)acquiescent

responding factor scores ($r=-.02$, $p>.01$). In this study, CEUT-24 scale score had a Cronbach's alpha of .83

DEMOGRAPHIC DIFFERENCES

Univariate analysis of variance were conducted to test differences according to gender (male, $N=202$ / female, $N=459$) and education level² (members from secondary education, $N=191$, upper secondary education, $N=79$ and undergraduate, $N=391$) for the CEUT-24 scale scores.³ The main effect of gender was statistically significant $F_{(1, 655)}=5.62$, $p=.018$, partial $\eta^2=.01$ with women ($\bar{x}=105.14$) outscoring men ($\bar{x}=102.85$). The main effect of education level was statistically significant $F_{(2, 655)}=6.60$, $p=.001$, partial $\eta^2=.02$: Undergraduates score ($\bar{x}=105.68$) significantly higher than upper secondary pupils ($\bar{x}=103.60$) and secondary pupils ($\bar{x}=102.71$).⁴ The interaction effect between gender and educational level was not significant, $F_{(2, 655)}=1.31$, $p=.272$, $\eta^2=.00$.

DISCUSSION, CONCLUSION AND IMPLICATIONS

MEAN ITEM SCORES

The comparability of the features in the CEUT-24 instrument has been exploratively investigated across Turkish and West-European adolescents and early adults. Participants in all cultural groups agreed on the likelihood of each feature. This implies that the CEUT-24 items have on average the same meaning in Turkish than in Western samples. This implies that not only the same latent factors could be expected in the Turkish sample, but that also the same item loadings should be found.

INTERNAL STRUCTURE

The predicted internal structure of CEUT-24 was completely confirmed at item level: both the EU ability factor and two design-based method effects – an acquiescence responding and design-based error covariance were needed for a fitting model. From a content perspective, the instrument is basically one-dimensional, but one needs to control for acquiescent responding and consider the situational judgment test nature.

As theoretically predicted, evidence was found that all emotion components were involved also in Turkish context. To well represent the emotion construct, emotional understanding ability needs to include understanding of all emotional components (i.e. understanding appraisals, understanding action tendencies, understanding bodily reactions, understanding expressions and understanding subjective feelings).

The present study further demonstrated that there is no need to transform raw item scores into proportion scores, as Fontaine et al. (2022) Huyghe et al. (2022) already demonstrated in Western samples. Also in a non-Western, Turkish context raw item scores contain the needed information.

SCALE CONSTRUCTION

CEUT-24 scale scores were extremely highly correlated with the EI factor scores. Thus, simple scale scores very closely match model based factor scores. Moreover, there was no correlation between acquiescent responding factor scores and CEUT-24 scale scores. This can be explained by the balanced design of the CEUT-24 with as many correct as incorrect items. In such a balanced design a

² Age was not taken into account due to the confounding between education level and age.

³ ANOVA analyses were executed on a subsample of participants ($N=661$). 19 participants who marked the 'other' option for gender and education level were not included.

⁴ We also checked the effects of gender and education level with the EI factor scores. We came to the same conclusions. The main effect of gender was statistically significant $F_{(1, 655)}=5.20$, $p=.023$, partial $\eta^2=.01$ for the EI factor scores with women ($\bar{x}=.01$) outscoring men ($\bar{x}=-.08$). The main effect of education level was statistically significant $F_{(2, 655)}=3.35$, $p=.036$, partial $\eta^2=.01$ for the EI factor scores. Undergraduate member scores ($\bar{x}=.01$) were significantly higher than upper secondary ($\bar{x}=-.01$) and secondary members ($\bar{x}=-1.1$). The interaction effect between gender and educational level was not significant, $F_{(2, 655)}=2.10$, $p=.124$, $\eta^2=.01$.

method factor that affects all items to the same extent is cancelled out when scale scores are computed. Design based error covariances had no (or at best a marginal) impact on the scale scores, because they are limited to each specific scenario. Together with the good internal consistency of the scale scores, these correlations justify to continue working with the easy to compute scale scores in the future.

DEMOGRAPHIC VARIABLES

There were to be expected, but small gender and education effects on EU ability. This information gives extra validity evidence for the CEUT-24 instrument. According to the findings, women were better than men on EU ability. There are similar findings in the CEUT original version validity research examining the differentiation of emotion EU ability in line with gender in different cultural groups (Sekwena & Fontaine, 2018). Also, undergraduates on average outperformed upper secondary and secondary pupils. It can be said that EU ability can be improved with education. In fact, emotional competence can be nurtured and developed as a person grows by context and cultural-related experiences with others (Saarni, 1999).

LIMITATIONS AND FUTURE DIRECTIONS

In this study only EU ability was investigated in Turkey. As a future direction, it is possible to study whether the aforementioned model can be generalized to other facets of the EI like emotion recognition and emotion regulation ability. EI scales with an SJT format using Likert response can be investigated with the same model. The current results are very promising. Moreover, as only one non-Western context, the Turkish context, was investigated, future research should test the CEUT-24 internal structure in other non-Western cultural groups.

CONCLUSION

With the confirmatory factor structure also emerging in the Turkish context using raw item scores, strong evidence is found for the generalizability of the CEUT-24 beyond western contexts. The same theoretical framework and the same instrument can be used in a Turkish context to assess emotional understanding ability and to control for the two method effects of acquiescent responding and design-based error covariances.

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ETHICAL STATEMENT

The research ethical protocol was approved by the Social and Human Sciences Ethical Board at the Mersin University – Turkey with the data and number of 03/07/2020-35. Informed consent forms were obtained before the research digitally. For minors, informed consent forms are also obtained from their parents. All data were anonymized.

AUTHOR CONTRIBUTION

First author has made contributions to data curation; resources; roles/writing - original draft & editing. The second author has been involved in conceptualization; formal analysis; methodology; resources; writing - review & editing.

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APPENDIX

DATA AVAILABILITY

The data of the sample can be shared for scientific purposes. Please contact to first author.

Uncovering Turkish Science High School Students' Learning Strategy, Inquiry-Oriented Self-efficacy, Task Value, Achievement Goals: A Structural Equation Modelling Analysis

Burak Feyzioğlu, Assoc. Prof. Dr., Aydın Adnan Menderes University, Türkiye, bfeyzioglu@adu.edu.tr
 0000-0002-0128-3343

Barış Demirdağ, Dr., Gaziemir Nevvar Salih İşgören High School, Türkiye, barisdemirdag@gmail.com
 0000-0003-1474-4951

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Abstract

In the literature, the characteristics of students with high skills in the subjects of science and mathematics are generally examined independently of the social learning environment. The aim of this study was to investigate the relationship between achievement goal orientation, inquiry oriented self-efficacy, learning strategies and task value and to present that relationship with various models. This study was carried out with 292 students from Science High School (SHS) in Turkey in the 2018-2019 academic year. In this research, two models were tested with relational screening designs as theoretical models for the relationship between the learning strategies used by SHS students and their inquiry-oriented self-efficacy (IOS) and achievement goal orientations (AG). The IOS scale, the AG scale, semi-structured interview forms, and the learning strategies scale were used as data collection tools. Collected data was analysed using the Multiple Regression Analysis. The first model is developed according to a task in which scientific inquiry is valuable, considering the goals of the SHS chemistry curriculum, while the second model is designed according to a task in which competition and test scores are valued rather than scientific inquiry. Contrary to expectations, it is surprising that performance goal orientation (PE) is mediated through the learning strategy and IOS that SHS students use, as much as they explain their chemistry learning conceptions with the test score.

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INTRODUCTION

In different kinds of schools such as Gymnasium in Germany, Lukokoulutus-Gymnasieutbildning in Finland and Bachillerato in Spain (European Commission/EACEA/Eurydice, 2018) students with high academic achievement in the fields of science and mathematics are given advanced science and mathematics lessons like Science High School (SHS) in Turkey. It is expected that students who graduate from these schools will be able to closely follow scientific studies, use new technologies, and create new knowledge and plan projects. When the science curriculum for these schools is studied, the nature of science and scientific inquiry are taken into consideration. Therefore, it is advised that teachers prioritise laboratory practises alongside concept teaching in scientific lessons as part of the Science High School Chemistry Course curriculum. In this case, it is expected that teachers will give more space to active learning methods in chemistry lessons in such schools (Kovarik, Robinson & Wenzel, 2022), and that students' self-efficacy (Howell, Yang, Holesovsky & Scheufele, 2021; Liu, 2022), achievement goal orientation (Feyzioğlu, 2019) and learning understanding (Baur & Emden, 2021) will also change positively. Although attention is expected to be paid to the nature of scientific inquiry, schools such as science high schools, where advanced science and mathematics courses are taught, have a highly competitive, perfectionist learning environment in which assessment is focused on results and success, and mistakes are not well received. Therefore, when examining SHS students, whose high academic achievement in the fields of science and mathematics differ from those of other students, the characteristics of the learning environment should be considered. This is because there is a dynamic relationship between these variables that make up the learning environment (Bardach, Yanagida, Klassen & Lüftenegger, 2022; Urdan & Kaplan, 2020).

CONCEPTUAL FRAMEWORK

THE DYNAMIC STRUCTURE OF LEARNING ENVIRONMENT: SELF EFFICACY, GOAL ORIENTATION, AND LEARNING STRATEGIES

Bandura (2001) defined self-efficacy as a person's belief in his/her own capacity to attain the desired levels of learning and behaviour. On the other hand, Zimmerman (2008) stated that self-efficacy is as an individual's belief that he can carry out a task in the most effective way. Self-efficacy determines the effort shown by students during a task, and the stability and flexibility that they show when faced with a challenge. The more self-sufficient students feel, the greater their effort, determination and flexibility is (Pajares, 1996). According to Pajares (1996) and Smith and Fouad (1999), it was highly challenging to generalise self-efficacy across all domains because it was domain-specific with regard to goals and result expectations. In this study, students' IOS is examined. The characteristics of individuals who have high self-efficacy feel competent with regard to inquiry skills, strive to develop and use these skills, and demonstrate flexibility and stability when faced with a difficulty during a scientific task (Feyzioğlu, 2019; Howell et.al, 2021; Liu, 2022). It is expected that these students, who have high academic achievements in science and mathematics in schools that aim to train scientists and give weight to scientific applications, have high self-efficacy towards inquiry. For students to be able to show good performance regarding inquiry skills, it is not sufficient for them to have self-efficacy only in this regard. In the learning environment, goals for these skills should be included and these goals should be valuable enough. Raising individuals who have high-level IOS must be among the aims of SHS type schools. However, when setting these goals, the characteristics of SHS, where competition is high and, non-constructive feedback from peers is received in case of mistakes need to be taken into consideration. According to the relevant literature, there aren't enough studies at these schools that determined or developed IOS, in particular.

Another variable that constitutes the dynamic structure of learning environment, such as self-efficacy, is achievement goal orientation. AG can be characterised as orientation towards learning, mastery or a task in any subject (Zimmerman, 2008). According to this theory, understanding students' motivation and behaviours related to their academic success can be accomplished by connecting them

to the elements that contribute to it or to the objectives they have for themselves as they pursue academic courses (Ames, 1992). While previous studies in this field focused only on two goals of students, namely, performance (PE) and mastery goal (MA) orientations, in the studies conducted in recent years, there are developments in these models. Elliot et al. (Elliot & Church, 1997; Elliot & Harackiewicz, 1996) developed the "two model" as performance-approach (positive valence; approaching success) and performance-avoidance (negative valence; failure avoidance). Thus, they introduced a triple model (performance-approach, performance-avoidance, mastery-oriented goals). Although studies conducted according to the tripartite model yield consistent results, Elliot and McGregor (2001) stated that MA in the tripartite model is expressed only in positive valence. They developed a new four-dimensional scale by adding items describing learning objectives negatively. According to this new model, called the "2 x 2 Achievement Goal Model", students' AG are divided into four groups: mastery-approach, mastery-avoidance, performance-approach and performance-avoidance. However, in studies with students, mastery-avoidance goals received little empirical support (Lee & Bong, 2016). At the same time, although PE is classified as avoidance and approach, it has been determined that it cannot distinguish between normative and appearance features (Hulleman, Schrage, Bodmann & Harackiewicz, 2010). Finally a new model with sub-dimensions of mastery-approach, normative and appearance performance-approach, normative and appearance performance-avoidance goals has been proposed (Lüftenegger, Bardach, Bergsmann, Schober & Spiel, 2019).

When individuals with high IOS are faced with a task in which they will use their inquiry skills, it is expected that their goal will be to carry out the task by using these skills (Pintrich, 2000). Those students who are MA will define their deficiencies in the process and try to eliminate these by focusing on their own skills. In cases of failure, instead of seeking errors and deficiencies outside, they scrutinise their own skills. In some studies, however, it has been determined that students with high self-efficacy do not always demonstrate MA. These students may display PE (Jagacinski & Duda, 2001). It is revealed that these students, instead of self-regulating towards completing a task, will self-regulate towards being the best when compared to other students. It is seen that such students, rather than making an effort to understand the characteristics and goals of the learning environment, will adapt these characteristics to suit themselves (Henderson & Dancy, 2007). With this adaptation, students may sometimes become diverge from their actual goal. It can be asserted that these individuals, who spend their energies more on trying to be the best, have higher levels of anxiety and experience more burnout at the end of the process than those with mastery goal orientations (Linnenbrink & Pintrich, 2000). Individuals with performance avoidance tend to be as anxious as individuals with performance approach tendencies. These individuals have low self-efficacy levels. The source of their anxieties differs from that of individuals with performance approach orientations. These students do not wish their errors and deficiencies to be seen by other students, or even by their teachers. Their focus is on not revealing their deficiencies rather than completing the task. They cognitively self-regulate accordingly. Students with this tendency choose the easy tasks or the most difficult ones to do. If they fail, they make the excuse that the task is too difficult to do anyway (Linnenbrink & Pintrich, 2000). Both individuals who display a performance approach and those who display an avoidance approach will seek the source of their failure outside. They will claim that the task was so difficult that it was impossible to complete, that they did not receive adequate support, or that they are treated unfairly. However, another source of their failure is their lack of skills in that subject. It can be noticed that they do not mention making an effort or showing resistance in the face of difficulty.

It is expected that individuals who are focused on learning and on completing tasks and making cognitive adjustments to the task would prefer to use deep learning strategies (Elliot & McGregor, 2001). Individuals who use these strategies search for sources of knowledge by comparing more than one source with each other. That is, they do not immediately accept the first information they obtain as accurate. They learn new information by associating it with previous information. They take a

holistic view of concepts and skills (Marton & Saaljo, 1976). On the other hand, individuals who wish to be the best or who do not wish their errors to be seen will focus on the concepts and skills that are important and necessary for them. They are far from associating new information with previous one. They generally use surface learning strategies by accepting the first piece of information that they obtain as correct without questioning it (Marton & Saaljo, 1976).

AN INDICATOR FOR UNDERSTANDING THE TASK VALUE IN THE CHEMISTRY CLASSES: CONCEPTIONS OF LEARNING CHEMISTRY AMONG SHS'S STUDENTS

As stated in the literature there are models that self-efficacy predicts AG and learning strategies (Ames, 1992). However, when these models that include cognitive and affective variables are being developed, it is also necessary to consider the value placed on tasks in the learning environment (Feather, 2021). Is being the best more valuable in a learning environment where scientific studies are valued, or is it better to comprehend the traits of scientists and work toward acquiring these traits? How should students be assessed in this environment, and what are the criteria for evaluating these students? No matter how high a student's IOS is, if enough importance is not given to inquiry skills in the learning environment, then it cannot be expected that the student will set a goal for himself/herself in this subject or that he/she will use deep learning strategies for this subject. The characteristics of a learning environment and the tasks that are valued in that environment can be identified by means of observations related to the learning environment and students' explanations related to chemistry learning. The characteristics of the learning environment will be determinative on the students' self-efficacy towards questioning, their AG and the learning strategies they use within the framework of self-regulation.

Tsai (2004) determined and classified high school students' conceptions of learning science with a phenomenographic analysis. These conceptions will provide information related to which tasks are valued in these lessons. While this classification was being made, the questions "Why do we learn science?", "How do you best learn science?", "How do you know when you have learnt something?" and "Using which method of study do you learn?" were addressed to the students, and their learning conceptions were classified according to their answers. He classified these conceptions as memorising, test solving, calculating, increasing knowledge, practice, understanding information and interpreting with a different perspective.

The founding goals of SHS are explained as to prepare students with high academic achievement in the subjects of science and mathematics for higher education in these fields, and to be a source for educating the highly qualified scientists needed in science and mathematics. Students in science high schools are selected at the end of a central exam, which all secondary school students take. The exam consists of multiple-choice questions that covers secondary school subjects such as science, mathematics, language and reading, and social studies. In contrast to other high schools, science high schools have a different chemistry curriculum. Compared to the other chemistry curriculum, more experimental practices have been added to the Science High School Chemistry Curriculum. Moreover, emphasis has been placed on the use of information and communication technologies in chemistry teaching, on structuring outcomes that will also reflect high-level cognitive skills, and on associating these with everyday life.

Despite all these expectations, the teaching programmes are not sufficiently implemented in accordance with their goals in SHS. One of these reasons is that students who graduate from science high schools move on to higher education by taking the same central exam as students from other types of high school. The central exam is designed to measure students' academic success, rather than their high-level thinking skills. Moreover, this exam includes not only mathematics and science, but also other subjects as well. The reasons such as the intense content of the curriculum (Backus, 2005) the low readiness of the students in terms of high-level thinking skills (Hofstein & Lunetta, 2004), physical inadequacies (insufficient laboratory equipment, inadequate safety measures, crowded

classrooms) (Hofstein & Lunetta, 2004), the teachers' epistemological beliefs are not compatible with the objectives of curriculum (Brown et al. 2006), indicate that lessons are not carried out in accordance with the objectives specified in the curriculum.

In the SHS in which this study was conducted, the learning conceptions of students in chemistry classes were investigated according to Tsai's (2004) model, with the aim of determining which goals had been specified for chemistry lessons and the extent to which these goals were implemented. Tsai (2004) discussed the Concepts, Memorising, Testing, Calculating and Increasing knowledge dimensions of chemistry learning approaches as superficial, and the applying, understanding, knowledge and Interpreting knowledge from a different perspective within the framework of a deep learning strategy. This classification has also been used in different studies (Wong, Liang & Tsai, 2021; Tan, Liang & Tsai, 2021). In an environment where test scores are important, students take part in superficial strategies such as repetition, memorization, and reinforcement by solving multiple-choice test questions instead of applications involving deep learning strategies such as research, questioning, and problem solving (Ardura & Galán, 2019; Lindblom-Ylänne, Parpala & Postareff, 2019). Science High School students' chemistry learning was associated with test solving, which is one of the surface learning approaches, rather than with deep learning approaches (Table 1).

Table 1. Learning Conceptions of Students in Chemistry Classes in the Science High School.

Concept	Grade 9		Grade 10		Grade 11		Grade 12		Total		
	N	%	N	%	N	%	N	%	N	%	
Surface learning approaches (External)	Memorising	2	3,17	2	5,13	-	-	-	-	4	2,7
	Testing	36	57,13	25	64,1	13	44,85	9	52,94	83	56,1
	Calculating	-	-	-	-	-	-	-	-	-	-
	Increasing knowledge	1	1,6	-	-	-	-	-	-	1	0,67
Deep learning approaches (Internal)	Applying	4	6,35	6	15,39	8	27,58	1	5,88	19	12,83
	Understanding	16	25,4	4	10,25	7	24,13	6	35,3	33	22,3
	Interpreting knowledge	4	6,35	2	5,13	1	3,44	1	5,88	8	5,40
Total	63	42,56	39	26,35	29	19,60	17	11,49	148		

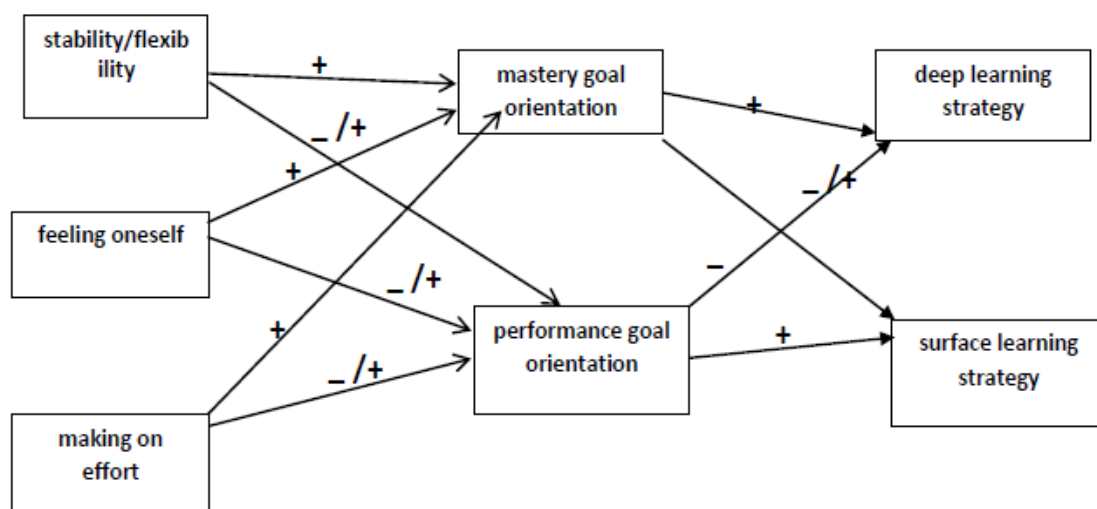
As can be seen in Table 1, students at each grade level preferred the test score, which is described as a surface learning approach, over other concepts when describing chemistry. In other words, if the test scores related to chemistry are high, they have accepted that they have learned the concepts in this course. Defining SHS students to learn chemistry concepts with surface learning rather than a deep learning strategy also shows that the test score is a more important task in this environment than the nature of scientific inquiry.

In this study, two theoretical models have been created by considering the variable of value given to tasks in the learning environment. Learning strategies are dependent variable, while value placed on tasks in the learning environment (learning conceptions), IOS and AG are independent variables.

Since this study was conducted in a science high school, the first model was created by considering that inquiry (deep learning approaches of learning conception) in the chemistry learning is an important task (Figure 1). In this model, it is estimated that effort, stability/flexibility and feeling oneself efficient, which are sub-dimension of inquiry oriented self-efficacy, will be positive predictors of MA and either negative or positive predictors of PE. In this model, it is estimated that the sub-

dimensions of IOS, namely effort, determination/flexibility, and feeling competent, will positively predict MA and negatively or positively predict PE. Although the development of high-level thinking skills in the learning environment is a valuable goal, however, some students, instead of focusing on developing these skills, will focus on avoiding making errors or on not revealing their deficiencies. Others, on the other hand, will select other students' learning as a criterion and create an atmosphere of competition by continually comparing themselves with those students. These students with PE are expected to use the same surface learning strategies as those showing avoidance. Students showing avoidance are expected to have low IOS, whereas students with PE, who try to be the best by taking their peers' learning as a reference, will have high levels of IOS. Just as these students, who aim to show good performance only in comparison to others, can use surface learning strategies, they can also use deep learning strategies.

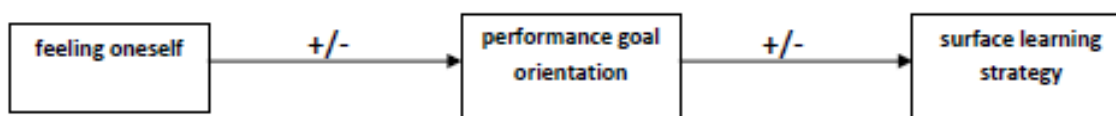
Figure 1. First Model for in a Learning Environment where Scientific Inquiry is an Important Task



In classrooms where the development of higher-order thinking skills is not an important goal, the nature of scientific inquiry will not be considered and applications will not be made. For example, laboratory practices will not be carried out, or even if they are carried, they will be types of practices in which inquiry level is low. Even though there are students with high IOS, since these skills are not considered important in the learning environment, these students will not see the need to display or develop these skills. For this unimportant goal, they will find it sufficient to use surface learning strategies instead of using deep learning strategies.

An alternative model to the first model was established by considering that test scores and competition (surface learning approaches of learning conception) were given priority. In this model, it is predicted that students will tend more towards a PE. SHS's students' identification of chemistry with test scores has been a crucial factor in testing this model. In the learning environment where test scores are important, SHS students are expected to use surface learning strategies. In an environment where scientific inquiry is not valuable, their efforts and determination towards this will not be very meaningful. This may also be a key factor in students' goal setting. It is expected that the IOS dimension of science high school students will positively predict PE and this will be a predictor of surface learning strategy (Figure 2).

Figure 2. *Second Model for in a Learning Environment where Test Score is a Much More Important Task than Scientific Inquiry*



IMPORTANCE OF THE STUDY

The relationship between AG, IOS, learning strategies and task value is presented with various models. However, it is seen that these models are not considered sufficiently in chemistry lessons and especially in learning environments with scientific inquiry. In literature, AG, learning strategies and self-efficacy are examined separately (Ardura & Galán, 2019; Lindblom-Ylänne et.al, 2019; Tan et.al, 2021). In this study, the relationship between these variables is discussed by considering tripartite structure of social cognitive learning theory. Another important aspect of this study is the characteristics of the study group. The study group is SHS students who are selected in order of success order with a multiple-choice exam that measures academic success throughout the country according to the courses they took in secondary school. In the schools these students attend, the subjects of science and mathematics are given priority over other subjects. Some of these students enter competitions at national and international level, such as physics, chemistry and biology Olympics, while some others also prepare scientific projects for national and international competitions. Academic studies conducted with these students are mostly studies that reveal their cognitive characteristics. However, studies that determine which tasks are of what value in the learning environment and that consider the interaction between students are not included. The findings obtained in this study will provide curriculum developers and implementers with an important resource regarding the characteristics of this environment and these students.

The aim of this study is to examine the cognitive characteristics of SHS students, where advanced science and mathematics lessons are taught, with goal orientation, task value, self-efficacy and, learning strategy. It is important to examine the relationship between these variables for chemistry classes, and especially for students with high academic success who take advanced science and mathematics courses and are placed by exam. It is thought that defining this relationship for SHS students will contribute to the literature.

METHOD

The data for this study, in which correlational survey models are used, were gathered from students who were in the 9th, 10th, 11th and 12th grades of a science high school located in the west of Turkey during the autumn semester of the 2018-2019 academic year. While the dependent variable of the study is learning strategies, the independent variable is achievement goal orientation, task value and inquiry oriented self-efficacy. IOS Scale, AG Scale, learning strategies scale and written form were used as the data tools.

PARTICIPANTS

The universe of the research is the students in the 9th, 10th, 11th and 12th grades of science high schools in Turkey, and the sample is the students at a state science high school located in the city of Izmir. The age range of the students in the sample of the study is between 14 and 17. A total of 292 students, including 102 male and 190 female students, took part in the study. The school where the research was conducted was chosen randomly as the sample. In the school which the data were collected, there are 3 classes in each of the 9th, 10th, 11th and 12th grades. The study was conducted with a total of 292 students, of whom 85 were in 9th grade, 68 were in 10th grade, 53 were in 11th grade and 86 were in 12th grade. 60 of these students had taken part in Olympic competitions at

national and international level (13 in biology, 10 in physics, 8 in chemistry, 14 in mathematics and 15 in computers). Moreover, 79 students were engaged in national and international projects carried out at the school.

Three chemistry teachers are employed at the high school. Two of these teachers hold the title of PhD in the field. Moreover, all teachers are authors who have written chemistry course books. During the interviews with teachers, it was determined that there were physics, chemistry and biology laboratories at the school where students could do experiments. The education year consists of two semesters, and two exams are given during each term. At least one of the exams consists of open-ended questions, while one of the exams is applied in a multiple-choice format. These exams consist mostly of questions measuring the students' knowledge of chemistry. Development of the students' inquiry skills is not accounted for in the exams. In the interview with the teachers, although the teachers stated that they included laboratory practice and projects in chemistry lessons, these views do not conform to the student conceptions of chemistry lessons shown in Table 1.

DATA-COLLECTION TOOLS

INQUIRY-ORIENTED SELF-EFFICACY SCALE

The scale was used to determine the students' self-efficacy levels regarding their inquiry skills. The five-point Likert type scale (55 items) prepared by the researcher (Feyzioğlu, 2019) consists of three sub-dimensions "Showing Stability- Being Flexible" (26 items), "Feeling Oneself Efficient" (22 items), and "Making an Effort" (7 items).

Since the scale would be applied to different age levels, Confirmatory Factor Analysis was performed using the Mplus software to determine its suitability for the study group. According to the fit indices of the three-factor DFA model, following values were calculated for $\chi^2(1423) = 2931,58$, $\chi^2/df = 2,06$, also for RMSEA= 0.060 (90%CI: 0.057, 0.063), CFI = 0.780, TLI = 0.770 and SRMR = 0.070. According to above values, it was decided that the three-factor structure was at an acceptable level for this study group. For this study, internal consistency coefficients were found as, 0,91; 0,93 and 0,79 respectively.

ACHIVEMENT GOAL ORIENTATIONS SCALE

The AG scale was used to determine the students' achievement goal orientation. It was developed by Ames and Archer (1988) was adapted by Demir (2011). The five-point Likert scale consists of 33 items and two sub-dimensions. The MA sub-dimension contains 17 items, and the PA sub-dimension contains 16 items. Since the scale would be applied to different age levels, Confirmatory Factor Analysis was performed using the Mplus software to determine its suitability for the study group. According to the fit indices of the two-factor DFA model, following values were calculated for $\chi^2(43) = 200,133$, $\chi^2/df = 4,65$, also for RMSEA= 0.081 (90%CI: 0.070, 0.093), CFI = 0.992, TLI = 0.990 and SRMR = 0.059. According to above values, it was decided that the two-factor structure was at an acceptable level for this study group. The reliability coefficients are $\alpha=0.96$ and $\alpha=0.92$, respectively. For this study coefficients were as, 0,88 and 0,88 respectively.

LEARNING STRATEGIES SCALE

It is Five Point Likert Scale developed by Ellez and Sezgin (2002) and started to be used after it was finalized by Yıldız (2008). It consists of "Deep" (21 items) and "Surface" (10 items) learning strategies sub-dimensions. Since the scale would be applied to different age levels, Confirmatory Factor Analysis was performed using the Mplus software to determine its suitability for the study group. According to the fit indices of the two-factor DFA model, following values were calculated for $\chi^2(433) = 1270,36$, $\chi^2/df = 2,93$, also for RMSEA= 0.082 (90%CI: 0.076, 0.087), CFI = 0.928, TLI = 0.922 and SRMR = 0.088. According to above values, it was decided that the two-factor structure was at an acceptable level for this study group. The reliability coefficients were measured for the deep learning

sub-dimension as $\alpha = 0.82$, and for the surface learning sub-dimension as $\alpha = 0.76$. For this study, it was found as, $\alpha = 0.85$ and $\alpha = 0.76$ respectively.

WRITTEN FORM FOR DETERMINING LEARNING CONCEPTIONS AND ANALYSIS

The form developed by Tsai (2004) was utilized to determine the learning goals of the students. According to the data obtained from this form, the degree of value placed on different tasks was identified in chemistry classes. The following open-ended questions aimed at determining learning goals were included in the form:

- (1) In your opinion, how is the subject of chemistry best learnt?
- (2) How do you understand that you have learnt the subject of chemistry?
- (3) By which method of study do you learn the subject of chemistry?
- (4) In your opinion, what is it intended that you should learn via the subject of chemistry?

148 of the 292 students who made up the sample of the study wanted to answer open-ended questions. The Written Form for Determining Learning Goals was administered to 148 students (63 9th grade, 39 10th grade, 29 11th grade and 17 12th grade) at the same time as the other forms. The responses given by the students were analysed by the researchers with the descriptive analysis method by taking the categories defined by Tsai (2004) into consideration. The analysis was performed separately for each class by the researchers, and an average goodness of fit index of 0.95 was calculated according to Cohen Kappa. After the students' opinions were placed in the sub-dimensions, the validity of the results was ensured by taking expert opinion by an expert separate from the researchers.

DATA COLLECTION PROCESS AND ANALYSIS

The data collection tools were applied to 9th, 10th, 11th and 12th grade students at a science high school located in the west of Turkey during the autumn semester of the 2018-2019 academic year. Participation in the research was carried out on a voluntary basis and ethical principles were fully complied with. Ethical permission for the study was obtained from Aydın Adnan Menderes University Educational Research Ethics Committee. Before collecting data, students were informed about the study and data were not collected from students who did not want to complete the scales.

At the first stage of the study, an analysis of the normal distribution of the data was made. At the next phase, before the model was tested, the measurement model of the factors was evaluated. At the final stage, structural equation modelling was done using Mplus 7 software to test the theoretical models.

The suitability of the established models is discussed by examining the fit indices. For this purpose, the ratio between chi square and degree of freedom (χ^2/df), the comparative fit index (CFI), the root mean square error of approximation (RMSEA) and the standardized root-mean-square (SRMR) values are taken into account. Values of χ^2/df that fall below 5.00 (Marsh & Hocevar, 1985), CFI values above .90 (Hu & Bentler, 1999), RMSEA values below .08 (Browne & Cudeck, 1993), SRMR values at .05 or below (Hu & Bentler, 1999) and TLI values close to .95 (Tucker & Lewis, 1973) are indicative of good fit.

RESULTS

The means and standard deviations of the scores of each sub-dimension of each scale collected from the participants and the skewness and kurtosis values tested for the normal distribution are presented in the table 2. In this study, it was determined that the data had a normal distribution (George & Mallery, 2016).

Table 2. Means, Standard Deviations, Skewness and Kurtosis for the Sub-Dimensions of the Measures.

Measures	Sub-dimensions	M	SD	Skewness	Kurtosis
IOS	Showing Stability- Being Flexible	88,04	14,66	-0,326	-0,031
	Feeling Oneself Efficient	78,62	12,79	-0,062	-0,236
	Making an Effort	23,17	3,89	-0,531	0,402
AG	MA	67,56	9,58	-0,723	0,822
	PE	58,97	10,41	-0,565	0,306
Learning strategies	Deep	79,83	10,66	-0,677	0,828
	Surface	21,16	5,87	0,363	-0,320

At the second stage of the study, with the aim of determining the relationships between the variables, correlation analysis was carried out and the correlation coefficients between the sub-dimensions were identified (Table 3).

Table 3. Mean Values, Standard Deviation, and Correlation Levels of Variables.

Observed variables	1	2	3	4	5	6
IOS						
1. Feeling oneself efficient	-	-	-	-	-	-
2. Stability/flexibility	.81**	-	-	-	-	-
3. Making an effort	.76**	.75**	-	-	-	-
AG						
4. MA	.45**	.41**	.51**	-	-	-
5. PE	.15*	-	.17**	.33**	-	-
Learning strategy						
6. Deep	.48**	.45**	.50**	.77**	.24**	-
7. Superficial	-.35**	-.39**	-.35**	-.49**	-	-.55**

Notes: Level of significance between the variables was taken as *p < .05 (N = 292), **p < .01 (N = 292).

When Table 3 is examined, it is seen that no significant relationship was found between the PE sub-dimension of AG and stability/flexibility or surface learning strategy. Apart from this, however, significant mutual relationships were determined among all the variables. While surface learning strategy had a negative relationship with all variables, the relationships between the other variables were positive.

Before the model was tested, the measurement model of the factors was evaluated. In the measurement model, it was determined that the fit values were within the desired limits. The indices of the model are found as $\chi^2(12) = 22.786$ ($p < 0.05$), $\chi^2/df = 1,90$, RMSEA = 0.055 (%90GA: 0.017, 0.090), CFI = 0.988, TLI = 0.980, SRMR = 0.030. When the residual values are examined, all of the correlation residuals are below standardized factor loads vary significantly between 0.309 and 1.068. The factor load of the surface learning sub-dimension was determined as -0.601. That indicates that this dimension has an inverse relationship with the learning strategy dimension. The R² values of the model vary between 0.095 and 0.826. The R² value for the mastery sub-dimension was not calculated because while the standardized factor load of this dimension changed significantly, the non-standard factor load did not change significantly. These findings indicate that the measurement model has sufficient fit.

TESTING THE MODELS

Testing first hypothesis: In a learning environment where scientific inquiry is an important task the IOS would be associated with the learning strategies mediated through the AG

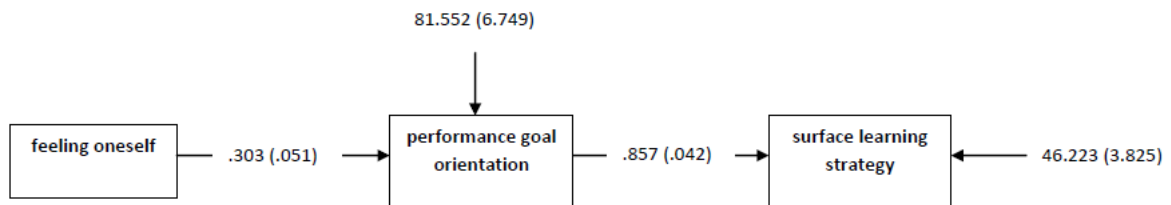
In the theoretical model for chemistry classrooms in which scientific inquiry was an important task, although the relationships between the variables was significant, the data fits were determined to be below the standards specified above ($\chi^2(7) = 67.64$ ($p < 0.05$), $\chi^2/df = 9.66$, CFI = .876, SRMR =

.075, RMSEA = .171 (%90GA: 0.136, 0.211), TLI = .681). This model was abandoned, and fit values for the alternative model were examined.

Testing the second hypothesis: In a learning environment where test score is a much more important task than scientific inquiry, the IOS would be associated with the surface learning strategies mediated through the PE.

When the relationship between the variables for the alternative model, in which success in tests was an important task, was examined, it was determined that both effort and stability variables were not significant predictors of PE. Except for this, it was determined that the fit indices of the model that predicted surface learning strategy via PE were at an acceptable level for feeling oneself efficient sub-dimension ($\chi^2(2) = 6.00 (p < 0.05), x^2/df = 3.00, CFI = 0.987, SRMR = .005, RMSEA = .083 (%90GA: 0.002, 0.163), and TLI = 0.960$).

Figure 3. Relationships and Their Values in the Model with Acceptable Fit Values.



DIRECT, INDIRECT AND TOTAL EFFECTS IN THE ACCEPTED MODEL

In this model, it was emerged that feeling oneself efficient sub-dimension of IOS was significant positive predictors of PE ($\beta=.30; p<.001$). It was also determined PE predicted surface learning strategy positively ($\beta=.85, p<.001$). In the established model, PE was explained at a rate of 18%, while surface learning strategy was explained at a rate of 54%. When examined in terms of standardized values, these values were determined as $\beta=.33, p<.001$, and $\beta=.77, p<.001$, respectively.

DISCUSSION AND CONCLUSIONS

In this study, the relationship of learning strategies used in chemistry lessons with inquiry oriented self-efficacy and achievement goal orientations of SHS students taking advanced-level science and mathematics was tested with theoretical models. The first model was set up according to chemistry classes in which scientific inquiry was valued by taking the goals of the SHS chemistry curriculum into account, while the second model was established according to chemistry classes in which competition and test scores were valued. Although chemistry teachers at the school claimed that they included laboratory practices and project work in their chemistry lessons, the first model, which was created according to an environment in which scientific inquiry was a valued goal, did not work. On the other hand, the second model, which was developed according to a learning environment in which test scores were more valued than scientific inquiry, did work.

When the students’ conceptions towards the subject of chemistry were examined, it was determined that test scores were more valuable for them in these classes. This conception may be due to the beliefs that the students had brought with them from secondary school (from their previous experiences), rather than to the learning environment. However, the fact that test scores were an important goal, not only in 9th grade but in all grades, shows that the reason for this situation is not entirely independent of the learning environment. Although the chemistry teachers stated that laboratory practices and project work were important in the learning environment, the students declared that contrary to this, test scores were an important goal. This difference between teachers

and students is important when defining the learning environment with task value. The reason for this may be the difference in the goals, future expectations and outcome expectations of the two groups.

The findings obtained in the study conform with theories and models existing in the literature. For example, the reason why the first model did not work and that the second one did can be explained with the expectancy value theory (Feather, 2021). According to this theory, students' beliefs about how confident they are in accomplishing an academic task and how remarkable the task are two important components in understanding students' achievement behaviours and academic outcomes. In the literature, the characteristics of students with high levels of skills in the subjects of science and mathematics are generally examined independently of the social learning environment. The findings obtained in this study reveal that learning outcomes are also affected by the learning environment. Vishnumolakala, Southam, Treagust, Mocerino and Qureshi (2017) determined that the positive relationship of inquiry-oriented learning with students' attitudes, self-efficacy and experiences. Learning outcomes are not a product of cognitive characteristics alone. The learning environment is as effective as cognitive characteristics for the behaviours displayed in this environment (Schunk, 2012). SHS students have high academic performance. Cognitively, they are at a high level. However, in this study, it was determined that the learning strategies used by them were affected by the characteristics of the learning environment as much as by cognitive characteristics. The fact that the students in this study were directed towards PE may be due to the environment of competition with their peers that they experienced. Another reason is the value placed on the task in the learning environment. If test scores rather than inquiry are important in SHS, this may have a negative effect on the development of students' IOS in the process. In this respect, even if a student feels oneself efficient, the fact that this characteristic is not valued in the learning environment will in time cause this behaviour to fade. In this case, when the student is faced with this task in the future, they will prefer to use surface learning strategies. The SHS students mostly associated learning chemistry with solving tests. As can be understood from the students' statements, most of which consisted of a surface learning approach, the most valuable goal of the SHS students was to be able to obtain a high average grade from tests in their chemistry lessons. Tsai (2004) placed the goal of "testing" in the "surface learning" category. He stated that this goal was related to extrinsic motivation. He also stated that a student in this category looks at knowledge quantitatively and that knowledge is learnt by repetition. The conception that knowledge is learnt by repetition and the fact that test scores were an important goal may have directed the science high school students towards PE even though their IOS was high. In this study, the SHS students' PE predicted surface learning strategy positively. That is, as disposition towards level of PE point increased, the SHS students used more surface learning strategies.

The findings obtained in the study conform with the self-regulation model proposed by Pintrich (2000). In this model, the value placed on tasks, and the perception of this, in a specified learning environment, are determiners in the relationship of IOS with AG and of AG with learning strategies. The way students perceive a task, or the learning goals will be effective in determining their learning goals and AG (Pintrich, 2000).

The extent to which SHS students associate the subject of chemistry with the future is important. The choice of a career related to chemistry will direct students towards MA when working on a chemistry-related project. This situation is explained with Miller and Brickman's (2004) model of future-oriented motivation and self-regulation. They stated that future-related goal orientations are driving forces such as concerns and needs. If students think that an academic task is useful and considerable for their futures, then they will display high effort. It cannot be expected that they will display the same effort in academic tasks that they perceive to be less related to the achievement of their future goals (Muenks, Yang & Wigfield, 2018). One of the founding aims of science high schools, and especially, one of the characteristics that distinguish them from other schools, was to be a resource for educating highly qualified scientists that are needed in the fields of mathematics and

science. However, the findings obtained in this study reveal that the teaching-learning processes in chemistry lessons do not conform with the aims of science high schools in this respect.

The SHS students placed to this school according to academic achievement score from the multiple-choice central exam. When they graduate from high school, they will again move on to higher education by means of a multiple-choice exam. Students who entered high school as a result of a race will again enter higher education as part of a race. This race may lead to competition in the learning environment.

In this study, in the model that worked (the second established model), feeling oneself efficient sub-dimension of IOS positively predicted a PE, and this, in turn, predicted surface learning strategy positively too. However, making an effort and stability sub-dimensions were determined not to be a significant predictor of PE. The fact that IOS directly predicts AG can be explained with achievement motivation model (Elliot, 1999; Lüftenegger et.al, 2019). According to this model, individuals with high self-efficacy are oriented towards a MA and PE, while those showing low self-efficacy are oriented towards performance avoidance (Elliot, 1999). In this case, self-efficacy positively predicts a MA and PE (Uzuntiryaki-Kondakci & Senay, 2015), while it negatively predicts performance avoidance. In this study, the reason why the making an effort sub-dimension did not work like the feeling oneself efficient sub-dimension in the model may be because the SHS students, who had high levels of academic achievement, did not feel the need to strive with regard to scientific inquiry. The fact that they considered themselves competent in this respect may have prevented them from making an effort. Another reason may be that in a learning environment that focuses on test scores and in which inquiry skills are not assessed (Kolil, Muthupalani and Achuthan, 2020), making an effort towards the latter may not be necessary (Lüftenegger et.al, 2019).

SUGGESTIONS

The situations of science high school students (highly skilled or especially talented individuals with high academic achievement) in high school were determined in this study. However, studies can be conducted towards monitoring their situations prior to going to high school and after graduating from high school. Moreover, the models created in this study and in similar studies can be used for evaluating the effectiveness of education. The use of these models for evaluation can guide researchers and administrators.

LIMITATIONS

In this study, the characteristics of the learning environment were determined only with the views of teachers and students. The fact that when the characteristics of the learning environment were being determined, observations were not made independently of the participants can also be regarded as a limitation. Another limitation found in this study is that the achievement goal model is handled only with mastery and performance approaches.

AUTHOR CONTRIBUTION

The first author contributed to determining the theoretical framework of the study, analyzing the data, and preparing the discussion and conclusion sections. The second author contributed to data collection, literature review, and preparation of the methodology. Both authors critically reviewed the article and approved the final version.

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Safety Problems at Schools According to School Administrators' Opinions*

Halil Karadaş, Assist. Prof. Dr., Mardin Artuklu University, Türkiye, halil.karadas@hotmail.com
 0000-0003-0855-3702

Başak Coşkun, Lect. Dr., Nevşehir Hacı Bektaş Veli University, Türkiye, basak84coskun@gmail.com
 0000-0002-0042-7130

Sevda Katıtaş, Dr., Ministry of National Education, Türkiye, sasevda@gmail.com
 0000-0003-3512-6677

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Abstract

The aim of this study was to define safety problems at schools according to school administrators' opinions. In the study, a case study design from qualitative research methods was employed. The participants of the study were composed of 25 school administrators working in public schools (kindergarten, primary school, secondary school, and high school) in Mardin province. The study group was determined according to the purposeful sampling method maximum variation technique. The saturation criterion was used to decide on the number of participants in the group. In the research, a semi-structured interview form was used to investigate the opinions of the administrators about the safety problems at schools. Descriptive analysis and content analysis were used in the analysis of the data. The findings showed that the school administrators faced safety problems originating from schools, students, and parents. Besides, it was found that these problems had negative effects on psychological, and academic outcomes and relationships with third parties. However, these problems could be solved with structural improvements, psycho-social support, and legal regulations. Finally, recommendations for researchers and practitioners were made based on the results of the study to minimize the safety problems at schools.

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INTRODUCTION

School safety has become one of the topics of international interest in both educational research and policy in recent years (Barnes, Leite, & Smith, 2017). Studies in educational sciences, social psychology and sociology reveal that the school environment must be safe and secure so that students can focus on learning (Zullig, Ghani, Collins, & Matthews-Ewald, 2017). Accidents, bullying, threats, and increasing violence and victimization among students cause public discussion about the issue of school safety in many countries (Juva, Holm, & Dovemark, 2020). The number of safety problems encountered in educational institutions is increasing and becoming more complex. To ensure and preserve school safety, greater attention needs to be given (Teperi et al., 2018).

Feeling safe is one of the basic needs of the individual (Maslow, 1943). Therefore, concerns about school safety negatively affect students' grades, school attendance and commitment (Fan & Williams, 2018). On the other hand, teacher concerns about school safety can affect how they teach, how they relate to their students, their commitment to school, and finally their decision to stay in the teaching profession (DeVoe, Peter, Noonan, Snyder, & Baum, 2005; Hughes & Pickeral, 2013). Although issues about school safety are discussed from different perspectives such as physical safety, school building safety and pedagogical safety (Bradshaw, Waasdorp, Debnam, & Lindström Johnson, 2014), little attention is paid to the role of school administration in creating a safe and secure school environment. For example, in Hudson, Windham, and Hooper's (2015) study on factors associated with fear of school safety and school violence, it was emphasized that measures should have been taken not only by schools but also by parents and communities to alleviate concerns about aggression and safety in schools. Greene (2005) presented a typology of strategies to reduce school violence and outlined procedures for effectively implementing evidence-based programs. In a study conducted by Can (2014) on the perceptions of school safety among teachers and administrators working in high schools, it was found that problems arising from uncontrolled school entrances and exits, student-civilian conflicts at the school exit, substance addiction, and cell phone issues were the most important safety problems experienced by teachers and administrators. Similarly, in Emerce, Şahin, Telli, and Timur (2022) study, it was found that school administrators and teachers were experiencing conflicts that could lead to physical fights in the school, some students were intentionally damaging school property, safety measures were not being taken against potential health problems, and the discipline mechanism in the school was not being operated properly. In the study by Boztuğ and Akyol (2017), it was found that administrators and teachers were inadequate in addressing safety problems due to deficiencies in educational policies, economic inadequacies, lack of education, and negative effects caused by the media, which could lead to larger safety problems over time.

Within this scope, it can be seen that the research generally focuses on security problems in schools or procedures for preventing violence, it neglects the role of safety management, staff competence, and organizational practices in creating safe schools (Martikainen, 2016). However, it may be claimed that one of the primary responsibilities of school administrators is to establish and maintain a safe school. Besides, it is vital that teachers, parents and other school community members contribute to this process and act in cooperation. Considering that school administrators have the greatest responsibility for detecting situations that threaten safety at school and taking measures against it, to learn more about safety issues in schools in-depth and to add to the body of knowledge, it is helpful to gain insight from school administrators.

CONCEPTUAL FRAMEWORK

SAFE SCHOOL

Although there is not a common definition of the school safety concept in the literature, it is noteworthy that there are explanations emphasizing the safe school and its characteristics. Stephens (1995) defines the safe school as a place where students and teachers can learn and teach in a friendly

environment without threat and fear. Caulfield (2000), on the other hand, interprets a safe school as a school where violence is less common, teachers and administrators spend more time on their educational tasks rather than student discipline, everyone perceives himself as important, and students are provided with important opportunities for learning.

In addition, safe schools are places where students, teachers and other employees feel physically, psychologically, and emotionally free (Dönmez, 2001), effective and efficient policies are developed and implemented, necessary precautions are taken before problems occur, and effective intervention programs are applied when problems occur (Dwyer & Osher, 2000). At the safe schools there are no fights, violence, and arguments (Çelik, 2005), all school community members resist unwanted behaviors such as theft, aggression, violence, use of harmful substances, and sexual abuse (Çalık, Kurt, & Çalık, 2011).

PROBLEMS AT UNSAFE SCHOOLS

School safety starts with the students' or teachers' morning commute to the school and includes their commute back from school to their homes (Memduhoğlu & Taşdan, 2007). It is crucial to assess the problems that pose a threat to the development of school safety in this backdrop. To investigate and assess the problems better, the researchers classify the school safety problems. Accordingly, the safety problems that are frequently encountered in schools can be listed as the events of bullying, harassment and theft, cigarette, alcohol, and drug use, vandalism, bringing sharp, injuring, or deadly tools to school, natural disasters such as earthquakes and floods that cause the crisis, emergency situations as fire, armed attack etc. (Dönmez & Özer, 2009; Memduhoğlu & Taşdan, 2007). Işık (2004), on the other hand, lists the security problems at schools in general categories as violence (from friends and teachers), natural disasters, health and hygiene, sexual abuse, psychological and emotional issues, and ethnic and political grounds.

As the students are most vulnerable members of the unsafety, at a reasonably safe school, they are expected to be the most positively influenced group of all the school members. A safe school protects students from peer violence and plays a preventive role in important concerns like natural disasters, health, cleanliness, and sexual abuse (Işık, 2004). When the safe school characteristics are investigated, it is seen that the subject is quite comprehensive and multidimensional. However, school climate is the most frequently noted variable in studies on the characteristics of a safe school. Therefore, it can be said that many of the factors in building a safe school are related to the school climate (Çalık, Kurt, & Çalık, 2011).

THE ROLE OF THE SCHOOL ADMINISTRATOR IN ENSURING SAFETY AT SCHOOLS

For a school to maintain its existence and meet the educational needs of society, the school community members must work in a certain order. In this context, the duty of the school administrator is to keep in line with its aims by using all human and material resources of the school in the most efficient way. As educational organizations, schools have a planned and regular legal infrastructure and functioning. The understanding of administration in the school is influenced by a host of variables such as the attitudes of administrators, teachers and other school community members, and the socio-economic and political structure of the school environment. The school should try to solve multidimensional problems from various sources in a democratic way, considering their unique aspects (Dönmez, 2001). In this context, taking measures to ensure student safety, detecting, and responding to risks and dangers immediately is the main responsibility of the school administration and is among the most important duties of the administrators (Memduhoğlu & Taşdan, 2007).

What is important in a safe school is the preserving safety standards rather than just establishing a safe structure. Establishing and maintaining a safe school environment is among the most important duties of the school administration. All school community members must feel safe for the organizational goals of the school to be accomplished. When evaluated from this point of view, issues

such as ensuring the safety and security of the school, being prepared for natural disasters, the safety of its physical environment, the proper arrangement of the traffic-related elements around it and taking precautions regarding health and substance abuse are considered within the scope of school safety. In this context, it is important to include school administrators, teachers, parents, and other employees in the process of creating and maintaining a safe school (Turhan & Turan, 2012).

A comprehensive, holistic, and integrated approach should be adopted in addressing school safety. Rather than solely focusing on physical security, health, or prevention of risky situations, the goal should be to establish and maintain safety throughout the entire educational institution (Syrjalainen, Jukarainen, Varri, & Kaupinmaki, 2015). According to this approach, in every action and decision made in the school, the conscious consideration of the health and safety of every individual and the school community is necessary (Boychuk, 2014). Adopting a comprehensive security approach has significant implications for understanding school security management. The management of school security should be seen as an approach that aims to integrate security into every school activity, rather than just complying with health and safety regulations. Therefore, the management of school security should encompass measures and actions related to all school community members and all levels of the school (Díaz-Vicario & Gairín Sallán, 2017).

For students, growing up in an unsafe environment can negatively impact a range of important life outcomes, including mental health, happiness, satisfaction, well-being and earnings (Aldridge, McChesney & Afari, 2019; Reaves, McMahon, Duffy, & Ruiz 2018). In contrast, a safe school environment is generally associated with better academic achievement (Kutsyuruba, Klinger, & Hussain, 2015). In this regard, although all the school community members have a responsibility to ensure the physical and mental safety of the students, the responsibility largely is on the school administrators (Özer & Dönmez, 2013). In addition to their responsibilities in official procedures such as student affairs, personnel affairs, and financial affairs, they have to undertake an important task in ensuring safety and the importance of this task is increasing day by day. Unless the school becomes safe, it is not possible to have quality education, which is the main function of the school. Considering that ensuring the safety of the child is under the responsibility of the state, as declared in the Convention on the Rights of the Child, schools are the areas where the state has utmost responsibility towards children. It is the responsibility of school administrators as the representative of the state to ensure the safety of students, teachers, and other school community members (Karakütük, Özdoğan Özbal, & Sağlam, 2017). In this context, it is expected from administrators to make their schools physically, socially, and emotionally safe places, and thus, to be a kind of safety expert that allows families and society to trust in the schools (Balyer, 2012).

School administrators affect the school climate in three ways: by managing the disciplinary environment, by being instructional leaders through the direction of the curriculum, and by properly managing internal and external resources and support (Goldring, Huff, May, & Camburn, 2008; Printy, 2008). In this context, how administrators evaluate and perceive the school climate can be related to their instructional and management visions for students, which also affects safety and disciplinary practices in schools. Despite the important role of administrators in creating and directing the disciplinary environment, little information is available about how their perceptions of school safety practices are related to the security measures implemented in schools (Pyo, 2020). In this frame, this study, conducted to ascertain the safety issues experienced in schools from the administrators' views, explored the answers for the research problems listed below:

1. What are the school administrators' views on the reasons for the safety problems at schools?
2. What are the views of school administrators on the effects of safety problems at schools?
3. What are the opinions of school administrators about the measures that can be taken against safety problems at schools?

METHOD

RESEARCH DESIGN

This study aiming to reveal the safety problems experienced in schools according to the opinions of school administrators was conducted with the qualitative research method. The case study design, as one of the qualitative research methods, was employed in the research. According to Miles and Huberman (1994), a case can be defined as a phenomenon that always occurs in a certain context. Case study, on the other hand, is known as a research approach that investigates a problem in its own context in a detailed and systematic way (Yıldırım & Şimşek, 2013). Hancock and Algozzine (2006) explain studies that give a rich description of the events that occur under natural conditions, using time and space constraints, and various data collection tools, as case studies.

In this study, descriptive case study design (Hyett, Kenny, & Dickson-Swift, 2014; Merriam, 2009) was used in terms of its purpose and embedded multiple case study design (Yin, 2009) was used in terms of the number of the cases. In the embedded multiple case design, there is more than one case. However, each case included in the research can be studied by dividing it into various sub-units. In this way, it is possible to make a comparison between cases (Yıldırım & Şimşek, 2013). In the current study, schools were considered as the limited context and the safety problems in schools were regarded as the constant phenomena. Safety problems in schools were described through the cases experienced by the school administrators, so the reasons and effects of safety problems and the measures that could be taken against these problems were analyzed by dividing them into sub-units.

STUDY GROUP

The study group of this research consisted of 25 school administrators working in public schools (kindergarten, primary school, secondary school, and high school) in the province of Mardin. Maximum variation sampling method, one of the purposive sampling methods, was used to determine the study group. The saturation criterion was used to decide on the number of participants in the group. When the participants are included in the study according to maximum variation sampling method, they are supposed to bear some characteristics as being related to the problem and similar on their merits, representing the diversity and different cases (Grix, 2010). In the saturation criterion, on the other hand, the data gathering process is completed when the researchers begin to gather similar information from different participants about the phenomenon examined, and when it comes to a point where new information cannot be reached (Strauss & Corbin, 2014). While determining the study group of this research, it was aimed that the school administrators included in the research varied in terms of gender, education level, school level and professional seniority. Nicknames were used in the research to guarantee participants' confidentiality. And when the themes and codes in the interviews were begun to be repeated frequently, in other words, when the saturation point was reached, the interviews were terminated. In this context, the demographic characteristics of the school administrators participating in the research are presented in Table 1.

As seen in Table 1, eight of the administrators participating in the research were female and 17 were male. Considering that school administrators are predominantly male, this distribution in terms of gender can be considered as a natural situation. As regard to professional seniority, nine of the administrators had a seniority of 1-10 years and 16 of them had a professional seniority of 11 years or more. Five of the administrators were working in pre-school, six in primary school, seven in secondary school and seven in high school. 19 administrators had undergraduate degrees and six administrators had graduate degrees.

Table 1. *Participants' Demographic Characteristics*

<i>Variable</i>	<i>Characteristic</i>	<i>n</i>
Gender	Female	8
	Male	17
Seniority	1-10 years	9
	11 years and over	16
School Level	Preschool	5
	Primary School	6
	Secondary School	7
	High School	7
Educational Level	Bachelor's Degree	19
	Graduate School	6

DATA COLLECTION

In the research, a semi-structured interview form was used to investigate the opinions of the administrators about the safety problems at schools. Before the final form was created, the literature on safety problems at schools (Akgün & Başar, 2019; Gahungu, 2018; Karakütük, Özdoğan Özbal, & Sağlam, 2017; Sprague & Walker, 2021) was examined and a question pool of 10 open-ended questions (e.g., what kind of safety issues are experienced in schools, what are the reasons of safety problems in schools, what are the effects of safety problems in schools, what measures do you think should be taken regarding the security problems in schools) were written. These questions were sent to three field experts and their opinions were asked. In line with the expert opinions, the number of questions in the form was reduced to five. Afterwards a pilot interview with a school administrator was conducted with the form consisting of five questions and six probe questions. After the interview, the compatibility and clarity of the questions with the aim of the research were examined with the school administrator. The form was finalized with the evaluations and corrections at the end of the pilot interview. Prior to the commencement of the interviews, approval was obtained from Mardin Artuklu University Scientific Research and Publication Ethics Committee on 12.01.2022 with approval number 1-9. Afterwards, the participants were reached, informed about the research, and interviews were held at times and places convenient to them. During this process, informed consent was obtained from all participants. Interviews were recorded with the permission of the participants who signed the consent form.

DATA ANALYSIS

The audio recordings taken before the analysis of data were transcribed in the computer and was ensured to be kept in a safe environment. Afterwards, code names were given to the participants included in the study. Each of the participants, consisting of the principal and assistant principals were given pseudonyms and their real names were kept confidential. Descriptive analysis and content analysis were used in the analysis of the data. Descriptive analysis is more superficial than content analysis and is used in research where the conceptual framework of the research is clearly defined beforehand. In descriptive analysis, direct quotations are frequently used to make the ideas of the interviewees intriguing to readers and the results can be evaluated in a cause-effect relationship (Yıldırım & Şimşek, 2013). In content analysis, accessing the basic contents of the information and summarizing the message content are essential. Content analysis is a technique in which historical documents, newspapers, letters, book chapters, books and some words of a text are systematically summarized into smaller categories by coding within the rules (Cohen, Manion & Morrison, 2007). The main goal in content analysis is to reach concepts and relationships that can explain the obtained data (Yıldırım & Şimşek, 2013). In the data analysis process, only the language errors were corrected, the interview transcripts were read repeatedly by the researchers and the responses related to the research questions were coded, and then the codes were grouped into appropriate themes. The codes

and themes were interpreted descriptively by the researchers. Data analysis was first independently conducted by the researchers, and then a consensus was reached by evaluating divergent views. Directly quoted opinions from participants are presented in italics.

VALIDITY AND RELIABILITY

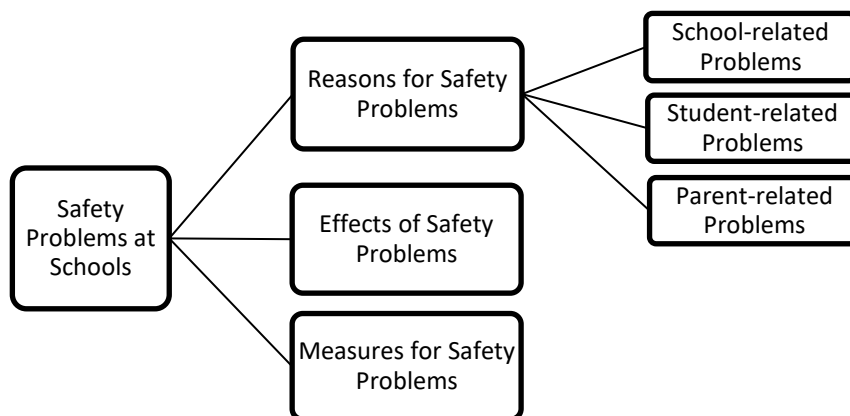
The interview form, which was created with open-ended questions in the study, was presented to the opinion of experts on school safety and qualitative research before it was applied and feedback was received from them (Patton, 2014). During the implementation phase, necessary explanations were given to the participants about the research before the interviews and the interviews were held in a natural conversation setting. The interviews lasted approximately 30-35 minutes and the responses given by the participants were given in the findings section with direct quotations. In this study, internal validity problems were tried to be solved in this way. To ensure external validity in the study, the reason for choosing the research method was explained, the study group was determined with the purposeful sampling method, the creation of the data collection tool, the data collection process was explained in detail, and the researchers avoided prompting (Cresswell, 2007).

In the research, the internal reliability of the research was increased by preventing data loss by using a voice recorder and transferring the findings to the reader without comment. To ensure external reliability, the researchers used the triangulation technique (Patton, 2014) by creating codes through independent readings of the data. The researchers then worked together to create themes based on these codes and expressed their opinions under a common view. In addition, the consistency of the findings and conclusion sections were also discussed by the researchers and a consensus was reached.

FINDINGS

In this study, which aimed to reveal the safety problems experienced in schools according to the opinions of school administrators, the findings obtained from the interviews were categorized under three themes: the reasons for safety problems at schools, the effects of these problems and the measures that can be taken for these problems. Among these, the theme of reasons for safety problems was divided into three categories: school-related problems, student-related problems, and parent-related problems (Figure 1). In this context, the findings were presented under the headings, respectively, in accordance with the sub-objectives of the research, considering of the themes and categories created.

Figure 1. *Safety Problems at Schools*



REASONS FOR SAFETY PROBLEMS AT SCHOOLS

To reveal the experiences of the administrators regarding the reasons for the safety problems in their schools, they were asked about what caused the safety problems they experienced.

Accordingly, under the theme of the reasons for safety problems at schools, three categories emerged as school-related problems, student-related problems, and parent-related problems. These categories are described below, respectively.

SCHOOL-RELATED PROBLEMS

As a result of the interviews with the school administrators, the sub-categories, and codes for the category of school-related problems under the safety problems experienced in schools are given in Table 2.

Table 2. School-Related Problems

Category	Sub-Categories	Codes	f
School-Related Problems	Structural Problems	Large number of students	18
		Busy roads near the school	15
		Low classroom windows	6
		The dangers of the school yard ground	5
		The dangers of the wires used in the yard walls	4
		Lack of yard walls	3
	Inadequate Resources and/or Supervision	Unsafe electrical switches in classrooms	2
		Lack of security guards	15
		Unsafe school buses	14
		Unhygienic areas in the school	12
		Unhealthy food in the canteen	9
		The dangers of slippery floors	8
		Shops selling cigarettes around the school	7

As can be seen in Table 2, school-related safety problems were divided into sub-categories of structural problems and inadequate resources and/or supervision. While the subcategory of structural problems is related to both the school building and its annexes and the structural elements in the garden, the problems of lack of resources/supervision are related to both the limited resources (such as the absence of security guards in the school) and the insufficient supervision or the lack of adequate sanctions. When Table 2 is examined, it is seen that the biggest school-related safety problem is the large number of students. On this subject, School Administrator Hasan stated that *the crowd in the school caused situations such as collisions or injuries in areas such as corridors and yards*, while School Administrator Kemal stated that *the crowd made it impossible to control and therefore the students could exhibit violent behaviors more easily*. It is understood from these comments that unintentional (such as collisions in the corridors) or intentional (such as acts of violence) safety problems arise due to the large number of students.

Another important problem is the lack of security guards in schools, which are considered under the sub-category of insufficient resources. As it is known, schools employ security guards with their own means. This means that schools in low-resource and low socio-economic environments do not have the budget to employ security guards. Administrator İlyas explained that not having a security guard at the school became an important problem when combined with the region where the school was located, with the following statements:

Theft incidents are leading safety problems. Every morning when I come to school, I start hoping that no thieves have entered the school. Even though we cannot see substance addicts directly, I have the feeling that they can do something any time. In addition, the presence of people selling harmful substances in the areas around the school worries us.

STUDENT-RELATED PROBLEMS

As a result of the interviews with the school administrators, the sub-categories, and codes for the category of student-related problems under safety problems at schools are shown in Table 3.

Table 3. Student-Related Problems

Category	Sub-Categories	Codes	f
Student-Related Problems	Physical Violence	Violent acts of students from other schools	40
		Students' possession of prohibited substances (cigarettes, sharps, piercing tools)	28
		Damage to the school yard by students out-of-school hours	21
		Climbing the wall, iron and wire in the yard	13
		Breaking classroom windows out-of-school hours	8
	Physical / Verbal Violence	Thefts from the school yard or building out-of-school hours	6
		Peer bullying	15
		Bullying against immigrants	14
	Individual Difficulties	Student disrespect towards teachers	11
		Quarrels about the romantic relationships	7
		Emotional problems	10
		Problems with exam grades	9

As can be seen in Table 3, the category of student-related problems under safety problems at schools were categorized in the subcategories of physical violence, physical/verbal violence and individual difficulties. The reason why physical/verbal violence was categorized under a separate subcategory from the physical violence subcategory was that behaviors such as bullying in this category contain both verbal and physical violence elements. It is seen that the codes in the sub-category of physical violence are sometimes directed to people and sometimes to things. The reason why the code for students' possession of prohibited substances was classified under physical violence is that they could be substances or items that could be used for or cause violence. The most frequently mentioned student-related problem in Table 3 is the violence from the students from other schools to the school's students. For example, according to Administrator Mahmut, *people who are not students of the school usually start fights around the school*. Apart from that, Administrator Esra stated that *sometimes students come to school with sharp objects*. Administrator Şerif, who drew attention to the disrespectful behavior of students towards teachers, stated that *the reason for this situation (disrespect) is the distance education in schools due to the effect of Covid-19*.

PARENT-RELATED PROBLEMS

The sub-categories and codes for the category of parent-related problems under safety problems at schools are presented in Table 4.

Table 4. Parent-Related Problems

Category	Sub-Categories	Codes	f
Parent-Related Problems	Attitudes and Behaviors Towards Teachers	Prejudice against teachers	31
		Frequent complaints and harassment of school management and teachers	6
		Violent behavior towards teachers	4
	Parenting Styles	Taking a side in the arguments among students	12
		Making trouble for students' grades	10
		Having a defensive attitude in students' problems at school	9
	Economic Reasons	Not supporting school economically	14

As can be seen in Table 4, the statements in the category of parent-related problems under safety problems at schools were classified in three sub-categories: attitudes and behaviors towards teachers, parenting styles and economic reasons. When Table 4 is examined, it is seen that parents, who are expected to assume the role of problem solver can also be the source of problems just like students. The findings show that we can find the reason for the parent-related problems mostly in the attitudes and behaviors towards the teaching profession. Violence caused by parents has become so likely that Administrator Elif expressed her thoughts as the school administration and teachers were

under pressure from parents, they were at risk of being victims of violence at any moment. Administrator İlyas, on the other hand, pointed out a cause-effect chain emerged with the combination of attitudes towards teachers and parenting styles. He stated that *he was worried that the parents would be prejudiced because of the wrong information given by the students, and that they would use violence against the school staff or students*. It was stated that parents did not support the school economically which might also be a reason for the sub-category of inadequate resources of school-related problems category in Table 2. Administrator Mahmut stated that although the parents were from a good financial profile, they did not support the school even for the important needs of the school.

EFFECTS OF SAFETY PROBLEMS AT SCHOOLS

As a result of the interviews with the school administrators, the categories and codes related to the theme of the effects of safety problems at schools are given in Table 5.

Table 5. *The Effects of Safety Problems*

<i>Theme</i>	<i>Categories</i>	<i>Codes</i>	<i>f</i>
The Effects of Safety Problems at Schools	Psychological Effects	Anxiety and insecurity	29
		Fear and panic	24
		Permanent psychological problems	9
		Fear of school	5
	Academic Effects	Difficulty of administration	31
		Students' and teachers' request for school change	19
		Lack of motivation of employees	14
		Teachers' difficulties in establishing classroom management	13
		Student absenteeism	10
		Significant decrease in lesson efficiency	9
	Relationship with the Third Parties	Negative image in the media	17
		Problems with parents	13
		Problems between administrators and the Ministry of National Education [MoNE]	11

As can be seen in Table 5, three categories emerged under the theme of the effects of safety problems at schools. These categories were named as psychological effects, academic effects, and relationships with the third parties. When Table 5 is examined, safety problems at school cause temporary or permanent psychological effects, such as anxiety and fear, mostly on students. According to Administrator Demet safety problems might create a feelings of insecurity, unrest, anxiety, fear and insecure environment. In the interviews, it was stated that psychological effects caused anxiety and fear not only on students but also on teachers and parents; for example, it was stated that some parents were worried about their children could get harmed. The point that the majority of the administrators participating in the study pointed out was that the psychological effects of safety problems ultimately affect academic achievement and education in a negative way. Administrator Ali summarized this situation as follows:

Students can be considered as the first and most important group affected by such safety problems. Because they are the most vulnerable. Students become reluctant and they experience serious decreases in motivation at schools with safety problems, they develop negative affect towards the school, as well.

Administrator Kahraman stated that safety problems harmed the academic and psycho-social development of students, and students who were the victims of violence could request a school change. Administrator Şinasi, on the other hand, stated that not only the students but also the teachers

would be successful in an environment where they would feel safe, and argued that both teachers and administrators would not be able to perform effectively in schools with safety problems.

MEASURES TO BE TAKEN FOR SAFETY PROBLEMS IN SCHOOLS

As a result of the interviews with school administrators, the categories and codes related to the theme of the measures that can be taken against safety problems at schools are shown in Table 6.

Table 6. Measures to be Taken for Safety Problems in Schools

Theme	Categories	Codes	f	
Measures to be Taken for Safety Problems	Structural Improvements/Increasing Resources	Having security personnel at schools	22	
		Having security cameras that see all areas of the school	21	
		Having school cops	17	
		Regular hygiene maintenance at the school	16	
		Equipping the schools to meet physical needs	13	
		Increasing the school yard safety	15	
		Increasing the safety at school buses	13	
		Building safe school yard walls	8	
		Employing security teams roaming around the school during teaching hours	7	
		Building schools away from busy roads	6	
		Adjusting window heights according to safety criteria	5	
		Providing trained personnel for boiler rooms	3	
		Installing electrical panels in suitable places where students do not enter	2	
		Psycho-social Support	Increasing parent-teacher communication	20
			Creating a positive school climate	18
	Rehabilitation of violent students		14	
	Increasing the prestige of teachers and administrators		10	
	Legal Regulations	Increasing the activities by which students will discharge their energy	4	
Removal of high school education from compulsory education		12		
		Ensuring the implementation of disciplinary rules	11	

As can be seen in Table 6, the measures that can be taken against the safety problems at schools were grouped in three categories: structural improvements/increasing resources, psycho-social improvements and legal regulations. Considering the codes based on participant views, it is clear that school administrators see the solution mostly in structural improvements and increasing resources. The most cited measure as structural improvement/resource increase was the employment of security staff. According to Administrator Ahmet, in addition to having security staff, night guards and police should be more careful around the school.

The administrators participating in this research claimed that psycho-social support could be a solution to safety problems as well. For example, Administrator Uğur marked the effect of psycho-social support at the school as follows:

One way to ensure school safety is to create a positive climate at school. There is less conflict in such schools. In addition, it is necessary to create activities where young people will spend their energy. Disciplinary rules should be reminded to the students by the class counselors in the classrooms and they should be posted where they can see them. The number of sports and cultural activities should be increased at school and students should be encouraged to participate in these activities.

Leyla, one of the school administrators, drew attention to the importance of communication within the scope of measures to prevent safety problems. According to the administrator Leyla, the

school administration's good relations with both teachers and parents could prevent many safety problems. On the other hand, Administrator Mahmut put forward a view that might be radical by suggesting that high school education should not be compulsory, he expressed his thoughts in the following sentences:

It is necessary to change the rule of compulsory education. Students who do not want to get educated cause many discipline problems. While trying to rehabilitate these young people, we are in danger of losing the other students. Volunteer participation in education should be essential in high school education; Students who do not want to study should be directed to vocational education.

DISCUSSION

With this research, it was aimed to examine the safety problems at schools in depth according to the opinions of school administrators. The findings shows that school building and facilities, students and parents might cause safety problems at schools in various ways. School-related safety problems include the large number of students, lack of security staff, unsafe school busses, busy roads around the school, unsafe school yards, hygiene problems and unhealth food. There are other studies in the literature that support these findings. Especially studies about small and large schools show that problems involving negative behaviors occur less in small schools with a small number of students than in large schools (Cotton, 1996). Similarly Bakioğlu and Polat (2002) draw attention to the increase in crime rates in crowded schools; Ekici and Burgaz (2009) showed that crowded schools as the cause of undesirable student behavior.

The harm from the students of other schools, the damage to the school yard in out-of-school hours, students' possession of prohibited substances are the main student-related safety problems at school. These problems can be associated with the lack or shortage of security guards at schools, which is one of the school-related problems. Both the harm from outside students to the students in the school and damage to the school yard in out-of-school hours, damage to the building or the facilities are directly related to the absence or insufficiency of the security personnel responsible for ensuring safety at the school. According to the results of the research, student violence in schools negatively affects the functioning of the school. On the subject, Debarbieux (2009) states that violence caused by students in schools disrupts the administrative structure of the school and the academic functioning of the classrooms. Türkmen (2004), on the other hand, reveals that students who are exposed to violent behavior tend to show violence to their other friends and that these students, who cause safety problems, also affect other students negatively in behavioral terms.

Regarding the parent-related safety problems, the administrators mostly experience problems with parents such as being prejudiced against teachers, not supporting the school economically, taking a side in the arguments among students and causing problems at school for their children's exam grades. It can be said that these problems have been experienced due to the loss of reputation of the teaching profession in recent years and the gradual decrease in respect for teachers (Başkara, 2017). In the past, teaching profession was one of the most respected professions in the society. However, based on the opinions of school administrators today, it can be argued that due to the gradual decrease in trust and respect for teachers and the school, parents cause problems such as questioning teachers' decisions, objecting to exam grades, harrassing educators and not supporting the school financially.

In the study, it was concluded that safety problems at schools have negative effects on the psychological well-being of the school members, academic outcomes and third-party relations. Specifically, it was revealed that the safety problems experienced in schools might cause unrest, fear and panic on students, cause permanent psychological problems and cause them to experience school fear. In the context of academic effects, it was found that safety problems make school administration difficult, cause students and teachers to want to move to other schools, reduce the motivation levels

of school staff, cause teachers to have difficulties in classroom management and increase student absenteeism. Considering the effects on relations with the third parties, it was seen that the reflection of safety problems in the media causes the school to display a negative image and causes the administrators to have new problems with both parents and the MoNE. Based on these results, it can be said that an unsafe school environment has many negative academic and psychological effects on both teachers, administrators and students. Different studies support this finding; in a study conducted by Jacobson, Riesch, Temkin, Kedrowski and Kluba (2011), it was revealed that children who do not feel safe at school may have problems such as absenteeism, stress and anxiety, and emotional problems due to the feeling of insecurity. According to the study by Çalık, Kurt, and Çalık (2011), when the necessary emphasis is not put on creating a safe school, the processes related to teaching activities are also negatively affected. Çankaya and Arabacı (2010), who reveal a negative relationship between the perception of safety and the level of anger, emphasize that existing safety problems, such as the inability to control anger, lead to new ones that can result in violence.

In the research, school administrators offered concrete suggestions and practical solutions for the measures that can be taken for safety problems. In this context, it was revealed that administrators express solution-focused measures such as employing security personnel, having security cameras that see all the areas of the school, increasing parent-teacher communication and creating a positive school climate. This finding is in line with other research findings. In a number of research it is pointed that the use of security cameras in the school has positive effects on ensuring school security, although it is not sufficient on its own. Increasing communication and interaction and establishing positive human relations are as important as technological tools and physical solutions in preventing safety problems at schools (Dönmez, 2001; Dönmez & Özer, 2009; Turhan & Turan, 2012). Yıldırım, Akan and Çiftçi (2018) state that in addition to security camera systems, it is important to get support from the parent-teacher association, to regularly monitor the duties of teachers, and to report security problems to the authorities in a timely manner in ensuring school safety. Delice and Arslan (2018) concluded that the school building structure, yard walls, stairs, security cameras and security guards are important factors for school safety.

CONCLUSION AND RECOMMENDATIONS

As in the developed countries, educators, policy developers, parents and students in Turkey pay more attention to the school safety as it has irreversible consequences on all the members of the school. Besides pointing to a vital issue in education and adding to the literature by exploring the first hand experiences of school administrators, this research bears some limitations. First of all, the fact that the research is designed entirely based on a qualitative research design is a limitation. This situation is related to the inability to generalize the results obtained in qualitative research to the population. In this context, it is thought that this limitation will be overcome by conducting future studies that use both quantitative and qualitative research designs together on this subject. Moreover, as expected in qualitative research, it focused on a certain context and was conducted in a comparatively small city in Turkey. The experiences of those working in big cities and more urbanized schools would surely be different. This is why, it can be recommended to the researchers to run their studies in different settings. The comparative experiences of school administrators from big and small cities could be helpful in developing school-based or region-based solutions. Another limitation of the study is the weak gender diversity among the participants. In this study, the vast majority of participants consist of male administrators. In future research, this limitation can be overcome by conducting research with participants who have a more balanced distribution in terms of gender. Another limitation is that the research focused on the opinions of school administrators, yet teacher, student and parent experiences can depict a different angle. The studies reflecting the opinions of other important members of the school can present a holistic view. Therefore, renewing the research with different school community members in the future will contribute to the literature.

With this research, the issue of security problems occurring in schools, which closely concern all members of the school at the level of administrators, teachers, parents, and students, and which constantly maintains its relevance, has been addressed within the scope of administrator views and important results have been obtained. Accordingly, the research concluded that the security problems experienced in schools primarily stem from issues related to the school, students, and families. The research revealed that security problems in schools have negative psychological and academic effects on both students, teachers, and parents. The research also demonstrated that individuals affected by security problems encounter issues in their relationships with third parties, such as administrators and family members. The importance of increasing resources that enhance school safety, providing all school community members with the necessary psychosocial support related to the issue, and making appropriate changes to and implementing legal regulations was emphasized in the research to prevent security problems in schools. In this context, it is believed that the study will provide important contributions to both the relevant literature and practical applications in educational organizations.

As a matter of fact, it is known that ensuring school safety is a prerequisite for increasing the quality of education and obtaining successful student outcomes. Without a sense of safety, administrators, teachers, and other members of the school staff cannot work as effectively to accomplish the school's aims and objectives or give their contributions at their best effort. Again, for the students feeling unsafe it would not be as easy to focus on their learning tasks and fulfil their social development or reach to the fullest of their academic performance. For these reasons, in order to ensure that all school community members can benefit from education and training activities at the highest level by being in a safe environment where they feel peaceful and comfortable, the following suggestions based on the research findings have been developed to improve school safety:

a) Security staff should be employed at the schools and the schools should be equipped with security cameras, especially in the high-risk areas where the general crime rates are high. The schools should be supported financially to apply these measures.

b) In order to minimize safety problems in schools and to facilitate disciplinary controls, the class sizes should be arranged in accordance with the health and education standards, and the total number of students in schools should be kept at an optimum level.

c) The school buildings should be constructed away from the busy roads, and the places that can pose potential threats to the students. During the construction of school buildings, attention should be paid to its location both in terms of road safety and in terms of threats that students may encounter in and around the school.

d) A positive school climate should be created in schools, and in this context, social activities, which will increase the interaction of administrators, teachers and parents, such as picnic organizations and school fairs should be organized.

AUTHOR CONTRIBUTIONS

First author planned, supervised and collected all data and also contributed for academic writing process. Second author contributed to the methodology, design, and analysis of the findings and to the writing of the manuscript. The third author contributed to the methodology, design, analysis of the findings, and interpreting the results. All authors also discussed design process of the research, academic writing process and commented on the manuscript throughout the entire process.

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Response to Intervention: What do Elementary School Teachers of Students with Specific Learning Disabilities in Inclusive Classrooms in Türkiye Know?

Macid Ayhan Melekoğlu, Prof. Dr., Eskişehir Osmangazi University, Türkiye
macidayhan@gmail.com  0000-0002-9933-5331

Asuman Sağlam Ak, Research Assistant, Eskişehir Osmangazi University, Türkiye
asuman.saglam.06@gmail.com  0000-0001-7793-159X

Sultan Kaya, Research Assistant, Anadolu University, Türkiye
sultankayaa2@gmail.com  0000-0002-7697-3242

Murat Ballıoğlu, Teacher, Ministry of National Education, Türkiye
mballioğlu48@gmail.com  0000-0003-0445-7617

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Abstract

As a multi-tiered early diagnosis, intervention, and support system, Response to Intervention (RtI) identifies struggling students and helps them in inclusive classrooms. This study aims to examine the Turkish elementary school teachers' knowledge level about RtI and its components. For this purpose, a basic qualitative study within the scope of qualitative research methods was conducted. Data was collected by conducting interviews with nine teachers working in inclusive classrooms with at least one student with specific learning disabilities at the elementary school level in Eskişehir, Türkiye. The data were analysed with content analysis. Results showed that participants of this study are not aware of RtI but they use some components of it in their instructions. In line with the findings, it is recommended that teachers, school administrators and policy makers in Türkiye need to expand their awareness with students with special needs and research-based practices in inclusive education, including multi-tiered interventions.

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INTRODUCTION

Türkiye, as a European Union (EU) candidate country, has invested in educating individuals with special needs, and special education and inclusion in the national education system is quickly growing. For the last five years, the number of students in the special education system, as well as the number of students in inclusive educational environments, have rapidly increased. According to the statistical report of the Ministry of National Education (MoNE), as of the 2019-2020 school year, with a 3.71% increase, the total number of students in formal education reached 18,241,881 in the Turkish education system. Furthermore, the number of students diagnosed with special needs has increased by 47.59% and reached 425,774. The ratio of students with special needs increased to 2.33% within formal education. In terms of inclusive education, the number of students with special needs has increased by 57.19% and reached 318,300 in inclusive classrooms. The ratio of students in inclusive education increased to 74.76% within all students with special needs (MoNE, 2016; 2020). Although statistics in special education is rapidly changing in Türkiye, the provision of special education services and implementation of inclusive practices by the MoNE are historically quite new practices in the Turkish education system (Cakiroglu & Melekoğlu, 2014).

As in most of the other countries in the world (Gargiulo & Bouck, 2018), the provision of special education services in Türkiye started in segregated settings. In fact, important developments in terms of special education started in the 1950s. One of the most striking developments of this period is that the planning and execution of special education services were transferred from the Ministry of Health and Social Aid to MoNE (Melekoğlu, Cakiroglu, & Malmgren, 2009). The transfer of special education services from a health-related ministry to an education-related ministry is important in terms of realizing that the issue of special education should be considered as an 'education issue' rather than a 'health problem' (Kargin, 2004; Sucuoğlu & Kargin, 2006). Until today, the subject of special education and the inclusion of individuals with special needs took part in many laws and regulations and step by step reached its final form. Finally, the 'Educational Implementations by Integration/Inclusion' section was developed in the Special Education Services Law, which entered into force in 2018, and the change from an integrated approach is acknowledged throughout the legislation (MoNE, 2018a). When the implementations related to inclusion/integration are examined today, there is an effort to try to understand the current situation and improve the quality of inclusive education. In addition, there is no systematic progress and full-time inclusion has not yet started for all children with special needs. Today, there are still separate special education schools and special education classes where only individuals with special needs are educated (MoNE, 2018a). Currently, there are various special education categories, including intellectual disabilities, hearing impairments, autism spectrum disorder, visual impairments, and specific learning disabilities (SLD), in the Turkish education system. Among those categories, the category of SLD has gained strong attention in the system and literature, and all students with SLD are educated in inclusive classrooms (Melekoğlu, Erden, & Çakiroğlu, 2019).

SLD is an official special education category in the Turkish education system and the last official definition of SLD exists in the Special Education Services Regulation published in 2006. According to this regulation, students with SLD are defined as individuals who need special education and support due to their difficulties in listening, speaking, reading, writing, spelling, attention, and mathematical calculations arising in one or more of the processes of acquiring the knowledge required to understand and use the language in oral or written form (MoNE, 2006). When a student is diagnosed with SLD, they are placed in an inclusive classroom, usually in a school/classroom that they normally attend, as a student with special needs. They will obtain extra assistance in a resource room and be entitled to further support (e.g., assessment, in-class participation, etc.) in their school. Furthermore, they can receive additional one-on-one (two hours per week) and small group (one hour per week) special education support from a private special education and rehabilitation center (MoNE, 2012). In fact, students with SLD have started to receive extensive special education services after the publication of

the 'Special Education and Rehabilitation Center Specific Learning Disabilities Supportive Education Program' by the MoNE in 2009. Since then, the number of students diagnosed with SLD is continuously rising.

The number of students with SLD in the special education system has steadily increased in the last five years. According to the MoNE, 7971 students with special needs were diagnosed with SLD and received special education services in inclusive environments in the 2014-2015 school year. The proportion of students with SLD was 3.07% within the special education system (MoNE, 2017). Furthermore, in the 2018-2019 school year, with a 107% increase since the 2014-2015 school year, the number of students with SLD reached 16,478 in the special education system. The ratio of students with SLD rose to 4.13% in the special education system (MoNE, 2019). Compared to other countries (e.g., in the United States of America the ratio of students with SLD in special education is 38.2%; U.S. Department of Education, 2020), the number of students with SLD is seen as very low in the Turkish special education system. The reason behind this conflict is related to the special education assessment system for students with SLD in Türkiye (Çakıroğlu, 2020).

ASSESSMENT PROBLEMS OF STUDENTS WITH SLD IN TÜRKİYE

Due to the lack of an early intervention program in Türkiye, the process of the diagnosis of SLD starts at the hospitals. The diagnosis that's given at the hospitals is the medical diagnosis. The medical diagnosis is given only by a healthcare committee in a public hospital or a training and research hospital. Experts from the healthcare committee determine the rate of disability based on their assessments. The ones that have a 20% or more disability rate can apply for an educational assessment to Guidance and Research Centers (GRC). At the GRC, there is a special education assessment committee that decides the assessment details of students referred for the possibility of SLD (Görgün, 2020).

ASSESSMENT OF SLD AND RESPONSE TO INTERVENTION (RTI)

With the re-enactment of the IDEA (Individuals with Disabilities Education Improvement Act) in 2004 in the United States, an important step was taken to diagnose SLD (Fletcher & Vaughn, 2009; Glover & DiPerna, 2007; Hale, Kaufman, Naglieri, & Kavale, 2006). The discrepancy model, which focuses on the difference between the IQ-achievement score recommended in the diagnosis of individuals with SLD in the old system, has been replaced by response to intervention (RtI) in IDEA (Fuchs & Fuchs, 2006). The discrepancy model in which students are expected to get low scores from many different achievement tests aims to diagnose SLD (Brown-Chidsey & Steege, 2010; Reynolds & Shaywitz, 2009). In the discrepancy model, the scores of the students in these academic tests are compared with the IQ scores and it is expected that there will be a discrepancy between the scores, in other words, 'to fail'. In addition, with the discrepancy model, it is not possible to obtain any data or hint about how the education of the student who is diagnosed with SLD during or after the diagnosis process (Bradley, Danielson, & Doolittle, 2005). In the RtI, interventions are implemented without waiting for any failure from students, and students who do not respond adequately to interventions are guided to be assessed on SLD (Fuchs, Fuchs, & Zumeta, 2008). RtI is a multi-tiered service delivery system that starts at the general education school and increases the intensity of interventions according to the students' responses to interventions (Fletcher & Vaughn, 2009). In other words, RtI is a multi-tiered early diagnosis, intervention, and support mechanism that recognizes students who have learning difficulties and supports students in inclusive classrooms before they are left behind (Gersten et al., 2009).

Early and accurate identification of students with disabilities is critical in ensuring that students have access to interventions that will help them succeed academically (Bradley et al., 2005). It is understood that preventing learning difficulties is better than treating them and early intervention has the potential to prevent learning difficulties that may lead to the diagnosis of SLD (VanDerHeyden & Burns, 2010). RtI is a system built on the diagnostic potential of early intervention. The purpose of RtI

is to provide early intervention to all students at inclusive schools who are at risk of failure, that is, not only students with special needs but also students who are not diagnosed and at-risk (Fuchs & Fuchs, 2006; Glover & DiPerna, 2007). Moreover, RtI prevents students with special needs from receiving inappropriate referrals and diagnoses (Orosco & Klingner, 2010). According to Fuchs, Mock, Morgan, & Young (2003), RtI is a process that provides quality education to all students in the class while monitoring students' progress, then provides additional education to those who do not respond appropriately, and finally directs them to special education services. In other words, RtI can be defined as a student-centered assessment model that uses problem-solving and scientific-based methods to identify and address learning disabilities in students (Johnson, Mellard, Fuchs, & McKnight, 2006). RtI has key features: (a) teaching with high-quality and scientifically based methods, (b) universal screening, (c) continuous monitoring of progress, (d) intensified interventions based on students' needs, (e) monitoring progress during interventions, and (f) curriculum-based measurement (CBM; Glover & DiPerna, 2007; VanDerHeyden & Burns, 2010).

Although RtI is a multi-tiered model, it is widely applied as the three-tiered model (Gartland & Strosnider, 2020). The quality of academic intervention at each tier changes and intervention intensifies at each tier in the transitions between tiers (Fletcher, Lyon, Fuchs, & Barnes, 2019). In the first tier of RtI, all students in the general education class are taught with high quality and scientifically based methods, and all students are monitored during the teaching process (Spear-Swirling, 2015). While high-quality and scientifically based teaching aims to prevent difficulties related to learning; classroom monitoring provides early detection of difficulties if they arise (Clemens, Keller-Margulis, Scholten, & Yoon, 2016; Gersten et al., 2009). In the first tier, data is collected for two main purposes. These purposes are to identify students who need additional intervention and to determine whether the problem is specific to the student or the class the student is enrolled (Burns et al., 2016). Evaluations carried out in the first tier must be done at least three times in an academic year (Burns et al., 2016; Clemens et al., 2016; VanDerHeyden & Burns, 2010). Despite using high-quality and scientifically based instructional methods given in the first tier, approximately 20% of students in a general education class do not succeed and need the second tier of RtI (Gersten et al., 2009). In the second tier, interventions are generally implemented in small groups of two to eight pupils for elementary school classes, eight to ten students for secondary school classes, and ten to twelve or even fifteen adolescents for high school classes (VanDerHeyden & Burns, 2010). In other words, targeted and small group interventions are implemented in the second tier (Fuchs & Fuchs, 2007). While data of the first tier is important to make decisions based on screening, data in the second tier is needed to determine which prerequisite skills are missing and which teaching conditions can accelerate learning (Fletcher et al., 2019; Owocki, 2010; Silberglitt, Parker, & Muyskens, 2016). In addition to being more precise than data in the first tier, data of the second tier should be collected weekly or biweekly (Hosp, Huddle, Ford, & Hesley, 2016). The second tier data is used to monitor progress, to move students between groups when necessary, and to decide whether the intervention is effective (Silberglitt et al., 2016; VanDerHeyden & Burns, 2010). The third tier of RtI involves the most intense interventions, and generally, around 2% to 5% of the student population in a general education class needs an intervention density beyond that provided in the second tier (Berkeley, Bender, Peaster, & Saunders, 2009; Fuchs, Fuchs, & Compton, 2012). The third tier generally includes one-on-one interventions as well as high-quality and scientifically based teaching. At this tier, monitoring student performance is critical (Gersten et al., 2009). With increased sensitivity and frequency patterns, data should be collected at least once every week to monitor progress in the third tier. The data collected in the third tier plays an important role in determining the cause of academic failure (Klingbeil, Bradley, & McComas, 2016; VanDerHeyden & Burns, 2010). The purpose of the assessment in the third tier is to define an intervention that will speed up learning before the student is directed to special education services (Owocki, 2010) This tier is linked to special education because the data collected in the third tier allows for the identification of adequate and inadequate responders

and provides a framework for the implementation of uninterrupted interventions between general and special education (Fletcher & Vaughn, 2009; Gartland & Strosnider, 2020; Vaughn & Fuchs, 2012).

THE NEED FOR THE STUDY

Starting in 2019, Türkiye is initiating a nationwide project titled ‘Increasing the Quality of Special Education Services for Inclusive Education (EuropeAid/139588/IH/SER/TR)’ which is co-funded by the European Union and the Republic of Türkiye. In this project, there is an intervention titled ‘Response to Intervention Model’ and within this intervention, tiers of modules will be prepared and designed in accordance with the RtI Model, and the model will be implemented and tested in five pilot elementary schools in Ankara, İzmir, İstanbul, Adana and Trabzon. (MoNE, 2018b). Although this project has been carried out in the field, there is almost no research or information about teacher awareness and/or readiness for a multi-tiered intervention model, which is RtI in this case.

Furthermore, SLD is an area that has a large proportion of students with special educational needs, but there are limited studies to improve educational opportunities. SLD, which includes problems related to learning, is observed as a problem in academic fields such as reading, writing, and mathematics (American Psychiatric Association [APA], 2013). Performing the necessary interventions in the pre-assessment process for all students who may have special education needs, including SLD, can both expedite the adaptation of the student to general education and facilitate the determination of the individual's educational needs. Providing early education interventions to students at risk of SLD plays a critical role in their future learning (Snowling, 2012). In order to provide the learning environments that students need, it should be determined whether they have SLD. In addition, studies have shown that the number of students diagnosed with SLD is reduced as a result of supporting students with appropriate intervention methods (VanDerHeyden & Burns, 2010). In Türkiye, intelligence tests for identifying individuals with SLD are used. However, scientific-based and systematic practices that can be used to meet the educational needs of individuals with SLD before diagnosis are insufficient.

In Türkiye, students with SLD often continue their education in general education classes. It is the duty of the classroom teachers to determine the educational needs of the students with SLD who receive education within the scope of inclusion practices (Melekoğlu, 2018). Considering the importance of early intervention in special education and considering the vital importance of providing scientific-based interventions early in identifying students with SLD, studies should be increased within the framework of improving the quality of education provided to these individuals in general education settings.

RESEARCH QUESTIONS

The RtI model, which is one of the scientifically based models, offers early intervention to students at risk for SLD (Tuğrul-Kalaç, 2018). Since early interventions for students with SLD is required from elementary school teachers, it is important to understand how well the elementary school teachers know and apply this model and whether the appropriate intervention is given prior to diagnosis in inclusive classrooms. When the national literature was examined, there was no study to evaluate the levels of awareness elementary school teachers had about the RtI model in Türkiye.

The aim of this study is to examine whether the elementary school teachers make any distinction between students who have academic difficulties among the students in their classrooms and to assess the level of understanding the elementary school teachers have about the RtI model. For the purpose of the study, the question of “what do elementary school teachers of students with SLD in inclusive classrooms know about RtI model and its components?” will be answered.

METHOD

RESEARCH DESIGN

Since this study is aimed to determine the level of knowledge of classroom teachers working with students with SLD in inclusive environments, the components, were carried out as a basic qualitative study within the scope of qualitative research methods. The qualitative research method was preferred because it allows obtaining in-depth data from the selected study group, and in basic qualitative studies, the general aim is to figure out how participants make sense of their own lives and experiences (Merriam, 2009).

PARTICIPANTS

This study received ethical clearance from the Institutional Review Board of the Eskisehir Provincial Directorate of National Education (approval date and number: 15.04.2019/7631214). Criterion sampling, one of the suggested sampling methods, was used to determine the study group. In the sampling criterion, researchers evaluate those parameters and study with participants who meet the criterion (Patton, 1990; Suri, 2011). In this study, one criterion was determined. The criterion is to be an elementary school teacher working in a classroom of a student with SLD. In order to decide which teachers are to be included in the study group, a list of schools with elementary school teachers working in a classroom of a student with SLD was requested from the Provincial Directorate of National Education. Nine schools, three from each socio-economic level, were selected from the list. One voluntary elementary school teacher from each school was selected. Each participating teacher has provided appropriate informed consent orally before the interview. The characteristics of the teachers are given in Table 1.

Table 1. *Participants Characteristics*

<i>Teachers</i>	<i>Grade</i>	<i>Gender</i>	<i>Year of Service</i>	<i>Graduation</i>	<i>Graduation program</i>
T1	2	Female	17	Bachelor	Classroom teaching
T2	2	Female	31	Junior college	Classroom teaching
T3	3	Female	19	Bachelor	Classroom teaching
T4	4	Female	15	Bachelor	Classroom teaching
T5	4	Male	34	Junior college	Classroom teaching
T6	3	Male	29	Bachelor	Classroom teaching
T7	4	Female	21	Bachelor	Classroom teaching
T8	4	Male	35	Junior college	Classroom teaching
T9	3	Female	22	Bachelor	Landscape architecture

DATA COLLECTION TOOL

The researchers examined the literature on components of the RtI model and a semi-structured interview technique was used for data collection. Based on the findings, interview questions were formed, and expert opinion was consulted. Three of the experts to whom the interview questions were sent have a PhD in special education and two of them in the field of research methods and are experienced in qualitative research. The experts shared their opinions about the interview questions by examining whether the questions covered the subject, whether they were comprehensible and clear. The researchers rearranged the interview questions, according to the feedback from the experts.

In order to determine whether the questions are clear and comprehensible by the teachers, pilot interviews were conducted with three elementary school teachers who are continuing their master's education in the field of Education Management. In the pilot interviews, a personal information form and interview questions were used together with a digital voice recorder with the permission of the participants. It was determined that the questions asked in the pilot interview were understandable and the interview questions were finalized after the pilot interviews. The final interview form included 26 questions. While 14 of the questions aimed to determine the demographic and educational information of participants, 12 of the questions aimed to find out participants' knowledge about RtI. The questions about RtI also had follow up questions in order to get more detailed information. Questions about demographic and educational information included questions like "Which faculty and department did you graduate from?", "Have you attended any training on inclusion and/or special education? If yes, what kind of training did you attend?". Some of the questions related to RtI were "What do you know about whether the primary school Turkish and/or mathematics curriculum has been developed on a scientific basis?", "Do you carry out any different practices for students who perform poorly according to the assessments you made in Turkish and/or mathematics courses? If yes, what kind of different accommodations do you make and how, can you explain?".

INTERVIEW PROCEDURE

In order to determine the level of knowledge of the elementary school teachers, working in a classroom of a student with SLD, semi-structured interviews were conducted with voluntary elementary school teachers. All interviews were conducted by the second and fourth authors, and they were master's student in the special education program. They took the scientific research methods course during their master's education. An interview guide was prepared by all the authors and pilot interviews conducted according to the interview guide. Interviewers were prepared by conducting pilot interviews and evaluating pilot interviews according to interview guide with first author who has doctoral degree in special education. Before the interviews, the second and fourth authors called the schools and made appointments with the teachers. Then they went to schools to conduct the interviews. The interviews were conducted in the school principals' room. Interviews were recorded with a digital voice recorder. Before the interviews, the authors met with the teachers. Then interviewers asked for permission to record the interview. Only one of nine teachers didn't want to be recorded. That teacher wrote the answers to the interview questions instead. All the remaining interviews were audio recorded. Each interview took between 15-28 minutes. Average duration of the interviews was 20 minutes and 10 seconds.

DATA ANALYSIS PROCEDURE

The data obtained from the interviews conducted during the research process were analyzed through content analysis. The main purpose in content analysis is to reach the concepts and relationships that will help explain the data collected. Data is extensively processed in content analysis and new concepts are discovered. The basic process in content analysis is to gather similar data within the framework of certain concepts and themes and to interpret them in a way that the reader can understand (Yıldırım & Şimşek, 2008). Within the scope of content analysis, audio recordings of interviews were written, and interview transcripts were prepared by using inductive approach. The frequencies of the codes and themes that were generated as a result of the interviews were calculated and the data digitized.

TRUSTWORTHINESS

The term of trustworthiness is used for qualitative studies' validity and reliability (Guba & Lincoln, 1982). According to Guba (1981), trustworthiness of a qualitative study can be explained by four terms such as credibility, transferability, dependability, and confirmability. To increase trustworthiness of this study, peer debriefing about research method and interview questions, purposeful sampling, detailed description of the participants and researcher triangulation measures

were taken. Also, the research data were independently coded by the first and second authors. After the categories were developed, the codes were rearranged, and the coding keys filled in. The consistency between codings was compared by the third author. Reliability data was calculated by Miles & Huberman’s (1994) $(\frac{consensus}{(consensus+disagreement)} * 100)$ formula. According to the results of these two codings, the agreement was calculated at 98%. Coding disagreements were discussed with all authors and a joint decision was reached.

FINDINGS

THEME 1: SCIENTIFIC BASIS OF THE CURRICULUM

The first theme obtained as a result of the content analysis is 'scientific basis of the curriculum.' Three sub-themes have been determined under this main theme. These sub-themes are scientifically developed, curriculum incomplete or inadequate, and not scientific. The frequencies of the teachers' responses are included in Table 2.

Table 2. *The Scientific Basis of the Curriculum*

<i>Theme</i>	<i>Sub-themes</i>	<i>n</i>	<i>%</i>
Scientific Basis of the Curriculum	Scientifically developed	5	45.45
	Incomplete or insufficient	3	27.27
	Not scientific	3	27.27
TOTAL		11	100

Teachers have opinions about the scientific foundations of the Turkish elementary school and the curriculum of Mathematics. Some of these opinions are as follows.

'...I think there is definitely a scientific base for the curriculum' (T9), '... I am implementing the program, but the program is insufficient for me' (T7), 'I don't think it was developed scientifically. Especially if we look at the level of inclusion, not at all.' (T5).

THEME 2: DETERMINATION OF THE EFFECTIVENESS OF METHODS

When teachers were asked about the strategies they used, they indicated 'direct instruction, question-answer, drama, by doing and living, showing and doing.' 'I use reading and drama methods in Turkish lessons. In mathematics, I use methods such as animation, showing, and doing. In addition, I use internet content such as Morpha Campus and EBA [Eğitim Bilişim Ağı - Educational Information Network]. I draw the subject on the board and visualize it. I use encryption, coding techniques.' (T4) The above statement is an example of teachers using various methods. In addition, various answers were given when the teachers were asked how they present teaching according to the performance level of their students. The teachers' answers were 'using images, repeating the narration, gamification, small group instruction, asking one-on-one questions, choosing course materials according to student level and assign assignments according to the student's level.'

As a result of content analysis, how teachers recognize that the teaching strategies they use are effective was defined as the second theme. There are three sub-themes relating to the theme of 'determination of the effectiveness of the methods.' These sub-themes are a result of the evaluations, students joining the lesson with pleasure, and from parents' feedback. The frequencies of the teachers' responses are included in Table 3.

Table 3. Determination of the Effectiveness of Methods

Theme	Sub-themes	n	%
Determination of the effectiveness of methods	As a result of the evaluations	9	75
	Students joining the lesson with pleasure	2	16.67
	From parents' feedback	1	8.33
TOTAL		12	100

Teachers have opinions about the determination of the effectiveness of methods. Some of these opinions are as follows.

'It depends on the success of the exam.' (T1), *'From children attending the class with enjoyment and the correct answers I obtained from the questions I asked.'* (T4), *'... that's how I understood, when I asked the children the questions that they answered. And the feedback from parents as well.'* (T3).

THEME 3: SCIENTIFIC BASE OF METHODS

As a result of the content analysis, the third theme is determined as 'the scientific base of methods.' When asked questions about teachers' knowledge of scientific evidence, four sub-themes were determined as a result of their answers. The frequencies of 'none-scientific data, the use of suggested methods on the Internet and in lectures, the use of methods used by all in their class and researching which method is the best from different sources' sub-themes are included in Table 4.

Teachers have opinions about the scientific base of methods. Some of these opinions are as follows.

'... whether the methods we use are scientific or not does not really interest me. It is not so important to be scientific, when it comes to learning and achievement' (T5), *'... we got this training. We have learned which learning method is more effective.'* (T3) and *'From the internet.'* (T4), *'So I apply the method that all teachers work in their classroom.'* (T1), *'As I said, I am researching again, which is the best method? By looking at facts from various sources.'* (T7).

Table 4. Teachers' Knowledge of Scientific Evidence

Theme	Sub-themes	n	%
Scientific base of methods	Not interested in scientific evidence	3	37.5
	Use methods recommended on the Internet and in seminars	3	37.5
	Use the methods everyone uses in their class	1	12.5
	Researching which is the best method from different sources	1	12.5
TOTAL		8	100

THEME 4: CURRICULUM-BASED MEASUREMENT (CBM)

As a result of the content analysis, the fourth theme is 'curriculum-based measurement'. When teachers were asked how they evaluate Turkish and Mathematics lessons; they indicated making a written or verbal assessment and making the students read. When they were asked about how often they conduct the assessment; they answered that 'once a week, at the end of each unit and at the end of each lesson.' There are three sub-themes belonging to the theme of 'curriculum-based measurement'. These sub-themes are not knowing, making evaluations on the topics in the curriculum, and making written and verbal assessments. The frequencies of the teachers' responses are included in Table 5.

Table 5. Teachers' Knowledge of CBM

Theme	Sub-themes	n	%
Curriculum-based measurement	Not knowing	6	66.67
	Making evaluations on the topics in the curriculum	2	22.22
	Making written and verbal assessment	1	11.11
TOTAL		9	100

Teachers have opinions about how they evaluate Turkish and Mathematics lessons. Some of these opinions are as follows.

'I have no idea.' (T4), *'Evaluation of the issues we handle. I make an evaluation at the end of the unit; I make an evaluation that way.'* (T1), *'There are multiple-choice questions. There are true-false questions that require explanation.'* (T7).

THEME 5: PRACTICE FOR LOW PERFORMING

As a result of the content analysis, the fifth theme is 'practice for low performing'. When the teachers were asked about the practices they did when they realized that the students did not understand the subject, they provided various answers. 'Taking a break and repeating the topic, using a different method to retell the subject, developing extra materials, and retelling the topic using them and trying to understand where the problem is' are the practices of teachers. Seven sub-themes were determined for the main theme 'practice for low performing'. The sub-themes are repeating the subject, interact with the student individually, meet with the family, doing extra studies, making an assessment appropriate to the level of the student, intervening after determining the cause of the problem, and guiding students to read books. The frequencies of the teachers' responses are included in Table 6.

Table 6. Teachers' Practices for Low Performing Students

Theme	Sub-themes	n	%
Practice for low performing	Repeating the topic	6	33.33
	Working individually with the student	3	16.67
	Meeting with the family	3	16.67
	Doing extra study	3	16.67
	Making an assessment appropriate to the level of the student	1	5.56
	Intervening after determining the cause of the problem	1	5.56
	Guiding students to read books	1	5.56
TOTAL		18	100

Teachers have opinions about the practices for low performing students. Some of these opinions are as follows.

'I do something over and over again. I repeat the topic. I return after a while.' (T1), *'We prepare questions again according to the level of our students. Or we have individual studies for them.'* (T2), *'I also ask for support from their families by showing exactly what they cannot do for students with low performance.'* (T4), *'I'm doing additional studies.'* (T5), *'I meet with the children first. We are trying to find the cause of the problem. After that, if there is a big problem, we step in with the family. We are doing extra work. Determining what to repeat helps me identify things s/he doesn't understand. You know, I repeat from time to time. If it is about not understanding, then we have repetitions.'* (T9), *'I direct them to read more books. I already know that this is the biggest shortcoming.'* (T3).

THEME 6: CHARACTERISTICS OF STUDENTS RECEIVING SMALL GROUP INSTRUCTION

When the teachers were asked about their use of the small group instructional method in their classrooms, five teachers indicated using small group instruction while four teachers mentioned that they are not using small group instruction in their classrooms. As a result of the content analysis, the sixth theme is 'characteristics of students receiving small group instruction'. Four sub-themes were determined for this theme. These sub-themes are students with disabilities, students who have trouble reading and/or comprehension, refugee students, and students who have not come to school for a long time. The frequencies of the teachers' responses are included in Table 7.

Table 7. Characteristics of Students Receiving Small Group Instruction

Theme	Sub-themes	n	%
Characteristics of students receiving small group instruction	Students with disabilities	2	33.33
	Students who have trouble reading and/or comprehension	2	33.33
	Refugee students	1	16.67
	Students who have not come to school for a long time	1	16.67
TOTAL		6	100

Teachers have opinions about the characteristics of students who have been provided small-group instruction. Some of these opinions are as follows.

'We work to train those with learning difficulties from autistic students to other students.' (T8), *'I do it for children with reading and comprehension difficulties.'* (T1), *'I teach one-on-one with my refugee students. Also, illnesses occur frequently during some periods. For example, there are those who do not come regularly. When the student comes to school, I immediately complete the lessons that they missed.'* (T5).

THEME 7: EFFECTIVENESS OF METHODS USED IN SMALL GROUP INSTRUCTION

As a result of the content analysis, the seventh theme is 'effectiveness of methods used in small group instruction'. When teachers were asked about the methods, they used in small group instruction; they indicated that repeating topics, question-answer, gamification, direct instruction, peer instruction, and involving students in the process. When they were asked about how they understood if their methods were effective, they gave various answers. Four sub-themes were determined for the theme 'effectiveness of the methods used in a small group instruction'. The sub-themes are reassessing and evaluating the progress, based on student feedback, and based on improvements in students' attention, and when reaching the classroom level. The frequencies of the teachers' responses are included in Table 8.

Teachers have opinions about the effectiveness of the methods teachers use in small group instruction. Some of these opinions are as follows.

'By doing small individual exams for them again, I assess whether they have learned or not.' (T2), *'Their reading speeds are up, for example, they become more active in understanding. They used to understand the subject after I had told them twice. Now for example, I explain it once, and they complete the task. I feel like I see the benefits that way.'* (T1), *'I defined it according to the success of the students. That is, depending on whether he/she has achieved the same level as the other students in the class.'* (T8).

Table 8. Teachers' Opinions About the Effectiveness of the Methods They Use in Small Group Instruction

Theme	Sub-themes	n	%
Effectiveness of methods used in small group instruction	Reassessing and evaluating the progress	2	40
	Based on the student feedback	1	20
	Based on improvements in students' attention	1	20
	When reaching classroom level	1	20
TOTAL		5	100

THEME 8: CHARACTERISTICS OF STUDENTS RECEIVING ONE-ON-ONE INSTRUCTION

The eighth theme resulting from the content analysis is 'characteristics of students receiving one-on-one instruction'. When teachers were asked if they lectured one-on-one students, eight of them answered 'yes, I did', one of them answered 'no, I didn't'. The teachers who lectured one-on-one were asked about the characteristics of the students, and then four sub-themes were identified.

The sub-themes are students with disabilities, students below the grade level, students above the grade level, and students having difficulty expressing themselves. The frequencies of the teachers' responses are included in Table 9.

Table 9. Characteristics of Students Who Receive One-On-One Instruction

Theme	Sub-themes	n	%
Characteristics of students receiving one-on-one instruction	Students with disabilities	5	45.5
	Students below the grade level	4	36.4
	Students above the grade level	1	9.05
	Students having difficulty expressing themselves	1	9.05
TOTAL		11	100

Teachers have opinions about the characteristics of students receiving one-on-one instruction. Some of these opinions are as follows.

'I lectured my mainstreaming students one-on-one.' (T4), *'...I need an individual study. Others also made progress, for example, last year they became literate, learned letters. But if this student didn't yet, he/she already shows herself/himself that there is a problem with this him/her.'* (T2), *'There are many gifted students in my class who want to solve extra questions much above the level of the classroom... I often sit down and solve extra questions together with those students.'* (T3), *'I lectured one-on-one to a student with forgetfulness and speech difficulties.'* (T6).

THEME 9: EFFECTIVENESS OF METHODS USED IN ONE-ON-ONE INSTRUCTION

As a result of the content analysis, the ninth theme is 'effectiveness of methods used in one-on-one instruction'. When teachers were asked about the methods they used in one-on-one instruction; they answered that they use question-answer, direct instruction, gamification, and peer instruction. When they were asked about how they understood if the methods are effective, some of the teachers answered they evaluated first and saw that the methods were effective. Some of them answered that they think it's effective without evaluation. Two sub-themes have been established and the sub-themes are focused on evaluations and assumptions. The frequencies of the teachers' answers are included in Table 10.

Table 10. Teachers' Opinions on the Effectiveness of the Methods They Use in One-On-One Education

Theme	Sub-themes	n	%
Effectiveness of methods used in one-on-one instruction	Based on assessments	4	57.2
	Based on assumptions	3	42.8
TOTAL		7	100

Teachers have opinions about their determination process about the effectiveness of the methods they use in one-on-one instruction. Some of these opinions are as follows.

'I found that the methods I used were generally very effective. We evaluated whether it was effective or not with our guidance teacher by calling the student to the guidance room every month. I think this is very effective. S/he started to feel confident. Until the first grade and even half of the second grade, his/her disharmony has completely disappeared, he/she is now in harmony with his/her friends.' (T6), *'I think one-on-one training is very effective. But while dealing with students in the classroom, I cannot do one-on-one instruction with mainstream students.'* (T4).

THEME 10: THE PROCESS OF IDENTIFYING SPECIFIC LEARNING DISABILITIES

When teachers were asked about Response to Intervention, all the teachers answered that they have never heard it. So, these interviews were the first time that those participants heard the term Response to Intervention. As a result of the content analysis, the tenth theme is 'the process of identifying specific learning disabilities.' Six of the teachers took part in the diagnosis of the student

but only five of the teachers expressed their opinions about the conclusion process of the student's specific learning disability. Three sub-themes were determined for this theme. The sub-themes are different from other students, very low performance in class, and 'not willing/doing requested tasks.' The frequencies of the teachers' answers are included in Table 11.

Teachers have opinions about their conclusion process of the student's specific learning disabilities. Some of these opinions are as follows.

'I noticed it in the first 10 days of starting school. Because he was a very different student.' (T6), *'We did not make any progress in 1st grade. S/he never learned the letters. At the beginning of the 2nd class, I directed her/him to Guidance and Research Center. Her/his learning level was very, very backward, s/he immediately forgot what s/he learned, could not express herself/himself.'* (T4), *'I was asking why. S/he was saying s/he loved the school and the lessons, and s/he was happy to come to school. But when it came to read, something was happening, I mean there was something pushing the student away.'* (T1).

Table 11. The Process of Teachers to Conclude That the Student Has Specific Learning Disabilities

Theme	Sub-themes	n	%
The process of identifying specific learning disabilities	Different from other students	2	40
	Very low performance level in class	2	40
	Not willing/doing requested tasks	1	20
TOTAL		5	100

THEME 11: DIFFERENTIATION BEFORE REFERRAL TO EVALUATION FOR SPECIFIC LEARNING DISABILITIES

The last theme that content analysis yielded is 'differentiation before referral to evaluate specific learning disabilities'. Six of the teachers expressed their opinions on this subject because they took part in the diagnosis of the student. Some of the teachers stated that they made differences in the teaching process before the student was diagnosed. Some others stated that they directed the student to be diagnosed without making any difference. Five sub-themes were determined for this theme. The sub-themes are working individually with the student, no differentiation, making extra interesting for the student, using images and materials, and using peer instruction. The frequencies of the teachers' responses are included in Table 12.

Table 12. Teacher's Status of Differentiating the Teaching Process Before Referring Students Who Have Specific Learning Disabilities

Theme	Sub-themes	n	%
Differentiation before referral to evaluation for specific learning disabilities	Working individually with the student	2	33.3
	No differentiation	1	16.6
	Making extra interesting for the student	1	16.6
	Using more images and materials	1	16.6
	Using peer instruction	1	16.6
TOTAL		6	100

Teachers have opinions about making changes in teaching before guiding the student to be diagnosed. Some of these opinions are as follows.

'I worked individually with that student; I already knew that the student was not at the grade level. That's why I turned a little more towards individual instruction.' (T2), *'For example, I was more interested so that s/he would love to read and like me. If I was interested 2-3 minutes with other children, I was interested in her/him for 5 minutes or until s/he finishes.'* (T1).

DISCUSSION, CONCLUSION AND IMPLICATIONS

In this study, the opinions of teachers on the intervention process for students with SLD and their level of information on the Rtl model and its components has been assessed. Overall, results indicated that Turkish classroom teachers do not know the Rtl model, but they integrate some components of the model into their instruction in a limited way. Besides, teachers are not aware of the importance of scientifically based instructional methods and interventions.

The findings of this study revealed that teachers mostly believe that the instructional curriculum has been scientifically developed but some teachers are not interested in the scientific evidence of the curriculum and instructional methods. These findings support previous studies that yielded teachers' ignorance about scientifically based practices and their inability to use those practices in their classrooms (Gable, Tonelson, Sheth, Wilson, & Park, 2012; Jones, 2009; Stormont, Reinke, & Herman, 2011). Moreover, the current study has similar results with the literature in terms of the limited knowledge level of teachers and the utilization of scientifically based practices in classrooms (Alhossein, 2016). The reason behind the limited understanding and the employment of scientifically based practices may be because of inadequate teacher training programs in terms of gaining a knowledge base regarding the scientific background of instructional practices and curriculum, and getting equipped with scientifically based instructional methods, to accommodate students with special needs in inclusive classrooms.

Furthermore, this study has shown that Turkish classroom teachers provide support for low-performing students but are also limited to re-teaching practices. These results are in line with the findings of previous studies in terms of the teachers' approach to providing extra support for students with low performance usually by offering additional instructions (Ekstam, Linnanmäki, & Aunio, 2015; Konstantopoulos & Sun, 2012). Especially, students with special needs may require various types of support in inclusive classrooms (Thousand & Villa, 2005). Although providing some type of support can be considered important for struggling students in the classroom, teachers' limited knowledge about different types of support for low performing students as well as students with special needs in inclusive classrooms may be due to insufficient theoretical and practical knowledge about individualization and differentiation of instruction.

In terms of the instructional approach, this study has shown that teachers prefer small groups and one-on-one instructions with their students with special needs. This finding is parallel with the literature in terms of the importance of small group instruction for students with special needs to meet their educational needs and the critical importance of one-on-one instruction for students with more intense educational needs (Collins, Gast, Ault, & Wolery, 1991; Fuchs & Fuchs, 2006; VanDerHeyden & Burns, 2010). Teachers' statements about using small group and one-on-one instruction with students with special needs can be considered positive in terms of inclusive classroom atmosphere in Turkish schools. However, the implementation of instructional practices should be evaluated in terms of adequacy and fidelity for effective implementations.

According to the findings of this study, teachers in Türkiye use a limited number of teaching and assessment methods (e.g., direct instruction, cooperative learning, peer tutoring, formative assessment, evaluation, and providing feedback) in their classrooms. This result shows that teachers do not embrace some evidence-based practices for inclusive education including metacognitive strategies, concept mapping, reciprocal teaching, and functional behavioural analysis (Hornby, 2014). Moreover, the current study yielded that, teachers use smart boards in their classroom and their technology use is usually limited to these boards. This finding supports the literature on the use of technology for students with special needs (Alammary, Al-Haiki, & Al-Muqahwi, 2017; Chmiliar, 2007; Copley & Ziviani, 2004; Sydeski, 2013). The reason for not being able to utilize various evidence-based practices and different assistive technologies that support inclusive education may be insufficient

practical knowledge about evidence-based practices and assistive technologies to facilitate inclusion, and not being able to access various assistive technologies.

Furthermore, findings of the current study indicated that teachers evaluate the effectiveness of their instruction with limited and subjective resources including feedback from students and personal assumptions. These findings are contrary to the literature on using various approaches for assessment in small group teaching (Gillies, 2007). Although teachers in Türkiye evaluate their instruction in limited ways, the process of the evaluation also sounds vague. The reason that teachers in Türkiye cannot extensively and systematically evaluate their instruction may be related to the limited knowledge about assessment and evaluation, especially in inclusive classrooms.

As an important finding of this study, the majority of participating teachers in Türkiye have no idea about CBM. On the contrary, Yell, Deno, & Marston (1992) indicated that teachers are familiar with CBM. Furthermore, Eckert, Shapiro, & Lutz (1995) concluded that both special education and general education teachers widely use CBM. According to the current study results, teachers who have an idea about CBM stated that they conduct assessments about topics in the curriculum. Although teachers indicated using evaluations to make decisions, their evaluation process is unclear. The reason behind this unawareness of CBM may be teacher training programs in Turkish universities. There aren't any courses focused on CBM or any other specific measurement, especially regarding inclusive practices and students with special needs. In addition, as aforementioned, there is not a multi-tiered intervention model in Türkiye. Therefore, teachers do not need any systematic measurement about the curriculum, and they do not know anything about CBM.

Based on the results of the study, teachers who took part in the diagnosis process specified specific criteria before referring to special education assessment. Similar findings have emerged in terms of the decision of teachers for special education referrals (Dunn, Cole, & Estrada, 2009; Smeets & Roeleveld, 2016). In addition, the majority of teachers also stated they made some differentiations before they refer students to special education services. In general, teachers who made differentiation expressed that they spent more time with students and provided extra support for them. Young & Gaughan (2010) reached similar results to this study. In their study, a pre-referral team recommended several pre-referral intervention types to teachers and teachers selected pre-referral interventions that suit them. Some of the most common and preferred pre-referral interventions were similar to this current study. Even though teachers have no idea about RtI, they implement some components of RtI.

LIMITATIONS

There are several limitations that may impact the interpretation of findings and discussion of this study. The first limitation of this study is the number of participants. There was a total of nine participating teachers in this study. Furthermore, another limitation is having participants from one province of Türkiye. All participating teachers were working in central schools in Eskisehir province. Moreover, having only teachers with 15 years and above teaching experience, as participants is another limitation of this study. Newly graduated classroom teachers usually do not work in city centers and therefore they were not participants in this study.

CONCLUSION

In conclusion, this study indicates that Turkish elementary school teachers who participated in this study are not aware of RtI and its components but some of them implement some components of RtI unconsciously. Since the MoNE is planning to start implementing RtI in Turkish schools to improve the quality of inclusive education and spread those implementations throughout Türkiye, teachers need to be well trained regarding all components and implementation steps of RtI. Furthermore, participating teachers are not well equipped in terms of knowledge about research-based practices and questioning the research base of the curriculum as well as instructional methods. Moreover, students with special needs, especially with learning disabilities, are not well recognized and supported

by their teachers in terms of early diagnosis as well as early intervention. Because all students with learning disabilities are enrolled in inclusive schools and there is no special school for those students, it is vital that teachers in regular education understand and intervene with those students with learning disabilities. Overall, this study highlights the importance of extensive training of teachers during pre-service as well as in-service in terms of students with learning disabilities, effective inclusive practices, and multi-tiered intervention procedures, such as the RtI process.

IMPLICATIONS FOR PRACTICE

This study's findings yielded several implications for educators, administrators in MoNE, and policy development. First of all, educators need to expand their awareness with students with special needs, especially with learning disabilities, and research-based practices in inclusive education, including multi-tiered interventions, such as RtI. Since the inclusion of students with special needs has become a widespread implementation in the Turkish education system, it is inevitable to confront students with special needs for teachers in regular education, especially for classroom teachers in elementary education. Teachers should seek and demand in-service training regarding the aforementioned topics and teacher candidates should also take more classes during their college years regarding students with special needs as well as inclusive practices. Teachers can also pursue an education that yields certificates and graduate degrees in inclusive practices. Furthermore, teachers need to regularly follow updates on recent research on teaching students with special needs in inclusive environments by reading new publications and research journals in the field.

In terms of administrators in MoNE, all general directorates should work in coordination and focus on improving the quality of inclusive education at all levels of the education system. Initially, administrators need to increase types as well as the quality of inclusive education support for teachers and students. MoNE should assign at least one special education and/or inclusive education expert/teacher to all schools as the coordinator of inclusive education. In fact, the number of coordinators can be arranged according to the number of students with special needs in the school. These coordinators need to provide support for teachers in terms of various inclusive practices as ideas and hands-on implementations. In addition, these coordinators can provide resource room support for students with special needs. Furthermore, administrators in MoNE should develop research projects with experts in special education and inclusive education to improve the quality of inclusive practices in Türkiye. These projects may focus on improving teacher's awareness on inclusive education as well as developing a multi-tiered intervention model for inclusion in line with the dynamics of the Turkish education system. In addition, the administrators in MoNE should form various resources, including handbooks, booklets, etc. regarding students with special needs and inclusive education for teachers to apply.

The policy is the center for inclusive practices and policymakers in MoNE need to establish various policies that need to formulate more inclusive practices and outline the details of effective inclusive education in Türkiye. First of all, there should be a separate regulation in terms of inclusive education in Türkiye. In regulations related to inclusive education, research-based practices as well as multi-tiered intervention models, including RtI, should be more emphasized and outlined in detail. Secondly, policymakers need to establish new regulations about inclusive education support systems in regular education. There is an urgent need for policy in terms of special education coordinators in inclusive schools, co-teaching in inclusive classrooms, resource room support, and support for struggling students without disabilities.

FUTURE RESEARCH

This study was conducted with nine teachers working in Eskisehir province in Türkiye. In addition, those participants were classroom teachers working in 1-4 grades. In fact, more studies need to be conducted regarding the teachers understanding about inclusive practices as well as multi-tiered interventions, including RtI with teachers from various provinces in Türkiye. Furthermore, since the

participants of this study were relatively experienced teachers, future researchers may replicate this study with newly graduated or less experienced teachers. In addition, the implementation of teachers in inclusive education needs to be extensively researched. Besides, studies using different technologies and technological tools can be planned on the teaching of students with special needs in inclusive classrooms.

Moreover, teacher assessments in inclusion are critically important for the quality of inclusive education and more in-depth research is needed about the assessment and evaluation process in inclusive classrooms and assessment skills of teachers. In addition, research needs to be conducted to improve teacher background as well as an approach regarding research-based practices in inclusion. Furthermore, various training needs to be developed regarding inclusion and multi-tiered interventions, including RtI, for Turkish teachers in regular education and studies need to be conducted to evaluate the impact of those training on teacher knowledge as well as implementations. Additionally, in order for the special education referral process to be more systematic, there should be a multi-tiered intervention model that fits the Turkish education system. Researchers should conduct a study on developing a multi-tiered intervention model in pilot schools as a case study.

AUTHOR CONTRIBUTIONS

- The first author made significant contributions to the design of the study, the structuring of all parts of the manuscript, and the analysis of the data.
- The second author made important contributions to data collection, analysis and drafting of the manuscript.
- The third author has made important contributions to data analysis and drafting of the manuscript.
- The fourth author has important contributions to data collection, introduction, and methods sections of the manuscript.

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Analysis of Dialogic Reading's Effects on Primary School 4th Graders' Views on Values Education and Attitudes towards Reading

Ergün Yurtbakan, Assist. Prof. Dr., Yozgat Bozok University, Türkiye, ergun.yurtbakan@yobu.edu.tr

 0000-0001-8811-6320

Onur Batmaz, Assist. Prof. Dr., Yozgat Bozok University, Türkiye, onur.batmaz@yobu.edu.tr

 0000-0001-9208-2645

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Abstract

The present study carried out to assess dialogic reading's effects on 4th graders' views on values education, and attitudes towards reading based on a quasi-experimental design with pre-test, post-test, and control group. The study group was comprised of 4th graders in a primary school in Yozgat province, Turkey, in 2021-2022 academic year. Data collection tools were the "Reading Attitude Survey" and the "Student Opinions Survey on Values Education". Mann Whitney U and Wilcoxon Signed Rank tests were used to analyze data. The results revealed that dialogic reading led to statistically significant differences in the views of 4th grade students about values education compared to traditional reading. However, no significant difference was found in children attitude towards reading.

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INTRODUCTION

Dialogic reading can take place with the involvement of the family and the child, the teacher and the child, babysitter and the child, as well as the family, the teacher, and the child. Dialogic reading with foundations in the sociocultural theory was introduced by Whitehurst et al. (1988) for the first time. A child who engages in dialogic reading with the person(s) in her/his social circle can use of the experiences such person(s) may already have. In this context, dialogic reading requires multiple reads of a book, may involve questions before, during, and after the reading with the adult guiding the initially passive child to assuming the position of the storyteller (Graham-Doyle & Bramwell, 2006; Lonigan et al., 1999; Whitehurst et al., 1994). In dialogic reading, it is important for children to develop language and speaking skills, as they give them the opportunity to answer the questions asked by adults (Blom-Hoffman, O'neil Pirozzi & Cutting, 2006; Hargvare & Senechal, 2000). There are essentially two methods employed in dialogic reading, as the child gradually assumes the role of the storyteller, taking the place of the adult in the process. The first, one is the PEER method involving (P)rompting the child with questions to help better understand the book, (E)valuating the child's response, (E)xpanding on what the child said, and (R)epeating or revisiting the initial prompt. The second one is the CROWD method focus on (C)ompletion, (R)ecall, (O)pen-ended, (W)h- [who, where, why, when, what], and (D)istancing questions (Whitehurst, 1992; Zevenbergen & Whitehurst, 2003). These questions can be asked at any moment during the dialogic reading. In contrast, no questions are expected during the conventional reading process (Ergül, Sarica, & Akoğlu, 2016). Conventional reading involves a rather passive child and a more active adult, whereas in dialogic reading asking questions, telling the story and thinking about it, and even adding new pieces of information are the tasks assumed by the child, who gets to play a more active part (Lonigan et al., 1999). While there is not much interaction between the child and the adult in traditional reading, the level of interaction will be important in dialogic reading, as the name suggests (Dixon- Krauss et al., 2010). However, some guidelines can be considered to further increase the interaction level. First of all, during any dialogic reading process, the book should be read in an inviting and sincere environment, as if engaging in a conversation (Angeletti, Hall, & Warmac, 1996; Laboo, 2005). The focus in book selection should be on the quality rather than the quantity, with the child's requests and interests as well as level of development in mind (Guthrie & Davis, 2003; Kim & Hall, 2002; Scarborough & Dobrich, 1994). The books should be read by the adult alone, in advance of the reading with the child. Moreover, activities for specific purposes should be designed (Yurtbakan, 2022). Children should be seated so that they can see the book clearly (Ergül et al., 2016). Before commencing with the read, the adult should give children time to go review the book. The adult should say some words to introduce the author and have the children read the cover page, then discuss what the book might be about (Flynn, 2011). The use of gestures and mimics, and changes in the reader's tone are important. Even impersonations involving animation of the characters should be part of this process (Al-Otaiba, 2004; Vukelich, Christie, & Enz, 2014). The adults should explain the words that children do not know, and focus on the entertaining aspect of the process rather than educational one (Boit, 2010; Domack, 2005; Justice & Pullen, 2003; Whitehurst et al., 1994). Doing so helps the development of language, speech, reading, writing, mathematics, and communications skills of children.

Dialogic reading is also observed to have a positive effect on the children's attitude towards reading, as they develop literacy skills at an earlier age, as they learn about the figures, numbers, and letters (Er, 2016; Ergül et al., 2016; Vally, 2012). This experience enhances the children's willing and interest in reading, as they assume an active rather than passive position throughout the reading experience (Ganotice et al., 2017). Thus, the children discover the entertaining and enjoyable qualities of reading as a form of learning (Er, 2016). Therefore, providing an active role to children in the dialogic reading process is expected to lead to a positive effect on their attitudes towards reading. Because the attitudes are crucial in the behavior accusation process of the child, as well as the development and continuation of the behavior later on. The learning process is the one, in which attitude towards

reading play the most decisive role. The learning experience is the experience that the child acquires from her/his environment, along with the readings she/he makes throughout her/his education and social life. Therefore, the child should be able to utilize a robust infrastructure to reinforce every piece of knowledge acquired. Such an infrastructure could benefit from positive attitude towards reading. Indeed, children who like reading do more of it, with their attitudes and willingness towards reading contributing significantly to the development of their reading skills. In this process, the behaviors, which the child develops in the context of the family, the environment, and the school are effective in establishing the foundations of such attitudes. That is why efforts and activities on reading should be paid attention and diligently analyzed (Karahan, 2018; Wilson & Casey, 2007). A learning-teaching process focused only on cognitive or psychomotor skills does not help the child in developing affective skills such as attitudes or values. Shortcomings in the development of such skills, in turn, will make social bonding and sharing common goals harder. In this context, helping children acquire the values associated with affective behaviors from early ages on, is most crucial (Yazıcı, 2006).

Values refer to mental concepts in the affective domain guiding and influencing our thoughts and actions (Demircioğlu & Tokdemir, 2008). Furthermore, values play a rather crucial role in shaping and guiding social and personal behaviors of an individual, and affect the operation of social institutions. While there are no clear instructions on what to do in certain situations, they do provide guidance for the right action (Erkenekli, 2013; Gudmundsdottir, 1990). Aydın and Akyol Gürlü (2013) state that in recent years, values have begun to be ignored in societies. As a result of this, he states that violence and judicial crimes increase in society, family institutions weaken, work ethic decreases, parents and teachers are opposed, personal and social responsibility awareness decreases, and the social environment structures of young people change. Values education is deemed crucial in overcoming or minimizing these issues. Tillman (2000) also notes that effective and efficient values education is the route to be taken by the families and educators in many countries, in their quest to overcome these problems hurting social order. It is assumed that education leads to the individual to be aware of certain values, develop and embrace new ones, shape her/his personality in the light of these values, and exhibit such values through her/his behavior. This kind of education is called values education (Yeşil & Aydın, 2007). Values education is about more than learning information, and entails an approach focusing on emotions and behaviors as well. In this sense, the values education programs applied today at schools mostly focus on internalizing values (Turan, 2014). Children books designed with values education in mind are deemed to play an important part in internalizing values. For example, the child is able to ascribe meaning to and internalize the values presented in these books through the reading process. Indeed Kasapoğlu (2013) is also indicated that children books providing awareness about the concept of right and wrong and containing references to universal values can influence the behavior, thoughts, perspectives, and attitudes of children, and help them learn and internalize universal values. A careful selection of the children books written for values education, discussion of the values based on questions, which are indispensable elements of dialogic reading, before, during and after the reading process, and the use of impersonations, designs, slogans, poems, and posters during the reading process will play an important part in instilling in the values. These books can help children easily develop concrete grasps of the values in their minds.

Studies so far investigated dialogic reading's effects on primary school students' comprehension and fluent reading skills as well as their motivation to read (Yurtbakan, 2022; Yurtbakan, Erdoğan & Erdoğan, 2021). However, no assessment of their attitudes towards reading was carried out. Moreover, no study to date tried to analyze the effects of dialogic reading on values education (Kotaman, 2008; LaCour et al., 2013; Lever & Senechal, 2011; Sperling & Head, 2002), even though its effects on preschool students' attitudes towards reading drew some attention in literature. Against this background, the present study is expected to fill out this gap in the literature, and shed light for subsequent studies on this matter.

PURPOSE OF THE RESEARCH

This study is designed to provide an analysis of dialogic reading’s effects on 4th graders’ views on values education and attitudes towards reading. In this context, the following questions were investigated:

1. Is there a significant difference between the 4th year primary school students’ views on values education, prior to and after dialogic reading and conventional reading?
2. Is there a significant difference between the 4th year primary school students’ attitudes towards reading, prior to and after dialogic reading and conventional reading?

METHOD

RESEARCH DESIGN

In an effort to assess dialogic reading’s effects on 4th year primary school students’ views on values education and attitudes towards reading the present study employed a quasi-experimental design with pre-test, post-test, and control group. The pattern is designed with two groups based on random sampling. First group is called the experimental group, and the second is called the control group. Both groups undergo through processes of assessment prior to and after the experiment, under the same circumstances (Karasar, 2020). In this study, this research pattern is employed to provide an analysis of dialogic reading’s effects on primary school 4th graders’ views on values education and attitudes towards reading.

SAMPLE

The study group is comprised of 4th graders in a primary school in the province of Yozgat, in the 2021-2022 academic year. A primary school was selected through random sampling, to provide the experimental and the control group. This sampling technique is based on the selection of participants randomly from a universe of a specific size (Christensen, Johnson, & Turner, 2015). The experimental group is comprised of 26 students enrolled in 4th year of primary school, whereas the control group is comprised of 25 students. More than three-quarters of the mothers and fathers of students in both the experimental and control groups are primary or secondary school graduates. All of the mothers in the experimental and control groups were mothers with low socio-economic income, and not working. In addition, their fathers were self-employed. The findings are presented in Table 1.

Table 1. Results of Mann Whitney U test between the Groups, for Values Education

Scales	Sub-Dimensions	Group	n	Mean Rank	Sum of Ranks	U	z	p
Values	-	Experimental	26	23.52	611.50	260.500	-1.223	.22
		Control	25	28.58	714.50			
Reading Attitude	Fun	Experimental	26	22.29	579.50	228.500	-1.831	.07
		Control	25	29.86	746.50			
	Academic	Experimental	26	22.21	577.50	226.500	-1.867	.06
		Control	25	29.94	748.50			
Total		Experimental	26	21.85	568.00	217.000	-2.040	.04
		Control	25	30.32	758.00			

Mann Whitney U test was applied to check whether the students in the experimental and the control groups were comparable in terms of their views on the values education and attitudes towards reading. Mann Whitney U test is used instead of the independent t test in bivariate cases where the sample size is less than 30. In addition, in cases where the number of samples is less than 30, the normal distribution of the scores is evaluated with the Shapiro-Wilk test (Can, 2017). In this study, it is seen that the values education scores of the control group are not normally distributed according to

the Shapiro Wilk test in the pre-test (see Table 3). The results revealed that the groups were comparable in terms of views on values education, but not so in terms of their attitudes towards reading. The students in the control group, compared to their peers in the experimental group, were found to have more positive attitudes towards reading. It was impossible to apply the ANCOVA test as the data did not meet the criteria required statistically significant relationship between the pre-test and post-test scores obtained through both surveys. In cases where the prerequisites for ANCOVA are not met, independent samples t-test can be applied to test the significance of the post-test scores of the experimental and the control groups, provided that the sample count is larger than 30 (Öner-Sünkür & Arıbaş, 2020). As the number of students in both groups were lower than 30 in the present study, Mann-Whitney-U Test was applied for the two groups, as a non-parametric test. Moreover, Wilcoxon Signed Rank Test was applied to determine the level of significance of the effect of conventional reading with the control group, and dialogic reading with the experimental group, in terms of instilling in the values and attitudes among the students.

DATA COLLECTION

The data collection tools used in the study are the “Reading Attitude Survey” adapted to Turkish language by Kocaarslan (2016), and the “Student Opinions Survey on Values Education” developed by Çengelci, Hancı, & Karaduman (2013).

ATTITUDE SCALE TOWARDS READING

The scale is composed of a total of 20 items, covering two sub-scales –entertainment and academic–, each associated with 10 items. The scale is organized around four distinct states of emotion of the cat character named “Garfield” created by Jim Davis. Those states of emotion are represented with “very upset”, “mildly upset”, “slightly happy” and “very happy” Garfield images. The students are asked to choose only one of the images, culminating in a scoring in the 1 to 4 range. After obtaining the necessary permission from the developers of the scale, the scale was translated from English to Turkish by two translation experts. Then, it was presented to the opinion of three academicians who are the experts in the field of educational psychology and reading education, and arrangements were made on translation errors and cultural equivalents of the concepts in line with the suggestions. Then, it was translated from Turkish to English by the experts and the first version of the scale was compared with the final version. As part of its adaptation to Turkish language, the survey was subjected to confirmatory factor analysis. The analysis revealed that the chi-square value was significant ($\chi^2=311.64$, $N=289$, $p=.00$) while the χ^2/df ratio was less than 5. Other fit index values were RMR=.05, RMSEA=.05, NFI=.93, CFI=.89, IFI=.97, GFI=.89, and AGFI=.90 (Kocaarslan, 2016). The *Cronbach’s Alpha* for the survey was found as .82 with respect to reading for entertainment purposes, .78 with respect to reading for academic purposes, and .88 for the whole survey.

QUESTIONNAIRE FOR DETERMINING STUDENTS’ VIEWS ON VALUES EDUCATION IN SCHOOL ENVIRONMENT

The survey designed for students in 4th to 8th grades is comprised of two parts. The first part is about the students’ personal characteristics, while the second one is comprised of items to determine the students’ views on the values education at school. The survey items offer three choices as answers: “I disagree (1)”, “I’m undecided (2)”, and “I agree (3)”. Experts were consulted for the survey’s validity and reliability assessment. There are 20 questions in the value scale and minimum 20 and maximum 60 points are taken from the scale. The survey was piloted with 40 students as a first stage implementation, leading to a reliability factor of .88 (Çengelci, Hancı, & Karaduman, 2013).

The scales were applied students three times to compare dialogic reading and conventional reading in the context of their attitudes towards reading and their views on values, and to assess the retention of the effects.

IMPLEMENTATION PROCESS

The first step was selecting a book. The book selection was based on the criteria developed by Yurtbakan, Erdoğan, and Erdoğan (2021) for the selection of books suitable for dialogic reading. These criteria include the book's contents being compatible with the interests and needs of the students, the pictures and the events in the books being appropriate to the characteristics of the students, considering the special circumstances which may be of concern for the student (fears, death, divorce, separation etc.), consistency with the criteria pertaining to the students' availability, and facilitating creative thinking and imagination of the students.

Once the books were chosen, two experts specialized in early reading and writing who had prior experience with dialogic reading were consulted, to assess the books' compatibility with the criteria provided above. Following positive feedback by the experts, dialogic reading activities were designed for each book thus chosen. The activities thus formulated were presented to the same two experts for review. Then the activities were prepared for implementation, in line with the recommendations by the experts. The dialogic reading activities designed to enhance the students' attitudes towards reading, and to improve their intake of the values presented, were completed through a period of eight weeks, with one activity to take place per week.

The activities took, on average, two hours of class (80 minutes), and were carried out by the students' own primary teachers, with one researcher acting as an observer. Before the activity began, the researchers provided the primary teacher to carry out the activity, with a seminar on what dialogic reading is, and how it should be carried out. Activities carried out in the context of Yurtbakan (2022) and Yurtbakan, Erdoğan, and Erdoğan (2021) were reviewed, culminating in the practice of having a book read dialogically by the primary teacher accompanied by 2 researchers, prior to the actual activity of the teacher reading it dialogically with the students. Moreover, following the dialogic reading with the students, the researcher who observed the activity provided recommendations to the teacher.

Questions about the book are permitted before, during and after the dialogic reading. These questions are completion, recall, open-ended, wh-, and distancing questions. Before commencing with the reading, the students are given an opportunity to examine the front and back covers of the book, and asked to voice their opinions on what the book may be about. Finger plays, riddles, and rhymes about the subject matter of the book can also be used. The teachers ensured guidance students with questions during the reading of the book. However, once the students get actively involved, they can also begin to ask questions to their peers, about the book. Reading plays and animations can be used with the book which undergoes shared reading by the students. During the reading activity, the words the students do not know are explained. Then, the students are given the opportunity to use those words in new sentences they come up with. Sometimes (particularly at the end of pages) the reading is paused, to ask questions about how the story can proceed and what can happen to the elements of the story, so as to facilitate a connection between the events taking place in the book and the student's own life, and helping the students notice the similarities and differences between the book's characters and the students and their close circles. Such questions can also push students to coming up with authentic solutions to the problems encountered in the book. Following the read, the students can be asked what they think about the subject matter and the central theme of the book, any alternative title they may propose, the part they liked most in the book, and if they wish to change any part of the book. Moreover, design activities can also be carried out with respect to the subject matter of the book. As the study is also about the values education of the students, they were given tasks to perform throughout the week, about the specific value covered in the book which was read dialogically. Examples of such tasks include donating unused clothes at home to someone in need in the context of the solidarity value; sharing the pastries baked at home, with the neighbours; helping an elderly with heavy bags he is carrying; or helping the child's parents with the tasks at home.

In the control group observed by the other researcher, on the other hand, the teacher had the story read conventionally, with the task shared among the students. The teacher asked the students to take note of the words they did not know, and had the students find those words from the dictionary and use them in sentences after story reading was completed. The conventional reading activity was completed with the teacher asking questions about the elements of the story. The books read through dialogic reading in the study are presented in Table 2.

Table 2. *Details of the Books read Through Dialogic Reading*

<i>Weeks</i>	<i>The title of the book</i>	<i>Author</i>	<i>Value</i>
1	Nobody Will Be Cold This Winter	Feridun Oral	Solidarity
2	I'm not a Chair	Ross burach	Respect
3	Beast of love	Rachel bright	Love
4	Like you	Jan Fearnley	Responsibility
5	Giraffe Storage Guide	Michelle Robinson, Claire Powell	Hospitality
6	There is A Lion in My House	Jim Helmore, Richard Jones	Friendship
7	Here, I am	Stephanie Moss	Self-control
8	Courage Chest	Sharmin Yasar	Bravery

VALIDITY AND RELIABILITY

Before commencing with the study, the ethics board’s approval was obtained, along with permission from the families of the children acting on behalf of the children. Also, information was provided to the students in the control group and the experiment group about the goal of the study. The preparations for the study, ranging from the selection of the books to the activities designed for the dialogic reading process were carried out with experts on the matter. When choosing the books, those to instil in various values in line with the purpose of the study, covering a topic to have positive effects on the students’ attitudes towards reading, enriched with imagery, easy to read, and finally, in a style the students are accustomed to read. With equal amounts of contribution by individual researchers, the study was carried out with comparable efforts in terms of the selection of the books, the design of the activities, and the observation of both the conventional and the dialogic reading groups. In addition, the students were asked to fill out surveys which had been previously subjected to validity and reliability assessment.

DATA ANALYSIS

In the first week, the students were given the reading attitude survey and the student opinions survey on values education at school, as a pre-test. Both surveys were applied by the primary teacher for the children, at different hours of the school day. At the time of answering the survey, the primary teacher read each and every question out loud, providing adequate explanations to the students if they needed. Then, the dialogic reading process continued for eight weeks. It was followed by the post-test comprised of both surveys. Three weeks after the post-test, the two surveys were once again applied with the students, as a retention test. The data obtained through the students’ views recorded in the reading attitude survey and the student opinions survey on values education were then subjected to descriptive analysis (arithmetic mean, maximum and minimum score, standard deviation, kurtosis and skewness). An attempt was made to apply the ANCOVA test to see if the results of the pre-test and post-test as well as the results of the post-test and the retention test were statistically significantly different. ANCOVA test is frequently applied to determine if the post-test scores of the control and the experimental groups differ significantly in studies involving pre-test and post-test (Büyüköztürk, 1998). However, to be able to apply the ANCOVA test, the covariate and the dependent variable should be related, the dependent variable scores should have a normal distribution, the groups should exhibit a homogenous structure, and the groups’ regression lines should exhibit similar slopes (Büyüköztürk, 2014; Can, 2017; Pallant, 2007). The data obtained through the student opinions survey on values education revealed no relationship between the covariate and the dependent variable ($p > .05$); whereas the reading attitude survey results did not exhibit a normal distribution of

the post-test results for the whole survey comprised of the entertainment and the academic sub-scales ($p=.00$, $p=.01$, $p=.049$). Therefore, it was impossible to apply the ANCOVA test as the data did not meet the criteria requiring statistically significant relationship between the pre-test and post-test scores obtained through both surveys. In cases where the prerequisites for ANCOVA are not met, independent samples t-test can be applied to test the significance of the post-test scores of the experimental and the control groups, provided that the sample count is larger than 30 (Öner-Sünkür & Aribaş, 2020). As the number of students in both the experimental and the control groups were lower than 30 in the present study, Mann-Whitney-U Test was applied for the two groups, as a non-parametric test. Moreover, Wilcoxon Signed Rank Test was applied to determine the level of significance of the effect of conventional reading with the control group, and dialogic reading with the experimental group, in terms of instilling in the values and attitudes among the students. Furthermore, the size of the effect was also assessed in cases found to be statistically significant. According to Cohen's eta squared classification, eta squared values (η^2) in the .01 - .06 ranges indicate small effect level, whereas values in the .06 to .14 range indicate medium effect level, and values equal to or higher than .14 indicate big effect level (Pallant, 2005).

FINDINGS

This section presents the quantitative analysis and statistical analysis results reached through the reading attitude survey and the student opinions survey on values education. The findings are presented in Table 3.

Table 3. Descriptive Analysis Results of the Pre-Test and Post-Test Results in the Values Education Survey

Groups	Test	N	Min.	Max.	Mean	Sd	Shapiro Wilk
Control	Pre	25	2.45	2.90	2.68	.15	.01
	Post	25	2.40	2.90	2.75	.14	.01
Experimental	Pre	26	2.40	3.80	3.30	.36	.07
	Post	26	2.70	3.90	3.35	.36	.00

Table 3 shows that the minimum score and standard deviation recorded for the control group in the post-test were lower, whereas the mean figure was on the rise. The experimental group, in turn, exhibited increases in minimum, maximum, and average scores in the post-test, with the same level of standard deviation.

The statistical significance produced within the group between the pre-test and the post-test by conventional reading applied with the control group and the dialogic reading with the experimental group, with respect to the values education for 4th year primary school students was also analyzed using Wilcoxon Signed Rank test. The findings are presented in Table 4.

Table 4. Wilcoxon Signed Rank Test for In-Group Effects on Values Education

Dimension	Pre-test, Post-test	n	Mean Rank	Sum of Ranks	z	partial η^2	p
Control	Negative	9	9.33	84.00	-1.897	-	.06
	Positive	15	14.40	216.00			
	Equal	1					
Experimental	Negative	2	11.50	23.00	-3.879	.76	.00
	Positive	24	13.67	328.00			
	Equal	0					

It is evident that the conventional reading activity carried out with the students in the control group did not produce statistical significance on its own ($p>.05$), whereas the dialogic reading carried out with the students in the experiment group led to a statistically significant change ($p<.05$). In terms of effect size, the significance can be considered substantial. Based on these figures, one can reach to the conclusion that conventional reading was not effective in the context of values education provided to the students, whereas dialogic reading was.

The significance of the change between the groups, with reference to the post-test scores obtained by the students in the context of the values education, was analyzed by using the Mann Whitney-U test. The findings are presented in Table 5.

Table 5. Results of Mann Whitney U test between the Groups, for Values Education

	Group	n	Mean rank	Sum of Ranks	U	z	Partial η^2	p
Values Education	Control	25	19.92	498.00	173.00	-2.886	.57	.04
	Experimental	26	31.85	828.00				

Mann Whitney U results indicate that the type of reading carried out in the context of the values education of the 4th graders caused a statistically significant ($p < .05$) change, in favour of the experimental group which received dialogic reading (31.85). The findings are presented in Table 6.

Table 6. Descriptive Analysis Results for Attitudes towards Reading

Sub-Dimensions	Groups	Test	N	Min.	Max.	Mean	Sd	Shapiro Wilk
Fun	Control	Pre-test	25	2.70	3.90	3.48	.31	.12
		Post-test	25	2.70	3.90	3.44	.28	.02
	Experimental	Pre-test	26	2.40	3.80	3.30	.36	.03
		Post-test	26	2.70	3.90	3.35	.36	.16
Academic	Control	Pre-test	25	2.60	3.90	3.46	.32	.11
		Post-test	25	2.50	3.80	3.46	.28	.00
	Experimental	Pre-test	26	2.60	3.90	3.28	.37	.44
		Post-test	26	2.50	3.90	3.38	.40	.01
Total	Control	Pre-test	25	2.95	3.85	3.47	.26	.10
		Post-test	25	2.60	3.80	3.45	.25	.00
	Experimental	Pre-test	26	2.60	3.75	3.29	.33	.18
		Post-test	26	2.80	3.85	3.37	.35	.04

A glance at the scores the control group received with respect to the attitudes towards reading, as presented in Table 6, indicates that the average and standard deviation for the attitudes towards reading suffered in the post test with respect to the entertainment sub-scale, whereas a fall was registered in the minimum, maximum, and standard deviation figures with respect to the academic sub-scale. The minimum, maximum, and standard deviation figures have been found to fall for the whole scale. Looking at the reading attitudes scores of the experimental group, one would discern increases in minimum, maximum, and average scores for the entertainment sub-scale of the attitudes towards reading survey, a fall in the minimum scores but an increase in standard deviation with the academic sub-scale, and an overall increase in minimum, maximum, average scores, and standard deviation for the whole survey.

The statistical significance produced within the group between the pre-test and the post-test by conventional reading applied with the control group and the dialogic reading with the experimental group, with respect to attitudes towards reading for 4th year primary school students was also analyzed using Wilcoxon Signed Rank test. The findings are presented in Table 7.

Table 7. Wilcoxon Signed Rank Test for In-Group Effects on Attitudes towards Reading

Dimensions	Groups	Pre-Post Test	N	Mean Rank	Sum of Ranks	z	Partial η^2	p
Fun	Control	Negative	13	12.46	162.00	-.741	-	.46
		Positive	10	11.40	114.00			
		Equal	2					
	Experimental	Negative	11	12.91	142.00	.554	-	.58
		Positive	14	13.07	183.00			
		Equal	1					
Academic	Control	Negative	11	11.77	129.50	-.098	-	.92
		Positive	11	11.23	123.50			
		Equal	3					
	Experimental	Negative	11	9.23	101.50	-1.389	-	.17
		Positive	13	15.27	198.50			
		Equal	2					
Total	Control	Negative	13	11.00	143.00	-.152	-	.88
		Positive	10	13.30	133.00			
		Equal	2					
	Experimental	Negative	11 th	11.59	127.50	-.943	-	.35
		Positive	14	14.11	197.50			
		Equal	1					

The conventional reading applied with the control group and the dialogic reading carried out with the experimental group did not lead to a statistically significant difference ($p > .05$) in the sub-scales and overall survey in terms of the development of the 4th year primary school students' attitudes towards reading, between the pre-test and the post-test.

The significance of the change between the groups, with reference to the post-test scores obtained by the 4th year primary school students in the context of attitudes towards reading, was analyzed using the Mann Whitney U test. The findings are presented in Table 8.

Table 8. Results of Mann Whitney U test between the Groups, for Attitudes towards Reading

Sub-Dimensions	Groups	n	Mean Rank	Sum of Ranks	U	z	p
Fun	Cont.	25	27.70	692.50	282.50	-.81	.42
	Exp.	26	24.37	633.50			
Academic	Cont.	25	26.84	671.00	304.00	-.40	.69
	Exp.	26	25.19	655.00			
Total	Cont.	25	27.30	682.50	292.50	-.61	.54
	Exp.	26	24.75	643.50			

Given the data in Table 8, no statistically significant difference exists between the scores for the control group and the experimental group in terms of the 4th graders' attitudes towards reading ($p > .05$). In this context, one can forcefully argue that, when compared against conventional reading, dialogic reading did not lead to a change in primary school 4th graders' attitudes towards reading.

DISCUSSION, CONCLUSION AND IMPLICATIONS

In this study, it was investigated the dialogic reading's effects on 4th graders' views on values education and attitudes towards reading led to the conclusion. The results revealed that dialogic reading had a highly effective in values education, but was not effective in altering attitudes towards reading.

Shortly put, dialogic reading has been found to be influential in the values education of 4th year primary school students. In other words, dialogic reading with primary school students through picture

books helps them gain values such as love, respect, cooperation, responsibility, hospitality, friendship, self-control and courage. It is seen that the effect of dialogic reading on the language and social skills of normal or developmentally retarded students in the pre-school period has been examined (Yurtbakan, 2020), but the effect of neither primary school nor pre-school students on values education has been investigated. Like children's picture books were used in dialogic reading in the study, Batmaz and Erdoğan (2019) also benefited from the case studies in children's books in their value education study and achieved positive results. The selection of books for use in dialogic reading to match the value intended to be instilled in, and the students talking about examples from their own lives in connection with the value highlighted in the book, through questions asked before, during and after the reading, can help with the cognitive aspect of values. Later on, the animation, design, and tasks related with the value covered in dialogic reading, such as sharing one's food with her/his neighbour, respecting the elderly, or helping elderly with carrying bags can help with the psycho-motor aspect of values. Finally, the emotions the student feels upon performing the task can help with the affective aspect of values (Akbaş, 2004). For, through the learning experiences, the students get acquainted with the shared values, which have to be introduced in early ages and which play an important part in keeping a nation alive (Çalışkur, 2010; Özbay & Karakuş-Tayşi, 2011). Therefore, in this study, the students' active involvement in the values education process through dialogic reading may have let them into an enjoyable and fun learning process, and brought about significantly higher post-test scores regarding the values education.

On the other hand, dialogic reading was not found to be influential on the 4th year primary school students' attitudes towards reading. In other words, the interactive reading practice with the students did not support the students to develop positive attitudes towards reading. Primary school students have low, medium and high reading attitudes (Chotitham & Wongwanich, 2014; Deveci-Taşçı & Tahiroğlu, 2022; Kuşdemir, 2019; McKenna, Kear & Ellsworth, 1995; Özdemir & Kiroğlu, 2021). The reasons for the differences in the levels of reading attitudes of primary school students; It may depend on the child's family reading books and newspapers, weekly visits to the library, doing homework/borrowing books/using the library to read (Durualp, Çiçekoğlu & Durualp, 2013). Studies investigating the effect of dialogic reading on reading attitudes include preschool children and improve reading attitudes of children in this period (Kotaman, 2008; LaCour, McDonald; Tissington & Thomason, 2013; Lever & Senechal, 2011; Sperling & Head, 2002). Although it has been stated that dialogic reading has an effect on shaping preschool children's attitudes towards reading, the reason why it is not found to be effective in changing the attitudes of 4th grade students towards reading is probably that the older group has already developed their reading skills and therefore, it does not have a significant effect (Kuşdemir, 2019; LaCour et al., 2013). A glance at the average attitudes towards reading exhibited by the students in the control group and the experimental group (see Table 5) reveals that all expressed already very positive attitudes towards reading. Indeed, the study by Özdemir and Şerbetçi (2018) also found that the vast majority of 4th year of primary school students had substantially positive attitudes towards reading. Other studies in the literature (Darican, 2014; Yavaş, 2013) also support these findings. The students' previous experience with reading activities with their own families in preschool years (Morrow & Young, 1997) and the fact that they have enjoyable reading activities with their teachers as they learn how to read (Baker, 2003) may have led to the development of reading attitudes in early ages. Against this background, the attitudes towards reading may not have more room to improve with an 8-week process of dialogic reading.

SUGGESTIONS

- Selection of books in tune with the values intended to be instilled in primary school students can help achieve positive results.
- Longer dialogic reading activities, lasting more than eight weeks as implemented in this study, can be designed to have a clearer effect on the students' attitudes towards reading.

- Designing activities to cover the cognitive, affective, and psychomotor skills of the students in the context of dialogic reading activities can facilitate the achievement of intended goals, such as the enhancement of values education.
- The dialogic reading activities found to be effective in the values education of 4th year primary school students may be analyzed with other age groups as well, including preschool children and students in earlier years of primary school.
- Studies focusing on a single variable, namely determining the exact effects of dialogic reading on the 4th year primary school students' attitudes towards reading, can be in order.

AUTHOR CONTRIBUTION

In this study, the researchers contributed equally to the selection of the books, the preparation of the applications, and the observation of the interactive or traditional reading class.

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Examining the Relationship between Mother-Child Attachment Styles and Creativity*


Ayşe Alptekin, Selçuk University, Türkiye, elmaliayse@hotmail.com

 0000-0002-3524-5265

Ayşegül Sarıkaya, Selçuk University, Türkiye, asarikaya@selcuk.edu.tr

 0000-0001-6838-9057

Mustafa Güler, Selçuk University, Türkiye, mustafaguler@selcuk.edu.tr

 0000-0003-2701-1220

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Abstract

This study was conducted to determine the relationship between attachment styles and creativity. The relational survey model, one of the general survey models, was used in the study. The sample of the study consists of a total of 301 children, 153 girls, and 148 boys, between the ages of 7-11, studying in four different primary schools in Konya province Selcuklu district. The Torrance Creativity Test was used to determine children's creativity and the Experiences in Close Relationships -II- Middle Childhood Scale was used to determine their attachment styles. The scales were administered to the children individually. The scores the children got from the scales were converted into standard scores. Correlation (Pearson) and Regression analysis was conducted with the obtained data using SPSS 21 package program. According to the findings, a significant negative relationship was found between Figural creativity and anxious and avoidant attachment styles, but no significant relationship was found with verbal creativity. As a result of the regression analysis, while avoidant attachment style significantly predicted the sub-scale of formal creativity, it did not significantly predict anxious attachment style.

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INTRODUCTION

The age we live in is the age of changes in the field of technology. Innovation, creativity, and problem-solving ability are among the basic skills of this age. Creativity and innovation are essential for any enterprise to continue and be successful. (Wang & Cheng, 2010). Creativity offers people the basis of happiness, a bright future, comfort, and well-being. It creates individual and social life (Moghaddami & Rashidi, 2017). Research shows that creativity will be the center of gravity of new movements in the future. It will be important to use creative thinking in different scientific and technological fields (Craft, Jeffrey, & Labeling, 2001).

Creativity is one of the most important factors that ensure the development and survival of the individual. It means the ability to bring together different ideas and make connections between these thoughts in a unique way (Richard et al., 2018). The expression of having academic ability in a certain field and showing high performance in this field, having leadership ability, having superior abilities in one of the arts or sports branches are characteristics defining creative individuals (Parke, 1989; McClellan, 1985). Creativity is defined as the process of sensing problems, trying to eliminate deficiencies, evaluating and testing existing or self-generated hypotheses, re-evaluating and re-testing, and reporting and announcing the results to the public (Laguia et al., 2019). Creativity is a cognitive process influenced by environment and culture, and creative people have a high level of understanding of new relationships and challenges (Twigg & Yates, 2019). Creative behavior is needed wherever there are problems, including interpersonal relationships (Guilford, 1968). Therefore, to explore the nature of creativity and raise creative individuals, scientists are encouraged to focus specifically on variables that have not been included in the creativity literature so far (Zhou & Hoever, 2014).

When the literature is examined, studies on the effect of attachment styles on creativity are limited (Aslan & İmamoğlu, 2009; Backes, 2000; Černe et al., 2018; Esmaeliy & Sheikholeslami, 2018; Hosseinihah & Vahedian, 2011; Kirrane et al., 2019; Malekzadeh et al., 2020). Considering that creativity emerges as a result of interaction and relationships with others, different attachment styles may affect the nature of creativity. People with a secure attachment style tend to display more functional qualities and produce more results than other people (Jones et al., 2018).

Attachment is a term that is very effective in the development of personality and describes establishing a deep and emotional bond with certain people (Ardenghi et al., 2020). Attachment theory, first proposed by Bowlby (1980), is based on the relationships that emerge and develop between the infant and the primary caregiver. Attachment is considered to continue from birth to death and determines one's emotional experiences and relationships (Ainsworth et al., 1978; Ainsworth & Parkes, 1991; Bowlby, 1982; Shaver & Mikulincer, 2002). From infancy, the child first internalizes the attachment figure, his relationship with the primary caregiver, and then his relationship with others. (Levy, Blatt, and Shaver, 1998). Individual attachment can explain how individuals act in their job and what potential they reveal (Manning, 2003). Children's attachment styles with their mother can hinder their creativity, but can also be a source of creativity. Because the mother assumes the status of being a source of power in the lives of the children (Lawrence, 1913; Olsen, 1981; Updike, 1992). It is thought that the relationship experienced at every stage of life is driven by the desire to renew, which is the desire to regain the perfect love of the mother in infancy (Balint, 1952; Bowlby, 1973; Winnicott, 1971). This relationship can be a source or hindrance of mutual creativity throughout life. Secure attachment creates exploratory behavior in infancy; this enables them to display creative activities in adulthood. The reason for this is the comfort that secure attachment creates in children (Hazen & Shaver, 1990). Leaders with secure attachment in adulthood are trusting and empathetic towards others (Mayseless, 2010). Therefore, they encourage the personal development and commitment of their employees or the group they lead (Mikulincer & Shaver, 2010), and the productivity of the group increases with the increase of loyalty and trust of

the group (Davidovitz et al., 2007; Popper & Mayseless, 2003). This information lays the groundwork for the evaluation of the effect of insecure attachment style on the creativity of individuals (Yip et al., 2018).

The need to examine the relationship between attachment styles and creativity and the studies conducted in the literature for university students (Esmaeliy & Sheikholeslami, 2018; Hosseinikhah & Vahedian, 2011) or adults in working life (Černe et al., 2018; Kirrane et al., 2019; Malekzadeh et al., 2020) created the gap in evaluating the relationship between the attachment styles of younger children and their creativity. This study aims to contribute to the literature in this field by analyzing the connection between the creativity of pupils aged 7-11 and their attachment styles.

METHOD

SAMPLE

301 children between the ages of 7-11, studying in 4 different primary schools in the Selçuklu district of Konya-Türkiye, participated in the study. Participation in the study is based on the volunteering of the school and family. The study included children aged 7 (n=7), 8 (n=91), 9 (n=90), 10 (n=92), 11 (n=21). While the number of children aged 8,9,10 is almost equal, the participation rate of children aged 7 and 11 is lower. One of the reasons for this is that most of the 7-year-old children are in the first grade and are illiterate. It is because some of the 11-year-old children have passed secondary school. Since the study was conducted with primary school children, secondary school children were not included in the study. Mothers of 153 girls and 148 boys do not work in any job. While choosing the schools to take part in the study, schools with children from families with low socioeconomic status (n=93), medium socio-economic level (n=98), and high socio-economic level (n=110) were preferred. Children in the sample group are children with normal development.

DATA COLLECTION

In the study, the Torrance Creativity Test was used to survey creativity of children, and the Experiences in Close Relationships Scale-Revised (Middle Childhood) was used to measure the attachment style of the mother and child. Researchers are certified to administer and use the Torrance Creativity Test. Necessary permission was obtained for the Experiences in Close Relationships - II Middle Childhood Scale. Meetings were held with the Provincial Directorate of National Education, which provides the administrative and management of the schools affiliated to the Ministry of National Education in the region where the study is planned, and the schools that will participate in the study were determined in line with the joint decisions of the researchers and the administrative institution. In the determination of the schools, it was tried to provide the criterion of being the schools where the children of families with different socio-economic levels attend. To meet this criterion and to make school choices, non-confidential personal data obtained by the guidance service of the schools were used. The information and opinions of the Guidance and Psychological Counseling services were taken into consideration. Guidance and Psychological Counseling services were given information on how to carry out the study and planning were made in line with common opinions. Torrance Test of Creative Thinking and Experiences in Close Relationships II Middle Childhood Scale was administered to the children individually. The tests were administered in the school, in the individual room provided for the researchers, and the necessary information was given to the children and mothers before the application.

The Torrance Tests of Creativity; Torrance Creativity Test was first mentioned in the relevant literature in 1966 and revised again in 1974 (Torrance), 1984 (Torrance & Ball), 1998 (Torrance). The test has two different scale. These are the verbal and figural scales. The activities in the verbal section are as follows; The ask and guess task requires the individual first to ask questions about a

picture (questions which cannot be answered by just looking at the picture). Next, they are asked to make guesses about the possible causes of the event, and then their consequences both immediate and remote. The fourth activity is Product Improvement Task, regardless of these pictures, the fifth activity is Unusual Uses, the sixth activity is Unusual Questions, and the last activity is Assume with a picture. In the figural section; The first activity is Creating a Picture with a stain on the paper, the second activity is Completing the Picture by giving different incomplete lines, and the third activity is activities based on creating different drawings with lines called Parallel Lines. In 1984, norm-resistant criteria were developed for figural form under the headings of fluency, originality, flexibility, abstraction of titles, resistance to early closure, and enrichment. At the same time, defiance for early ending, expressiveness of titles, ability to express the story, movement or activity, enrichment, and emotional expression. Simultaneously, expression of feelings, capability of telling the story, action or activity, elaborate expression of titles, synthesis of missing shapes, coalescence of titles, uncommon visualization, inherent visualization, flexing or passing borders, abundance of imagination and phantasm were among the criteria-based criteria developed in the test. The application of the test takes 75-80 minutes. In this study, form A of the test was used.

While the validity study of the test was carried out, the verbal test was administered to 10.127 people and the figural test was administered to 37.814 people. In studies conducted using the Torrance Creativity Scale and available in the literature, the Kuder-Richardson 21 test value was between .89 and .94; Cronbach Alpha value has been reported as .72 and below (Ferrando et al., 2007; Torrance, 1998). The construct validity of the verbal form of the test was determined by Dixon (1979), Hocevar (1979), Krumm et al. (2014), while the construct validity of the figural form was determined by Almeida et al. (2008), Heausler & Thompson (1988), Kim (2006), Kim et al. (2006), but different structural models have been presented. The Turkish validity and reliability study of the Torrance Creativity Test was conducted by Aslan in 2001 with 922 people from kindergarten to adulthood. The Cronbach Alpha reliability coefficient was found to be between .50 and .56, and item discrimination was significant at the level of .01 for each group.

Experiences in Close Relationships Scale-II (Middle Childhood): The Experiences in Close Relationships Scale-II was developed by Fraley et al. in 2000 to measure adult attachment scales. It was adapted into Turkish by Selçuk et al. in 2005. Brenning et al. (2011) adapted this scale to include 36 items for middle childhood and early adolescence. The scale is suitable for middle childhood and early adolescence between the ages of 8-13. The original items of the Experiences in Close Relationships Scale were simplified and the item contents were arranged by the child-parent relationship. The scale created by Brenning in 2014 was adapted into Turkish by Kirimer et al. The scale has a two-factor structure as anxiety and avoidance scales. Each scale item is graded in the range of 1-7 points. Each child grades the questions in a way that suits them best. It is applied individually and takes an average of 20 minutes.

The Turkish version of the Experiences in Close Relationships Middle Childhood Scale was administered to 357 children aged 10-14 years. While the avoidance attachment dimension represented by the first factor explained 18.66% of the total variance, the anxiety dimension represented by the second factor explained 17.72% of the total variance. Cronbach's alpha coefficient was calculated as .90 for the avoidance attachment dimension and .78 for the anxiety attachment dimension.

DATA ANALYSIS

In the study, the data obtained from the Torrance Creativity Test from children aged 7-11 were scored by two specialists and turned into commonly accepted scores. The correlation between the two experts was found to be .91. Correlation (Pearson) and regression (Hierarchical Regression) analysis were done by using SPSS 21 program to explain the correlation between the data obtained from the Experiences in Close Relationships Scale-II and the Torrance Creativity Test.

FINDINGS

Table 1. Findings Related to the Correlation Values of Children's Anxious and Avoidant Attachment Total Scores of the Experiences in Close Relationships Scale and Torrance Creativity Test Subtests

	Anxious Attachment	Avoidant Attachment	
Torrance Creativity Test Subtests	Verbal Fluency	-.11	-.05
		.07	.34
		301	301
	Verbal Flexibility	-.10	-.11
		.10	.07
		301	301
	Verbal Originality	-.04	.07
		.51	.25
		301	301
	Figural Fluency	-.15*	-.24**
		.01	.00
		301	301
	Figural Originality	-.11*	-.19**
		.05	.00
		301	301
	Abstraction of Titles	-.10**	-.14*
		.05	.01
		301	301
	Early Closing Resistance	-.05	-.17**
		.35	.00
	301	301	
Figural Enrichment	-.06	-.01	
	.27	.80	
	301	301	
Verbal Total	-.09	-.03	
	.13	.59	
	301	301	
Figural Total	-.15*	-.25**	
	.01	.00	
	301	301	

**p<.01. *p<.05

When the relationship between children's Torrance Creativity Test sub-dimension scores and their sub-scales scores from the Experiences in Close Relationships Scale are studied, it is evident that pupils anxious attachment and figural fluency ($r=-.15$; $p<.01$), figural originality ($r=-.11$; $p<.05$), the abstractness of the titles ($r=-.10$; $p<.05$) sub-scales and the figural total ($r=-.15$; $p<.01$); with avoidant attachment sub-dimension, figural fluency ($r=-.24$; $p<.01$), figural originality ($r=-.19$; $p<.01$), the abstractness of titles ($r=-.14$; $p<.05$), early closure resistance ($r=-.17$; $p<.01$) sub-scales and figural total ($r=-.25$; $p<.01$) were determined to be related negatively yet with statistical significance. No significant relationship was found between anxious and avoidant attachment and verbal creativity sub-scales.

Table 2. Comparative Values for Hierarchical Modeling: Avoidant Attachment

Model ^b	R	R ²	N. R ²	SH	R ² Change	F	p	Durbin-Watson
1	.26 ^a	.07	.05	20	.07	4.22	.00**	2.15

a. Predictors: Torrance Test of Creativity, figural Fluency, Figural Originality, Abstraction of Titles, Early Closure Resistance Sub-scales

b. Dependent variable: Avoidant Attachment

**p<.01

As seen in Table 2, it was determined that the model created by the children's creativity figural creativity sub-scales, which had a significant relationship with the scores of the Children's Experiences in Close Relationships Scale, avoidant attachment sub-dimension, was statistically significant [F (5.30)=4.22; p<.01]. The explanatory rate of proposed model was defined to be 7% (R²=.07). The multiple regression analysis for predictiveness is as follows:

Table 3. Multiple Regression Analysis Findings Regarding the Prediction of Torrance Creativity Test Figural Form Sub-Scales on the Avoidant Attachment Sub-dimension

Independent Variables	B	SH	β	t	p
(Fixed)					
Figural Originality	-.83	.25	-.19	-3.32	.00**
Abstractness of Titles	-.86	.34	-.14	-2.49	.01*
Resistance to early closure	-1.13	.39	-.17	-2.89	.00**
Figural Fluency	-1.04	.25	-.24	-4.12	.00**

Dependent Variable: Avoidance Attachment

**p<.01, *p<.05

When the predictors of the children's Experiences in Close Relationships Scale avoidant attachment sub-dimension scores were examined, figural originality (β=-.19; p<.01), figural fluency (β=-.24; p<.01), The abstractness of the titles (β=-.14; p<.05), resistance to early closure (β=-.17; p<.01) sub-scale predict the avoidant attachment sub-scale positively and significantly. According to these outcomes, high scores of the pupils in the sub-scale of figural originality, figural fluency, the abstractness of titles, and resistance to early closure predict the decrease in the scores of the avoidant attachment sub-dimension.

Table 4. Comparison Values for Hierarchical Modeling: Anxious Attachment

Model ^b	R	R ²	N. R ²	SH	R ² Change	F	p	Durbin-Watson
1	.17 ^a	.02	.01	20.45	.02	2.03	.09	1.92

a. Predictors: Children's Torrance Test of Creativity, Figural Fluency, Figural Originality, Abstraction of Titles, Resistance to Early Closure Sub-scales

b. Dependent variable: Anxious Attachment

As seen in Table 4, it was found that the model created by the children's creativity and figural creativity sub-scale, which had a significant relationship with the scores of Experiences in Close Relationships Scale, the anxious attachment sub-dimension, was not statistically significant.

DISCUSSION, CONCLUSION AND IMPLICATIONS

In the study, a negative significant relationship was found between Experiences in Close Relationships Scale, Anxious and Avoidant Attachment, and Torrance Creativity Test Figural Form

sub-scale, while no significant relationship was found between Verbal Form sub-scale. Betty (2011) and Mikulincer & Shaver (2007) showed in their studies that there is a harmonious relationship between secure attachment style and creativity. People with secure attachments have higher courage and flexibility, so exploration, experimentation, and learning increase. These also bring production and problem solving (Esmaeliy & Sheikholeslami, 2018). These features are characteristic of creative individuals and enable the prediction of the effect of secure attachment on creativity. Simmon et al. (2009) predicted in their study that securely attached leaders activate the productive capacity of their employees, while Škerlavaj Černe, and Dysvik (2014) predicted that securely attached people enable them to generate ideas at a higher level. Hassanvand et al. (2013) found a significant positive relationship between secure attachment style and creativity, and a significant negative correlation between insecure attachment and creativity in that research with university students. Crowell and Feldman (1988) examined preschool children's attachment styles and driving skills, and their mothers' behaviors. Mothers of securely attached children were more supportive, demonstrative, and helpful while driving; and mothers of avoidant attachment children were cold, controlling, mothers of children with anxious/ambivalent attachment were mild and gentle, but sometimes compelling and inconsistent, giving unpredictable reactions when their children could only do the task. This is thought to affect children's driving skills, exploration, and curiosity. By examining the relationship between attachment styles and creativity, Dirtu and Soponaru (2016) concluded that secure and insecure attachment make a significant difference between creative people. Kirrane et al. in their study with 192 employees in 12 engineering organizations, revealed that secure relationships were positively associated with creativity, while insecure attachment styles had negative effects on employee relationships, leading to lower creativity. The literature results reveal the negative effect of adult and kindergarten children's insecure attachment styles on creativity and the positive effect of secure attachment. The relationship of insecure attachment styles of middle childhood children with creativity obtained in this study is consistent with the studies of kindergarten children and adults in the literature.

The relationship between the figural part of creativity and attachment was not observed between the verbal part of creativity and attachment. In the study of Zarea et al. (2016) with twins, the environment has a great role in the emergence of verbal creativity, and in the study of Miller and Gerard (1979), social classes in society are positively related to the verbal creativity of children. Findings suggest that environmental factors and social development are more effective in the emergence of verbal creativity. Vernon (1989) determined that generally the artistic creativity of the ancestors, that is, applied arts, is transferred within the family and this is more an example of figural creativity. Rholes et al. (1995) stated that adults with an avoidant attachment style also approach their children in this way. Considering that attachment styles are also transmitted from generation to generation, it makes us think that figural creativity may also be related to family relations. In addition, the data related to verbal and figural creativity obtained from the literature and this study predicts the conclusion that attachment can play the role of a mediator variable between creativity and hereditary transmission of creativity. Aslan and İmamoğlu (2009) found that there was no relationship between attachment styles and verbal creativity scores in their study with gifted children. This study supports the result obtained about verbal creativity.

Another result obtained from this study was that while figural creativity sub-scale significantly and negatively predicted the avoidant attachment sub-dimension, they did not significantly predict the anxious attachment sub-dimension. Hosseinikhah, & Vahedian, (2011) found that avoidant attachment predicted creativity in their study, while Esmaeliy & Sheikholeslami (2018) determined that anxious attachment predicted creativity. While one of the two studies supports the results obtained in this study, the other study does not. However, two studies were conducted on university students and in a single university which means that the sample groups are limited.

The anxious attachment uses high activation strategies, while avoidant attachment uses low activation strategies (Main, 1990). Anxiously attached individuals are hypersensitive to the proximity of the attachment figure and threatening cues. They make an effort to maintain intimacy with the attachment figure. On the other hand, in individuals with avoidant attachment, the attachment system is disabled. They do not seek intimacy with the attachment figure, avoidant people try to stay away from others and suppress their emotions (Shaver & Mikulincer, 2002). Although people with an anxious attachment may have more negative experiences in their relationships due to insecurity, they may have relatively more positive experiences than people with avoidant attachment (Mikulincer et al., 2003; Shaver & Mikulincer, 2002). Considering that negative emotions have an inhibitory role on creativity, as in the study of Kobak et al. (1993), it is thought that avoidant attachment may affect creativity more negatively than anxious attachment. However, there is a need to study with large sample sizes for the effect of avoidant attachment and anxious attachment on creativity.

LIMITATIONS

The first limitation of the study was that it had a cross-sectional design and therefore causality could not be established. The second limitation was the lack of structured psychiatric evaluation for the participants. Another limitation was that the psychopathology of the parents were not screened. More longitudinal studies are needed to elucidate the relationship between creativity and attachment styles.

AUTHOR CONTRIBUTION

First author: Conception, Design, Materials, Data Collection and/or Processing, Analysis and/or Interpretation, Literature Review, Writing.

The second author: Conception, Design, Materials, Data Collection and/or Processing, Analysis and/ or Interpretation, Literature Review, Writing

The third author: Conception, Design, Materials, Data Collection and/or Processing, Analysis and/ or Interpretation, Literature Review, Writing

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Opinions and Experiences of Social Studies Pre-service Teachers on Web 2.0 Tools*

Ceren Utkugün, Assist. Prof. Dr., Afyon Kocatepe University, Türkiye, cerendemirdelen@hotmail.com

 0000-0002-5911-9175

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Abstract

The purpose of this research is to reveal the experiences of social studies pre-service teachers regarding the web 2.0 tools they use as a Material Design lesson in Social Studies Teaching and their opinions based on these experiences. The case study design, one of the qualitative research methods, was used in the research. The study group of the research consists of seven pre-service teachers who are studying in a state university Social Studies Teaching program in the spring semester of the 2021-2022 academic year. The application stages of the research were carried out in 2-hour classes for six weeks within the scope of the Material Design in Social Studies Teaching course. The research data were collected at the end of face-to-face interviews with each pre-service teacher after the implementation phases were completed. The data obtained were analyzed by the content analysis method, and diagrams containing themes, sub-themes, and codes were created and presented with their frequencies. It was determined as a result of the research that the pre-service teachers preferred the applications chosen by them to produce content because of their features such as ease of use, the richness of content, being usable in the classroom, and being interesting. Regarding content creation processes, it was seen that they enjoyed preparing colorful designs, using applications, learning new information, and designing puzzles/games/digital stories. However, it was observed that they had difficulties because there were paid options in the applications, the language of the application was English, it was difficult to understand the use of the application, and not everyone had a computer. Pre-service teachers thought that the use of web 2.0 tools in social studies lessons would have positive effects on teachers, students, and educational environments they suggested that these tools should be used by all teachers, their usage licenses should be purchased by the Ministry of National Education or school administrations, schools and classrooms should be improved in terms of technological facilities and tools, and in-service training should be organized.

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INTRODUCTION

The concept of the web is used to describe the system that provides access to information and documents in the internet environment. In the early days, the web environment, which consisted of classical HTML codes, consisting of visual elements and texts, had a form that did not allow interaction with the user (Deperlioğlu & Köse, 2010). It was passed from Web 1.0 which is the only readable web to Web 2.0 where content can be produced and interacted as a result of the developments in Information Technologies (Korucu & Karalar, 2017). Web 2.0 is a second-generation and more personalized, interactive online platform that provides active participation, communication, collaboration, knowledge, and thought sharing among users (McLoughlin & Lee, 2007). Web 2.0 tools, which allow individuals to easily create content on the Internet and add to the created content, enable the creation of common content with the cooperation of different participants, the sharing, storage, and evaluation of this content (Altınok et al., 2017). Educational use of web 2.0 tools, which can also be used in daily life, enriches educational environments and attracts the attention of today's children who grow up with technology (Korucu & Sezer, 2016). Therefore, the use of web 2.0 technologies in daily life and education has gained great importance (Ajjan & Hartshorne, 2008). It is seen as an important learning platform today because web environments become interactive, content production is easy and can be updated quickly, and it has features such as ease of access to content in web environments (Korucu & Karalar, 2017). The advantages and ease of use offered by Web 2.0 technologies provide both educators and students with the convenience and support they need in the learning and teaching process (Avcı & Atik, 2020). Web 2.0 tools have many positive contributions to learning and teaching environments. Web 2.0 tools that make learning fun for students who grow up between school desks and technological tools (Mete & Batıbay, 2019) positively affects students' interest and motivation towards the lesson (Aslan Efe et al., 2014). According to Huang et al., (2009), web 2.0 tools support learning, encourage cooperation, increase student participation, and provide a positive and encouraging learning environment. Korucu and Yücel (2015) emphasize the important effects of web 2.0 tools such as providing permanent learning, making the education and training process more effective, facilitating the teaching and learning process, and increasing the efficiency of education and training. Web 2.0 tools in today's educational approaches where students are encouraged to be active participants in learning environments and contribute to the content also increase the socialization opportunities of students by providing the opportunity to work collaboratively in content creation and content production. In addition, it has been determined that the effective use of web 2.0 tools in the lessons contributes to the development of students' high-level thinking skills, problem-solving skills, and initiative skills (Karaman et al., 2008), communication and self-expression skills (Drexler et al., 2008). It has been also found that it increases their academic success (Hew & Cheung, 2013) and helps students to create content, thereby increasing their self-confidence (Conole & Alevizou, 2010). Gillard (2010) emphasized that most of the students have technological devices such as mobile phones and tablets and that such technological devices should be used more beneficially instead of prohibiting the use of them in learning and teaching environments.

One of the most important factors in the effective use of web 2.0 tools in educational environments is the training of teachers (Tavares et al., 2012). According to Akpınar (2003), instead of introducing teachers only to technology, teachers should be given the opportunity to develop learning-teaching activities using technology. In this context, in order to train teachers who can use the developing technologies effectively in their lessons, it is necessary to provide pre-service teachers with the knowledge and skills related to the use of technology during their education (Çağıltay et al., 2007). In today's conditions, it is important for teacher/pre-service teachers to include web 2.0 tools, which provide the opportunity to create content without requiring software skills or program installation for their use. There are many studies examining the use of web 2.0 tools in social studies teaching in line with the widespread use of Web 2.0 tools in educational

environments in recent years. In these studies, the attitudes and opinions of social studies teachers towards the use of web 2.0 tools/digital materials (Altunay, 2021; Erdoğan & Şerefli, 2021; Güleli, 2015; Kırımlı & Demirezen, 2022; Seyhan & Küçük, 2021; Taşdemir, 2021; Yaylak & İnan, 2018), the opinions and competencies of social studies pre-service teachers regarding the use of web 2.0 (Özer & Albayrak Özer, 2017; Tünkler, 2021; Tepe & Çelik, 2021), the designs of web 2.0 tools developed for social studies teaching (Ak, Erdoğan & İlhan, 2020; Beaudry et al., 2013; Bull et al., 2008; Çelik & İlhan, 2021; Çelik & Tepe, 2022; Kavak & İlhan, 2021; Keskin & İlhan, 2021), the effects of using web 2.0 technologies in social studies lessons on students (Ada & Sözen, 2021; Almalı & Yeşiltaş, 2020; Balçın & Çalışkan, 2021; Gezer & Ersoy, 2021; İneç, 2017; Pala, 2021; Torrez, 2010;) are focused on. When the studies on Web 2.0 tools are examined, it is seen that there are few studies with pre-service teachers. Despite all these studies, the number of web 2.0 tools that can be used in educational environments is increasing day by day in parallel with the improvement of technology. For this reason, there is a need for applied and up-to-date new studies that include the views of teachers and pre-service teachers on web 2.0 tools. It is very important to provide pre-service teachers, who will be the teachers of the future, with knowledge, skills and experience regarding the active use of technology in social studies teaching during their education. It is aimed to determine the experiences of social studies pre-service teachers regarding the web 2.0 tools they use as a Material Design lesson in Social Studies Teaching and their opinions based on this experience. For this purpose, answers to the following questions were sought:

1. Which applications did the social studies pre-service teachers use to prepare digital material from web 2.0 tools?
2. What are the opinions of pre-service teachers about the reasons for preferring these applications?
3. What are the opinions of social studies pre-service teachers about the process of preparing digital material using web 2.0 tools?
4. What are the opinions of social studies pre-service teachers about the use of web 2.0 tools in social studies lessons?
5. What are the recommendations of social studies pre-service teachers to their other colleagues on the use of web 2.0 tools in educational environments?

METHOD

RESEARCH DESIGN

The case study design, one of the qualitative research methods, was used in the research. Case studies that seek answers to “how”, “what” and “why” questions (Çepni, 2007) are studies in which an individual, group, environment, or process with a situation can be investigated. The holistic single case design, which is one of the case study designs, is the studies carried out with a single analysis unit such as an individual, program, and school (Yıldırım & Şimşek, 2018). In the study, the pre-service teachers in the classroom in which the application was made in line with this pattern were considered as a holistic single analysis unit.

STUDY GROUP

The study group of the research consists of seven pre-service teachers who are studying in the 3rd year of a state university Social Studies Teaching program in the spring semester of the 2021-2022 academic year and taking the Material Design in Social Studies Teaching course. Criterion sampling, one of the purposive sampling methods, was used in the selection of the study group. In purposeful sample selection, information-rich situations are selected so that more in-depth research can be conducted (Maxwell, 2018). According to Patton (2018), information-rich situations are situations where the researcher can obtain as much information as possible. The criterion sample is the study of all cases that meet a predetermined set of criteria (Yıldırım & Şimşek, 2018). The criterion for

determining the pre-service teachers constituting the study group in this study is to be taking the Material Design in Social Studies Teaching course. Pre-service teachers coded their names as Fatma, Yıldız, Kürşat, Öykü, Pamir, Tuğba, and Zeynep and they wanted their names to be mentioned in this way in the study. Table 1 shows the characteristics of the study group.

Table 1. *Features of the Working Group*

		<i>f</i>	<i>%</i>
Gender	Female	5	71
	Male	2	29
Self-assessment of their ability to use technological tools	Middle	2	29
	Sufficient	4	57
	Very good	1	14
Self-assessment of their ability to use technological tools	Yes	5	71
	Partially	2	29
	No	-	-
Previous use of web 2.0 tools	Yes	7	100
	No	-	-
Consideration of using web 2.0 tools when they become teachers	I will use	7	100
	I will not use	-	-

DATA COLLECTION TOOL

A semi-structured interview form was used as a data collection tool in the research. According to Patton (2018), the interview form is prepared in order to get the same type of information from different people by addressing similar issues. The interview form ensures that all questions related to the research problem are used (Yıldırım & Şimşek, 2018). The interview form was presented to the opinion of two field experts in order to ensure the internal validity of the research. Feedback was received from the field experts on the way of expression and clarity of the questions, and necessary arrangements were made on the questions according to the feedback received. In the first part of the interview form, there are questions about the personal information to define the pre-service teachers, and in the second part, there are four basic questions determined in accordance with the research purpose and complementary questions for each question.

DATA COLLECTION

In case studies, situational details are giving readers the feeling of being there (MacDonald & Walker, 1977 cited in Güçlü, 2019). The implementation stages of the research were carried out face to face with the participation of seven pre-service teachers in the first six weeks of the Material Design in Social Studies Teaching course in the spring semester of the 2021-2022 academic year. In the first three weeks, web 2.0 tools for creating presentation, visual content and assessment tools that can be used in social studies lessons were introduced using web pages. After the presentation, the questions of the pre-service teachers about the preparation of web 2.0 tools were answered.

In the first three weeks, web 2.0 tools were introduced, and in the third week, pre-service teachers were asked to choose 4 web 2.0 tools to be presented in the last week of the application and produce content suitable for the Social Studies Curriculum learning outcomes. Pre-service teachers were given two weeks for content design, and the researcher provided guidance to the pre-service teachers at every stage they needed. In the 4th and 5th weeks, examples of web 2.0 tools for social studies education were examined and evaluations were made for the effective use of these tools in the classroom. In the sixth week, which is the last week of the application, the pre-service teachers explained the preparation process of the web 2.0 tools they designed individually and introduced the web 2.0 tools. After the presentation, other pre-service teachers made evaluations about the quality and in-class use of the web 2.0 tools they watched.

The data collection process started by obtaining ethical permission from Afyon Kocatepe University Scientific Research and Publication Ethics Committee (Ethics Committee Decision dated 08.04.2022 and themed 2022/121). The research data were collected at the end of face-to-face interviews with each pre-service teacher on April 14, 2022, at the researcher's office in the Faculty of Education building, after the implementation phases were completed. According to Yıldırım and Şimşek (2018), an interview is one of the most widely used data collection methods in qualitative research. The reason for this is that they are very powerful in terms of revealing individuals' opinions, experiences, and feelings, and it is based on speech, the most common form of communication. In this respect, the interview method removes the limitations or artificiality found in tests or questionnaires based on writing or filling out.

Before starting the interview, it was stated to the pre-service teachers that their personal information would not be shared and that the data obtained during the interview would only be used for research. Permission was obtained from the pre-service teachers for voice recording during the interview, a comfortable and quiet environment was created for the pre-service teachers to express themselves comfortably, and they were informed that they could end the interview whenever they wished. Probe questions were used in order to make an in-depth analysis of the answers of the pre-service teachers. According to Patton (2018), probe questions are used to deepen the answer given to a question, increase the richness and depth of the answers, and give clues to the participant about the desired level of answer. At the end of each interview, which lasted approximately 15-20 minutes, the data collection process was concluded by asking the pre-service teachers whether they had any comments they would like to add.

DATA ANALYSIS

The audio recordings taken during the interviews were transcribed and the data were analyzed by the content analysis method. Content analysis is a process of examining the data in depth, considering the similarities in the expressions, making the codes, themes, and sub-themes meaningful, and presenting them to the reader (Yıldırım & Şimşek, 2018). Expert opinion was sought to ensure reliability in the analysis of the research data. The coding of the researcher and the field expert were compared in terms of research reliability, and the percentage of agreement was calculated as $(\text{Agreement} / (\text{Agreement} + \text{Disagreement}) \times 100)$.93. Reliability calculations over 70% are considered reliable for research (Miles & Huberman, 1994). The sections where there were differences of opinion were re-evaluated and a consensus was achieved and the analysis of the data was finalized. The data obtained were presented with their frequencies by creating diagrams containing themes, sub-themes, and codes, and were supported by direct quotations from the views of the pre-service teachers.

FINDINGS

Social studies pre-service teachers' views and experiences on web 2.0 tools, the applications they chose to produce content and the reasons for choosing these applications, the stages they liked and had difficulty with the content production process, and their thoughts on the use of web 2.0 tools in social studies courses, and their advice to other colleagues about the use of web 2.0 tools in lessons were evaluated.

In Tables 2 and 3, the applications that social studies pre-service teachers choose to produce content and the reasons for preferring these applications are presented.

Table 2. *The Applications Chosen by Pre-Service Teachers*

		<i>f</i>
Presentation and visual content creation applications	Canva	7
	Voki	2
	Pixton	1
	PictraMap	1
	Emaze	1
	Storyboard That	1
Concept/mind mapping applications	Bubbl.us	5
	Mindmeister	1
	Word Art	1
Evaluation tool creation applications	Word Wall	4
	Puzzlemaker	3
	Kahoot	2

The applications chosen by the pre-service teachers to produce content were evaluated through sub-themes named presentation and visual content creation applications, concept/mind map creation applications, and evaluation tool creation applications. Pre-service teachers used applications named Canva, Voki, Pixton, PictraMap, Emaze, and Storyboard that as presentation and visual content creation applications.

Pre-service teacher Yıldız mentioned the economics of digital materials by saying “...If I had made the digital poster application that I organized in the Canva application by taking the cardboard and photo printouts in the classroom, it would have forced me and my students financially. I think this application is economical in terms of time and material...”. Öykü likened the presentation she prepared in the Emaze application to a virtual museum trip and said, “Preparing a presentation with Emaze was very enjoyable, ...I designed a museum of professions and aimed to show the students as a virtual museum. She said, “...we can make our own virtual museums with this application and use them in lessons for students who do not have the opportunity to visit museums...”. Zeynep, who created a digital character with the Voki application, used the phrase “I chose the Voki application because I can produce content suitable for the class level and amusing without using my own voice, I had a lot of fun preparing it and introducing it to my friends.”.

Pre-service teachers used Bubble. Us, Mindmeister, and Word Art applications as concept/mind map creation applications. Pre-service teacher Öykü “I used Bubble. Us application during distance education and I liked it very much. That's why I chose it again.” and Kürşat stated their opinions on these applications as “I chose the templates and themes of Mindmeister application because I find it aesthetic”.

Pre-service teachers used Word Wall, Puzzlemaker, and Kahoot applications as evaluation tool creation applications. Pre-service teacher Öykü “Word Wall has puzzles and games. At the end of the lesson, I used it as an evaluation tool.” and Zeynep expressed their opinion by saying “I prepared puzzles in Puzzlemaker, I found the application fun.”.

Table 3. *Opinions of Pre-Service Teachers on the Reasons for Preference These Applications They Have Chosen*

		<i>f</i>
Features of the application	Ease of use of the application	6
	Being too many options for application content	4
	Being able to create content suitable for the Social Studies Curriculum	3
	Having used the app before	3
	Suggestion of friends	1
	Widespread use of the application	1
Being suitable for use in the learning and teaching process	Suitable for classroom use	4
	Being interesting	4
	Being able to be used for concept teaching	3
	Being able to be used as an evaluation tool	2
	Being economical	1
	Suitable for use for topic summarization	1

The reasons why pre-service teachers prefer the applications they have chosen to produce content were evaluated over sub-themes named application's features and being suitable for use in the learning and teaching process. In the sub-theme of the application features, the pre-service teachers emphasized the ease of use, the wide choice of application contents, the ability to create content suitable for the Social Studies Curriculum, the fact that they had used the application before, the suggestions of their friends and the widespread use of the application. The opinions of the pre-service teachers on this subject are as follows:

Tuğba, "Because I do not trust my computer skills and there are applications that I have tried and failed to do, I preferred applications that I can use easily."

Kürşat "I paid attention to the simple use of the application and the advanced content."

Fatma "I aimed to design fun digital materials suitable for the Social Studies Curriculum."

In the sub-theme of being suitable for use in the learning and teaching process, the pre-service teachers emphasized that it can be used in the classroom, that it is interesting, that it can be used for concept teaching and subject summarization, that it can be used as an evaluation tool and that it is economical. The opinions of the pre-service teachers on this subject are as follows:

Yıldız "The financial situation of the students may be insufficient. ...Digital options can be used instead of doing activities that may force students financially."

Fatma "I prepared questions in the form of a fun and visual contest. These questions can be used as end-of-topic evaluation tools."

Zeynep "Colorful and visual mind maps can be used for end-of-topic summaries."

In Table 4, the views of social studies pre-service teachers about the process of producing content using web 2.0 tools are presented.

Table 4. *Opinions of Social Studies Pre-Service Teachers About the Process of Producing Content Using Web 2.0 Tools*

	<i>f</i>	
Features they enjoyed	Preparing colorful/enjoyable designs	6
	Being rich in application content	5
	Learning new information	5
	Being able to use applications easily	4
	Designing a puzzle/game	3
	Creating a digital story	2
	Refreshing their knowledge while preparing digital material	1
	Being able to make different designs through applications	1
	Being able to shape their ideas	1
	Gaining self-confidence	1
Features they had difficulties	Having paid options/usage restrictions in applications	7
	Usage of English as an application language	6
	Understanding application usage	4
	Not having a computer	2
	Creating content	3
	Not having sufficient technological skills	1

The views of pre-service teachers about the process of producing content using web 2.0 tools, the features they enjoyed and the features they had difficulty” were evaluated through sub-themes. Pre-service teachers emphasized preparing colorful/enjoyable designs, the applications being rich in application content, being able to use applications easily, learning new information, designing puzzles/games, and creating digital stories as features they liked. Some pre-service teachers stated that they can refresh their knowledge, make different designs through applications, shape their ideas, and gain self-confidence. The opinions of the pre-service teachers on this subject are as follows:

Kürşat “The stage I enjoyed most was preparing a game. I went back to my childhood... While I was preparing games, I also learned and improved myself in producing digital content.”

Pamir “It was fun to prepare digital materials. You're struggling, getting a little nervous, and having fun... I listened to music while I was preparing it. Normally, I can't work by listening to music when I pick up a book or a notebook, but I listened to music while creating digital content, I was able to work with pleasure and rest my mind.”

Zeynep “...I like that I can shape my ideas. I had a little difficulty producing these contents, ...I did it by watching it on YouTube. It encouraged me to use computers and design digital materials, and I gained self-confidence.”

The pre-service teachers emphasized having paid options and usage restrictions in applications, usage of English as an application language, understanding application usage, and not having a computer as the stages they have difficulty with. Some pre-service teachers stated that they had difficulties in creating content suitable for the level for use in applications and not having sufficient technological skills. The opinions of the pre-service teachers on this subject are as follows:

Yıldız “I had a language problem because the application language was not Turkish, my classmates had similar problems. We found a solution by activating the translate to Turkish button. However, our options were limited because there were paid parts in the applications, it would be very expensive if we wanted to buy it.”

Öykü “In order to be able to use the programs easily, I first watched Turkish videos on how they were made. I tried to use the application by stopping and using the application and continuing to watch the video. ... I prepared a digital story, but I couldn't take a

screen recording. When I saved it, the name of the application appeared on the designs I made. This reduced the visual quality of my digital stories and made them unreadable.”

Pamir “Not having a personal computer made it difficult for me because I had to request my friends... It was a bit of a challenge. “

Fatma “I had difficulties in preparing dialogues and questions suitable for the age of the students, especially in preparing the answers to the multiple-choice questions.”

In Table 5, the views of social studies pre-service teachers on the use of web 2.0 tools in social studies lessons are presented.

Table 5. *Opinions of Social Studies Pre-Service Teachers on the Use of Web 2.0 Tools in Social Studies Lessons*

	<i>f</i>	
Effects on teachers	Making it easier for teachers	5
	Supporting oral expression	4
	Being economical	3
	Demonstrating efficient use of technology to students	2
	Teachers' self-development in the digital field	2
	Teachers discovering new apps	2
	Being able to be used as an evaluation tool	2
	The preparation process is challenging for teachers	1
	The preparation process is enjoyable for teachers	1
	The necessity for teachers to have technological opportunities	1
	Effects on students	Being interesting from the perspective of students
Providing permanent learning		6
Facilitating learning		6
Students perceiving it as a game		5
Students' involvement with technology		4
Embodying abstract thinking		3
Increasing academic success		3
Possibility to harm eye health because they are digital tools.	1	
Effects on the educational environment	Making the learning and teaching environment fun	7
	Increasing in-class interaction	4
	The possibility of difficulty in classroom management	2
	The necessity for classrooms and schools to have technological facilities	1
	The possibility of using the preparation process as an in-class application	1
	Seeing easily as it is projected onto the screen	1

The views of pre-service teachers on the use of web 2.0 tools in social studies lessons were evaluated over the sub-themes of their effects on teachers, their effects on students, and their effects on the educational environment. Pre-service teachers emphasized about effects of using web 2.0 tools in social studies lessons on teachers that making it easier for teachers, supporting oral expression, being economical, demonstrating efficient use of technology to students, teachers' self-development in the digital field, teachers discovering new apps, being able to be used as an evaluation tool, the preparation process being challenging for teachers, the preparation process being enjoyable for teachers, the necessity for teachers to have technological opportunities.

Fatma “When teachers look at the videos explaining their use of the web 2.0 tool, there are different suggestions on the side of them in the explore section. They can see different web 2.0 tools...”

Yıldız *"It can be beneficial for teachers in terms of classroom management. In a very active classroom, students can be interested in the lesson, the teacher gets less tired. Also, in terms of material, cardboard, etc. It's very expensive, but we can prepare what we do here for free. While we spend at least 100-200 TL and lose time, we can do digital applications in less time and our money stays in our pocket."*

Kürşat *"For teachers, the lessons become more instructive with the use of web 2.0 tools. ...You cannot ask always 'Do you understand?' to each student, but to give an example from the test, you can say, 'look, you made a mistake here, this is the right thing' since the student's mistakes in the test fall into your system."*

After describing the pre-service teacher Öykü the web 2.0 tool as *"It is something that should be used if we want to get more efficiency from our lessons as a teacher"*, she used these expressions, *"Obviously, the web 2.0 tool preparation stage is a bit of a challenging process for teachers. We design these tools for a long time, we try to understand the use of the programs, and we spend time. Its preparation and use in lessons can be a bit difficult and time-consuming for the teacher."* Pre-service teacher Pamir said, *"Now, children grow up in the digital age, they get computers and phones in their hands at a young age. We should shape our course content according to our students."* He has voiced his opinion by saying, *"As I listen to music in the background while I work, I both produce a beautiful product and relax my mind"*.

Pre-service teachers emphasized about effects of using web 2.0 tools in social studies lessons on students that being interesting from the perspective of students, providing permanent learning, facilitating learning, students perceiving it as a game, students' involvement with technology, embodying abstract thinking, increasing academic success, possibility to harm eye health because they are digital tools. The opinions of the pre-service teachers on this subject are as follows:

Fatma *"...We can show how we can use technology more efficiently. We can adopt the view that technology is not just games or social media."*

Yıldız *"...Since students cannot think abstractly, these tools embody abstract thinking and facilitate learning. For example, they cannot understand latitude and longitude with a simple expression, they understand better by imagining it when they show it on Google earth..."*

Kürşat *"Let's think of two teachers, let's think of ourselves as students. A teacher just talks about the subject in the lesson. But the other teacher turns on the smart board and plays games. Which course would we like to attend more? The second teacher's classroom is more interactive, and happier. They love the teacher and the lesson because loving the lesson is about loving the teacher of the lesson. Students love teachers who use technology."*

Tuğba *"Students at secondary school level learn more easily with visuals. Therefore, the lessons are more efficient and interactive with the possibility of using visuals. If I were a student, I couldn't get enough of looking at it, I think it's very impressive, we use very nice applications and visuals. If I were a student, I would listen to the lecture with pleasure."*

Pre-service teachers emphasized about effects of using web 2.0 tools in social studies lessons on the educational environment that making the learning and teaching environment fun, increasing in-class interaction, the possibility of difficulty in classroom management, and the necessity for classrooms and schools to have technological facilities, the possibility of using the preparation process as an in-class application, seeing easily as it is projected onto the screen. The opinions of the pre-service teachers on this subject are as follows:

Zeynep *“If we use these tools, we can make our lessons more fun and more active. It can be even better if we increase the academic success in our classes, the lessons are fun, and we ensure the participation of all students in the activities.”*

Tuğba *“I would be happy. During my studentship, our teachers did not make such practices. They were just telling themselves and the lessons were bad for me, I couldn't understand much. Since my visual memory is better, I would like to do lessons with such activities. My other friends would think like me, and if we were educated this way, our classroom would be open to learning.”*

Öykü *“It has a positive effect on the class and attracts students' attention. It makes the lesson more efficient. In particular, children learn while having fun, they think that the content we have prepared is actually a game, but we teach them when they think it is a game, learning happens with such a secret. So, it can be useful for the classroom as well.”*

Pre-service teachers Tuğba said *“...I think it has more advantages, but it can provide a disadvantage in classroom management. If the students get bored, they can talk among themselves.”* and Pamir said *“Maybe the teacher just prepared the content without knowing the application in detail. When there is an undesired event on his/her computer or in the application at that moment, he/she may not be able to solve it and they may not be able to carry out the lesson adequately with applications”.* They stated that it may cause problems in classroom management. Öykü also said, *“Teachers, schools, and classrooms should have sufficient technological tools and facilities. Let's suppose we are assigned to a village school, problems may arise when there are no facilities such as internet, computer, projector, smart board.”* and stated that the technological facilities of the schools should be sufficient.

In Table 6, recommendations of social studies pre-service teachers to their colleagues on the use of web 2.0 tools in educational environments are presented.

Table 6. Recommendations of Social Studies Pre-Service Teachers to Their Colleagues on the Use of Web 2.0 Tools in Educational Environments

	<i>f</i>
	5
	3
	3
	2
	2
	2
Recommendations for teachers	2
	2
	1
	1
	1
	1
Recommendations for administration	7
	4
	2
	2
	2
	1
	1

The recommendations of the pre-service teachers to their colleagues on the use of web 2.0 tools in educational environments were evaluated over the sub-themes of recommendations for

teachers and recommendations for administration. Pre-service teachers emphasized about recommendations of teachers using web 2.0 tools on the educational environment that it should be used to increase efficiency in lessons and activate the student in the lessons, support should be obtained from experts/internet videos, it should be used by all teachers, teachers with insufficient computer skills should work on applications, different applications should be continued to try/research, it should be used to keep up with the age, and tools suitable for practice and lecture should be preferred in the lessons. Some pre-service teachers emphasized that it should be used to provide professional development, it should be used because it is economical, it should be used gamified, and it should be used because it attracts students' attention. The opinions of the pre-service teachers on this subject are as follows:

Fatma "I can recommend my colleagues who do not have sufficient technology usage skills to work on applications. There are lots of videos on Youtube. They can learn by watching them or get help from people who know."

Kürşat "I saw it for the first time, learned it and it was too late. I'd say that use it before it's too late."

Öykü "I wish our teachers would give such lectures; we would listen to the lessons without getting bored. Teachers in different branches should definitely use it. I think that if a math teacher uses it, the success of the course will increase a lot."

Pamir "When a teacher asks for help, he/she may think "Will I seem like a bad teacher", or when someone gets help as a pre-service teacher, he/she can think "Will I seem like I can't". Let everyone use Web 2.0 tools and get help when needed. I recommend everyone to get help without perceiving this as a personal or professional inadequacy. "

Pre-service teachers emphasized about recommendations of administration using web 2.0 tools on the educational environment that application licenses should be purchased by Ministry of Education/school administrations, technological facilities and tools should be available in schools/classrooms, and informatics classes should be created to be used in applications, there should be Turkish applications with unlimited use in EBA, students should be supported to have technological tools, contents produced with web 2.0 tools should be displayed on school walls, and in-service training should be given. The opinions of the pre-service teachers on this subject are as follows:

Fatma "Technological facilities may be insufficient in some schools, and the availability of technological tools in every classroom can be expanded. In schools with better conditions, such courses can be provided in computer and informatics classes."

Yıldız "I volunteered at the Ahbap platform, we were using Canva for free and we could do anything, it was great. If school administrations buy programs like this, teachers can produce more material."

Öykü "...For example, while using some applications, it gives the right to produce a maximum of two content, after which it becomes paid. We need to use it more when we become teachers, it would be more beneficial if our administrators could buy it."

Tuğba "... There should be more material opportunities in the classrooms. Classes such as music class, science class, and art class can be built. If there is a technology class, the Kahoot application can be used with tablets... It would be more advantageous if there were no usage restrictions when accessing these applications from the school or the internet connection in the Faculties of Education."

DISCUSSION, CONCLUSION AND IMPLICATIONS

In this research, which aims to determine the opinions and experiences of social studies pre-service teachers towards web 2.0 tools, the applications they chose to produce content and the reasons for choosing these applications, the stages they like and have difficulty in producing content, their thoughts on the use of web 2.0 tools in social studies courses and their recommendations to other colleagues about the use of web 2.0 tools in classes were evaluated from the point of view of the pre-service teachers constituting the study group. This research is limited to the opinions of social studies pre-service teachers, who constitute the study group, about web 2.0 tools.

Pre-service teachers created a presentation and visual content, concept/mind map, and evaluation tool with the web 2.0 applications they chose. They used applications Canva, Voki, Pixton, Pictrama, Emaze, and Storyboard That to create a presentation and visual content; Bubble.us, Mindmeister, and Word Art to create a concept/mind map, and Word Wall, Puzzlemaker, and Kahoot to create an evaluation tool. Tatlı et al., (2016) state that pre-service teachers like the applications Powtoon, Quiz Maker, and Edraw Max the most and they think to use them in their professional life, while Avcı and Atik (2020) state that teachers use web 2.0 tools LearningApps, Quiver, and Kahoot. Timur et al. (2020) states that some teachers actively use social media applications as web 2.0 tools during their university education and benefit from these tools when they start their professional life, while some teachers have the opportunity to use different applications thanks to the web 2.0 tool lessons they took from the university. Horzum (2010) and Timur et al. (2020) concluded that teachers; Kıyıcı (2010), Baltacı Göktalay and Özdilek (2010), Korucu and Çakır (2014) concluded that pre-service teachers actively use social networking, video sharing, and instant messaging sites. Çelik (2020) concluded that the applications that pre-service teachers can learn and integrate into the social studies course are Quizizz, Powtoon, Powerpoint, Mowi maker, Google Classroom, Toondoo, Clasdojo, Canva and Flipquiz. According to Baltacı Göktalay and Özdilek (2010), pre-service teachers are willing to use social networks, video sharing sites, and instant messaging applications in education. Arabacıoğlu and Dursun (2015) state that although pre-service teachers have knowledge about web 2.0 tools, they do not have enough information about how to use them in education. Other studies in the literature also support this finding (Efe, 2015; Dağhan et al., 2015; Eren et al., 2015; Fırat & Köksal, 2017; Tünkler, 2021).

The pre-service teachers explained the reasons for preference for the applications they chose to produce content, based on the application features and usability in the learning-teaching process. They emphasized about applications as reasons for preference that it is easy to use, their content has many options, it can create content suitable for the Social Studies Curriculum, it can be used in the classroom, it is interesting, it can be used as a concept teaching, subject summarizing, and evaluation tool, and it is economical. Avcı and Atik (2020) state that teachers prefer web 2.0 tools that are easy to use and suitable for effective material development. According to Tatlı et al. (2016), pre-service teachers preferred web 2.0 tools because they enable easy and effective material development. Özer and Albayrak Özer (2017) concluded that pre-service teachers thought of using web 2.0 tools that support individualized education and provide collaborative and social environments when they start their professional life.

Pre-service teachers emphasized about the features that they like in the process of producing content using web 2.0 tools that preparing colorful/enjoyable designs, the richness of applications in terms of content, ease of use, creating puzzles/games/digital stories, and learning new information, shaping their ideas, and gaining self-confidence. It is possible for teachers and pre-service teachers to find information on the use of web 2.0 tools, which are easy-to-learn and user-friendly applications, in sharing areas such as YouTube. Pre-service teachers' perceptions of the usefulness of Web 2.0 technologies are a strong indicator of their intention to use Web 2.0 tools to support student learning in their classrooms when they become teachers (Sadaf et al., 2013). It is possible for

teachers who are competent in the technological field to create a successful education process by using their pedagogical knowledge and knowledge about the field (Avcı & Atik, 2020). Nelson and Hawk (2020) state that making pre-service teachers believe that technology is beneficial in the education process will save pre-service teachers from the simplification process of only showing a PowerPoint presentation and will affect their professional development. There are research results that show that training on the use of Web 2.0 tools creates a change in the knowledge and skills of teacher candidates (Gürsoy and Göksün, 2019; Çelik, 2020; İzgi Onbaşılı, 2020). Providing pre-service teachers with technologically rich experiences with web 2.0 tools in pre-service teacher education programs can encourage the integration of these technologies into the real classroom environment (Coutinho, 2008).

The pre-service teachers emphasized about the features that pre-service teachers have difficulty in the content production process that having paid options and usage restrictions in applications, usage of English as an application language, understanding application usage and not having a computer, being able to produce content/questions to use in applications and not having sufficient technological skills. It has been determined that some of the social studies pre-service teachers have difficulties in content production processes due to their limited technological opportunities and they cannot allocate enough time to the content production process. In their research, Tünkler (2021) concluded that social studies teacher candidates have deficiencies in using computers, most of the web 2.0 tools used do not have Turkish language support, they obliged to purchase a payment to tools for using, and they encounter problems such as the inability to export the created content. Gürsoy and Göksün (2019) also state that pre-service teachers have difficulties in printing the content they have created, character limits, inadequacy in technology, and the interface being in English. In other studies on the subject, language problems in applications (İzgi Onbaşılı, 2020; Tatlı et al., 2019), access to all features in applications with paid memberships (Ünal and Uzun, 2019) and lack of information about these technologies (Pritchett et al., 2013) It is stated among the situations that negatively affect the use of web 2.0 tools. In the study of Erdoğan and Şerefli (2021), in which they examined the effect of personal experiences of social studies teachers on the use of technology in the teaching process, it is emphasized that social studies teachers' having limited technological opportunities in their learning processes negatively affects their technology use skills. In the studies conducted by Şad and Nalçacı (2015) and Saygıner (2016), it was concluded that pre-service teachers who have a computer have higher technological competence.

The pre-service teachers explained their views on the use of web 2.0 tools in social studies courses through its effects on teachers and students and the educational environment. Pre-service teachers emphasized about effects of using web 2.0 tools in social studies lessons on teachers that making it easier for teachers, supporting oral expression, being economical compared to other materials, demonstrating efficient use of technology to students, and teachers' self-development in the digital field, teachers discovering new applications in the web 2.0 tool design process, being able to be used as an evaluation tool, the necessity for teachers to have technological opportunities. Korucu and Yücel (2015) stated that web 2.0 tools have important effects such as increasing permanent learning, making the education process more effective, facilitating concept teaching, and increasing efficiency in education and training. While Özer and Albayrak Özer (2017) stated that pre-service teachers think that the use of web 2.0 applications will save time and facilitate the education process, Efe (2014), Firat, and Köksal (2017) have concluded that pre-service teachers' tendencies towards the use of web 2.0 tools in education are weak. In order to ensure that teachers can effectively use the new elements of developing technology in their lessons (Kaya & Yazıcı, 2019), they need to gain extensive experience in the use of technology in social studies teaching in the lessons they have taken during their education (Shin et al., 2019). In the study conducted by Vannatta and Nancy (2014), it was determined that teachers who improve themselves in the use of technology in their daily life and who are willing to learn how to use technology are more likely to use technology

in the classroom. Ersoy and Bozkurt (2015) also state that teachers can improve their technology use skills in education with their individual interest in technology and can positively affect their colleagues.

Pre-service teachers emphasized about effects of using web 2.0 tools in social studies lessons on students that being interesting from the perspective of students, providing permanent and easy learning, students perceiving it as a game, students' involvement with technology, embodying abstract thinking, increasing academic success. The importance of today's students, whom Prensky (2001) called digital natives, acquiring the culture of learning technology in safe and ethical ways and using it as a production tool is increasing day by day (Korucu & Karalar, 2017). The positive aspects of using technology in learning environments for students are emphasized in the literature. It contributes positively to increasing students' academic success and motivation (Almalı & Yeşiltaş, 2020; Bolatlı & Korucu, 2018; Çoklar, 2012; Holcomb & Beal, 2010; Jena et al., 2018; Spiezia, 2010), creating a perception of self-confidence and competence (Hefner, 2004), ensuring student participation, increasing the attractiveness of students to the subject, improving students' research skills (Gülbahar & Güven, 2008), developing critical thinking, problem-solving, and communication skills (Chai & Kong, 2017), improving interpretation skills (Newton & Rogers, 2003) raising individuals who use information effectively by gaining the skills required by the information age (Deperlioğlu & Köse, 2010). It has positive contributions in the process of recognizing misconceptions (Simpson, 2010), meeting individual differences (Norton & Hathaway, 2008), and developing students' self-concept (Sivin Kachala & Bialo, 2000). Faizi, Chiheb, and El Afia (2015) stated that Web 2.0 applications offer many educational advantages for students, thus contributing to more learning opportunities, and stated that online tools can provide more opportunities to go beyond traditional presentation formats and develop student-centered personalized learning environments.

Pre-service teachers emphasized about effects of using web 2.0 tools in social studies lessons on the educational environment that making the learning and teaching environment fun, increasing in-class interaction, and the possibility of using the preparation process as an in-class application, seeing easily as it is projected onto the screen. Palaigeorgiou & Grammatikopoulou (2016) state that web 2.0 learning activities put the student at the center of the learning process and increase trust and communication between students and teachers. Tünkler (2021), in his research, concluded that social studies teacher candidates can prepare web 2.0 materials thanks to the theoretical and practical training they receive on the use of web 2.0 tools, and that they are aware of the effect of these materials on learning. The use of new technologies in educational environments with Web 2.0 applications offers alternative learning environments to traditional classroom learning environments (Genç, 2010, cited in Yazıcı et al., 2021). In the study conducted by Holcomb and Beal (2010), it was revealed that web 2.0 tools used effectively by teachers in social studies education had a positive effect on increasing students' academic success, interest, curiosity and creativity in lessons. Today, developments in information and communication technologies have brought about the change in teacher and student profiles, and digital competence and digital literacy as a 21st-century teacher and student competencies have become among the concepts that are frequently emphasized (Orhan Göksün & Aşkım Kurt, 2018). This situation has revealed that the use of technology in education has increased, and it is necessary to use technology consciously in the classrooms. It is thought that the educational environments of future generations will be different from today's educational environments. Educational environments are affected by technological developments as well as teachers and students. The quality of educational environments is reshaped depending on the development of teacher and student qualifications (Çelik, 2020).

Pre-service teachers explained their advice to their colleagues on the use of web 2.0 tools in educational environments, based on recommendations for teachers and administration. Pre-service teachers emphasized about recommendations of teachers using web 2.0 tools on the educational environment that it should be used to increase efficiency in lessons and activate the student in the

lessons, support should be obtained from experts/internet videos, it should be used by all teachers, teachers with insufficient computer skills should work on applications, different applications should be continued to try/research, it should be used to keep up with the age, and tools suitable for practice and lecture should be preferred in the lessons, it should be used to provide professional development, it should be used because it is economical, it should be used gamified, and it should be used because it attracts students' attention. Professional development of teachers is one of the most important factors in order to use education and technology together (Lawless & Pellegrino, 2007; Liu, 2013). However, it is emphasized that pre-service teachers are not sufficiently equipped to acquire more theoretical knowledge and skills about technology during their education and how they can use technology in their own fields (Öksüz et al., 2009). Bolick (2017), on the other hand, emphasizes that the speed of technological development is higher than the speed of technology adoption and use in educational environments, and states that this situation causes social studies teachers to not be able to use technology according to the expectations of the age. In this sense, it is necessary for pre-service teachers to gain up-to-date knowledge, skills, and positive attitudes about the efficient and effective use of technology during their education, and to make practices in this direction. According to Önal (2018), 21st-century teachers need to have the skills to use information and communication technologies in the learning and teaching process as well as their digital competencies in order to raise qualified individuals in the future. Considering that the teaching profession is a professional occupation that requires content knowledge, academic work, professional formation, and technology skills (Erden, 1998), it is expected that newly trained young teachers will be more self-sacrificing in the use of technology in educational environments. The use of technology by teachers in educational environments will contribute positively to the education system (Jonassen & Reeves, 1996; Means, 1994), the use of web 2.0 tools in classrooms will become increasingly widespread (O'Connor Petruso, 2010) and it will have positive effects on students' motivation and cognitive development (Heafner, 2004) is indicated. For this reason, teachers should be supported and trained in using web 2.0 tools. Supporting teachers in the use of technology in lessons through in-service training will be beneficial in creating more effective educational environments for Alpha generation students, who have increasingly different expectations and desires (Avcı & Atik, 2020). Prensky (2001, 1) summarizes this situation by saying that “*Our students have changed radically. Today's students are no longer what our education system designed for the teacher*”.

In line with the results of the research, the following suggestions can be made:

- ✚ Academicians, teachers, and pre-service teachers can access web 2.0 tools whose usage licenses have been purchased on the EBA application.
- ✚ Course contents can be created so that pre-service teachers can gain knowledge and skills for the effective use of web 2.0 tools during their education.
- ✚ Necessary technological devices can be provided by making necessary technological arrangements in schools and classrooms, and internet connections in schools can be improved.
- ✚ New studies can be conducted to take the opinions of teachers and students on the usability of web 2.0 tools in social studies teaching.

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Factors Affecting Vocational College Instructors' Usage of LMS in the Post-Pandemic Normal

Umut Birkan Özkan, Assoc. Prof. Dr., National Defence University, Türkiye, umutbirkanozkan@gmail.com
 0000-0001-8978-3213

Harun Çiğdem, Assoc. Prof. Dr., National Defence University, Türkiye, hcigdem@gmail.com
 0000-0001-5958-5216

Gökhan Yazar, PhD., Türkiye, gokhanhocam@hotmail.com
 0000-0002-0339-3773

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Abstract

The use of a learning management system (LMS) in education is becoming more and more appealing. This study aimed to look at the variables influencing Turkish vocational college instructors' behavioral intentions (BI) in using the college's LMS, called the Course Portal (CP), following the pandemic. The LMS factors of self-efficacy (SE), area of scientific expertise (ASE), and interactivity (INT) are used in this extended Unified Theory of Acceptance and Use of Technology (UTAUT) model. A total of 105 instructors completed an online questionnaire. The regression model and artificial neural network approaches were used to analyze the data. The findings demonstrated that the instructors' BI in using the CP could be anticipated from the SE and instructors' ASE, and the instructors' behavior in the use of the CP could be anticipated from facilitating conditions (FC), INT, and the BI to use it. Performance expectancy (PE), effort expectancy (EE), and social influence (SI) were ultimately excluded from the final model due to their insignificant connections with BI. It is suggested that instructors' BI to use the CP will be high if their scientific expertise coincides with the e-learning and that instructors' BI to use e-learning will also grow, in their opinion, as their SE increases. Nevertheless, it is reasonable to conclude that instructors' BI, including the availability of FCs and an interactive LMS, will boost their overall use of LMS.

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INTRODUCTION

E-learning programs, notably a learning management system (LMS) that depicts web-based learning processes, now dominates many educational applications. Modern technology has played a vital part in helping instructors teach learners from afar by leveraging a variety of digital platforms and tools as teachers have been drawn to online education (Zacharis & Nikolopoulou, 2022). Since it provides convenience and flexibility to both instructors and students, the LMS has had a revolutionary impact on education and has become an enticing as well as a widespread education alternative. An LMS is a robust online content process that supports learning and teaching activities and is an extensively employed application in higher education (Lavidas et al., 2022). It is also an impressive tool since it allows the use of new online educational resources in teaching and learning that are typically not possible in traditional courses. The LMS has become the standard flat form for a modern educational organization, covering schooling announcements, lecture presentations, test revisions, report submissions, online assignment submissions, and course registration (Nguyen, 2021). The purposes of using an LMS in organizations are threefold: to develop their instructional systems, to fulfill the demands of their students, and to prepare the next generation for future questions (Hernandez et al., 2011). Given the usage rate of 99% in higher education institutes, LMS technology is the most widely used innovation in e-learning software. LMS, which has become increasingly widespread in recent years, was initially designed to manage distance education. However, supporting traditional in-class learning in mixed learning has become increasingly important as time has passed. Therefore, the use of an LMS may be considered a significant instructional technology used by a wide range of educational institutions at all levels, particularly in higher education (Cheng & Yuen, 2018). LMSs are feature-rich systems that are used to encourage both online and traditional classroom learning (Islam, 2013). LMS offers the infrastructure that authorizes instructors to develop and present course materials, track students' progress, communicate with them, and provide online learning experiences (McGill & Klobas, 2009). In addition, the LMS acts as a link between instructors and other instructional tools (Sinclair & Aho, 2018). Lecturers may offer a variety of learning experiences (video, lecture notes, lecture presentations, discussion forums, online homework, online tests, etc.) to their students using the LMS, and students can access the prepared content without time or space limitations.

An LMS technology is used in higher educational institutions, through mandatory practice or with departments making their own decision regarding its use. It is pivotal to use the LMS successfully in educational activities to complete the course of study expectations of today's students and to provide a variety of learning objectives. However, institutional investment in an LMS does not guarantee that instructors will develop content for the LMS or that the LMS will be effective. Furthermore, academics' adoption and utilization rate of the LMS may often be lower than institutional expectations (Teo, 2012). In addition, one of the major factors that may hinder LMS acceptability by instructors is the institutions' absence of an LMS utilization strategy (Wrycza & Kuciapski, 2018).

Aside from the fact that LMS usage has increased rapidly over the last decade, the COVID-19 pandemic that broke out on March 11th, 2020, demonstrated that educational institutions still face challenges in using e-learning applications. A significant roadblock to efficient LMS adoption is a lack of interest among teaching staff. Instructors' features, students' features, the technology used, and the assistance available are four significant features that influence the LMS application's performance (Selim, 2007). Determining the factors affecting a new technology's acceptance and use is an important research topic in studies because potential individuals must first understand and accept the technology before expanding the use of technological breakthroughs (Teo et al., 2019; Wrycza & Kuciapski, 2018). LMS technology progresses and lecturers use it in their professional lives; instructional technology researchers are still trying to understand what variables influence the instructors' use of this technology. The most important motivation for this research subject is that the benefits of LMS cannot be fully maximized unless instructors and students adopt the LMS (Teo, 2012).

All the suggestions mentioned above indicate that, in developing viable solutions, attention should be paid to understanding the instructors' BIs and use of the LMS. As a result, finding the crucial characteristics that influence instructors' use behavior and their BIs in using an LMS continues to be a major challenge.

THEORETICAL BACKGROUND

The user's BI, inspired by the user's expectations, usually influences how new technology is used (Fishbein & Ajzen, 1975). Numerous theoretical models that investigate the acceptance of the information system employ the concept of BI to identify factors that affect user utilization, guiding the best information system implementation and design. Numerous theoretical models based on technology have been created to explain how people perceive and accept new information technologies (Razkane et al., 2022). Two theories and models that describe how people adopt new technology are the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Davis et al., 1989). On the other side, The UTAUT model was established to describe a technology's user acceptance. It becomes clear that all models follow a similar process for accepting an innovation if their structure is analyzed (Venkatesh et al., 2003). This cycle happens as the person experiences favorable responses to adopting innovation, good behavior intents for use, and then uses the innovation.

Compared to other models, the UTAUT model (Venkatesh et al. (2003), was developed specifically for assessing an innovation's acceptance and use. Also, it provided a broad opportunity to understand information system acceptance and was used to identify the variables influencing instructors' BI to use and use behavior of LMS. UTAUT is an outstanding model and one of the most utilized frameworks in this context. The UTAUT model was suggested by Venkatesh et al. (2003), and they reported that the model was influenced by four significant independent variables and four moderators of information systems usage behaviors. Gender, age, experience, and volunteering are our moderators, while PE, EE, SI, and FC are independent variables. According to the model, these variables have an impact on an individual's BI.

Unique ideas about a system that rewards employees for their work performance are referred to as PE (Venkatesh et al., 2003). PE in instructional technology indicates working performance (Khechine et al., 2020), and in this regard, people choose to adopt programs that they feel will increase their company performance. The promise of improving performance via LMS will increase the willingness to utilize LMS. The instructors will be more eager to utilize the LMS if it is effective and helps them improve their work performance. One of the most common positive predictors of individuals' BI is PE (Venkatesh et al., 2003).

The degree of simplification in technology utilization is commonly referred to as EE. This factor indicates that instructors find LMS easy to use in the context of instructional technology. Lecturers will be more interested in using this innovation if it is simple and requires little effort. The expected effort, like expected performance, is frequently discovered to be a significant factor of BI (Venkatesh et al., 2016).

SI measures how many others value technology use (Venkatesh et al., 2003). SI represents the opinions of other instructors regarding the use of LMS when it comes to the topic. Although Mtebe and Raisamo (2014), reported that SI on BI use had no significant effect, numerous research has found SI to be one of the significant predictors of BI (Khechine et al., 2020). On the other hand, Hartwick and Barki (1994) suggest that SI is more prominent when it is needed. Because they use new technology daily, mandatory users appear to place greater weight on others' ideas, whereas volunteers do not emphasize others' ideas (Hartwick & Barki, 1994).

The third variable, the notion that a person would receive organizational or technological infrastructure help in the innovation process, is referred to as FCs (Venkatesh et al., 2003). Human and

technical supports are FCs in terms of instructional technology for using LMS. When instructors perceive that network infrastructure is sufficient for LMS use and, in some cases, they have an office to call, they are expected to be more willing to utilize LMS. As a result, teachers with a lot of support and good infrastructure are more likely to use LMS effectively. UTAUT2 significantly impacts e-learning technology adoption research (Lahrash et al., 2021). According to the UTAUT2 model, FCs and BI have a significant positive link (Venkatesh et al., 2016).

BI, as a dependent variable, explains people's intentions to utilize new technology in the future (Davis, 1989; Warshaw & Davis, 1985), whereas usage behavior refers to how much they use new technology. This refers to the instructors' aim to use the LMS in the context of instructional technology. The BI to use technology is often related to and required for the use of associated technology, according to most technology acceptance models. In this example, the classic UTAUT model was chosen as the basic model because it is a viable alternative to other theoretical acceptance models. UTAUT model recognizes these factors, including PE, EE, and SI, have a direct effect on BI use and FCs, and BI use directly affect the use behavior (Venkatesh et al., 2003). Furthermore, moderators such as gender, age, experience, and volunteering can alter the influence of BI predictors in the model (Venkatesh & Zhang, 2010). Recent studies have found that, in addition to the required criteria in UTAUT, many other factors can fully anticipate an information system's use behavior and provide a deeper understanding. Many researchers have modified the classic form of the UTAUT by adding other variables and factors or by eliminating existing ones. This present study employed the factors suggested by Wrycza and Kuciapski (2018) and the model generated by adding LMS SE to UTAUT.

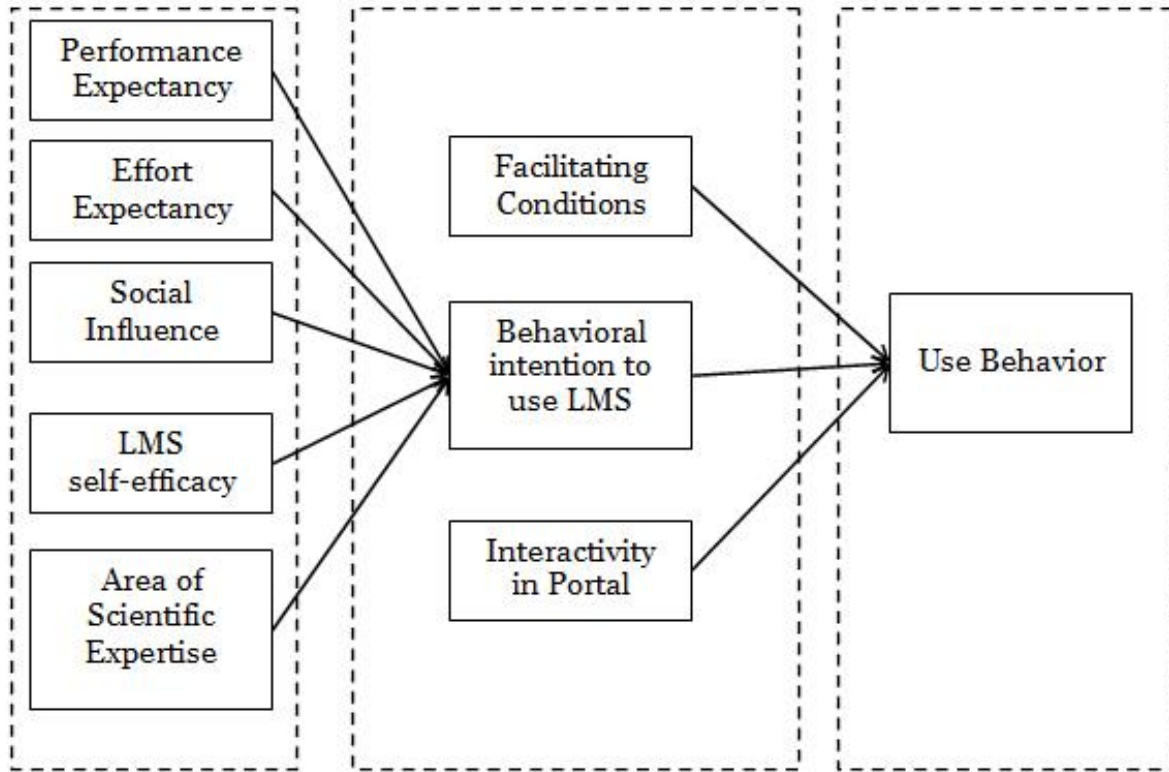
Using LMS is identical to using any other information system, but several context-specific factors may also affect the intention to use it. For this reason, the instructors' motivation to use LMS may differ significantly from that of other systems. Instructors may expect not just to enhance performance, reduce efforts, or increase social status but also for the LMS to be specialized to their field, interactive, and capable of being used by themselves. Many researchers have confirmed the UTAUT model as a sound model in various areas; however, it does have certain limitations. For example, while earlier studies have revealed that perceived SE has a considerable and positive effect on an individual's motivation and performance (Bandura, 1977), in the UTAUT model, SE does not appear to be a powerful determinant of BI. This study adds the SE factor to the research model to determine the teachers' perceptions of LMS performances. Thus, if the instructors realize that utilizing LMS surpasses their abilities and skills, we may assume that they will avoid using LMS, according to this study. Users who have a higher level of LMS SE are more likely to engage in LMS-related activities (Baki et al., 2018; Hsia et al., 2012); for example, SE, according to Ong and Lai (2006), influences both the need to apply e-learning and its performance.

Another significant factor for all learning environments is INT, regardless of the teaching technique or technology employed (Moore & Kearsley, 2011). It can be a critical aspect in developing instructors' good attitudes toward LMS (Wrycza & Kuciapski, 2018). All these factors show that an LMS's INT should be a key factor affecting instructors' decision to use it or not (Wrycza & Kuciapski, 2018). Because this feature of the LMS has not been commonly given to instructors in prior practices, it is expected to promote LMS usage. Another independent variable is the instructors' ASE, which stems from the fact that the study spans all departments of a military vocational school. Instructors in departments like Computer Technology utilize ICT technology in their everyday life and scientific studies, whereas instructors in other departments may be unfamiliar with e-learning since LMS is a different teaching technology than presentation preparation applications. For this reason, lecturers might request additional courses to learn about online teaching. ASE is generally identified as the extent of a belief that using LMS fits and develops its science teaching field (Wrycza & Kuciapski, 2018).

Herein, LMS SE and ASE are considered determinants of research design for instructors, while environmental factors focus on FCs and INT in LMS. The study intends to conduct an extended UTAUT

model to explore the association between instructor’s use behavior of the LMS and selected factors such as PE, EE, SI, LMSSE, ASE, BI, FCs, and INT in LMS (see Figure 1). Given that FCs and INT in LMS are connected to the development of LMS and would affect use behavior rather than BI to use LMS, we decided to add these variables into use behavior.

Figure 1. Extended UTAUT framework of the study



The model is conceptualized in the following way: BI to use LMS may be influenced by PE, EE, and SI from the UTAUT model, and LMS-SE, as well as ASE, is discussed in the first section. In a similar layer, the second section covers BI to use LMS, FCs, and INT in LMS, which tends to positively affect the use behavior that we discussed in the last section. The UTAUT of Venkatesh et al. (2003) serves as the conceptual underpinning for the present study. Also, other factors such as the ASE and INT in LMS as suggested by Wrycza and Kuciapski (2018) have been incorporated into the model, allowing it to achieve a unified conceptual framework. Understanding the instructors' LMS use behavior is a crucial topic based on the design discussed so far, not only to increase the use of the LMS but also to demonstrate its potential effects. With that in mind, the purpose of this research, which was based on Wrycza and Kuciapski (2018) extended UTAUT model, was to examine the determinants affecting military vocational college instructors' BI to use the LMS and its constructing factors, including PE, EE, SI, LMSSE, ASE as well as its predictors, FCs and INT in LMS at a post-secondary vocational college.

Other LMS researchers and providers will gain a comprehensive understanding of instructors' use behavior and BIs concerning the use of LMS through this study's findings. Consequently, they can plan and offer better LMSs that will enable more instructors to use and produce more efficient results. The development of LMS has made it simpler to create interactive lessons, and the interaction between instructors and students has increased. Therefore, looking into the impact of LMS INT on instructors' LMS use behavior has become critical. For the current study, the institution where the research is conducted is also critical. Because the internet access accessible to students in the military vocational college where the research is undertaken is limited, it is deemed necessary that the LMS be

enhanced and utilized by the instructors. Hence, using LMS in such environments is a valuable opportunity to influence instructors positively and increase their engagement.

Moreover, the fact that most of the instructors in the military vocational college where the research was done are brand new to their jobs and are not teacher-based makes this study relevant. Much research has been done on higher education; however, relatively little research has been conducted on post-secondary military vocational schools. So, this study with two-year post-secondary military vocational school instructors intends to contribute to the literature by presenting examples of similar educational environments.

Institutions make significant investments to incentivize the use of LMS, and it is essential to determine the factors affecting instructor LMS use in the post-COVID period. Previous studies include several specific external factors (TAM, UTAUT, UTAUT2) that cover part of the behavioral intentions of instructors to use the LMS, as is evident from the literature review. This study tries to provide a completer and more accurate picture by integrating many of the previously mentioned criteria as well as new factors (Interactivity, Facilitating Conditions) that have emerged with the advancement of technology. Most of the literature on LMS centers on higher education institutions with advanced LMS infrastructure and lecturers that use LMS effectively (Al-Fraihat et al., 2020). Although most studies were conducted in universities, the factors influencing instructors' intentions to use LMS in some schools were not investigated. In less researched colleges, such as post-secondary military vocational schools, less is known regarding instructors' LMS usage. As a result, the primary goal of this research is to look into the LMS usage patterns of two-year post-secondary military vocational school instructors, as well as the factors that may influence this behavior in the post-pandemic normal. by understanding the elements that drive LMS use behavior, instructors and institutions can determine what steps they may take to increase LMS use.

The following are some of the research questions that this study aims to investigate:

- Can BI to use LMS be predicted by PE, EE, SI, LMSSE, and ASE?
- Can use behavior be predicted by BI to use LMS, FCs, and INT features of the LMS?

METHOD

A quantitative research design of the relational survey type was adopted to achieve the study's goals. This study was conducted urgently after the successive lockdowns in a military vocational college. Because researchers are instructors, convenience sampling was used to select the participants. One of the researchers revised the LMS, which was named "Course Portal" and was developed using MOODLE, and its new version was introduced in the 2021-2022 academic year. Because of the school's unique situation, the LMS only broadcasts on the intranet, with no external access. At the start of the 2021-2022 academic year, an LMS manager was appointed to each department, and the researcher provided training about how to use the LMS properly. Department administrators provided the appropriate information to their departments, and all courses were made available on the LMS. On the other hand, instructors were not obliged to utilize the LMS.

PARTICIPANTS

This study included 105 instructors who used LMS during the 2021-2022 academic year. It was entirely voluntary to take part in the survey. The demographic information of the 105 faculty members that participated in the study is shown in Table 1.

Table 1. *Personal Characteristics of Instructors*

<i>Gender</i>	<i>n</i>	<i>%</i>
Male	87	82.85
Female	18	17.15
<i>Age</i>		
20-24	14	13.33
25-29	50	47.62
30-34	10	9.52
35-39	12	11.43
40-44	10	9.52
45-49	8	7.62
50-55	1	0.96
<i>Department</i>		
Technical Departments	55	52.38
Non-Technical Departments	50	47.62
<i>Graduation</i>		
Not Teacher Based	68	64.76
Teacher Based	37	35.24

Instructors, especially those who are not teacher-based graduates, do not have any LMS experience. It is also worth noting that the institution where the research was conducted is a newly established university and most of the participants are under the age of 30 and had their first teaching experience here. In addition, MOODLE, a free software, was used as the LMS, and a four-hour training was given to the instructors in all departments at the beginning of the semester on the use of LMS and its features (file upload, exam creation, homework, etc.).

DATA COLLECTION INSTRUMENT

The information was gathered in Turkish utilizing an online 5-point Likert-type scale questionnaire with a response range of 5 (strongly agree) to 1 (strongly disagree) adapted from Wrycza and Kuciapski (2018) expanded UTAUT model. LMS self-efficacy factor from Zheng et al. (2018) was added to the questionnaire. The questionnaire, which took 15 minutes to complete and comprised 30 items and a separate section with questions about the participants' demographic characteristics, was designed to meet the study's objectives.

Aside from the demographics, the questionnaire had eight subscales that represented instructors' LMSSE, PE, EE, SI, FCs, System INT of the LMS, instructors' ASE, and BI to use the LMS and use behavior. The items on each subscale are listed in Table 2.

Table 2. Items Placed on Each Subscale

<i>Subscales</i>	<i>Items</i>	<i>Mean</i>	<i>SD</i>
<i>Performance Expectancy*</i>			
I1	I find LMS useful in teaching.	4.30	.89
I2	Using LMS enables me to accomplish teaching activities more quickly.	4.13	1.00
I3	Using LMS increases my teaching productivity.	4.02	1.01
I4	If I use LMS, I will increase my chances of getting a positive evaluation.	3.73	1.02
<i>Effort Expectancy*</i>			
I5	My interactions with LMS have been clear and understandable.	4.01	1.03
I6	It is easy for me to become skillful at using LMS.	4.18	.95
I7	I find LMS flexible and easy to use.	4.09	1.01
I8	Learning to operate LMS does not require much effort.	4.17	.90
<i>Social Influence*</i>			
I9	I find LMS useful in teaching.	4.30	.89
I10	Using LMS enables me to accomplish teaching activities more quickly.	4.13	1.00
I11	Using LMS increases my teaching productivity.	4.02	1.01
<i>Facilitating Conditions*</i>			
I12	I have the resources necessary to use LMS.	4.00	.99
I13	I have the knowledge necessary to use LMS.	4.22	.80
I14	A specific person (or group) is available for assistance with LMS difficulties.	4.22	.90
I15	My computer is compatible with and able to support LMS.	4.25	1.02
<i>Interactivity in LMS**</i>			
I16	LMS enables interactive communication between teacher and students.	4.00	.92
I17	LMS enables interactive communication among students.	3.77	1.01
I18	Communication opportunities in LMS are effective (e-mail, bulletin board, online chat, etc.)	3.54	1.07
<i>Area of Scientific Expertise**</i>			
I19	My area of scientific expertise is convenient for teaching with LMS.	4.06	.88
I20	LMS has sufficient tools to teach my area of scientific expertise.	3.94	.95
I21	LMS makes easier to teach my area of scientific expertise.	4.05	.88
<i>Behavioral Intention*</i>			
I22	I intend to use LMS in the future.	4.23	.91
I23	I predict I would use LMS in the future.	4.28	.89
I24	If available, I plan to use LMS in the future.	4.24	.93
<i>Use Behavior</i>			
I25	I use LMS to attain learning objectives in my classes.	3.98	1.07
I26	I use LMS to support the process of teaching and learning.	4.12	.95
I27	I use LMS for the transfer or creation of knowledge.	4.10	.99
<i>LMS self-efficacy***</i>			
I28	I am confident about my ability to use LMS to complete my work.	4.18	.92
I29	I believe in my capability of using LMS to complete my work.	4.38	.79
I30	I have mastered the skills necessary for using LMS in my job.	4.01	.97

Note. SD = standard deviation of the mean. *Items were adapted from Venkatesh et al. (2003). **Items were adapted from Wrycza and Kuciapski (2018). *** Items were adapted from Zheng et al. (2018)

DATA ANALYSIS

Multiple linear regression and artificial neural network analysis (ANN) were used to examine the study questions and determine the correlations between the factors. At first, multiple linear regression analysis was used to investigate the impact of determinants on BI and behavior in the model. In order to test if the data had a normal distribution, the skewness and kurtosis values were evaluated, which is one of the prerequisites of multiple linear regression analysis. The skewness and kurtosis values of the variables are shown in Table 3.

Table 3. Skewness and Kurtosis Values of the Variables

<i>Variable</i>	<i>Skewness</i>	<i>Kurtosis</i>
Performance Expectancy	-.590	-.369
Effort Expectancy	-.508	-.473
Social Influence	-.496	-.428
Facilitating Conditions	-.384	-.411
Interactivity in LMS	.018	-.726
Area of Scientific Expertise	-.200	-.794
Behavioral Intention	-.748	-.160
Use Behavior	-.541	-.575
LMS self-efficacy	-.466	-.647

The skewness and kurtosis numbers in Table 3 can be used to determine if the series is normally distributed. Various opinions about skewness and kurtosis values indicate that these values can be acceptable in the assumption of normality within the range of -1 to +1 (Morgan et al., 2011).

For the current analyses with three and five predicted variables, Mahalanobis distance was employed based on criterion values of "16.27" and "20.52" (Tabachnick et al., 2001). As a result of the examination of Mahalanobis values, one outlier (extreme value) was found for the analysis with five predicted variables. However, no extreme values were found for the analysis with three predicted variables. For Pallant (2020), it is relatively unusual for a few outliers to arise; therefore, the study began with 105 people after one case was maintained in the dataset.

The existence of skewness and kurtosis values between -1 and +1 in the current study indicates that the scores have a normal distribution. The tolerance, variance inflation factor (VIF), and condition indices (CI) values for the predictor variables included in the study are also listed in Table 4.

Table 4. Tolerance, VIF and CI Values of the Predictive Variables

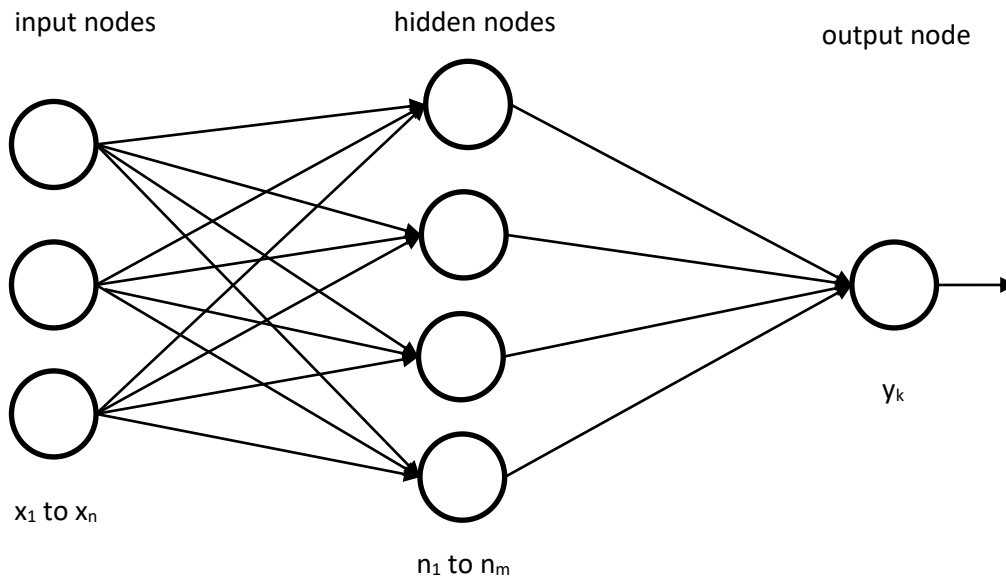
<i>Variable</i>	<i>Tolerance</i>	<i>VIF</i>	<i>CI</i>
Performance Expectancy	.370	2.699	8.889
Effort Expectancy	.328	3.049	11.013
Social Influence	.431	2.319	12.150
Facilitating Conditions	.554	1.804	8.350
Interactivity in LMS	.700	1.428	10.125
Area of Scientific Expertise	.425	2.352	16.222
Behavioral Intention	.624	1.602	6.766
LMS self-efficacy	.290	3.442	13.367

The results in Table 4 show that the independent variables' tolerance value is more significant than 0.20, the VIF value is less than 10, and the CI value is less than 30. This finding indicates that these variables are not multicollinear (Petrini et al., 2012; Robinson & Schumacker, 2009). The IBM SPSS Statistics 22 package software was used to conduct the analysis. Lastly, Durbin-Watson values were examined to ensure that errors were independent. The closer to 2 that the value is, the better (Rutledge & Barros, 2002), and the Durbin-Watson statistics for BI and Use Behavior are 2.14 and 1.62, respectively, which are close to 2 that the assumption is most very definitely met.

The results of regression analysis were compared to those of ANN analysis, a mathematical model that reflects largely parallel, distributed processing systems and is inspired by the human brain's neural network topology (Greenwood, 1991; Haykin, 1999). To tackle complex problems in parallel, the ANN model uses many interconnected processing components (neurons) (Haykin, 1999). The ANN model is a supervised-based learning model, meaning it learns from pre-existing instances called training data. An ANN can be adjusted for a specific purpose, such as pattern recognition or data classification, using training or learning methods. An ANN is widely used to detect data patterns and

solve complex interactions between inputs and outputs. An ANN model is commonly divided into three layers, as shown in Figure 2: input layers, hidden layers, and output layers. With x_1, x_2, \dots, x_n as inputs and y_k as the output, ANN uses a hidden layer as a feed-forward mechanism. A weight is assigned to each input node, which is subsequently passed on to the hidden layer, which is made up of many hidden nodes.

Figure 2. Sample ANN Model



The ANN model is used in various information systems fields, including e-learning, because of its computing capacity and ability to handle various data (Scott & Walczak, 2009; Shmueli & Koppius, 2011; Simoncini et al., 2017). ANN models also have several advantages over typical statistical models. Because there are no preconceived assumptions about the input data distribution, they are characterized as non-parametric models. They can capture both linear and nonlinear interactions; traditional statistical models, such as the regression model, on the other hand, are categorized as parametric models since they are based on the assumption of specified data distribution (Hair et al., 2013).

BI and use behaviors of instructors were taken as the output variables in ANN analysis. In statistics, the output variable (sometimes known as the output layer) relates to the dependent variable. On the other hand, PE, EE, SI, Portal SE, and ASE are the predictive variables of BI. Moreover, the predictive variables of use behaviors are FCs, INT in Portal, and BI. The model's whole set of variables was subjected to an "adjusted normalized" transformation. The data set is split according to the relative case number assigned to random cases. Training data (TRD), testing data (TED), and validation data (VD) / holdout data (HD) are the three parts of this data.

When it comes to separating this data, there is no standard technique to consider. For Zhang et al. (1998), 80% (TRD), 20% (TED) or 70% (TRD), and 30% (TED) rates are often used to divide data into parts. In this study, 60% (TRD), 30% (TED), and 10% (HD) rates were used. The use of 10% verification data in this study was done to minimize fitting problems, an issue that needs to be resolved in machine learning applications like Artificial Neural Networks. The risk of overfitting is considerable if the ANN model works too much on the training data set and memorizes it or if the training set is uniform since the model begins to research for precise copies of conditions in the training set. Overfitting can be avoided when the data set is split in two using validation data or when the model is permitted to estimate using a less complex model. In small datasets, the cross-validation technique is extensively utilized. The application is made on the test set based on the training that took place on the training set. The cross-validation method divides the data set into halves and creates different training-test set

pairs, allowing the model to run on a smaller data set. The dataset is split into three parts, 60% (TRD), 30% (TED), and 10% (HD), in this study so that the training data is not overworked, and the HD feature may be employed to avoid overfitting. Thus, training-test-holdout-sets were built, the model was trained on extra data, and overfitting preventative steps were implemented. During the analysis, IBM SPSS Statistic 22 pack was used, and the ANN model's architecture was constructed accordingly. The hyperbolic tangent function is utilized as the input activation function for hidden layers, whereas in automated architectural design, the identity function is used in the output units. The number of hidden layers is set to 1 in the automated architectural selection option. A three-layer network layout with one hidden layer is commonly utilized in the literature (Han & Wang, 2011; Hippert et al., 2001; Zhang et al., 1998). The "online" type of learning approach was chosen as the learning method in the ANN analysis since the data in the study are not totally independent of one another.

INSTRUMENT RELIABILITY

Cronbach's alpha was determined for the sub-scales within its scope to validate the questionnaire's internal consistency. The alpha values for each subscale are shown in Table 5. All reliability values were within acceptable limits ranging from .82 to .97.

Table 5. Subscales' Alpha coefficients

<i>Subscale</i>	<i>Items</i>	<i>Cronbach's Alpha</i>
Performance Expectancy	4	.925
Effort Expectancy	4	.880
Social Influence	3	.835
Facilitating Conditions	4	.824
Interactivity in LMS	3	.864
Area of Scientific Expertise	3	.921
Behavioral Intention	3	.969
Use Behavior	3	.940
LMS self-efficacy	3	.862
Total	30	

RESULTS

The preliminary research question was to see if the elements of PE, EE, SI, LMS SE, and ASE could predict BI. Multiple regression analysis was used to solve this research question. In Table 6, the model summary of the regression analysis for the BI of the academic staff towards the acceptance of LMS and the regression coefficients' findings are presented.

Table 6. Regression Analysis Model Summary for Faculty Members' Behavioral Intention towards LMS Acceptance

<i>Predictors</i>	<i>Adjusted R² = .557</i>		
	<i>F change = 27.113</i>		
	<i>p = .000</i>		
	<i>Coefficients</i>		
	<i>B</i>	<i>Beta</i>	<i>Sig.</i>
(Constant)	34.312		.009
Performance Expectancy (PE)	.086	.149	.167
Effort Expectancy (EE)	-.020	-.034	.769
Social Influence (SI)	.017	.016	.873
LMS self-efficacy (SE)	.271	.256	.037
Area of Scientific Expertise (ASE)	.462	.450	.000

A regression analysis was carried out to answer the first research question, whether instructors' LMS SE, PE, EE, SI, and ASE factors can predict BI to use of LMS. Moreover, it found a significant result, $R^2 = .578$, $F(5,99) = 27.113$, $p < .001$, only in SE and ASE, which positively affected the scores regarding BI to use (see Table 6). The ASE, one of the two significant predictors of BI to use LMS, maybe a more significant predictor than SE ($\beta_{ASE} = .450 > \beta_{SE} = .256$).

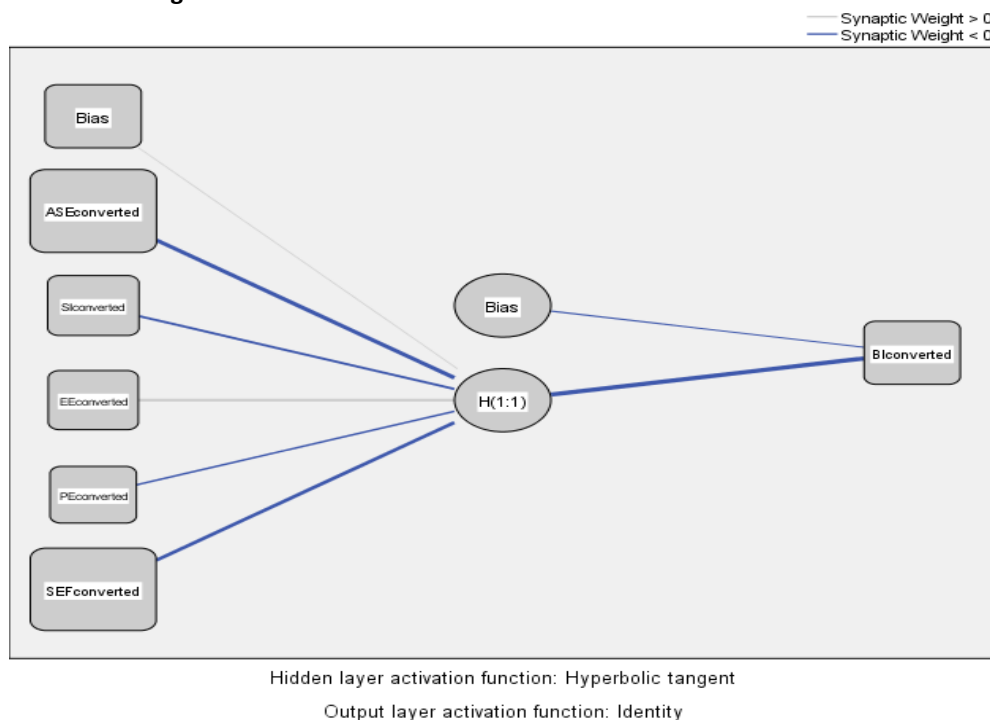
ANN analysis, in this study, was used to determine the instructors' BIs and the significance levels of the effective predictors in their use behavior, which were then compared to the regression analysis findings. According to the analysis, the Sum of Squares Error was found as 17.545, the Relative Error was found as .516 during the training, the Sum of Squares Error was 2.063, and the Relative Error was .225 during the testing phase. Relative Error increased to .245 while verifying. The IBM SPSS Statistic 22 tool bases its error calculations on the test sample. A brief overview of the data utilized in the ANN analysis is shown in Table 7.

Table 7. ANN Data Run Summary

	N	%
Training data	69	65,7%
Test data	28	26,7%
Holdout data	8	7,6%
Valid data	105	100,0%
Excluded data	0	
Total	105	

The whole data set was split into train (65.7%, n=69), test (26.7%, n=28) and validation (7.6%, n=8) as shown in Table 6. The whole data set was split into train (65.7%, n=69), test (26.7%, n=28) and validation (7.6%, n=8) as shown in Table 7. There is no excluded data, and all the data is valid. The structure of the developed ANN model and neural networks is shown in Figure 3.

Figure 3. ANN Model Structure to the Behavioral Intention



The ratings were defined in percentages to ascertain the importance of independent variables' ratings in line with the weights linking the artificial neural cells in the network, and Table 8 summarizes their findings.

Table 8. Significance of the Independent Variables Related to the Behavioral Intentions of the Instructors

<i>Independent Variables</i>	<i>Importance</i>	<i>Normalized Importance</i>
Area of Scientific Expertise (ASE)	.319	100.0%
Social Influence (SI)	.133	41.6%
Effort Expectancy (EE)	.126	39.5%
Performance Expectancy (PE)	.107	33.4%
Portal self-efficacy (SE)	.316	98.9%

When Table 8 is examined, it is clear that ASE (100%) is an essential independent variable for the artificial neural network constructed for the instructors' BIs. This independent variable is followed by the instructors' LMS SE (98.9%). This result is identical to the one obtained by regression analysis (Table 5). The most specific independent variables concerning beta values are ASE (= .450) and SE (= .256), which were statistically significant due to the regression analysis.

The second research question sought to ascertain the predictability of the factors, BI to use LMS, FCs, and INT features of instructors' use behavior of LMS. For this research question, multiple regression analysis was used. The model summary of the regression analysis for the instructors' use behavior towards LMS and the regression coefficients' results are shown in Table 9.

Table 9. Regression Analysis Model Summary for the Usage Behavior of Instructors Towards LMS

<i>Predictors</i>	<i>Coefficients</i>		
	<i>B</i>	<i>Beta</i>	<i>Sig.</i>
	(Constant)	-9.374	
Behavioral intention to use LMS (BI)	.414	.394	.000
Facilitating conditions (FC)	.226	.339	.000
Interactivity features of the LMS (IF)	.232	.215	.004

Adjusted R²= .626
F change= 56.316
p= .000

In a subsequent analysis, we examined whether the BI to use the LMS predicted use behavior, easing the conditions and interaction characteristics of the LMS. It produced a significant result, R²=.626, F(3,101)=56.316, p < .001, indicating that all variables have favorable outcomes on the use behavior of the instructors (see Table 9). When the importance levels of the predictors of use behavior are analyzed, BI to use LMS (BI=.394) is the most important predictor, followed by Facilitating conditions (FC=.339) and LMS INT features (IF=.215).

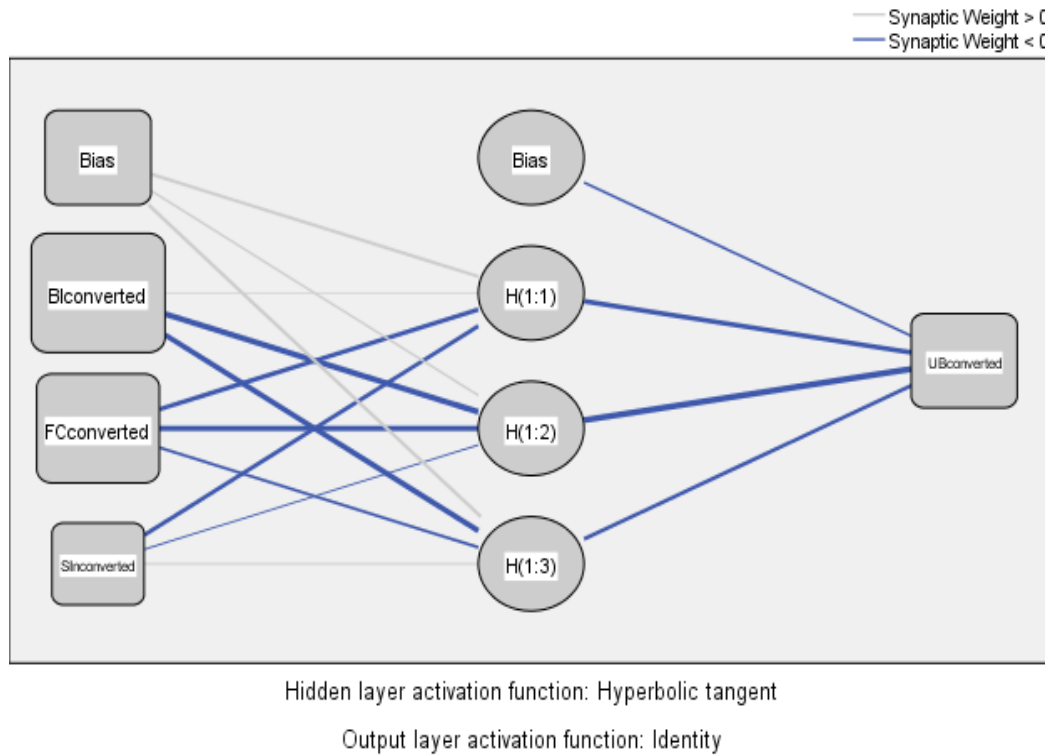
During training, the Sum of Squares Error was found to be 12.478, and the Relative Error was found to be .438 in an ANN analysis to evaluate the critical levels of predictors that are effective in the use behaviors of instructors. The Sum of Squares Error is 4.746, and the Relative Error is .277 during the testing phase. Relative Error became .543 after verification. The run summary of data used in the ANN analysis is shown in Table 10.

Table 10. ANN Data Run Summary

	<i>N</i>	<i>%</i>
Training data	58	55,2%
Test data	37	35,2%
Holdout data	10	9,5%
Valid data	105	100,0%
Excluded data	0	
Total	105	

Table 10 shows that the entire data set was divided into three categories: train (55.2 %, n=58), test (35.2 %, n=37), and validation (9.5%, n=10). There is no excluded data, and all of the data is valid. The structure of the developed ANN model and neural networks is shown in Figure 4.

Figure 4. ANN Model Structure to the Use Behaviors of Instructors



The ratings were defined in percentages to ascertain the importance of independent variables' rating in line with the weights linking the artificial neural cells in the network, and Table 11 summarizes their findings.

Table 11. Significance of the Independent Variables Related to the Use Behaviors of the Instructors

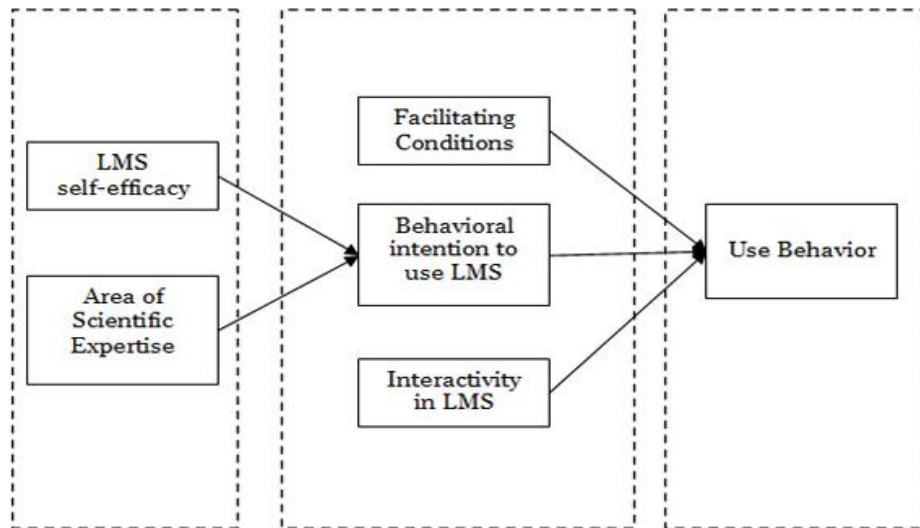
<i>Independent Variables</i>	<i>Importance</i>	<i>Normalized Importance</i>
BI	.487	100.0%
FC	.390	80.0%
IP	.123	25.2%

As can be noticed considering Table 11, the most important independent variable for the artificial neural network created for the BIs of the instructors is BI (100%). This argument is followed by FC (80%). This result is comparable to the one derived from the regression analysis (Table 8). According to the regression analysis, the most specific independent variables concerning beta values are BI (= .394) and FC (= .339), both of which are statistically significant predictors.

DISCUSSION, CONCLUSION AND IMPLICATIONS

Through the extended UTAUT model, the factors influencing instructors' BI to use and use behavior of LMS, which was optional to use, and their use behavior were scrutinized in this research. According to the analysis results, an explanatory model (see Figure 5) was developed that indicated instructors' BI to use LMS and LMS use behaviors. Using the UTAUT model, we found that, contrary to the literature, PE and EE are unreliable predictors of BI when using LMS.

Figure 5. Factors Affecting Instructors' Use Behavior of LMS



One of the factors affecting instructors' use intention is LMS SE. Instructors' BIs to use LMS are developing as they depend on their application skills. This result supports Bandura (1977)'s assertion that SE enhances active learning and that LMS SE may be viewed as an internal motivation factor that increases the BI to use LMS. In addition, this conclusion is now consistent with the findings of previous studies (Baki et al., 2018; Hsia et al., 2012; Ong & Lai, 2006). Instructors' BIs will diminish if they do not have adequate knowledge about LMS. Therefore, institutions may provide training to instructors on the use of LMS. The instructors' SE will improve if schools give training on using LMS to instructors in need at the start of each academic year. The investments will be utilized efficiently if the instructor believes s/he can accomplish it and is confident. According to this finding, the SE aspect should be added as a variable in research models in instructional technology studies, particularly those that use Venkatesh et al. (2003) UTAUT model.

Another aspect influencing BI to use is the instructors' ASE or their views on whether their courses are appropriate for LMS or online education. This study's findings contradict those of Wrycza and Kuciapski (2018), who found no direct influence of the ASE on BI. This result might be because the research groups are different. The study's findings may have been influenced by differences in LMS usage rules in the post-secondary military vocational institution where the research was conducted. Instructors intend to use LMS if they believe their courses can be supported by it. Again, if institutions provide examples from many areas of training to instructors and make instructors realize that there is something they can accomplish for their courses, their BI to use LMS will increase. According to the findings, one of the events is that the rate of instructors' use of LMS will grow in tandem with their desire to use it.

This research found no significant causal connection between PE and instructors' BIs to use LMS. This finding contradicts earlier research findings, which revealed that PE was highly beneficial in influencing BI (Venkatesh et al., 2003). The researchers' brief training to instructors on the use of LMS at the start of the academic year 2021-2022 and their motivation to utilize it could contribute to the insignificant relationship between PE and BI. Overall, it can be inferred that when institutions provide training to instructors on using LMS, their performance expectations rise.

Although the UTAUT (Venkatesh et al., 2003) model and Ain et al. (2016) revealed a significant link between EE and BI in using LMS, it was insignificant in this research. Furthermore, this conclusion is congruent with Wrycza and Kuciapski (2018) research. Additionally, practically all instructors are skilled in using the LMS due to the brief usage training offered at the start of the term having minimal impact on their intention to use the LMS. The finding of an insignificant association between EE and BI

in using LMS is in line with Ain et al. (2016). They found an insignificant link between effort expectation and BI in the context of LMS. Again, the brief training provided to instructors at the beginning of the school year led the instructors' EEs unaffected by their BI to use the LMS.

Williams et al. (2015) systematic review and Taiwo and Downe's (2013) meta-analysis revealed that the connection between BI and SI is minor. They found that 29 out of 115 research that looked at this direct connection found it to be insignificant. Venkatesh et al. (2003) claim that the importance of SI on technical acceptability varies depending on the circumstances of the study. The connection between SI and BI was minor, as in our study (Khechine & Lakhal, 2018; Mtebe & Raisamo, 2014; Teo, 2011; Venkatesh & Zhang, 2010). This relation might be because the LMS is utilized voluntarily by willing instructors. This result contradicts prior studies' findings that SI predicts BI (Khechine et al., 2020).

BI, FCs, and INT in the LMS are all factors that influence instructors' use behavior. As previously shown in prior studies (Šumak & Šorgo, 2016), there is much evidence of an essential connection between BI to use and use behavior. This finding indicates that actual usage will be more significant if instructors intend to utilize LMS. As a result, institutions should adopt and support online learning to complement traditional lecture delivery.

Because there is a significant link between FCs and use behavior, technological and human support are crucial for instructors to use the LMS. This outcome aligns with earlier research (Dwivedi et al., 2019). It is critical for institutions to establish a support office that can assist instructors with the use of LMS, provide user guides, and offer appropriate LMS equipment. Institutions that facilitate instructors' activities will encourage more instructors to use LMS for their courses.

INT in LMS predicts instructors' LMS use behavior, indicating that if instructors can use LMS's INT qualities to cooperate and communicate with students, they will wish to use LMS. This result is comparable to Wrycza and Kuciapski (2018). This data means that instructors intend to use LMS to communicate with students and other instructors, believing that doing so will improve teaching performance and lesson management. Furthermore, for instructors to communicate with their students via LMS, the LMS should be adequately selected and suitable for messaging.

The scope of this study is one of its main limitations. Other users (such as students and administrators) were not considered for this study, which solely focused on post-secondary military vocational school instructors' LMS usage. Another notable limitation of this study is that the research was done with instructors working in a two-year military vocational school in Turkey. This study may shed light on future research and can be conducted in larger institutions with more instructors to extrapolate the results.

The instructors' perceptions were examined over a period. On the other hand, instructor perceptions of LMS change over time and experience, and the COVID-19 pandemic may have altered many views on LMS. In addition, this research collected data using a quantitative approach. Continuous research using a mixed data-gathering strategy, including instructors and students, could also be used in future research.

As stated in the literature review section, an extended UTAUT model was employed in this study; future research should test additional variables that could give more critical information about instructors' LMS use behavior.

Before the pandemic of the unknown coronavirus illness, much education took place in physical classrooms. The COVID-19 outbreak was a watershed worldwide, indicating that the educational system needed to be rethought. The outbreak triggered new approaches to teaching online (Almahasees et al., 2021). When viewed from this aspect, COVID-19 can be considered to have raised the educational bar. Virtual classes have taken over following school closures to avoid spreading the disease (Chandra, 2021).

Consequently, it proved that instructors should adopt LMSs or online education systems as a requirement rather than a choice. The finding of this research might be essential in enhancing online courses or LMS in post-pandemic normalcy; it is expected that online learning use will continue, particularly in a hybrid type. Irrespective of the type of course, having videos, lecture notes, and course materials that students can access remotely is critical for instructional continuity. Faculty and higher education institutions are responsible for implementing these systems. According to the conclusions of this research, beginning with the COVID-19 breakout, technology has undoubtedly become a vital tool in the educational sector. Therefore, higher education institutions should train instructors on how to utilize LMS efficiently, and instructors should use LMS.

What is expected of students and instructors varies in the modern era as technology advances. The effect of new factors (augmented reality, artificial intelligence, Etc.) on instructors' intention to use LMS can be examined in future studies. Furthermore, our research has proven that the ANN methodology may be used in similar studies, and the same method can be used in large-scale studies.

Because of UTAUT's limitations, this research has revealed a more accurate solution to measure aspects of LMS acceptance and use, including individual, technological, and environmental factors. This study adds to the body of knowledge about how instructors embrace and use LMS and our understanding of technology acceptance and use. The study's conclusions show that higher education institutions should educate instructors on how to use LMS and focus on providing helpful circumstances for instructors by establishing a support office. Also, an interactive LMS can be suggested for instructors to develop interactive learning environments in pedagogical practice. Moreover, instructors are encouraged to utilize the LMS to send messages to students and answer as quickly as possible, which can boost student-instructor interaction.

AUTHOR CONTRIBUTION

- First author have made substantial contributions to acquisition of data, analysis, and interpretation of data
- The second author have made substantial contributions to conception and design, and have been involved in drafting the manuscript
- The third author have reviewed the article and checked for typos

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Psycho-Educational Effect of Motivational Interviewing on School Burnout

Yunus Hastunç, Assist. Prof. Dr., Siirt University, Türkiye, yhastunc@gmail.com

 0000-0003-2403-6350

Fuat Tanhan, Prof. Dr., Van Yüzüncü Yıl University, Türkiye, fuattanhan@yyu.edu.tr

 0000-0002-1990-4988

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Abstract

School burnout is an important problem which should be understood in terms of the consequences it causes in the school environment. During school burnout cases, undesirable behaviors may be exhibited. For this reason, it is very important to understand school burnout to recognize and to intervene before causing negative results. The aim of this study is to reduce students' school burnout using the motivational interviewing approach. In this study, a psycho-education program which based on the basic principles of motivational interviewing was developed and applied to middle school 6th and 7th grade students. This study is an experimental study with pretest posttest follow-up test. According to the results of the post-test conducted after psycho-education applications, it was seen that this program decreased significantly students' school burnout levels. In the follow-up test conducted later, it was observed that the decrease in the levels of school burnout showed stability. Based on these results, it can be said that motivational interviewing based psycho-education al interventions will be beneficial for students experiencing school burnout.

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INTRODUCTION

The problems in schools have multifaceted effects. Negative attitudes towards school, which turn into undesired behavior, not only affect those who develop these attitudes, but also school's educational climate (Fish, Finn & Finn, 2011). The point to note here is that the existence of individuals who develop undesired behaviors will ultimately influence the lives of all school stakeholders. This situation tells us that the problems experienced in schools should not be ignored and these problems should be accepted as the common problems of the society in which the students are. In this respect, efforts to reduce the problematic behaviors will directly contribute to the other individuals in the school environment. Reducing problematic behaviors should be considered important because they are related to academic achievement and behavioral commitment (Parker, Nelson & Burns, 2010).

Many situations are cited as the causes of problematic behaviors in schools. Drugs and substance abuse (Ondigo, Birech & Gakuru, 2019), student alienation (Mau, 1989), bullying (Salmon, James & Smith, 1998), school violence (Henry, 2000) are some of them. School burnout is one of these negative situations mentioned in the relevant literature (Gabola et al. 2021). It is understood that school burnout should not be ignored when its results are taken into consideration.

Among the symptoms of burnout, a decrease in physical and emotional energy, as well as a feeling of decreased personal achievement is described (Çam & Öğülmüş, 2019). In various studies, different reasons are mentioned as the causes of school burnout. Some of these reasons are, selection exams (Yedigöz Sönmez & Çapri, 2013), homework (Özdemir, 2015), indifference and incompetence (Aypay & Eryılmaz, 2011), peer bullying and cyber victimization (Uzun & Karataş, 2019), family expectations and economic situation (Acar & Çakır, 2015) and so on. These are just some of the causes of school burnout. On the other hand, situations such as self-regulation, teacher-student relationship, peer relations and the involvement of families in educational processes stand out as factors that reduce burnout (Özhan & Yüksel, 2021). When considered in the context of cause and effect, it is understood that school burnout is an important situation. For this reason, this study is expected to contribute significantly to school guidance services. In this study, the reasons, symptoms and negative conditions of school burnout were discussed and a psycho-education program was prepared to reduce the level of school burnout.

SCHOOL BURNOUT

It is the common determination of teachers' that some of the students are reluctant to learn. Situations such as lack of confidence and anxiety from high performance expectations (Liu & Littlewood, 1997), teachers, parents and curriculum (Aziz, Quraishi & Shahid Kazi, 2018), lack of social support (Engin, Özen & Bayoğlu, 2009) are among the reasons for this reluctance. However, most teachers have difficulty in identifying the causes and basic sources of this reluctance. When they attempt to do so, they argue that the student does not do enough for most of the time and that the parents do not help their children enough (Viau, 2015). This point of view makes the matter seem simple but in fact, this reluctance is a very important problem. Besides, it can be caused by many different reasons.

School burnout can also be shown among these negative reasons (Pala, 2012). However before addressing school burnout, it is useful to look at professional burnout. Burnout is defined as individuals' emotional distancing from their work and feeling themselves exhausted, cynic and inefficient (Maslach, Schaufeli & Leiter, 2001). Individuals in this situation feel tired, are indifferent to others at workplace and see themselves inadequate for their work (Maslach & Leiter, 2016).

Recently, besides the occupational groups, the burnout of the students has started to be studied. Burnout, seen as a problem created by the works, is also considered as a valid situation for students (Bilge, Tuzgöl Dost & Çetin, 2014). Although the students are not workers, the essence of their activities can be evaluated as work. They attend classes and do homework to pass an exam or to

get a degree (Bask & Salmela-Aro, 2013). From these perspectives, it can be said that the work of the students is a kind of profession.

Just as in the workplace, burnout in the school environment has negative consequences. Burnout among students means fatigue caused by the demands of the study, not belonging to his studies and feeling himself insufficient as a student (Schaufeli, Martinez, Pinto, Salanova & Bakker, 2002). Among the problems caused by school burnout, a decrease in school engagement (Özdemir, 2015) academic procrastination (Balkıs, 2013) lack of academic motivation (Seçer, 2015) depressive symptoms (Salmela-Aro, Savolainen & Holopainen, 2009) can be shown. In their study, similar to these studies, Fiorilli, De Stasio, Di Chiacchio, Pepe and Samela-Aro (2017) stated that students with school burnout experience problems such as low academic achievement, low motivation to fulfill their school responsibilities, and passivity in learning tasks. Based on the findings of these studies, it may be stated that burnout in the school environment has significant effects on students' school life. Being able to identify these students in the classroom will prevent the above-mentioned overlook and underestimation.

MOTIVATIONAL INTERVIEWING

Miller and Rollnick (2013) defined motivational interviewing as a guiding method that increases intrinsic motivation to change by searching and analyzing ambivalence. Motivational Interviewing is a client-centered approach that encourages people to make their own changes to their own lives. Motivational interviewing is seen as a way for individuals to recognize their current or potential problems and take action on them. This method is considered an effective method, especially for people who are reluctant or ambivalent about change (Rubak, Sandbaek, Lauritzen & Cristensen, 2005). The point to be emphasized in motivational interviewing is ambivalence. Ambivalence is the coexistence of opposite situations in individuals, and often lies between change and not change (Hall, Gibbie & Lubman, 2012). Motivational interviewing allows individuals to make a change talk in their own words in this ambivalence situation. Motivational interviewing also supports individuals in their self-efficacy.

There are a number of principles on which the motivational interview practice is based on while the clients are accompanied by change. These principles guide both the counselor and the client. The following are the four basic principles that show great relevance to the nature of the motivational interview.

Express empathy. A client-oriented and empathic counseling is a key principle and a defined characteristic of motivational interviewing. This kind of empathic communication is used throughout the process from the very beginning of the motivational interview process (Miller & Rollnick, 2013). This technique, which includes reflective comments that indicate what the client is saying, indicates that the consultant listens to the client and tries to look at it from his point of view (Droppa & Lee, 2014). The use of this skill helps the client enter positive tendencies in order to plan a change. In addition, empathy helps to establish a safe space where the client can easily move between feelings and thoughts (Stoltz & Young, 2012).

Develop discrepancy. The second main principle of the motivational interview is to create a contradiction between the client's purpose and values related to the future and the present behavior. When a behavior is perceived as conflicting with a person's important goals (such as one's health, success, family's happiness or positive self-image), change is more likely to occur (Miller & Rollnick, 2013).

Roll with resistance. Resistance occurs when the counselor advocates change and the client presents evidence against it. Such debates are time consuming to achieve the goal. Not only does the ambivalent annihilate the possibility of convincing the person, but he also forces the person to go in the opposite direction, causing a direct defense argument (Miller & Rollnick, 2013).

Support self-efficacy. An individual's positive belief about change is an important element of motivation. The client himself is responsible for all of the changes in the process of change and the consequences of these choices. The counselor's belief that the client can make the change is reflected in the attitude of the client during the change process. Encouraging their positive beliefs in the direction of change leads to positive behavioral changes.

In the relevant literature, it is mentioned how motivational interviewing can help theoretically and practically in the face of many negative situations (bullying, at-risk students, dropout) encountered in schools (Rollnick, Kaplan & Rutschman, 2016). In addition, the findings of the researches that motivational interviewing affects academic behaviors (Terry, Smith, Strait & McQuillin, 2013) also provided the idea that this technique can prevent burnout, which is an undesirable thing in school environments.

In this study, the effect of a psycho-education program that prepared according to the motivational interviewing basic principles, on the school burnout levels of secondary school students was investigated. For this purpose, the following hypothesis has been created:

School burnout of students participating in the motivational interview psycho-education program will show a significant decrease compared to students who do not.

METHOD

This study was carried out to examine the effect of a psycho-education program prepared in accordance with the principles of motivational interviewing on the school burnout levels of 6th and 7th grade primary school students. Accordingly, an experimental design with pre-test, post-test, follow-up test and control group was used. This method is the research in which the cause-effect relationships between the variables are investigated and the changes are observed by keeping the variables under control (Cemaloğlu, 2012). Experimental studies are quantitative approaches designed to explore the effects of assumed causes. In this approach, changes are deliberately made to see how one thing will affect another (Christensen, Johnson & Turner, 2015).

In this study, 2 x 3 factorial design was used. In this model, there are two groups created by random assignment. One of these groups is the experiment; the other is used as the control group. In both groups, pre-experimental and post-experimental measurements are made under equal conditions (Karasar, 2016).

STUDY GROUP

This study was conducted in a secondary school in Van, Turkey in 2016-2017 academic year. The study group of the study consisted of the students selected from the 6th and 7th grades in secondary school. The students participating in the research are between 12-14 years old. Pre-test was administered to all of the students in the 6th and 7th grades of the school. When the literature on the establishment of psycho-education groups for children and adolescents is reviewed, it is recommended that the age range and grade level should not be more than two for the same groups (Brown, 2018). Similarly, 5th grade students were not included in the study because they were younger and it was thought that they would have difficulty in participating in the group process. 8th grade students were not included in the study as they were preparing for the entrance exam to high schools and did not have time. For this reason, 6th and 7th grades, which are thought to have close characteristics, were included in the research groups. Totally 198 students from 6th and 7th grades participated in the pre-test application. The pre-test scores of these students from SBI are presented in the Table 1.

Table 1. *The Pre-Test Scores of These Students from SBI.*

	<i>n</i>	<i>Min</i>	<i>Max</i>	\bar{X}	<i>Sd</i>
<i>SBI Total</i>	<i>198</i>	<i>9,00</i>	<i>45,00</i>	<i>17,823</i>	<i>7,280</i>

DATA COLLECTION

The School Burnout Inventory (SBI) was developed by Salmela-Aro, Kiuru, Leskinen and Nurmi (2009) in order to measure school burnout levels of students aged 10-18 years. The scale is 5-likert type. The items are scored as the participant makes the most appropriate choice in the range of “I totally don’t agree” and “I totally agree”. The Turkish adaptation study of the inventory was performed by Seçer, Halmatov, Veyis and Ateş (2013). The original form of the inventory consists of 9 items and three sub-dimensions. These sub-dimensions are exhaustion at school, cynicism toward the meaning of school and sense of inadequacy at school. After confirmatory factor analysis for Turkish form, similar to the original form three sub-dimensions were tested. As a result of the reliability analysis of the scale, the internal consistency parameter has been found to be $\alpha=.75$, and the reliability of test-retest as $\alpha=.80$ (Seçer et al., 2013).

PROCESS

This study is an experimental study consisting of three tests (pre-test, post-test and follow-up test). In accordance with the purpose of the study, the researcher created an eight-session psycho-education program. The aforementioned basic skills of motivational interviewing were used in each session of the psycho-education program. In the first session, the meeting took place and the group rules were established by joint decisions. In the last session, the psycho-education program was evaluated. The Session Evaluation Form was used to evaluate the psycho-education program.

The content of the psycho-education program applied in this study was prepared in line with the basic principles of motivational interviewing. After the session content and activities were prepared by the researcher, they were presented to the opinions and suggestions of a field expert. Some arrangements were made in line with the opinions of the field experts. Then, it was submitted to the provincial directorate of national education in order to evaluate the content and appropriateness of the program and to obtain the necessary application permissions. After obtaining the necessary permissions, the principal and school counselor at the implementation school were interviewed and information was given about the program content.

The inventory form to be used in the study was applied to 198 students attending 6th and 7th grade students. Then the results of the pre-test application were analyzed and the students were assigned to the experimental and control groups. After the students in the experimental and control groups were determined, a permit document was requested from the parents of the students to participate in the application. At the end of the psycho-education process, post-test was applied to the students in the experimental and control groups. This application was made to the experimental group students attending the sessions and to the control group students attending the meeting where the post-test application was held. Finally, two months after the post-test application, the students in the experimental group, and control group (participating in the post-test) were followed-up. The last test results were analyzed together with the pre-test post-test results and their findings were presented in the study.

PSYCHO-EDUCATION PROGRAM

Psycho-education programs aim to eliminate or minimize the problems by raising awareness of individuals about the potential they have in order to eliminate the problems they encounter (Srivastava & Pandey, 2017). Psycho-education al groups are inherently educational and prioritize skills training (Brown, 2018). It is thought that studying subjects such as social skill development, working skills, sexual issues, emotional issues and stress management in psycho-education groups may be effective (Bore, Hendricks & Womack, 2013).

Motivational interviewing aims to help students not only for their academic success but also to cope with different problem situations they may encounter in school (Rollnick, Kaplan & Rutsman, 2016). The psycho-education program prepared for this study focused on the issue of school burnout,

which may be one of the different situations. The preparation of this program, which aims to help school burnout with the principles of motivational interviewing, started by reviewing the related literature. This psycho-education program consists of 8 sessions. Although each session varies according to its content and activities, it takes an average of 70 minutes. It is stated that this period will be appropriate if active participation of the group is achieved (Brown, 2018). Content of a sample session:

Topic: Gives information about the topic of a session. For example, if the session is about feeling weak, the topic might be "weakness".

Objectives: It is the part where the purpose of the session is known. For example, noticing situations in which he/she feels "weak" at school.

Aim: It is the place where the situations that are expected to be gained at the end of the session such as skill, knowledge, awareness are expressed. For example, He/she will notice situations in which he/she feels weak at school.

Awareness raising: At this stage, it is expected that the students are aware of the topic of the session.

Expressing empathy: This stage represents one of the basic principles of motivational interviewing. Students are given the message that they are listened to and understood by giving empathic reflections.

Develop discrepancy: The next step in motivational interviewing is developing discrepancy. At this stage of the program, students are expected to notice the contradictions between their current situation and the situations they want, imagine and expect.

Rolling with resistance: This is the third step in motivational interviewing. An individual who gains awareness about change may not be able to accept this change easily. The resistance to change that will arise in this case is not seen as a problem in motivational interviewing. Resistance to change can arise for different reasons. The thing to do is to understand the resistance and make the student be aware of the resistance.

Support self-efficacy: The student himself is responsible for all of the changes. Supporting student's self-efficacy will bring out positive results in the change process.

Ending the session: The group leader thanks the members for participating in the session and the session is ended with good wishes.

In each step of the session, the basic skills used in motivational interviewing were used. Open questions, affirmations, reflections and summarizing are the basic skills used in motivational interviewing and were used in sessions of this psycho-education program. The most important issue to be considered in practice is that the group leader should provide the time that the participants can attend the activities.

RESULTS

According to the results of the t-test conducted to test whether the pre-test mean scores of the experimental and control groups obtained from the SBI were equal before the experimental procedure, the difference between the mean scores of the experimental groups in both groups was not significant [$t(32) = -1,233$ $p > .05$].

Table 2. Mean and Standard Deviation Values of the Groups for Scores of all Three Tests of the SBI.

Groups	Pre-Test			Post-Test			Follow-up		
	n	\bar{X}	Sd	n	\bar{X}	Sd	n	\bar{X}	Sd
Experimental	17	24,235	4,76353	16	17,9375	6,85535	16	12,1250	2,777
Control	17	26,9412	7,69310	12	31,5000	10,1935	12	25,2500	9,733

When the table is examined, it is seen that the mean score of the experimental group participants in the pre-psycho-education program was 24,235, while the average score of the same test was \bar{x} =17,9375 after psycho-education. The mean pre-test score of the control group was \bar{x} =26,9142 and this was \bar{x} =31,500 for the post-test. Accordingly, it can be said that there was a decrease in the school burnout levels of the experimental group participants after the applied psycho-education program and the increase in the burnout levels of the control group participants who did not receive education.

It is seen that the experimental and control groups are different from the ones taken from the SBI. The results of ANOVA for the repeated measures applied to determine the significance of the differences between the mean scores of the scores of the groups were given in Table 3.

Table 3. ANOVA Results for SBI all Three Tests Scores.

Source	Sum of Squares	df	Mean Square	F	p
Between groups	43542,29	27			
Groups (Experiment/Control)	1875,62	1	1875,62	21,603	.000
Error	2257,368	26	86,822		
Within groups	3107,621	56			
Time	777,145	2	388,572	11,631	.000
Group*Time	593,24	2	296,62	8,879	.000
Error	1737,236	52	33,408		
Total	43542,29	27			

p <.05

According to the results of Table 3, it was observed that the group effect was significant (F (1-26) = 21,603; p <.05) in the mean of the school burnout all three tests' scores of the participants in the experimental and control groups. According to this, it can be said that there is a significant difference between the mean scores of the scores obtained from the SBI without discriminating between the pre-test, post-test and follow-up test results of the experimental and control groups.

The difference between the averages of the scores of all three tests was statistically significant (F (2-52) = 11,631; p <.05). It can be said that school burnout levels change as a result of the experimental process when group discrimination is not performed. However, when the effect of group*measurement is considered, it is understood that the result obtained is meaningful (F (2-27) = 8,879; p <.05). According to this finding, there is a change in the scores of the experimental and control group participants from the tests.

Bilateral comparisons were made with Bonferroni method in order to learn the source of significant differences in measurement*group interaction in school burnout measurements. The paired comparison results of the experimental and control groups are presented in Table 4.

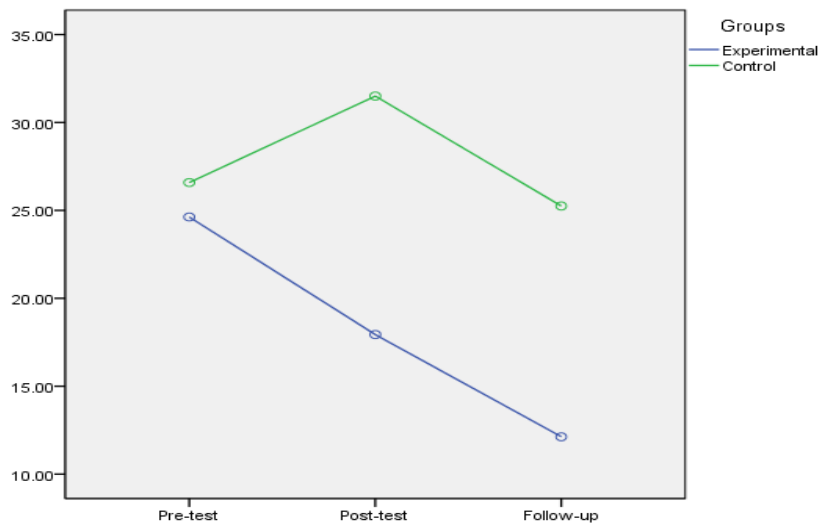
Table 4. Post-hoc Table of the Tests' Scores of the Experiment and Control Groups From the SBI.

		Experimental			Control		
		Pre-test	Post-test	Follow-up	Pre-test	Post-test	Follow-up
Experiment	Pre-test	–	6,688*	12,500*	1,958		
	Post-test		–	5,812*		13,562*	
	Follow-up			–			13,125*
Control	Pre-test				–	4,917	1,333
	Post-test					–	6,250*
	Follow-up						–

*p <.05

As seen from the results in the table, there was a significant difference (6,688; p <.05) between the pre-test and post-test scores of the participants in the experimental group participating in the psycho-education program. There was also a significant difference between the pre-test scores and the follow-up test scores of the experimental group participants (12,500; p <.05). This significance was found between the post-test scores of the experimental group participants and the follow-up test scores (5,812; p <.05). When the table was examined, there was no significant difference between the tests applied to the control group except the post-test and the follow-up test. The graph of changes due to groups and measurements in the study process is presented in Figure 1.

Figure1. Graph of Change due to Groups and Measurements in School Burnout Scores



As seen in Figure 1, there was a steady decline in school burnout scores among the experimental group participants. In addition, the scores of the control group participants showed an increase from the pre-test to the post-test and then decreased in the follow-up test.

The aim of the present study was to investigate the effect of a psycho-education al program prepared according to motivational interviewing basic principles on the school burnout levels of middle school students. For this, the researchers carried out an application consisting of 8 sessions. When the school burnout scores obtained from the experimental and control groups at the beginning and at the end of the application are analyzed, it is seen that the burnout scores of the participants of the experimental group differ significantly from the scores of the control group. Based on the analysis findings, it can be said that motivational interviewing has an effect on reducing the school burnout of

middle school students. However, no study investigating the relationship between motivational interviewing and school burnout was found in the literature review. It is seen that the studies conducted are generally associated with the results of school burnout.

According to the results of the study, it was observed that the psycho-education program implemented in this study decreased school burnout. When the researches are reviewed, it is seen that academic achievement is related to school burnout and increasing academic success decreases burnout. It would not be wrong to say that the decrease in burnout in this study increased academic achievement. Similarly, Reich, Sharp, and Berman (2015) concluded that motivational interviewing intervention influenced students' studies outside the school and increased the success of their examinations. Based on this result, it can be said that motivational interviewing based intervention decreases school burnout and thus increases academic achievement.

In the literature, it is stated that there is a significant relationship between school burnout and self-efficacy (Charkhabi, Abarghuei & Hayati, 2013). In this respect, it can be said that reducing school burnout will increase self-efficacy. In this study, using motivational interview principles, it can be concluded that self-efficacy increases as a result of the decrease of school burnout. Channon et al. (2013) pointed out that the peer support program they prepared in accordance with the motivational interview principles contributed to the development of positive school beliefs and the students' experience as a supporting environment. Considering the fact that the learner feels lonely in the school environment, one of the most important factors in the alienation of the school can be said that the applied psycho-education program reduces the alienation status of the school by giving students the awareness of peer support among their own resources. In their study, Cryer and Atkinson (2014) concluded that the motivation of motivational interviewing led to an increase in the motivation of learning even for young children and a significant decrease in classroom behavior. This result is consistent with the conclusion that motivational-based psycho-education reduces the impact of school alienation.

According to the results of the research, it was seen that the education program applied in this study reduced school burnout. Safaeinaeini et al. (2020) stated in their study that, similar to the results of this study, motivational interviewing helps to reduce academic burnout. Based on these and similar indirect studies, it can be said that interventions to school burnout can affect positive student behavior. Considering the significant effect of the psycho-education program applied in this study in reducing school burnout, it can be said that motivational interviewing is an effective method in intervening in adverse situations in schools.

RECOMMENDATION

In present study, it was aimed to reduce the school burnout levels of secondary school students by using the principles of motivational interviewing. For this purpose, a psycho-education program was developed and applied in eight sessions. It can be seen from the research findings that the motivational interviewing-based psycho-education program is effective in reducing the school burnout of students in the specified age group. Based on these findings, it is recommended to conduct motivational interviewing practices at different educational levels. Similarly, it is thought that motivational interviewing practices will be useful in solving different problems (academic alienation, violence, bullying etc.) that can be seen in schools.

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AUTHOR CONTRIBUTION

- The first author has made substantial contributions to the conception and design, data collection, and data analysis
- The second author has made substantial contributions to the conception and design as well as the analysis and interpretation of the data

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Predictive Roles of Language Learning Strategies, Academic Self-concept, Gender and Grade Level in English Language Learning Achievement

Cemal Bıyıklı, Dr., Curriculum Development, Ankara Private Tevfik Fikret Schools, Türkiye
cemal.biyikli1972@gmail.com  0000-0002-8060-8977

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Abstract

This study aims to identify the factors influential in academic achievement in learning English. The study was conducted with the participation of 522 students who were the ninth, tenth and eleventh graders in an Anatolian High school located in Ankara city centre. The research data were collected with the Turkish version of personal and academic self-concept inventory (PASCI-Fleming & Whalen, 1984) and of strategy inventory for language learning (SILL-Oxford, 1990) (Cesur & Fer, 2007). The data were then analysed through bivariate correlation coefficient and multiple linear regression analysis. As a result, significant correlations were found between academic achievement in English and all sub-factors of learning strategies and of academic self-concept ($p < .01$). It was found that all the variables analysed (gender as male students, grade 11 as class variable, language learning strategies, academic self) predicted 42% of the variance in academic achievement in English. In the study, it was found that cognitive, compensatory and metacognitive strategies which are language learning strategies positively predicted English academic achievement while affective strategies predicted negatively. In the academic self-dimension of the study, it was found that academic ability and family acceptance positively predicted academic success in English while physical appearance and social anxiety predicted negatively.

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INTRODUCTION

Individuals need to learn a foreign language if they want to adapt into the developments or changes which arise in science, art, economy, technology and so on in this century (Ataman, 2017; Aykaç, 2020; Demirel, 2004; Kırkiç & Boray, 2017). The need also helps the individuals to communicate with others in the society, to have respect for the cultural properties and lifestyles of the society, to look at such issues as the mental development and problem-solving power from a different perspective and to understand different cultures (Alptekin, 1989). Despite the great importance of learning a foreign language, it becomes apparent on considering the efforts and resources wasted in this area it is seen that there is not enough efficiency in foreign language education (Işık, 2018).

The failure in foreign language teaching can be described by making quotations from various researchers. In his research, Gökdemir (2005) describes the universities' not providing enough opportunities to practise despite offering English preparatory classes, their using teacher-centered approach to teach English, the students' not showing necessary effort in order to learn English and the failure to provide an appropriate classroom environment for teaching as the encountered problems. Can and Can (2014) argue that the causes of failure in English language teaching are English Language Department students' lack of interest in learning the language, their ignorance of the probable benefits of learning the language and their priority to take notes so as to pass their exams. Işık (2008) stated in his research that a foreign language education culture has been formed since the Ottoman Empire, and that this is insufficient in addition to the developing teaching methods and techniques. Haznedar (2010), the most basic problems in the English language teaching process in Turkey are crowded classrooms, inadequacy of physical conditions, inadequacies in qualified teacher training, language policies and approaches to language teaching.

The existence of problems in foreign language teaching gives us clues on the influential factors in language learning. The interpretation for the four studies cited above (Can & Can, 2014; Gökdemir, 2005; Haznedar, 2010; Işık, 2008) may be that learning environments and the characteristics of learners and teachers are effective in foreign language teaching. Similar to this interpretation, Conteh-Morgan (2002) also states that student characteristics and the effects of the teaching-learning process, social content, learning conditions and learning are the most significant variables in foreign language teaching. Students' academic achievement in foreign languages can be increased if all other variables influential in foreign language teaching in addition to the ones are improved. In other words, increase in academic achievement, which is an important variable (Güven, 2004), can be secured by managing various factors accurately.

The concept of success has been perceived in various ways and different structures have been made. Success is progress towards achieving the desired result (Şimşek, 2012). Academic achievement indicates the student's level of achievement of instructional goals (Baykul, 2015). The academic achievement discussed in this study as stated by Good (1973) and Özgüven (2022) is expression the development of the students in the courses in the curriculum, the grades given by the teachers for the performance of the students in the classroom, the skills determined by the test scores or both. Students' academic achievement is influenced by their (students') levels of social-emotional-mental development, their levels of motivation, their ways of perceiving the school and by their study habits (Eymur & Geban, 2011; Keskin & Sezgin, 2009), students' age and gender (Khesht-Masjedi, et al., 2019; Nasir & Masrur, 2010; Yalın, 2020), their intelligence, concerns, personality, beliefs, attitudes and capabilities (Ekmekyermezoğlu, 2010) are also important in determining academic achievement. The variables mentioned in these studies can differ from person to person. Such individual differences between students have different effects on them in the process of language teaching and have direct effects on their academic achievement in foreign language (Aydın & Zengin, 2008).

Individual differences among learners reveal the emergence of the concept of learner autonomy. It requires preparing an individual and educational action plan (Can, 2011). Dickinson (1992) describes learner autonomy as learners' decisions on their learning process and their implementation of the decisions. In other words, learner autonomy requires learners to take the responsibility of their learning and to use learning strategies (Gözüm & Başbay, 2019). Learning strategies involve the techniques used in order to remember, comprehend and apply the knowledge and skills in an area. When seen from this perspective, learning strategies can be important in serving to a purpose such as "being able to learn a foreign language in good quality" (Chamot, et al., 2004).

Weinstein, et al. (2000) call strategies containing any type of emotion, thought, belief or behaviour which enable one to acquire new knowledge and skills, to internalise them and then to use them in different situations language learning strategies. Riding and Rayner (1998), on the other hand, defined the methods and techniques which individuals develop to solve their problems when they feel incompetent while learning a language as language learning strategies.

Language learning strategies which are labelled as the techniques which contribute to students' ability to learn a foreign language enable them to understand what they have been taught and to retain it in their mind. It, in turn, accelerates their language learning process and makes it fun (Bekleyen, 2005). Students' use of learning strategies in environments which are supported by language learning strategies will cause them both to be open to development and to promote their academic achievement (Baş, 2014). Studies which analyse language learning strategies along with students' academic achievement are available in the literature. When these studies are examined, it is demonstrated that those students who were academically more successful used language learning strategies more frequently (Çetinkaya, 2017; Gan, et al., 2004; Green & Oxford, 1995; Uslan, 2006; Wharton, 2000; Yamamori, et al., 2003), that certain strategies were more effective in increasing academic achievement (Atan, 2003; Gözüm & Başbay, 2019; Öztürk, 2004), that vocabulary learning strategies increased success at words (Aydemir, 2007; Bölükbaş, 2013) and that language learning strategies (memory and cognitive) predicted academic achievement (Baş, 2014).

Language learning strategies which are thought to be effective in the development of academic achievement can be said to differ from student to student (Gözüm & Başbay, 2019). The difference can be influenced by the education (Akkaş-Baysal, 2020) they receive in their family (Güney, 2009) and in their school (Çalık & Kurt, 2010). Those factors education, family, school which affect language learning strategies can also lead to the development of students' academic self-concept (Cesur, 2016). Their academic self-perception will develop in positive ways if their needs to increase academic achievement are met. The learning-teaching process should be regulated in accordance with students' interest, skills and capabilities to be able to secure the development (Işmar & Şehitoğlu, 2021). When learning-teaching environments are arranged in this way, students' academic achievement can also be high (Cesur, 2016). The students with high academic achievement will have higher academic self-concept than those who do not have academic achievement (Marsh, et al., 2005).

The points common to the academic self-concept definitions are that individuals make self-evaluations, that they compare themselves with the society in which they live, that the concept has both cognitive and affective aspects, that it is not restricted to one single academic domain and that personal views and academic competence is also included (Cantekin, 2020). Academic self-concept can be both the cause and effect of academic achievement (Marsh et al., 2005). Besides, its influence in achievement can also be said to be stronger than the effectiveness of achievement (Lau & Chan, 2001). The fact that the two concepts are so close to each other has also reflections in the literature. Accordingly, it is argued in the literature that academic achievement and academic self-concept are correlated (Akyüz, 2019; Dickhäuser, 2005; Guay, et al., 2003; Işmar & Şehitoğlu, 2021; Koç, 2011; Korkmaz & Kaptan, 2002; Marsh & Craven, 2006; Piyancı, 2007; Valentine & Dubois, 2005), that academic self-concept influences students' academic achievement in positive ways (Cantekin, 2020),

that academic self-concept is a predictive of academic achievement (Awad, 2007; Dursun-Sürmeli & Ünver, 2017; Karasakaloğlu & Saracaloğlu, 2009; Stringer & Heath, 2008; Şimşek, 2012) and that academic self-concept is a predictive of achievement in foreign language learning (Saracaloğlu & Varol, 2007).

It was remarkable in the literature were not available in relation to the prediction of language learning strategies and of academic self-concept in academic achievement in foreign language learning. On the other hand, no studies which investigated the four variables influential in foreign language learning achievement (language learning strategies, academic self-concept, grade levels and gender) were found.

Several ways have been tried so as to make the process of foreign language learning more permanent. One of the ways is to determine the factors which influence achievement in foreign language learning as in many other areas. The main aim of the research is to determine the effects of language learning strategies, academic self, grade level and gender on foreign language academic success of students in foreign language learning. It is thought that this aim will contribute to the preparation of foreign language teaching programs and the development of foreign language teaching methods. The thought is considered to be correct in that it explains what academic achievement in language learning is influenced by. Additionally, it can also be said that showing researchers an example for a statistical method that they can use in their study, the linear regression analysis used in the study, is also valuable.

Based on what has been stated so far, this study aims to identify the factors which influence academic achievement in English as a foreign language. In accordance with this general purpose, the research problem was formulated as “what are the factors which influence secondary school students’ (the 9th, 10th and 11th graders’) levels of academic achievement in English?”. Setting out from the research problem, answers are sought to the following questions:

1.How correlated are language learning strategies, academic self-concept, gender and grade levels to academic achievement in English?

2.How strong are language learning strategies, academic self-concept, gender and grade levels in predicting academic achievement in English classes?

METHOD

RESEARCH DESIGN

This research was designed according to the quantitative approach and the relational survey model was preferred in the study. In relational survey, which is one of the general survey models, the degree of change between at least two variables is determined (Karasar, 2020). In this study, the relationships among English academic achievement, language learning strategies, academic self-concept, gender and grade level were examined.

STUDY GROUP

The research for the study was conducted in May and June in the Spring semester of 2018-2019 academic year due to convenience to the researcher (physical, managerial, practical and economic convenience). The research was conducted in an Anatolian high school located in Çankaya, one of the central districts of Ankara. The 9th, 10th and 11th graders at the Anatolian school participated in the research on the basis of volunteering (Güven, et al., 2020). The participants were informed of the content of the study and of where to use the research data beforehand. Their permission to use the research data within the scope of the study was also obtained prior to the research.

The population for the study was composed of the 9th, 10th and 11th graders who attended the Anatolian high school in 2018-2019 academic year when the research was done. The research was done with the inclusion of high school students considering the maturation level of them and the fact that the statements in the language learning strategies scale and in the academic self-concept scale would be understood and interpreted better by them (Baş, 2014; Cesur, 2016; Gözüm & Başbay, 2019). The 12th graders were not included in the study because they were preparing for university entrance exam (This exam is that everyone who has completed high school education must take in order to go to university.) in the period when the research was done. Convenience sampling method was used in collecting the research data.

550 of the 671 students who were the 9th, 10th and 11th graders in the school where the research was done agreed to take part in the research. 28 of them were excluded from the research due to some reasons (such as not completing the whole scale, refusing to write down their school number). Thus, remaining 522 students who were included in the research constituted 78% of all the 9th, 10th and 11th graders in the school. 182 of the participants (98 female students (53.84%) and 84 male students (51.85%) were the 9th graders while 178 of them (96 female students (53.93%) and 82 male students (46.07%) were the 10th graders and 162 of them (84 female students (51.85%) and 78 male students (48.15%) were the 11th graders. Considering all the students included in the study, 34.86% of them were the ninth graders whereas 34.09% were the tenth graders and 31.05% were the eleventh graders. In addition to this, 278 (53.46%) of the participants were female students whereas 244 of them (46.54%) were male students.

VARIABLES

LANGUAGE LEARNING STRATEGIES

The Strategy Inventory for Language Learning (SILL) was used so as to determine students' language learning strategies. It was developed by Oxford (1990). The scale consists of six sub-parts and 50 items. It is in 5-pointed Likert type, and the maximum score receivable from the inventory is 250 and the minimum score is 50. The Turkish version of the inventory which was adapted by Cesur and Fer (2007) was used in the current study. The English and Turkish versions of the SILL were used in several studies. The Cronbach's Alpha coefficients for the inventory are shown in Table 1 by adding the data in this study to the implementation results of the inventory (Cited in Akar, 2013).

Table 1. Cronbach Alpha Values of the Application Results of the SILL in the current and Other Studies

<i>Language Learning Strategies</i>	<i>Original Scale (Oxford, 1990)</i>	<i>Cesur and Fer (2007)</i>	<i>Felemens (2008)</i>	<i>Park (2011)</i>	<i>Fazeli (2012)</i>	<i>Akar (2013)</i>	<i>in research (2019)</i>
Total	.93	.92	.93	.90	.89	.95	.97
Memory Strategies	.80	.73	.73	.69	.73	.83	.83
Cognitive Strategies	.78	.82	.83	.75	.71	.85	.90
Compensation Strategies	.75	.65	.63	.43	.72	.75	.82
Metacognitive Strategies	.86	.86	.89	.78	.81	.91	.90
Affective Strategies	.78	.59	.58	.45	.71	.72	.82
Social Strategies	.93	.92	.93	.90	.89	.95	.83

ACADEMIC SELF-CONCEPT

The data on students' academic self-concept were collected with the Personal and Academic Self-concept Inventory (PASCI). The inventory was prepared by Fleming and Whalen (1984). It contains nine sub-parts and 45 items. The items are in 7-pointed Likert type. The maximum score from the inventory is 315, and the minimum score is 45. The original inventory was used in the interviews with English teachers. Fleming and Whalen (1990) calculated the reliability of the inventory in internal consistency and test-retest method. The correlation between social anxiety- a

sub-factor of the inventory- and social anxiety available in FSB (Fenigstein, et al., 1975; Cited in Fleming & Whalen, 1990) was found as $r = -.80$; and the correlation with RSES (Rosenberg Self-Esteem Scale, Rosenberg, 1965; Cited in Fleming & Whalen, 1990) in terms of self-respect was found as $r = .74$. The Cronbach's Alpha for the results of the implementation is shown in Table 2.

Table 2. *Cronbach Alpha Values for the Results of the Academic Self-Concept Inventory in the Research.*

<i>Academic Self Inventory Sub-Dimensions</i>	<i>Cronbach Alpha Values</i>
Academic Self Total	.93
Self-Esteem	.53
Social Acceptance	.80
Academic Ability	.68
Verbal Ability	.65
Mathematical Ability	.86
Physical Appearance	.86
Physical Ability	.65
Family Acceptance	.74
Social Anxiety	.80

ACADEMIC ACHIEVEMENT IN ENGLISH

The participants' end of the year average mark for their academic achievement in English was considered as their academic achievement score. End of the year average mark is calculated by adding the average mark which is found with marks students receive one written, two oral exams (student's performance in the lesson) and one performance (both process-based and product-based type) assignment given in the second semester to the average mark for the first semester and then dividing the total into two. Thus, the students' average, was 74.1 and the standard deviation was 12.85.

GRADE LEVEL AND GENDER

The data for the students' gender and grade level were obtained through the personal information form available in the scales. The distribution of the students according to gender and grade levels is described in detail under the heading of the study group.

DATA ANALYSIS

The analyses were done for the variables available in the study by means of the SPSS 23 package programme. The analyses included arithmetic mean, standard deviation, skewness and kurtosis, bivariate correlation coefficient and multiple regression. The correlations between the dependent variable (academic achievement in English) and the independent variables (language learning strategies, academic self-concept) were analysed through Pearson product moments multiplication correlation. Multiple linear regression analysis was used in analysing the effects of gender, grade levels, language learning strategies and academic self-concept on academic achievement in English.

Certain assumptions should be met so as to do the multiple regression analysis. Therefore, Mahalanobis distance which does not have values which negate the linearity and normality assumption was examined and calculated. Besides, whether or not the data for the variables displayed linearity assumption was tested by examining the scatter plot for the dependent and independent variables. Accordingly, it was also found that the correlation between the standardised predicted values available in the scatter diagrams and the standardised residual values was linear (Büyükoztürk, 2020; Yurt, 2014). It was found that the multicollinearity problem, which is another of the multiple regression analysis assumptions, was fulfilled because the correlation values of the independent variables in the study were between $r = .158$ and $r = .801$. In other words, since the criterion that there should not be a high correlation ($r > .90$) between the variables was in the study,

the assumption of multiple regression analysis was provided (Çokluk, et al., 2018). The correlations between academic achievement in English and language learning strategies and the sub-factors of academic self-concept were smaller than $r=0.90$. Therefore, it may be said that there are no high correlations between these values and scores for academic achievement in English. Because academic achievement in English had very high correlations with language learning strategies and with the general scores for academic self-concept, the linearity assumption could not be met. Thus, it was not included in multiple regression analysis. In addition to this, it was also found that there was no collinearity problem between the variables, the variance increase factors (VIF) in the data set were 10 and below 10 (1.55-5.070), the tolerance values (TV) were .10 and above .10 (.191-.901) and was supported (Çokluk, et al., 2018). In brief, the data set used in the study is thought to meet the required assumptions.

ETHICAL PRINCIPLES OF THE RESEARCH

The research was conducted with the participation of volunteered students (Creswell, 2016). The participants were informed of the study, and they were assured that their identity would be kept confidential, and their approval was received. The school name and students' names were not mentioned in the study. The application process, data collection tools, the data analysis and the results of the analyses were described in detail and accurately within the scope of research ethics. The references consulted in writing the article were listed meticulously (Creswell, 2016).

FINDINGS

Whether or not the participants' academic achievement scores for English, their scores for the sub-factors of Strategy inventory for language learning (SILL) and of academic self-concept inventory (PASCI) which constituted the data set of the research had normal distribution was analysed. It was found that their arithmetic mean for their achievement in English scores was $\bar{x}=74.71$, standard deviation was $sd=12.85$, skewness was $\alpha_3=-.499$, kurtosis was $\alpha_4=-.58$. The average for language learning strategies scores was between $\bar{x}= 17.35$ and $\bar{x}= 44.16$, standard deviation was between $sd=5.48$ and $sd=11.79$, skewness coefficients were between $\alpha_3=-.341$ and $\alpha_3=.076$, kurtosis coefficients were between $\alpha_4=-.524$ and $\alpha_4=-.180$. The averages for academic self-concept scores were between $\bar{x}= 22.02$ and $\bar{x}= 25.19$; standard deviation was between $sd=5.41$ and $sd=7.53$; skewness coefficient was between $\alpha_3=-.376$ and $\alpha_3=-.82$; and kurtosis coefficient was between $\alpha_4=-.703$ and $\alpha_4=.112$. An examination of the skewness and kurtosis coefficients showed that the values changed between -2 and +2, and therefore, the data set can be said to have normal distribution (Tabachnick & Fidell, 2019).

HOW DO LANGUAGE LEARNING STRATEGIES AND ACADEMIC SELF-CONCEPT RELATE TO ACADEMIC SUCCESS IN ENGLISH COURSE?

Table 3 shows the correlations between academic achievement in English and language learning strategies and academic self-concept. Accordingly, there are significant correlations between academic achievement in English and all sub-factors of language learning strategies and of academic self-concept ($p<.01$). The highest correlation is between academic achievement in English and cognitive strategies a sub-factor of language learning strategies ($r=.487$, $p<.01$). The correlations between academic achievement in English and the other sub-factors of language learning strategies are as in the following from the highest to the lowest: compensation strategies ($r=.430$, $p<.01$), social strategies ($r=.375$, $p<.01$) and affective strategies ($r=.298$, $p<.01$). The highest correlation between academic achievement in English and acceptance by the family- a sub-factor of academic self-concept is the highest ($r=.389$, $p<.01$). The correlations between academic achievement in English and the other sub-factors of academic self-concept are as in the following- from the highest to the lowest: academic capability ($r=.332$, $p<.01$), verbal capability ($r=.313$, $r<.01$), self-respect ($r=.301$, $p<.01$), mathematical capability ($r=.251$, $p<.01$), physical appearance ($r=.212$,

p<0.01), social acceptance (r=.205, p<.01), physical capability (r=.201, p<.01) and social anxiety (r=.134, p<.01). Besides, the correlations between language learning strategies and the sub-factors of academic self-concept were also found to be significant (p<.01).

Table 3. Correlation Values between Academic Achievement in English, Language Learning Strategies and Academic Self-Concept

Variables	Mean	Sd	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13	V14	V15	V16
V1Academic Success in English	74.71	12.85	1															
V2Memory Strategies	27.00	7.37	.438**	1														
V3Cognitive Strategies	44.16	11.80	.487**	.789**	1													
V4Compensation Strategies	19.21	5.48	.476**	.658**	.782**	1												
V5Metacognitive Strategies	28.61	8.48	.430**	.645**	.801**	.737**	1											
V6Affective Strategies	17.35	5.82	.298**	.659**	.658**	.589**	.689**	1										
V7Social Strategies	19.51	5.76	.371**	.635**	.661**	.653**	.684**	.692**	1									
V8Self-Esteem	23.19	5.42	.301**	.369**	.348**	.369**	.322**	.364**	.379**	1								
V9Social Acceptance	24.02	7.12	.205**	.198**	.172**	.158**	.165**	.186**	.191**	.405**	1							
V10Academic Ability	22.03	5.99	.332**	.393**	.269**	.243**	.261**	.352**	.344**	.568**	.478**	1						
V11Verbal Ability	24.39	5.69	.313**	.353**	.349**	.334**	.315**	.332**	.402**	.569**	.476**	.498**	1					
V12Mathematical Ability	22.07	7.53	.251**	.345**	.257**	.242**	.200**	.280**	.292**	.391**	.266**	.501**	.305**	1				
V13Physical Appearance	22.16	6.07	.212**	.356**	.333**	.385**	.345**	.407**	.360**	.629**	.385**	.521**	.468**	.362**	1			
V14Physical Ability	23.71	6.54	.201**	.287**	.263**	.296**	.239**	.283**	.273**	.507**	.436**	.408**	.436**	.359**	.532**	1		
V15Family Acceptance	25.20	6.13	.389**	.356**	.311**	.289**	.312**	.294**	.332**	.452**	.329**	.448**	.467**	.406**	.374**	.299**	1	
V16Social Anxiety	22.87	7.12	.134**	.237**	.213**	.228**	.234**	.284**	.278**	.511**	.682**	.514**	.529**	.307**	.535**	.495**	.343**	1

WHAT IS THE PREDICTIVE POWER OF LANGUAGE LEARNING STRATEGIES, ACADEMIC SELF, GENDER AND GRADE LEVEL IN ENGLISH COURSE ACADEMIC SUCCESS?

According to Table 4, students’ academic achievement in English is predicted significantly by gender (male), grade level (11th grade), language learning strategies and all the sub-factors of academic self-concept ($F_{(17,504)}=21.536, p<.001$). In other words, all the variables analysed in the study

were found to explain 42% of the variance in academic achievement in English. Gender on its own did not have any effects on explaining students' academic achievement in English ($p>.05$). An examination of the data shown in Table 2 demonstrates that the 11th grade, the variable of grade level ($B=6.542$, $t=6.603$, $p<.05$), predicts academic achievement ($F_{(17,504)}=21.536$, $p<.001$). On the other hand, the 11th graders' academic achievement in English was found to be higher than the 9th and 10th graders. Thus, an increase of 6.542 units occurred in their achievement at 11th grade.

Table 4. Multiple Regression Analysis Results on Predicting Academic Achievement in English

	Unstandardized Coefficients		Standardized	t	p	Collinearity Statistics	
	B	Standard Error	Coefficients Beta			Tolerance	VIF
(Constant)	38.297	2.6		14.732	.000		
Sex (Male)	.505	.954	.02	.53	.597	.836	1.196
Class (11th Grade)	6.542	.991	.236	6.603	.000	.901	1.109
Memory Strategies	.047	.107	.027	.44	.66	.305	3.284
Cognitive Strategies	.184	.083	.169	2.212	.027	.197	5.070
Compensation Strategies	.537	.140	.229	3.841	.000	.322	3.101
Metacognitive Strategies	.218	.099	.144	2.203	.028	.269	3.722
Affective Strategies	-.345	.121	-.156	-2.852	.005	.383	2.610
Social Strategies	.08	.123	.036	0.65	.516	.377	2.650
Self-Esteem	.019	.121	.008	0.156	.876	.440	2.270
Social Acceptance	.157	.088	.087	1.84	.075	.484	2.067
Academic Ability	.403	.107	.188	3.771	.000	.464	2.154
Verbal Ability	.128	.108	.057	1.183	.237	.504	1.986
Mathematical Ability	-.011	.072	-.007	-.158	.875	.645	1.552
Physical Appearance	-.213	.105	-.1	-2.028	.043	.468	2.136
Physical Ability	-.009	.088	-.005	-.102	.919	.571	1.750
Family Acceptance	.362	.088	.173	4.09	.000	.645	1.550
Social Anxiety	-.329	.096	-.183	-3.428	.001	.405	2.468
$F_{(17,504)}=21.536$	R=.649						
$p<.001$	$R^2=.421$						

An examination of the data in Table 4 makes it clear that cognitive strategies ($B=.184$, $t=2.212$, $p<.05$), compensation strategies ($B=.537$, $t=3.841$, $p<.05$), metacognitive strategies ($B=.218$, $t=2.203$, $p<.05$) and affective strategies ($B=-.345$, $t=-2.852$, $p<.05$) the sub-factors of language learning strategies- predict students' academic achievement in English. While cognitive, compensation and metacognitive strategies predict academic achievement in positive ways, affective strategies predict it in negative ways. When there is a one unit of rise in cognitive, compensation and metacognitive strategies, there is a rise of $B=.184$ (for cognitive), $B=.537$ (for compensation) and $B=.218$ (for metacognitive) units in students' academic achievement. On the other hand, when there is a one unit of rise in affective strategies, there is a $B=.345$ decrease in students' academic achievement scores.

The Standardized Coefficients Beta value gives the order of importance of the variables. Regardless of whether the sign in front of it is minus or plus, the largest value represents the most influential variable (Büyüköztürk, 2020). Accordingly, when we look at the Standardized Coefficients Beta value in Table 4, it is seen that compensatory strategies are the most effective in predicting academic achievement among language learning strategies.

It is also evident from Table 4 that academic capability ($B=.403$, $t=3.771$, $p<.05$), physical appearance ($B=-.213$, $t=-2.028$, $p<.05$), acceptance by the family ($B=.362$, $t=4.090$, $p<.05$) and social anxiety ($B=-.329$, $t=-3.428$, $p<.05$)- the sub-factors of academic self-concept- predict students'

academic achievement in English ($F_{(17,504)}=21.536, p<.001$). While academic achievement in English is predicted by academic capability and acceptance by the family in positive ways, it is predicted by physical appearance and social anxiety in negative ways. Thus, an increase of one unit in academic capability and acceptance by the family leads to an increase of $B=.403$ units (for academic capability) and $B=.362$ units (for acceptance by the family) in students' academic achievement scores. On the other hand, an increase of one unit in physical appearance and social anxiety leads to a drop of $B=.213$ units (for physical appearance) and $B=.329$ units (for social anxiety) in students' academic achievement scores. According to the standardised coefficients beta shown in Table 4, academic capability has the largest effect on predicting academic achievement. The regression equation formed in relation to the prediction of academic achievement by grade level and by the sub-factors of language learning strategies and academic self-concept is as in the following:

$$\text{Academic Achievement} = 38.297 + 6.542 * \text{Class (11th Grade)} + .184 * \text{Cognitive Strategies} + .537 * \text{Compensation Strategies} + .218 * \text{Metacognitive Strategies} - .345 * \text{Affective Strategies} + .403 * \text{Academic Ability} - .213 * \text{Physical Appearance} + .362 * \text{Family Acceptance} - .329 * \text{Social Anxiety} + e$$

According to the regression equation, the highest factor in predicting students' English academic achievement is the variable of grade level (11). According to the correlation coefficient, it can be said that the relative importance of the predictive variables of language learning strategies on English course academic success is compensatory strategies, affective strategies, metacognitive strategies and cognitive strategies. According to the correlation coefficient, the relative importance of academic self-predictive variables on academic success in English courses could be academic ability, social anxiety, family acceptance, and physical appearance.

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

One of the findings obtained in this current study was related to the investigation of the correlations between the sub-factors of language learning strategies and academic achievement in English. Accordingly, significant correlations were found between the sub-factors of language learning strategies and academic achievement. Studies are also available in the literature supportive of this finding. Gözümlü and Başbayrak (2019) concluded that the students who used language learning strategies while learning English had higher academic achievement than those who did not use the strategies. Demirel (2012) also concluded in his research that as students use language learning strategies more, their academic success increases. Bremner (1999), Nisbet et al. (2005) found significant correlations between language learning strategies and proficiency in a foreign language; El-Dip (2004), Aslan (2009) and Baş (2014) found significant correlations between language learning strategies and academic achievement. Besides, Dreyer and Oxford (1996) found the correlation between language learning strategies and academic achievement as $r=.73$ whereas Oxford and Ehrman (1995) found it as $r=.61$. In these two studies, there is a strong, significant and positive relationship between language learning strategies and academic achievement. (Christensen, et al., 2012). Results contrary to the ones obtained in this study were also found in the literature. Thus, Tüz (1995) found that there were no correlations between language learning strategies and language proficiency. Some research (Mullins, 1992; Park, 1994; Watanabe, 1990 (Cited in Oxford et al., 2004)) found that the correlations between using language learning strategies and academic achievement were not very high. We can say that these results are due to the characteristics of the research group and the data collection tools used in the research.

Teaching foreign language strategies to students can be possible with teachers. Teachers hold the view that teaching the strategies in classes takes too much time (Sökmen, 2006). In that case, English teachers need to find new ways to teach and to use the strategies. One of the ways is to give homework and another is to use blogs. Students can have the opportunity to revise the subjects and

strategies taught to them by doing homework. It is reported in the literature that teachers think that students who do homework promote their achievement in a foreign language (Koçak & Göçer, 2020; Sönmez et al., 2017; Wallinger, 2000). Homework in language teaching enables language education to continue outside the classroom. Students also devote more time to studying. When assigning homework, the assignments should be appropriate to the level of the students. In assignments, attention should be paid to the academic interests and wishes of the students. Homework should be fun, reinforcing what is learned in the lesson and applicable in daily life (Büyüktokatlı, 2009).

Developments in educational technologies have also changed the types of homework given by teachers. It is inevitable for teachers to make use of the possibilities of technology in the present day. Their use of the possibilities offered by technology in the learning and teaching process can have impacts on students. One of the possibilities of technology increasing achievement in English is the use of blogs. Aykaç (2020) asked students to use blogs and to write on blogs. The experimental group students' achievement in as well as their attitudes towards the course increased through the blog implementation. Huang (2016), in a study concerning students' use of blogs, teachers' and students' use of blogs is beneficial in foreign language education. In addition, Huang recommended using the blogging method as a course tool.

Another finding obtained in this study is that cognitive strategies have the highest correlations with academic achievement, and affective strategies have the lowest correlations among language learning strategies. According to this finding, it can be said that the academic achievement of the students who use cognitive strategies is high, and the academic achievement of the students who use affective strategies is low. Studies which are parallel in this finding (Gözüm & Başbay, 2019) are also available in the literature. Gözüm and Başbay (2019) found that the students who used cognitive strategies at high levels attained higher achievement than those who used those strategies at medium or low levels. Alyılmaz and Şengül (2018), Öztürk (2004) and Oxford and Ehrman (1995) also found in a similar way that students' use of cognitive strategies affected the achievement of students in languages in positive ways (grammar, advanced reading, writing, listening, pronunciation, motivation). In contrast, studies which found that academic achievement had high correlations with memory strategies and low correlations with social strategies are also available (Aykaç, 2020) in the literature.

Studies in which affective strategies were used less than the other strategies are also found in relevant literature. Hamamcı (2012) found that students in university preparatory classes used affective strategies less than other strategies. A similar result was achieved when Uztosun (2014) performed with randomly selected students studying in the Department of English Language Education. Using affective strategies can be influenced by students' perceptions of beliefs and attitudes towards languages. Graham (2003) found that students ignored learning strategies when they have low self-sufficiency beliefs and low self-perception, and that such a situation affected their academic achievement in negative ways.

The current study also found that there were significant high correlations between academic achievement in English and the sub-factors of academic self-concept. In parallel to this finding, there are also studies in the literature that support the finding of the research and show a significant and high relationship between academic achievement and academic self-concept (İşmar & Şehitoğlu, 2021; Piyancı, 2007; Valentine & Dubois, 2005). In the literature, there are studies (Dickhäuser, 2005; Karasakaloğlu & Saracaloğlu, 2009; Rodriguez, 2009) that reveal a positive, significant and moderate relationship between academic achievement and academic self. There are also studies showing that academic self has a positive effect on academic achievement (Dika, 2012; Jansen & Suhre, 2010; Mihaela, 2015; Nunez, 2009). Apart from that, the researcher also found a study which found that there were no correlations between academic self-concept and academic achievement (Öner, 1993).

It may be said that there are significant correlations between academic self-concept (Akyüz, 2019) and that the two affect each other in positive ways (Marsh & Craven, 2006; Marsh & Martin, 2011). The efforts students make to attain their goals are influenced by their self-perceptions. Their motivation is very important in this process.

Students need to motivate themselves to attain academic achievement. The process of motivation leads them to use their potential at the maximum level. Students' motivation is very important in learning a foreign language as in achievement in any area (Cited in Akyüz, 2019). They should keep studying to learn the language. In order to ensure this continuity, their motivation and therefore their academic self-perceptions must be at a high level (Akyüz, 2019). Çetinkaya (2017) concluded that students with higher academic achievement used language learning strategies more often and that they had higher motivation. It can be said that the motivation of students for foreign language learning is effective in the increase in academic success and the use of language learning strategies more. For this reason, the conditions affecting motivation in foreign language education (teachers' characteristics, not being able to use the language practically, words that need to be memorized, the quality of learning-teaching processes (Mehdiyev, et al., 2016) and the fear of not being able to speak English (Csizer & Dörnyei, 2005)) should be taken into consideration.

Of the sub-factors of academic self-concept, acceptance by the family was the one with the highest correlations with academic achievement in English. Based on the items in PASCI, it can be defined as being accepted by the family, supporting the student, and ensuring that the individual receives education according to his interests and wishes. According to this definition, it can be said that the primary duty of the family in the education process of the student is to reveal and develop the positive aspects and abilities of the student (Güney, 2009). Özer and Korkmaz (2016) stated that both the language success of the students at school and the frequency of using the language outside of school increased due to the importance given by the family to language learning. In addition, Özer and Korkmaz (2016) emphasized that family was important in increasing students' motivation to learn language. Gonzales (2001) identifies the external factors influential in learning a foreign language as the socio-cultural structure of the family such as parents' levels of education, their occupation, the family structure and the language used in the family. Bölükbaş (2010) found that students' academic achievement in learning a language (Turkish) increased in parallel to the rise in parents' levels of education.

On the other hand, the lowest correlation was between academic achievement and social anxiety. Social anxiety in foreign language teaching should be distinguished from other types of anxiety. Individuals who are going to learn a language can find themselves in a different environment once they have learnt the language. Even the thought of this situation can create fear in people. Students may have more fear than they should in this process. The anxiety and fear stand as a barrier in front of students (Allwright & Bailey, 2004).

It was also found in this study that all the variables together explained 42% of the variance in academic achievement in English. No studies focusing the extent to which academic self-concept, language learning strategies, grade levels and gender altogether predict academic achievement in a foreign language were found in the literature. However, studies (Baş, 2014; Saracaloğlu & Varol 2007) which argued the degree to which these variables (self-concept, attitude language learning strategies) each predicted academic achievement were available. Baş (2014) found that language learning strategies alone predicted 25% of academic achievement in English whereas Saracaloğlu and Varol (2007) found that academic self-concept and attitudes towards foreign languages together predicted 82% of academic achievement and that academic self-concept on its own predicted 44% of academic achievement. As to research in other areas, Stringer and Heath (2008) found that academic self-concept predicted 25% of the variance in academic achievement, Dursun et al. (2017) found that academic self-concept predicted 10% of academic achievement, Şimşek (2012) found that academic self-concept and score received from university entrance exam together predicted 44% of

achievement in mathematics, Nazlıççek (2007) found that previous achievement in mathematics and academic self-concept together predicted achievement in mathematics directly and significantly, and Awad (2007) concluded that academic self significantly predicted overall academic achievement.

It can be stated that the variables discussed in this study affect foreign language academic achievement. It can be said that many variables affecting foreign language academic achievement both in this study and in other studies are affected by attitude. Students' attitudes towards the foreign language, towards the teacher who teach the language, towards the school and towards learning in general affect their achievement in the foreign language (Anbarlı-Kırkız, 2010; Brown, 2001). According to Gardner and Lambert (1972), attitudes are a factor which motivate students in foreign language teaching (Cited in Özgan-Sucu, 2018). Saracaloğlu et al. (2014) demonstrated that there were quite high and positive correlations between students' attitudes towards foreign languages, their academic achievement and their academic self-design. Studies which conclude that there are positive and significant correlations between academic achievement in English and attitudes towards it (Anbarlı-Kırkız, 2010; Genç & Kaya 2011) are available in the literature. Thus, cooperation should be made with parents, different and rich methods should be used in classes and continuously positive atmosphere should be created in the learning-teaching process in order to increase students' attitudes towards the course.

Another finding in this study was that cognitive, compensation and metacognitive strategies positively predicted academic achievement in English but that affective strategies predicted it negatively. Cesur and Fer (2011) found that the most significant predictors of reading comprehension in foreign languages were cognitive and compensation strategies. Gözüm and Başbay (2019), on the other hand, reached the conclusion that the students who used cognitive strategies at high levels had higher scores for achievement in English than those who used the cognitive strategies at medium or low levels. Baş (2014) found that the learning strategies which influenced English academic achievement scores the most were cognitive strategies and memory strategies.

There are studies which demonstrate that metacognitive strategies were the predictors of academic achievement. Young and Fry (2008), Öztürk (2014) and Evran and Yurdabakan (2013) found positive and significant correlations between students' academic achievement in English and metacognitive skills. Pishghadam and Khajavy (2013) also found that metacognitive skills were a predictor of general achievement in languages (17.6%). Moradi (2013) found that the students who had received education in metacognitive awareness had higher academic achievement in English. In addition to that, Özgan-Sucu (2018) found metacognitive strategies explained 63% of academic achievement in English along with learned helplessness and attitudes towards the course. Contrary to the findings obtained in the study, Adıgüzel and Orhan (2017), Şahin and Küçüksüleymanoğlu (2015) found that there were no significant correlations between levels of metacognitive awareness and academic achievement in English.

Having metacognitive awareness in learning foreign languages enables students to use learning strategies consciously (Anderson, 2003). When considered in this sense, metacognitive strategies can also be regarded as strategies which organise the learning process. Learners plan, direct and correct the process by using this strategy (Özer, 2008). Students also follow the similar process while learning a language. The process of language learning involves several things new or different to learners such as unknown words, rules different from the rules in native language. According to Oxford (1990) increase in academic achievement can be obtained by using metacognitive strategies in the process in which learners have difficulty in focusing their attention (Cited in Vardar, 2011). The fact that one of the significant predictors of academic achievement in English is the use of metacognitive strategies can be due to the awareness of participants' metacognitive strategies. Thus, it may be said that students act strategically in learning a language and therefore they have the power to use new strategies. It is very natural for students to have these characteristics and to reflect those characteristics into their academic achievement.

Results different from the ones obtained here were also encountered in the literature. Gözüm and Başbay (2019) found significant differences between students who used affective strategies at high and medium levels in learning a language and students who used them at low levels. Baş (2014), in contrast to the findings of this study, found that compensation strategies had very small effects on academic achievement in foreign languages. Luo (2014) concluded that academic achievement was dependent on internal factors and efforts.

Considering one of the findings obtained from this study academic capability and acceptance by the family predicted academic achievement positively while physical appearance and social anxiety predicted it negatively. Academic self-concept is important in terms of clarifying students' views on their academic abilities. One of the definitions of academic self-concept is students' perception of their capabilities in their academic life (Trautwein, et al., 2006). Individuals' beliefs in academic education are influenced by their academic capabilities and by their intellectual accumulation which support (DeDonno & Fagan, 2013). One of the factors which makes the effects visible is students' comparison of their academic capabilities with their peers'. The academic capabilities of the students in groups where comparisons are made can lead students to have low or high academic self-perceptions. When one of the two students with similar achievement joins a group with high academic achievement, that student's development of academic self-concept is weaker than the student who joins the other group (Dadandı, 2017).

In this study, it is mentioned that self-concept influences academic achievement. Another component which influences academic achievement is the family. Families affect all kinds of academic success of students (Aslanargun, 2007). Woods, et al. (2007) concluded that the students who learnt a second language had families with education level above average and that their perceptions of English were formed by their families. The same study also mentions three levels of attitudes. Children of families with the highest level of attitudes have the highest academic achievement. They speak in English with their children to support their education, they listen to their children while they are reading, they read books with them and thus they set a model to their children and support them in learning English. In addition, it was concluded the study, that the number of family members who speak English at home and greater number of foreign language resources at home affect the family's attitude towards foreign language. This effect is more common in families with high level attitudes.

Families' explanation of the benefits of learning a foreign language to their children and thus urging them to learn a language make positive contributions to their language learning (Ekmekçi, 1983). Additionally, the environments and materials that families provide for their children to learn a language also affect the development of children's language development skills (Ünal, 2009). There are significant correlations between parents' interest in their children's education and children's academic achievement (Fullan, 2001). Face-to-face interviews can be conducted with parents who cannot provide this interest for various reasons. Families interest in foreign languages can be increased through such interviews. Teachers' communication with parents can help to eliminate such negative attitudes towards language learning. The consequence will be an increase in children's interest in learning a language and thus contributions will be made to their achievement in the language (Ministry of Education [MoNE], 2006).

Students' positive attitudes towards a course increase academic achievement (Genç & Kaya, 2011; She & Fisher, 2002 (Cited in Bölükbaş, 2010)). In order to achieve this increase, great responsibilities fall on the school and the family (Koç, 2011). Therefore, the school and the families should work in cooperation. The school should inform the families pedagogically and make them act in the light of the pedagogy. In a similar way, the families should be included in various activities including the decision-making process (Gümüşeli, 2004). Apart from these, there are also studies in the literature which conclude that there is no significant correlations between family participation

and academic success in English lessons (Doğan, 2018). This result may be due to the characteristics of the students and parents in the research group.

Still another finding obtained in this study was that academic achievement scores were affected in negative ways by the rise in importance attached to physical appearance and by the rise in social anxiety scores. Physical appearance is also mentioned as physical self-respect in relevant literature. It means self-evaluation made by individuals in relation to their bodily appearance (Adams et al., 2005). Several studies in the literature which were within our access reached conclusions different from the ones reached in this study. Karaçam and Pular (2019) found that physical education teachers' physical self-respect had positive and direct predictor effects on their perceptions of achievement. Kılıçarslan (2006) suggested that physical self-concept increased labour productivity while Pehlivan (2010) argued that there were positive and significant correlations between physical education department students' physical self-concept and their attitudes towards a course.

Social anxiety, just like physical appearance, was found to predict students' academic achievement in negative ways. Social anxiety is the feeling of fear and tension individuals experience due to thoughts that they will not behave consistently with the social circumstances they are in, that they will give negative impressions on people and that they will be criticised and evaluated negatively by others (APA, 2013). Studies which conclude that there are negative correlations between anxiety and academic achievement (Akyol et al., 2018; Dordinejad et al., 2011; Vitasari et al., 2010; Steinmayr et al., 2016) are available in the literature. In the light of these data, it may be said that anxiety affects academic achievement in negative ways.

Students who do what is asked to do them get high marks in exams, study efficiently and prioritise this characteristic of them are regarded as successful. Students' achievement academically helps them to feel that they are valuable (Yapıcı & Yapıcı, 2005). Feeling in this way diminishes social anxiety and may lead to the rise in academic achievement naturally. In addition to that, the attitudes displayed by students' family also causes the emergence or prevention of social anxiety. The problem-solving skills of students who are brought up in families with positive attitudes can develop and thus they have high academic achievement. In the opposite case, negative attitudes displayed by families can cause social anxiety to increase and thus their academic achievement to fall (Kaya et al., 2012).

In the literature, there are also studies which obtained findings different from this study. Gültekin and Dereboy (2011), for instance, found that there were no significant differences between individuals who have social phobia and those who do not have the phobia. Polat (2017) found that feeling of failure which was a sub-factor of academic self-efficacy and constant anxiety had positive and significant correlations with academic achievement and demonstrated through regression analysis that both variables explained 10% of the change in academic achievement.

Rise in social anxiety can cause the feeling of learned helplessness. Students who have the feeling of learned helplessness cannot control their learning process or cannot use their cognitive and affective properties if their efforts do not yield the desired results (Hsu, 2011). Even successful students can lose control in foreign language classes when they feel learned helplessness and as a result, their success can fall (Price, 1991). Yaman et al. (2011) concluded that students' academic achievement decreased as their levels of learned helplessness rose.

In another finding of the study, it was concluded that academic achievement in English was predicted only by academic achievement at the 11th grade level. This result can be interpreted as a contribution to the academic achievement of the students' previous studies only when they reach the 11th grade level.

The final finding obtained in the current study was that gender on its own did not predict academic achievement in English. Studies on whether or not academic achievement changes according to gender are available in foreign literature, which obtained varied results (Ekmekyermezoğlu, 2010). Based on these different results in the studies, in the examination of the relationship between gender and foreign language academic achievement, gender should not be taken only or directly, instead other variables should also be included in analyses. It may be said on the basis of this finding that there are variables apart from gender which can predict academic achievement better (Cantekin, 2020).

In conclusion, it was found that academic self-concept, language learning strategies, gender and grade level altogether predicted academic achievement in English by 42%. Accordingly, cognitive, affective and metacognitive strategies the sub-factors of language learning strategies predicted achievement in positive ways while affective strategies predicted in negative ways and academic capability and acceptance by the family the sub-factors of academic self-concept predicted academic achievement in positive ways whereas physical appearance and social anxiety predicted it in negative ways.

As with many studies, this study has some limitations. Extensive research was carried out while writing the article. Despite such a comprehensive literature review, no research has been encountered in which the variables used in the research are discussed. The data in the research were obtained from articles, theses, books, symposiums/congresses written in Turkish and English and various sources on the internet. The research data were collected only from English and Turkish sources can be considered as a limitation of this research.

The limitation of the study may also be due to the research design. The research was not conducted in all high schools in Ankara due to difficulties in obtaining permission from the participants or institutions. It may also be a limitation that the data affecting the results of the research indicate the current decision of the participants and their retrospective observations. In short, the results of the research and the following recommendations should be considered within the scope of these limitations.

The following can be recommended on the basis of the findings obtained and interpretations made in this study:

- Teachers should be made to learn and train the learners the language learning strategies and feel the importance of academic self-concept during pre-service and in-service training so as to increase academic achievement in English classes, and various activities (Such as seminar, workshop, project) should be organized in this sense.

- Considering the fact that students are not knowledgeable about language learning strategies, they should be taught those strategies during the learning-teaching process, and they should be given the opportunity to practise.

- In the current study, various scales are used. Instruments of qualitative research method along with the above-mentioned scales could be used by interviewing teachers and students and observing foreign language classrooms and thus further research could be performed. With this type of research, the reasons for the results can be understood.

- Further research could be done by employing variables such as learning styles, personality traits and study styles along with the variables used in this study-which demonstrated the extent to which academic achievement in a foreign language was predicted by language learning strategies, academic self-concept, grade levels and gender.

- Similar research could be conducted in secondary schools and elementary schools.

The precautions to be taken and priorities to be set can be determined in accordance with the results to be obtained in this current study which examines the effects of the sub-factors of language learning strategies and of academic self-concept on academic achievement in foreign language learning. Alternative work on curriculum development can be done for language teaching processes on the basis of the results. Thus, more effective teaching strategies may be used with students who have difficulty in foreign language learning.

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Effects of Using Virtual Tour Applications in Social Studies on Academic Achievement, Motivation, and Attitude*

İskender Daşdemir, Dr., Ege University, Türkiye, iskender.dasdemir@ege.edu.tr

 0000-0003-4158-2388

Nusret Koca, Prof. Dr., Afyon Kocatepe University, Türkiye, nkoca@aku.edu.tr

 0000-0002-1415-9683

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Abstract

This study investigated the effects of using virtual tour activities on students' motivation, attitude, and academic achievement in social studies. An exploratory sequential mixed -method design was employed for the study. Data were collected using the Journey in Turkish History Unit Achievement Test, which included learning objectives and was developed by the author, the Social Studies Motivation Scale, the Social Studies Attitude Scale, and the Semi-Structured Focus Group Interview Form for gathering students' opinions. The collected data were analyzed using statistical programs. Content analysis was performed on the qualitative data, while parametric tests were administered to the quantitative data with normal distribution. In the quantitative dimension of the study, no remarkable difference was detected between the control and experimental groups' attitudes, motivation, and academic achievement in the context of social studies before the process. However, at the end of the study, there was a statistically significant difference in favor of the experimental group. In the qualitative dimension, difficulties such as the program's structure, equipment, software, hardware, technological aspects, and teacher competence were addressed regarding the adaptation and use of virtual tour activities in social studies.

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INTRODUCTION

One of the most concrete indicators of today's educational approach is the use of technology in learning and teaching, processes (Kongar, 2003). Today, technology not only makes educational processes enjoyable, colorful, entertaining, and attractive for students, but it is also one of the most effective ways to convey costly, dangerous, and time-consuming learning situations. Beyond its use in learning and teaching processes within educational institutions, technology also influences the content and method of education, such as organizing educational institutions, archiving for their functioning, classification, and sorting (Aksoy, 2003).

The use of three-dimensional technologies in education, especially virtual tours, brings high scientific quality to education. Such technologies are perceived as applications that require technical knowledge and skills (Michael & Jodi, 2016; Peker, 2014). Virtual tour technology assists in the educational process by helping students transfer their learning to daily life and create a society that uses technology to solve everyday problems. One of the most important applications that bring technology (i.e., science) and daily life is virtual tour applications. With the help of computer technology, these applications create a sense of reality by transporting students to non-classroom environments, even though the learning environment is in the classroom. This situation encourages students to be willing to use virtual tours (Goetsch, 1984).

The content of social information provides crucial information about how variables between people and society are directed (Johnson, 1990). Social studies help us to acquire the knowledge, skills, attitudes, and values necessary to understand the past, present, and future along the axis of individuals and society, and to live in harmony, as well as pass them on to future generations (Welton, 2004). Expectations are the individual's expectations from society and society's expectations from individuals. Social studies aim to find a common denominator in the state to educate its citizens by regulating the relationships between individuals, considering their shared characteristics (i.e., the sovereign power). For this reason, social studies hold vital importance for people to coexist and form a society, and it maintains unchangeable characteristics as a course (Safran, 2008).

Virtual tours capture students' attention in the learning-teaching process by providing a realistic experience and motivate them towards the learning process. Virtual tours have significantly strengthened the existing methods, techniques, strategies, materials, and tools in all areas of education, and have provided new and advantageous opportunities for students (Bayraktar & Demir, 2007; Michael & Jodi, 2016; Kun-Hung & Chin-Chung, 2019).

The primary objective of this research is to examine the impact of virtual tours on students' academic achievements, as well as their attitudes and motivations towards social studies within the context of social sciences. Another aim of the research is to explore students' opinions about the use of virtual tour activities in social studies (Almeida & Yokoi, 2003). In its quantitative dimension, the study investigates the effect of using virtual tours on students' academic achievements, motivations and attitudes towards social studies. Meanwhile, in the qualitative dimension, students' opinions about learning social studies through virtual tours were gathered and analyzed (Azuma, 1997).

To achieve this goal, an experimental study was conducted, focusing on only four of the eight learning objectives in the third unit of the 7th grade social studies course, "Journey in Turkish History". This was because the structure and content of the other learning objectives were not suitable for virtual tour applications. Therefore, the virtual tour application was designed and implemented to help students attain the following learning objectives:

- The student evaluates the political and cultural activities of the Turks during the Seljuks period in Anatolia and their role in the Turkification of Anatolia.

- The student analyzes the conquests and struggles of the Ottoman Empire, with a focus on the significance of trade and maritime power.
- The student explores the interaction between Ottoman and European cultures, art, and aesthetics, and examines the impact of this exchange.
- The student draws inferences about social and economic changes resulting from the institutional reforms of the Ottoman Empire.

The learning objectives were taught using virtual tour applications, and students' academic achievement in social studies, as well as their motivation and attitudes towards the course, were examined.

In the quantitative dimension of the study, the research question "Does the use of virtual tour activities in social studies have an effect on students' academic achievement and motivation for social studies and attitudes towards the course?" was analysed. The sub-research questions of the study were as follows:

1. Do the pre-test academic achievement scores of the experimental and control groups differ from each other? Is there a significant difference?
2. Do the post-test academic achievement scores of the experimental and control groups differ from each other? Is there a significant difference?
3. Do the pre-test and post-test academic achievement scores differ in the experimental group? Is there a significant difference?
4. Do the pre-test and post-test academic achievement scores differ in the control group? Is there a significant difference?
5. Do the pre-test SSMS scores of the experimental group differ from those of the control group? Is there a significant difference?
6. Do the post-test SSMS scores of the experimental group differ from those of the control group? Is there a significant difference?
7. Do the pre-test and post-test SSMS scores differ in the experimental group? Is there a significant difference?
8. Do the pre-test and post-test SSMS scores differ in the control group? Is there a significant difference?
9. Do the pre-test SSAS scores of the experimental group differ from those of the control group? Is there a significant difference?
10. Do the post-test SSAS scores of the control group differ from those of the experimental group? Is there a significant difference?
11. Do the pre-test and post-test SSAS scores differ in the experimental group? Is there a significant difference?
12. Do the pre-test and post-test SSAS scores differ in the control group? Is there a remarkable difference?
13. What are 7th grade students' views on the use of virtual tour activities in social studies?

When examining the social studies curriculum, it is evident that it offers suitable conditions for the compatible and effective use of educational technologies within the context of learning areas, units, and objectives. However, technology has not been fully utilized in social studies today (Barth & Demirtaş, 1997). According to recent studies, although educational technologies such as smart boards, projectors, and computers are used in the classroom, the pace of development in information technologies does not show parallelism with the utilization of these technological products in social studies. Virtual tour technology is one of the significant reflections of these technological developments on education. In this context, the use of virtual tour applications in social studies aligns with the characteristics of today's educational approach, constructivism, such as engaging students, encouraging participation, and making them responsible for their own learning (Calongne & Hiles, 2018).

METHOD

STUDY DESIGN

In this study, a mixed research method was selected to address the study problems multidimensionally and comprehensively, as it broadens the perspective for understanding the researcher’s verification processes and combines the features and superior aspects of both qualitative and quantitative research approaches in a single study (Johnson et al., 2007). The mixed research method, one of the research methods, is defined as the integrated and the combined version of qualitative and quantitative approaches, in which the researcher collects data using both qualitative and quantitative methods, analyzes this data, unifies the findings, and presents predictions for the future (Tashakkori & Creswell, 2007; Tashakkori & Teddlie, 1998).

A quasi-experimental design with a control group (CP) was employed for the quantitative research to examine the effect of using virtual tour activities on students’ motivation, attitude, and academic achievement within the context of social studies.

STUDY GROUPS

The control group was identified among the 7th-grade classrooms from four public middle schools, and the experimental group (EG) was identified during the 2017-2018 academic year. Both groups’ academic achievement and motivation for social studies, as well as their attitudes towards the course, were measured before and after the experimental procedure. The pre-test and post-test control group design is shown in Table 1 (Fraenkel et al., 2012).

Table 1. Design of The Pre-test and Post-test CG

<i>Group</i>	<i>Pre-test</i>	<i>Procedure</i>	<i>Post-test</i>
Experimental	<ul style="list-style-type: none"> • Achievement Test • SSMS • SSAS 	<ul style="list-style-type: none"> • Social Studies with Virtual Tour Activities 	<ul style="list-style-type: none"> • Achievement Test • SSMS • SSAS
Control	<ul style="list-style-type: none"> • Achievement Test • SSMS • SSAS 	<ul style="list-style-type: none"> • Regular Curriculum 	<ul style="list-style-type: none"> • Achievement Test • SSMS • SSAS

DATA COLLECTION INSTRUMENTS

As shown in Table 1, the “Journey in Turkish History Unit Achievement Test” (JTHUAT), the SSMS and SSAS were applied to both groups before the experimental procedure. Following this, the experimental group was taught using virtual tour activities, while the control group was taught using the existing curriculum activities. In order to observe the impact of the experimental procedure on the groups, the measurement tools used as pre-tests were also applied as post-tests to both groups.

Subsequently, the qualitative data collection process was developed and executed. A semi-structured interview was employed as a qualitative data collection tool to provide a more comprehensive understanding of the findings obtained through the quantitative data collection instruments.

DATA COLLECTION PROCESS

The population for this research consisted of 7th grade students studying in the center of Izmir. The sample, selected using group sampling method, comprised eight 7th grade classrooms during the 2017-2018 academic year. A three-phase sampling method was employed to determine the sample representative of the population. In the first phase, schools in the city center of Izmir were grouped, and those with 7th grade classrooms were randomly selected. Group sampling refers to the random selection of clusters from a larger cluster, which includes all clusters in the population (Johnson &

Christensen, 2010). In the second phase, four different classrooms from four schools with similar characteristics, such as the number of students, student achievement levels, and motivation and attitudes towards social studies, were selected to establish experimental and control groups. This is referred to as purposeful sampling in the literature. The purposeful sampling method involves the inclusion of individuals or clusters with specific characteristics determined by the researcher in the sample group (Johnson & Christensen, 2010). In the third phase, random sampling was employed to determine the classrooms that would form the experimental and control groups. The random sampling model is used to prevent subjective factors, such as the researcher’s personal bias, or the inclusion of volunteers or the most convenient units (Moser & Kalton, 1985). In the random sampling model, all units in the population have an equal and independent chance of being selected, allowing results obtained from the sample to be easily generalized to the population. As the selection process is random, bias and sampling errors based on selection are expected to be minimal (Baştürk & Taştepe, 2013). the distribution of students in the groups according to schools is presented in Table 2.

Table 2. *Distribution of Students by Schools*

Schools	EG		CG	
	<i>f</i>	%	<i>f</i>	%
School A	28	29	25	25
School B	21	22	27	27
School C	24	25	24	25
School D	23	24	23	23
Total	96		99	

A total of one hundred ninety-five students participated in this study. with the experimental ($n = 96$) and control group ($n = 99$). The gender distribution of the students is shown in Table 3.

Table 3. *Gender Distribution of the Students in the Experimental Group*

Schools	Male		Female	
	<i>f</i>	%	<i>f</i>	%
School A	16	30	12	28
School B	13	24	8	19
School C	12	23	12	28
School D	12	23	11	25
Total	53		43	

The experimental group consisted of 53 male and 43 female participants (see Table 3). School A had 12 female and 16 male participants, School B had 8 female and 13 male participants, School C had 12 female and 12 male participants, and School D had 11 female and 12 male participants. The gender distribution of the students is presented in Table 4.

Table 4. *Gender Distribution of the Students in the Control Group*

Schools	Male		Female	
	<i>f</i>	%	<i>f</i>	%
School A	15	31	10	20
School B	12	25	15	29
School C	13	27	11	22
School D	8	17	15	29
Total	48		51	

In the control group, there were 51 female and 48 male participants (see Table 4). School A had 10 female and 15 male participants, School B had 15 female and 13 male students, School C had 11 female and 13 male participants, and School D had 15 female and 8 male participants.

For the qualitative dimension, criterion sampling, a purposeful method, was used to identify experimental and control group participants. From the experimental groups in the four public schools,

three 7th grade students with high, medium, and low pre-test scores were selected. A total of 36 students were chosen. In the criterion sampling method, conditions meeting a predetermined set of criteria are selected (Yıldırım & Şimşek, 2016).

Additionally, the qualitative data were collected using the JTHUAT, SSMS and SSAS, while the qualitative data were obtained through the "Student Interview Form". Four learning objective tests, each consisting of 20 questions related to the "Journey in Turkish History" unit- a unit within the "Culture and Heritage" learning domain- were published on the official website of the Ministry of National Education and examined for their suitability for the virtual tour activities in the experimental groups. Based on these four learning objectives, an achievement test comprising 20 questions was developed. To achieve the objectives of the study, the achievement tests designed by the relevant ministry to measure social studies learning objectives were reviewed, and an academic achievement test was developed accordingly. Pilot applications of the developed achievement test were conducted in four middle schools, selected using random sampling methods in the Bayraklı and Bornova districts of İzmir. Following validity and reliability analyses, the achievement test was deemed appropriate for use in the experimental study with the reliability coefficient of .81.

In the study, the SSAS was used to measure students' attitudes toward the course, while the SMSS was administered to determine students' motivation towards social studies. In the qualitative dimension of the study, a focus group meeting was conducted to explore students' views on the use of virtual tour activities in social studies. As a result, students were interviewed using a semi-structured interview form that consisted of six open-ended questions.

DATA ANALYSIS

In the experimental group, the teaching process applied to virtual tour activities focused on four learning objectives in the "Journey in Turkish History" unit of the "Culture and Heritage" learning area within the social studies course. The social studies learning objectives were taught for five weeks between 13 November 2018 and 15 December 2018 to 7th-grade students attending four schools in İzmir. The following steps were taken during the application process: In the first week, information about meeting and virtual tour applications was provided. Students were informed about the learning objectives of the "Journey in Turkish History" unit, which would be covered within the scope of the research, and examples were given to indicate which objectives were suitable for virtual tour activities. To measure academic success in the experimental and control groups before starting the teaching process, a success test, consisting of the learning objective tests for the "Journey in Turkish History" unit, was administered. Additionally, the "Social Studies Course Motivation Scale" and "Social Studies Course Attitude Scale" were applied by the researcher as pre-tests. It was observed that seventh-grade students completed the pre-tests in an average of 40 minutes. The data obtained from the pre-tests were transferred to a computer environment and analyzed. By examining the pre-test results, the success scores of the experimental and control groups were determined before starting the teaching process.

In the second week, for the seventh-grade social studies course's "Journey in Turkish History" unit, virtual tour activities were conducted related to the first learning objective: "the student evaluates the political and cultural activities of the Turks during the Seljuks period in Anatolia and their role in the Turkification of Anatolia." As part of these activities, students were given a virtual tour of Niksar Castle in Tokat province, showcasing examples of Seljuk architecture in Anatolia, as suggested in the teacher's guidebook for the related learning objectives. Additionally, students virtually visited the "Malabadi Bridge" in Diyarbakır province and the "Divriği Grand Mosque and Darüşşifa" in Sivas province, exploring their cultural characteristics and contributions. In the third week, activities focused on the second learning objective of the "Journey in Turkish History" unit for the seventh-grade social studies course: "the student analyzes the conquests and struggles of the Ottoman Empire, with a focus on the significance of trade and maritime power." Based on the activities recommended in the

teacher's guidebook, students took virtual tours of "The Bosphorus," "The Grand Bazaar," "Topkapi Palace," "Izmir Cesme Port," and Trabzon, exploring their historical significance and the role they played in the Ottoman Empire.

In the fourth week, for the seventh-grade social studies course's "Journey in Turkish History" unit, the focus was to explore the interaction between Ottoman and European cultures, art, and aesthetics, and examines the impact of this exchange. Based on the activity recommendations in the teacher's guidebook, students took virtual tours of "Istanbul New Mosque," "Topkapi Palace," "III. Ahmet Fountain," and "Hagia Sophia," exploring these locations and their significance. In the fifth week, the seventh-grade students drew inferences about social and economic changes resulting from the institutional reforms of the Ottoman Empire. Following the activity recommendations in the teacher's guidebook, students participated in virtual tour activities related to "Galatasaray High School" and "Ankara Ziraat Bank Museum."

RESULTS

FINDINGS AND INTERPRETATIONS ABOUT THE QUANTITATIVE DATA

The results of the t-test conducted to answer the sub-research question "Do the academic achievement pre-test scores of the experimental group differ from those of the control group? Is there a significant difference?" are presented in Table 5.

Table 5. *The T-Test Results of the Pre-test Academic Achievement Scores of Both Groups*

	<i>N</i>	\bar{X}	<i>Ss</i>	<i>Sd</i>	<i>t</i>	<i>p</i>
EG	96	10.91	2.80	193	-.282	.779
CG	99	11.04	3.30			

According to Table 5, no significant difference was detected between the experimental group (EG) and control group (CG) students' Journey in Turkish History Unit Achievement Test (JTHUAT) pre-test scores ($p > .05$). Based on this finding, the students in both groups were similar in terms of academic achievement. Büyüköztürk et al. stated that groups should be equal in designs containing two or more groups in experimental studies (2013). Thus, having equal groups was a necessary result to begin the research process.

The results of the t-test conducted to answer the sub-research question "Do the academic achievement post-test scores of the experimental group differ from those of the control group? Is there a significant difference?" are illustrated in Table 6.

Table 6. *The T-Test Results of the Post-test Academic Achievement Scores of Both Groups*

	<i>N</i>	\bar{X}	<i>Ss</i>	<i>Sd</i>	<i>t</i>	<i>p</i>
EG	96	14.56	4.41	193	6.741	.000
CG	99	11.18	2.30			

As clearly seen in the Table 6, a significant difference occurred between the JTHUAT post-test scores of both groups ($p < .05$). Before the experimental procedure, no significant difference was observed between the JTHUAT pre-test scores of both groups. However, after the experimental procedure, it is evident that the difference is in favour of the experimental group (EG). This finding indicated that the use of virtual tour activities in social studies increased students' academic achievement in the "Journey in Turkish History" unit.

The results of the t-test conducted to answer the sub-research question "Do the academic achievement pre-test and post-test scores of the experimental group differ from each other? Is there a significant difference?" are summarized in Table 7.

Table 7. *The T-Test Results of the Pre-test and Post-test Academic Achievement Scores of the EG*

	<i>N</i>	\bar{X}	<i>Ss</i>	<i>Sd</i>	<i>t</i>	<i>p</i>
Pre-test	96	10.91	2.80	95	-6.632	.000
Post-test	96	14.56	4.41			

According to Table 7, there was a significant difference between the JTHUAT pre-test and post-test scores of the EG ($p < .05$). This finding indicated that the use of virtual tour activities in social studies increased EG students' academic achievement in the "Journey in Turkish History" unit. In this case, it can be concluded that using virtual tour activities is an effective method in increasing students' academic achievement in the "Journey in Turkish History" unit in social studies.

The results of the t-test conducted to answer the sub-research question "Do the academic achievement pre-test and post-test scores of the control group differ from each other? Is there a significant difference?" are presented in Table 8.

Table 8. *The T-Test Results of the Pre-test and Post-test Academic Achievement Scores of the CG*

	<i>N</i>	\bar{X}	<i>Ss</i>	<i>Sd</i>	<i>t</i>	<i>p</i>
Pre-test	99	11.04	3.30	98	-.328	.743
Post-test	99	11.18	2.30			

Table 8 shows no significant difference occurred between the JTHUAT post-test and pre-test scores of the CG ($p > .05$). It indicates that the use of the existing curriculum activities is not an effective method in increasing students' academic achievement in the "Journey in Turkish History" unit in social studies.

The results of the t-test conducted to answer the sub-research question "Do the SSAS pre-test scores of the experimental group differ from those of the control group? Is there a significant difference?" are outlined in Table 9.

Table 9. *The T-Test Results of the Pre-test SSAS Scores of Both Groups*

	<i>N</i>	\bar{X}	<i>Ss</i>	<i>Sd</i>	<i>t</i>	<i>p</i>
EG	96	60.80	4.53	193	.841	.402
CG	99	60.27	4.25			

Table 9 indicates SSAS pre-test scores of EG are very slightly different from SSAS pre-test scores of CG ($p > .05$). Based on this finding, the students in both groups were similar in terms of their attitudes towards social studies. Therefore, having equal groups was a necessary result to begin the research process.

The results of the t-test conducted to answer the sub-research question "Do the SSAS post-test scores of the control group differ from those of the experimental group? Is there a significant difference?" are reported in Table 10.

Table 10. *The T-Test Results of the Post-test SSAS Scores of Both Groups*

	<i>N</i>	\bar{X}	<i>Ss</i>	<i>Sd</i>	<i>t</i>	<i>p</i>
EG	96	82.58	3.57	193	42.75	.000
CG	99	61.05	3.45			

Table 10 shows that no significant difference occurred between the SSAS post-test scores of both groups ($p < .05$). Before the experimental procedure no significant difference was observed between the pre-test SSAS scores of both groups. However, after the experimental procedure, the difference seen in the Table 10 is in favour of the EG. This finding indicated that the use of virtual tour activities in social studies improved the attitudes of 7th-grade students towards the course.

The results of the t-test conducted to answer the sub-research question “Do the SSAS pre-test and post-test scores of the experimental group differ from each other? Is there a significant difference?” are presented in Table 11.

Table 11. *The T-Test Results of the Pre-test and Post-test SSAS Scores of the EG*

Score type	N	\bar{X}	Ss	Sd	t	p
Pre-test	96	60.80	4.53	95	-37.61	.000
Post-test	96	82.58	3.57			

Table 11 demonstrates that SSAS post-test of the EG increased significantly, ($p < .05$). This finding indicates that the use of virtual tour activities in social studies improved EG students’ attitudes towards the course. In this case, it can be concluded that using virtual tour activities is an effective method for increasing students’ attitudes towards social studies.

The results of the t-test carried out to answer the sub-research question “Do the SSAS pre-test and post-test scores of the CG differ from each other? Is there a significant difference?” are presented in Table 12.

Table 12. *The T-Test Results of the Pre-test and Post-test SSAS Scores of the CG*

Score type	N	\bar{X}	Ss	Sd	t	p
Pre-test	99	60.27	4.25	98	-1.816	.072
Post-test	99	61.05	3.45			

According to Table 12, the SSAS post-test of the control group did not differ significantly from the SSAS pre-test score ($p > .05$). Although there was an increase in the attitude scores, this increase was not remarkable. This finding indicated that the use of the existing curriculum activities is not an effective method for increasing students’ attitudes towards social studies.

The results of the t-test conducted to answer the sub-research question “Do the SSMS pre-test scores of the experimental group differ from those of the control group? Is there a significant difference?” are detailed in Table 13.

Table 13. *The T-Test Results of the Pre-test SSMS Scores of Both Groups*

	N	\bar{X}	Ss	Sd	T	P
EG	96	62.21	3.72	193	1.258	.210
CG	99	61.41	5.08			

No remarkable difference was seen between the SSMS pre-test scores of both groups’ students ($p > .05$). Based on this finding, the students in both groups were similar in terms of their motivation towards social studies. In experimental studies, two or more groups being equal is a desired result for the research process and results. Therefore, this finding is crucial in terms of determining the effectiveness of the method applied.

The results of the t-test conducted to answer the sub-research question “Do the SSMS post-test scores of the experimental group differ from those of the control group? Is there a significant difference?” are presented in Table 14.

Table 14. *The T-Test Results of the Post-test SSMS Scores of both Groups*

	N	\bar{X}	Ss	Sd	t	p
EG	96	91.70	4.66	193	45.12	.000
CG	99	62.06	4.51			

Table 14 clearly shows the difference between the SSMS post-test scores of both groups ($p < .05$). Before the experimental procedure, no remarkable difference was seen between the SSMS pre-test scores of both groups. However, after the experimental procedure, the difference demonstrated in Table 14 is in favour of the EG. This finding indicated that the use of virtual tour activities in social

studies has a positive impact on increasing 7th-grade students’ motivation towards social studies compared to the existing curriculum activities.

The results of the t-test conducted to answer the sub-research question “Do the SSMS pre-test and post-test scores of the experimental group differ from each other? Is there a significant difference?” are demonstrated in Table 15.

Table 15. *The T-Test Results of the Pre-test and Post-test SSMS Scores of the EG*

Score type	N	\bar{X}	Ss	Sd	t	p
Pre-test	96	62.21	3.72	95	-44.27	.000
Post-test	96	91.70	4.66			

Table 15 shows that there was a remarkable difference between the SSMS pre-test and post-test scores of the EG ($p < .05$). It indicated that the use of virtual tour activities in social studies increased the motivation of the 7th-grade students in the EG toward the course. In this case, it can be concluded that using virtual tour activities is an effective method for increasing students’ motivation towards social studies.

The results of the t-test conducted to answer the sub-research question “Do the SSMS pre-test and post-test scores of the control group differ from each other? Is there a significant difference?” are detailed in Table 16.

Table 16. *The T-Test Results of the Pre-test and Post-test SSMS Scores of the CG*

Score type	N	\bar{X}	Ss	Sd	t	p
Pre-test	99	61.41	5.08	98	-1.685	.095
Post-test	99	62.06	4.51			

According to table 16, an increase can be seen in the motivation scores of the CG. However, this increase was not remarkably high ($p > .05$). In this case, it can be inferred that the existing curriculum is not effective in increasing students’ motivation towards social studies.

FINDINGS AND INTERPRETATIONS ABOUT THE QUALITATIVE DATA

In this section, the qualitative findings of the study are presented. The findings are derived from the opinions of the 7th-grade students who participated in the virtual tour activities as part of the social studies curriculum. The results are organized according to the main themes that emerged during the data analysis, and they provide insights into the students' experiences, perceptions, and attitudes towards the use of virtual tours in social studies. After the virtual tour activities related to these learning objectives were conducted, focus group interviews were carried out with the students selected by criterion sampling. The data obtained from the focus group interviews were treated as documents and analysed using content analysis. The views of 7th-grade students’ views on lessons conducted before the virtual tour activities are presented in Table 17.

Table 17. *Students’ Views on the Lessons before Using Virtual Tour Activities*

The lessons were generally more boring.
There was less participation in the class.
There was less retention.
Learning the subjects was more difficult.
Our teacher predominantly lectured in the class.
I perceived it as a course based on memorization.
My exam grades were lower.

Table 17 indicates that students found the lessons prior to the virtual tour activities be generally more boring, with less participation and retention. They considered learning the subjects more difficult, and their teacher predominantly lectured in class. They also perceived social studies as a course based on memorization.

Table 18. *7th-grade Students’ Views on the Contributions of the Virtual Tour Activities Regarding the Lessons*

The activities made the lesson more enjoyable.
The activities increased participation in the lesson.
The activities helped to the concretization of social studies.
The activities made it easier to learn difficult subjects.
The activities engaged multiple senses.
The activities made the subjects richer.
The activities promoted retention.
The activities improved exam grades -
The activities enhanced classroom communication.
The activities made the lessons less boring.
The activities increased our interest in the subject.
The activities heightened our curiosity towards the course.
The activities engaged the students.

Table 18 demonstrates that 7th-grade students believed virtual tour activities made the lessons more enjoyable, increased participation, and concretized social studies. They stated that the activities made it easier to learn difficult subjects, engaged multiple senses, made the subjects richer, promoted retention, improved exam grades, and enhanced classroom communication. Furthermore, they reported that the activities made the lessons less boring, increased their interest in the subject, heightened their curiosity towards the course, and engaged the students.

Table 19. *7th-grade Students’ Views on the Individual Contributions of the Virtual Tour Activities*

Contributions outside the class	They guided me to use technological tools for learning purposes outside of class. They helped me satisfy my curiosity outside of class. They allowed me to learn about historical places I had not seen before. They enabled me to share the locations I visited during the lessons with my family.
Contributions within the class	The activities contributed significantly. The activities made me enjoy social studies more. The activities increased my curiosity about the subject. The activities heightened my interest in the course. The activities made me more active during lessons. The activities ensured better retention. The activities improved my exam performance. The activities facilitated their understanding of the subjects. The activities made the lessons less boring. The activities encouraged me to attend classes voluntarily and willingly. The activities made the lessons more productive for me.

As shown in Table 19, 7th-grade students expressed their views on the individual contributions of the virtual tour activities used in two dimensions: contributions outside the class and contributions within the class. Regarding contributions outside the class, the students mentioned that the virtual tour activities guided them to use technological tools for learning purposes outside the classroom, helped them satisfy their curiosity outside of class, allowed them to learn about historical places they had not seen before, and enabled them to share the locations they visited during the lessons with their families.

Concerning contributions within the class, students stated that the virtual tour activities contributed significantly, made them enjoy social studies more, increased their curiosity about the subject, and heightened their interest in the course. In addition, they mentioned that the activities made them more active during lessons, ensured better retention, improved their exam performance, and facilitated their understanding of the subjects.

Finally, they pointed out that the virtual tour activities made the lessons less boring, encouraged them to attend classes voluntarily and willingly, and made the lessons more productive for them.

Table 20. *7th-Grade Students' Views on the Problems Faced while using the Virtual Tour Activities*

The activities are time-consuming.
The activities cause difficulties in classroom management.
Classes are too crowded.
Getting permission to speak can be problematic.
Some students dominate.
Those who lack technological competence struggle.
There are issues with internet connection.
the places we visited on the virtual tours become confusing.
There was excessive noise in class.
Prolonged use of virtual tours makes the lesson boring.
The subject matter is not well understood when you only focus on the virtual tour.

According to Table 20, 7th-grade students identified problems faced while using virtual tour activities, such as the activities being time-consuming and causing difficulties in classroom management and obtaining permission to speak. They expressed that classes were too crowded, some students dominated, those who lacked technological competence struggled, and there were issues with internet connectivity. Furthermore, they noted that the places they visited on the virtual tours became confusing, there was excessive noise in class, prolonged use of virtual tours made lessons dull, and the subject matter was not well understood when they only focused on the virtual tour.

Table 21. *7th-Grade Students' Solution Recommendations for the Problems Encountered During the Use of Virtual Tour Activities*

Teachers should maintain stricter discipline.
Less time can be allocated to virtual tours.
In the event of internet issues, there should have a virtual tour saved on the computer.
Class sizes can be reduced.
Everyone should be given a chance to speak.
Those who lack computer skills can be taught outside of the classroom.

As illustrated in Table 21, 7th-grade students proposed solutions for the problems encountered during the use of virtual tour activities. They suggested that teachers should maintain stricter discipline, allocate less time to virtual tours, and have a virtual tour saved on the computer in the event of internet issues. In addition, they recommended reducing class sizes, allowing everyone a chance to speak, and teaching computer skills to those who lack them outside of class.

DISCUSSION, CONCLUSION AND IMPLICATIONS

In this part of the study, the results from the JTHUAT, SSMS, and SSAS are presented and discussed in relation to other research findings. First, the results of each scale are provided, followed by a discussion that links the quantitative and qualitative data.

The JTHUAT analysis revealed no significant difference between the pre-test JTHUAT scores of both groups, indicating that students in both groups had similar academic achievement levels. However, the post-test JTHUAT scores of the EG were significantly different from their pre-test scores, demonstrating an increase in academic achievement for students taught the "Journey in Turkish History" unit using virtual tour activities. This suggests that using virtual tour activities is an effective method for improving students' academic achievement in the "Journey in Turkish History" unit in social studies. In contrast, the pre-test and post-test results of the CG were nearly identical, indicating that existing curriculum activities are ineffective at increasing students' academic achievement in this unit (Çetinkaya & Akçay, 2013; John et al., 2000; Kun-Hung & Chin-Chung, 2019; Richard, 2016). The literature on virtual tour applications shows that student achievement increases compared to traditional methods (John et al., 2000; Kun-Hung & Chin-Chung, 2019; Richard, 2016). Although these studies do not focus directly on social studies, their findings can be adapted to support the use of

technology and virtual tours in social studies education. The significant difference between the two groups found in this study aligns with the results of previous research (Demir & Akengin, 2010). Yuen et al. (2011) reported that using virtual tour technology for educational purposes leads to increased academic achievement. Similarly, Çakır et al. (2015) enriched the educational environment with technology and engaged students using augmented reality activities, finding that these activities positively affected students' achievement and class participation. In another study, Almeida and Shigeki (2003) developed a virtual tour guide to be used in virtual tour activities, particularly in museums and historical sites. This virtual tour guide increased student participation and academic achievement, with the results aligning with those of the current study (Hubalovsky & Sediyy, 2011).

The JTHUAT results and the students' views regarding the contribution of virtual tour activities, as discussed in the focus group meetings, were consistent with each other. Before the virtual tour activities, students described their social studies lessons as generally boring, with low attendance and less retention of learning. They found it more difficult to learn the subjects, experienced teacher-centered instruction, viewed social studies as a memorization-based subject, received lower grades. In contrast, students reported that the virtual tour activities made the lessons enjoyable, increased participation, helped concretize social studies concepts, facilitated learning of difficult subjects, engaged multiple senses, and enriched the content. They also mentioned that these activities enhanced the retention of learning, improved exam grades, increased classroom communication, made the lessons more engaging, and sparked curiosity and student activity. The focus group interview results revealed that students had difficulty learning subjects and received lower grades before using virtual tours. Furthermore, they stated that the virtual tours simplified learning of difficult subjects and raised their exam grades, supporting the study's findings that virtual tours positively affect academic achievement.

Additionally, the increase in students' interest and motivation, the alignment of experiences with individual learning styles, and the creation of a multi-sensory learning environment may account for this difference in achievement. Upon examining the SSMS results, it became apparent there was no significant difference between the pre-test SSMS scores of both groups' students, indicating that students in both groups had similar levels of motivation towards social studies. This finding is consistent with the study conducted by Özerbaş and Yalçınkaya (2018), which also found no significant difference between pre-test scores of the group before the experimental procedure. The analyses revealed that the experimental group's post-test SSMS scores increased significantly compared to those of the control group. This finding indicated that the use of virtual tour activities in social studies was more effective in increasing 7th-grade students' motivation towards social studies compared to the existing curriculum activities. This study finding is consistent with the studies conducted by Özerbaş and Yalçınkaya (2018), Erduran and Tataroğlu (2009), and Altınçelik (2009). Özerbaş and Yalçınkaya (2018) concluded in their study with 4th-grade students that the use of multimedia positively increased students' motivation. Erduran and Tataroğlu (2009) found that the use of technologies such as smart boards positively affected students' learning and increased their interest. Similarly, Altınçelik (2009) stated that the smart board attracted students' attention and motivated them to learn while teaching. Furthermore, the study showed a remarkable difference between the pre-test and post-test SSMS scores of the experimental group. This finding indicated that the use of virtual tour activities in social studies increased the motivation of 7th-grade students in the experimental group toward the course. In this case, it can be said that using virtual tour activities is an effective method for increasing students' motivation towards social studies. However, the control group's post-test SSMS scores did not show a remarkable increase. The quantitative findings from the SSMS support qualitative findings from the focus group interviews. While students considered social studies lessons boring before the virtual tour activities were used, they found the lessons more enjoyable afterward. They stated that the lessons became engaging, and their interest and curiosity towards the subject increased. These qualitative results support the findings obtained from the motivation scale.

The SSAS results indicated that there was no significant difference between the pre-test SSAS scores of both groups. Based on this finding, the students in both groups had similar attitudes towards social studies. This study finding is in line with the studies conducted by Yeşiltaş and Turan (2015) and Yıldırım and Tahiroğlu (2012), which also demonstrated no significant difference between pre-test attitude scores before starting the experimental procedure. Analyses showed that the experimental group's SSAS post-test scores significantly increased compared to those of the control group. This finding indicated that the use of virtual tour activities in social studies increased 7th-grade students' attitudes towards the course compared to the existing curriculum activities. This study finding is in consistent with some other studies. (Demirboğa, 2010; Ermiş, 2010; Yeşiltaş & Turan, 2015; Yıldırım & Tahiroğlu, 2012). Yeşiltaş and Turan (2015) found that teaching with virtual tour software developed for social studies positively affected 7th-grade students' attitudes towards the subject. Similarly, Yıldırım and Tahiroğlu (2012) found that activities supported by visual museum tours positively affected 5th-grade students' attitudes towards social studies. Demirboğa (2010) determined that activities supported by virtual museum visits positively contributed to students' affective and cognitive objectives. Finally, Ermiş (2010) emphasized that three-dimensional virtual museum visits contributed to visual arts education for 6th-grade students.

Moreover, the study revealed an increase in the experimental group's SSAS post-test scores compared to their SSAS pre-test scores. This finding indicated that the use of virtual tour activities in social studies positively affected the experimental group students' attitudes towards the course. In contrast, the control group's SSAS pre-test and post-test results did not show a significant alteration, indicating that the use of the existing curriculum activities is not effective in increasing students' attitudes towards social studies.

The results of the SSAS and the views given by the students regarding the individual contributions of the use of virtual tour activities in the focus group interviews were consistent with each other. Students expressed their opinions on the individual contributions of the virtual tour activities used in two dimensions: contributions outside the class and contributions for the class. Regarding virtual tour activities' contributions outside the class, students mentioned several benefits. They stated that these activities encouraged them to use technological tools for learning purposes beyond the classroom, satisfying their curiosity outside of class. In addition, virtual tour activities allowed students to learn about places they had not seen before, enriching their knowledge and broadening their horizons. Furthermore, these activities provided an opportunity for students to share their experiences and the places they virtually visited during the lessons with their families, promoting engagement and discussion at home. Regarding the contributions of virtual tour activities for the class, students expressed several positive outcomes. They highlighted that these activities significantly enhanced their enjoyment of social studies, sparked their curiosity, and increased their interest in the subject. Additionally, students noted that virtual tour activities made them more engaged during lessons, facilitated long-term retention of knowledge, improved their exam performance, and helped them better understand the subject matter. Furthermore, students pointed out that virtual tour activities made lessons more dynamic and engaging, motivating them to attend classes voluntarily and willingly. This, in turn, led to more productive learning experiences. The students' perspectives on the individual contributions of virtual tour activities, particularly concerning their impact on classroom experiences, are consistent with the results of the Social Studies Attitude Scale (SSAS).

The qualitative data from the focus group interviews revealed some challenges faced by students while using virtual tour activities in the classroom. Students reported that virtual tour activities took a long time, which led to difficulties in classroom management and getting permission to speak. They also noted that classes were too crowded, and some students stood out, while others who did not have the technological competence faced difficulties. Additionally, there were problems with the internet connection, and the places they visited on the virtual tours were getting mixed. There was also a lot of noise in class, and long-term use of virtual tours made the lessons boring, leading to

poor understanding of the subject when students only spent time on the virtual tour. To address these issues, students recommended some solutions. They suggested that teachers should be more disciplined, less time should be allocated to the virtual tours, and a virtual tour should be saved on the computer when there is no internet. They also suggested that the class size could be reduced, everyone could be given a chance to speak, and those who do not know how to use a computer could be taught outside of the classroom. During the focus group meetings, students were asked to evaluate the use of virtual tour activities on a scale of 1 to 10. Of the 36 students, 19 (53%) rated the use of virtual tour activities in social studies as a 10 out of 10, 12 (33%) rated it as a 9 out of 10, 3 (9%) rated it as an 8 out of 10, and 2 (5%) rated it as a 7 out of 10. When asked whether they would like to continue using virtual tour activities in class, 25 (69%) students answered yes, 4 (11%) answered no, and 7 (19%) were undecided.

AUTHOR CONTRIBUTION

The first author contributed significantly to the conception and design of the study, as well as the acquisition, analysis, and interpretation of data. The second author contributed to the drafting and critical revision of the manuscript for important intellectual content. Both authors have approved the final version of the manuscript and agree to be accountable for all aspects of the work.


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The Effect of the Flipped Classroom Model on Students' Achievement, Problem-Solving Skills and Attitudes towards Physics Lesson*


Özlem Koray, Prof. Dr., Zonguldak Bülent Ecevit University, Türkiye, ocankoray@gmail.com

 0000-0003-1804-0871

Veli Çakar, Teacher, Ereğli İMKB Anatolian High School, Türkiye, velicakarimkb@gmail.com

 0000-0002-7852-4205

Abdullah Koray, Assist. Prof. Dr., Zonguldak Bülent Ecevit University, Türkiye, korayabdullah@gmail.com

 0000-0002-2972-1317

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Abstract

The study explored the effects of the Flipped Classroom Model (FCM) application enriched with digital content and educational activities for the physics lesson on students' academic performance, problem-solving skills, and attitudes towards the physics lesson. The study employed the pretest-posttest control group quasi-experimental design. The study group of this research consists of 121 10th grade students, 59 of whom are experimental and 62 are control. In the study, the subject of "Pressure and Buoyancy" was taught according to the FCM in the experimental groups, while the lessons were carried out in the control groups using methods suitable for the 10th grade Physics Curriculum. Dependent and independent samples t-test analyses were used for the analyses of the pretest and posttest measurement data. The study findings revealed that the academic achievement, physics lesson performance, and attitude scores of the students in the experimental group, in which the FCM was used, were significantly higher than the scores of the students in the control group. No significant difference was found in the problem-solving skills scores between the experimental group students and the control group students.

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INTRODUCTION

Although face-to-face education is considered the most important characteristic of the learning process, the concept of distance education came into the picture with the use and spread of technological tools in the 19th century. The process, which started with the contribution of communication tools such as radio and television to education, continued with the use of computers and computer technologies. With the widespread use of the internet, online learning has come to the fore, and with mobile technologies, the boundaries of learning environments have been greatly expanded. It was put forward as a common view that the use of technology in education alone is not sufficient, just as traditional education cannot provide effective and efficient learning (Osguthorpe & Graham, 2003). At this point, one of the most possible solutions is considered to be “blended learning”. Inadequacies in current learning experiences can be overcome by blended learning (Driscoll, 1994). One of these blended learning models is the Flipped Classroom Model (FCM).

The FCM, which is defined as the integration of communication technologies into education, is an instruction model bringing the activities that take place in the classroom to the outside and the activities that take place outside the classroom to the classroom. The FCM, in short, refers to the flipping of the time and place of the theoretical lectures and homework (Bergmann & Sams, 2012). While the theoretical lecture of the lesson is carried out at home with online recordings, in-class activities are divided into points that are not understood, additional activities, and repetitions. While wide implementation trials of the model were encountered in the 2000s, the researchers who conducted the earliest studies on its functional use were Bergmann and Sams (2012). The most popular contribution to the FCM was made by Khan in his TED talk titled “Let’s use video to reinvent education”, and the entrepreneur used the concepts of “flipping the classroom” and “flipped classroom” for the first time (Khan, 2011).

The FCM gained even more importance after the World Health Organization declared a pandemic as a result of the spread of the corona virus. Specifically, the model’s presentation of the theoretical content to the students using technological materials was assessed as the only way to be followed after the closure of schools in all countries of the world due to the pandemic. Even after the effects of the virus are wiped out, these materials will still be available to students and teachers.

In many other studies, the effectiveness of the FCM on learning was examined using various methods, and these studies emphasized that the model’s advantageous aspects are quite satisfactory (AlJaser, 2017; Arnold-Garza, 2014; Bergmann & Sams, 2012; Cole & Kritzer, 2009). In a study by Wiginton (2013), the effects of three different learning environments, namely Flipped Active learning environment, Flipped Mastery learning environment, and traditional learning environment, on student achievement were investigated. In the same study, students’ experiences and how students’ learning styles affect their learning environment preferences were also investigated. The results showed that the math achievement scores of the groups that were in the Flipped Active learning environment and Flipped Mastery learning environment were significantly higher than the math achievement scores of the group that was exposed to traditional instruction. Another study examined whether the FCM has an effect on the learning of linear algebra subjects in engineering sciences. The study revealed that the students who were taught using the FCM were more successful than the students who were taught with the traditional model. It was also reported that the students had positive thoughts about the FCM and found the lesson materials educational and instructive (Love et al., 2014). In another study, Butt (2014) aimed to determine university students’ views on the teaching activities of a lesson designed according to the FCM. The study showed that the students’ views on the model were positive. The participating students stated that being able to access the materials in advance enabled them to prepare for the class, they were able to do unlimited repetitions at home, their learning was easier, and their learning quality and success increased. In the study conducted by Gross et al. (2015), the effectiveness of the FCM was examined in terms of the relationships between student participation,

student satisfaction, and academic performance. They concluded that there was a high level of student participation and lesson satisfaction in the classroom where the FCM was used. In addition, Yestrebsky (2015) examined the effectiveness of the FCM on the chemistry achievement of large groups. The study sample consisted of students who were majoring in science and engineering. According to the study results, the FCM significantly increased the achievement in Group A and Group B which had high achievement levels, the model had no effect on Group C and it actually decreased the achievement level in the group with already low academic achievement. Furthermore, another study determined that the digital technological materials developed for the classroom in which the FCM was used enabled students to have positive attitudes about their learning and teaching experiences outside the classroom (Long et al., 2016). Researchers' interest in the subject has continued in Turkey and in other countries. Kazu and Yalçın (2022) reported the existence of 58 studies published in Turkish and English between 2007-2021, investigating the effect of the flipped classroom model on academic achievement.

In the literature related to the field, there are studies revealing that the effectiveness of the FCM on learning and some variables is not significant (Howell, 2013; Setren et al., 2021). A study conducted by Bell (2015) aimed to reveal the effect of the FCM on the learning process in high school physics classroom, students' learning levels, and students' attitudes towards the Physics lessons taught with the FCM. In the aforementioned study, the instruction designed according to the FCM was carried out in three classrooms, while the traditional teaching was done in another classroom. The study results revealed a difference in favor of the experimental groups in terms of the attitude variable, whereas no difference was found in terms of students' learning levels. In another study carried out by Guerrero et al. (2015), the effect of the FCM on university students' attitudes towards the math lesson and their achievement were explored. Similarly, this study revealed that while students' attitudes towards math differed significantly, the model did not have a significant effect in terms of student achievement. Also, Overmyer (2014) examined whether the FCM or the traditional model had an impact on university students' academic achievement in algebra. When the academic achievement scores of the students were compared, no significant difference was found between the groups. Furthermore, another study put forth that the FCM increased student participation and lesson satisfaction, but did not have a significant effect on academic achievement (Gross et al., 2015).

As it can be understood from the results in the literature, there are cases where the FCM can be effective on learning, but there are also cases where it is not effective. However, most of the studies determined that the FCM contributes to the development of positive student attitudes towards the lesson, and increases students' participation in the lessons and their satisfaction with the lessons (Aydın & Demirer, 2022; Karjanto & Acelajado, 2022). Based on the studies, it is recommended to create environments in which students play an active role in order for the FC model to be effective (Hurtubise et al., 2015; Koray, 2022). Teachers cannot make experiments in which students can be active in physics lessons, due to the issues such as lack of laboratories and insufficient class hours. In this study, the students in the experimental group were planned to do experiment actively, while the students in the control group were planned to conduct a demonstration experiment by the teacher. The purpose of this study is to determine the effects of the FCM application enriched with digital content for the 10th grade physics "Pressure and Buoyancy" subject on students' academic achievement, their physics lesson performance level, their problem-solving skills, and their attitudes towards the physics lesson. It is believed that the present study will contribute to the field since the literature on the application of the FCM in physics education is limited and the model's effectiveness in terms of certain variables was not sufficiently examined. One of the criticisms emphasized by researchers such as Clark (2013) and Coufal (2014) is that the studies on the FCM focus largely on higher education. This study aims to fill the gap in the literature because it is an experimental study carried out in physics classrooms and is conducted with high school students.

In the context of the purpose of the research, answers to the following sub-problems were sought.

1. Is there a significant difference between the academic achievement scores of the experimental group in which the FCM was applied and the control group who were taught according to the physics curriculum?

2. Is there a significant difference between the physics performance level scores of the students in the experimental group in which the FCM was applied and the control group who were taught according to the physics curriculum?

3. Is there a significant difference between the problem-solving skills scores of the students in the experimental group in which the FCM was applied and the control group who were taught according to the physics curriculum?

4. Is there a significant difference between the attitudes towards the physics lesson scores of the students in the experimental group in which the FCM was applied and the control group who were taught according to the physics curriculum?

METHOD

Since this study aimed to test the cause and effect relationship between variables, it was carried out using a quasi-experimental design with pretest-posttest control group in which the existing classes were formed by random assignment (Büyükoztürk et al., 2018; Çepni, 2014). Before the application, pretests were administered to both groups at the same time and measurements related to the dependent variable were taken. The experimental procedure based on the independent variable whose effect will be examined is applied in the experimental group, whereas applications in which the methods provided by the curriculum are used in the control group. The administered pretests were also applied as the posttest and the scores of the two groups were compared using appropriate techniques (Sönmez & Alacapınar, 2011). In the present study, the effects of the FCM applications on the dependent variables of “Academic Achievement”, “Physics Performance Level”, “Problem-Solving Skills” and “Attitudes” were examined. For this purpose, experimental and control groups were formed, and the FCM applications were used in the experimental groups, and methods appropriate for the 10th Grade Physics Curriculum, published on July 17th,2017 by the Ministry of National Education Board of Education, were used in the control groups. The standard notation of the study design is presented in Table 1

Table 1. Standard Notation of the Study Design

<i>Group</i>	<i>Measurement I</i>	<i>Procedure</i>	<i>Measurement II</i>
EG	MCAAT ₁ PPLT ₁ LTGT ₁ PLAS ₁	X ₁	MCAAT ₂ PPLT ₂ LTGT ₂ PLAS ₂
CG	MCAAT ₁ PPLT ₁ LTGT ₁ PLAS ₁ (Dependent variables)	X ₂ (Independent variables)	MCAAT ₂ PPLT ₂ LTGT ₂ PLAS ₂ (Dependent variables)

Symbols used in Table 1. are as follows:

EG: Experimental group in which the FCM was applied

CG: The control group who are taught with methods according to the physics curriculum

X1: FCM applications

X2: Methods appropriate for the physics curriculum

MCAAT: Multiple Choice Academic Achievement Test

PPLT: Physics Performance Level Test

LTGT: Logical Thinking Group Test (for determining problem-solving skills)

PLAS: Physics Lesson Attitude Scale

STUDY GROUPS

The present study was carried out with 10th grade students from a public high school in the Ereğli district of Zonguldak in the 2017-2018 academic year. Four classrooms were included in the study, two of them were randomly assigned as the experimental group, and the other two were randomly assigned as the control group. The experimental group consisted of 59 students, 34 females and 25 males, and the control group had 62 students, 37 females and 25 males. While the FCM was applied to the experimental group, the control group was taught with the methods provided by the standard physics curriculum. The duration of the lessons was equal in both groups, and it was assumed that the groups were not affected by each other in any way. No additional application was done.

PROCEDURE

In determining the equivalence of classes, students' physics lesson grade averages and year-end grade averages in 2016-2017 academic year were taken into consideration. By examining the literature in the field of physics education, "Pressure and Buoyancy", one of the 10th grade physics lesson subjects that students have the most difficulty with, was chosen as the unit to be taught (Goszewski et al., 2013; Loverude et al., 2003). The lesson plans and the instruction process of the experimental group covering all the learning outcomes were developed by the researchers based on the FCM. On the other hand, for the control group, the lesson plans were prepared based on the 10th grade physics curriculum. A website was built for the theoretical transfer of the subjects that will take place outside the classroom. The videos in which the lectures were recorded were prepared by the physics teacher of the study groups - the same person is the researcher in this study. The reason why the preparation and recording of the videos in which the theoretical explanations were given was done by the physics teacher was to provide the control groups with information from the same source and to act in accordance with the nature of the FCM and experimental research. For this study, which aimed to examine the effect of using the FCM in physics education on the learning products, four different lesson plans covering the four learning outcomes of the "Pressure and Buoyancy Force" subject were prepared. In the first stage, for each lesson plan, lecture videos related to the learning outcome were uploaded to the website and necessary warnings and controls were made for the students to study. In the second stage, a short quiz about the videos watched in the classroom was administered, parts that could not be understood were repeated and the questions of the students were answered. In the third stage, the students were divided into groups of four in the laboratory, the activities prepared beforehand were done and each group wrote an activity report. In the fourth stage, students completed the achievement, comprehension, and homework tests in the classroom under the guidance of the teacher. The first lesson plan was designed to take six hours and the other three lesson plans for three hours each. A total of 15 periods (five weeks) were allocated for the implementation of the four lesson plans. Below are the works carried out at each stage along with the visuals.

WORKS DONE IN THE EXPERIMENTAL GROUPS

In the experimental groups, lesson plans were prepared for each outcome in order to realize the four outcomes, and the practices were carried out as follows, respectively.

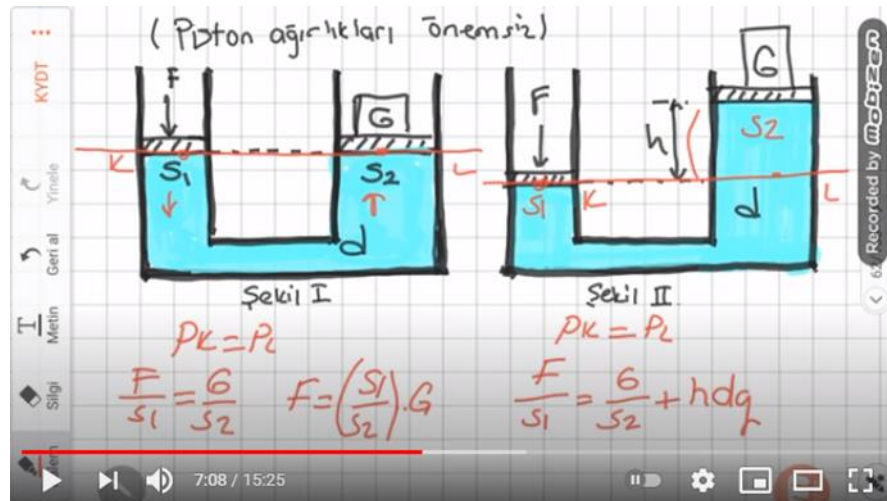
WORKS DONE RELATED TO LESSON PLANS

The first learning outcome of the “Pressure and Buoyancy” unit is “The student explains the concept of pressure in solids and stagnant liquids. The student analyzes the factors affecting pressure.” In order to achieve this outcome, a lesson plan covering 240 minutes (six periods) was prepared. As required by the FCM model, first the experimental group students were given access to the site installed on the Google site platform, then theoretical content about the outcome was uploaded and shared for students to watch. The theoretical contents were prepared by the researcher, who is also the physics teacher of the students, and the explanations were given using his own voice and the drawings he made. The reason for this was to carry the theoretical information transmission that students were accustomed to the online environment with all its aspects. In addition, an announcements tab was added to direct the students about their homework and to remind them which video they should watch at which time periods.

Figure 1. View of the Developed Website



Figure 2. An Example of the Theoretical Knowledge Explanations That the Students Watched on the Website



A quiz consisting of three questions was made in order to determine whether the students could understand the subject by watching the theoretical information about the first learning outcome on the website, and the subject was reinforced by repeating the parts that the students did not understand. During the next 120 minutes (3 periods), the classroom was divided into groups of four, and four activities related to this learning outcome were carried out in the physics laboratory. After each activity, the groups were asked to fill out activity reports. In the last 40 minutes (1 period), the homework given to the students on the subject was done in the classroom under the guidance of the

teacher. A second 120-minute lesson plan was prepared for the outcomes of “The student explains the concept of pressure in solids and stagnant liquids. The student analyzes the factors affecting pressure.” and “The student discovers the relationship between the flow rate of fluids and fluid pressure.” After making students watch the theoretical information about these learning outcomes, the gaps in students’ knowledge were completed with a quiz. Two activities related to these learning outcomes were carried out in the laboratory, and homework related to the learning outcomes was done in the classroom again, accompanied by their teacher. In the study, a third lesson plan of 120 minutes was prepared for the learning outcome of “The student analyzes the effect of pressure on change of state.” In order to achieve this outcome, after the students watched the theoretical information and the gaps in their knowledge were filled, two activities were carried out in the laboratory, and homework was completed in the classroom. Finally, a 120-minute fourth lesson plan was prepared for the learning outcome of “The student explains the buoyant force exerted by static fluids on objects.” Again, in order to achieve this learning outcome, after the students watched the theoretical contents and the gaps in their knowledge were filled, two activities were carried out in the laboratory, and homework was completed in the classroom.

ACTIVITIES CARRIED OUT IN THE LABORATORY WITH THE EXPERIMENTAL GROUP STUDENTS

In the study, 10 activities were carried out in a laboratory environment by having all the students work in groups. The students carried out these activities with their physics teacher, who was also one of the researchers. After completing each activity, they wrote a group activity report. In the activity reports, the students were asked to discuss the results of the experiment regarding the status of the hypothesis proposed at the beginning of the activity. For example, in the third activity, the hypothesis “The liquid pressure at a point is directly proportional to the vertical distance of this point to the open surface of the liquid” was proposed and the students were asked to write down their ideas about the hypothesis by observing the inflation amounts of the balloons connected to the holes opened in different parts of the water-filled canister. They were also asked to interpret the activity results.

Figure 3. Examples of Students’ Work During the Activities



WORKS DONE IN THE CONTROL GROUPS

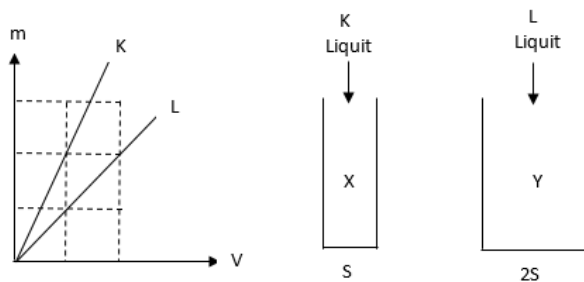
In the control groups, lesson plans were prepared by the researcher, the physics teacher of the study groups, in accordance with the yearly plan of the Ministry of National Education Board of Education. The lessons were taught using direct instruction, discussion, question, and answer techniques, and demonstration experiments were conducted for application. In the theoretical transmission of the subjects, the narration in the videos prepared for the experimental groups was followed. At the end of the lessons, homework was given to the control group students to reinforce the subjects, and they were given quizzes from time to time. Five activities were done in parallel with the textbook.

DATA COLLECTION TOOLS

Data collection tools used in the study are the "Multiple Choice Academic Achievement Test" (MSAAT), the "Physics Performance Level Test" (FPLT), the "Logical Thinking Group Test" (LTGT), and the "Physics Lesson Attitude Scale" (PLAS).

MSAAT: In order to determine the academic achievement levels of the students in the subject of "Pressure and Buoyancy", 54 multiple-choice questions based on the related learning outcomes were prepared after examining various textbooks, test books, and materials. The content validity of the test, the appropriateness of the questions to the learning outcomes, and the level of the students were ensured by obtaining expert opinions from 4 physics teachers whose professional experience ranged from 10 to 25 years. Based on the expert opinions, 14 questions were removed because they were not appropriate to students' level, were not clear enough, and were measuring the same outcome. Thus, the number of questions was reduced to 40. The item analysis of this test was conducted by administering the test to 98 11th grade public school students who had knowledge about the subject. The coefficient of internal consistency Cronbach's alpha was found to be .78. The test was administered as a pretest and posttest and the duration of the exam was determined as 40 minutes. Each correct answer in the test was scored with a score of 2.5, each wrong answer or question left blank with a score of "0". Thus, the possible test scores range from 0 to 100.

MSAAT Sample Question



Equal volumes of K and L liquids seen in Figure are taken and placed in X and Y containers with base sections of S and 2S.

Accordingly, what is the P_x/P_y ratio of the liquid pressures in the X and Y containers?

- A) 2 B) 3 C) 4 D) 5 E) 6

FPLT: In order to determine students' physics performance levels, four basic questions were prepared based on the learning outcomes of the "Pressure and Buoyancy" subject. The questions were prepared by examining the science questions asked in the PISA exams, and each of the questions consists of three sub-questions. PISA is a research conducted to determine the science and math literacy and reading skills levels of 15-year-old students in today's information society (Anil et al., 2015). One of the sub-questions for each basic question was multiple-choice, one was "true-false" and the other was open-ended. Multiple-choice questions were assessed as "5", true-false questions as "10", and open-ended questions as "10" points. In order to determine the appropriateness of the questions to students' levels and the learning outcomes, expert opinions were taken from 4 physics teachers whose professional experience ranged from 10 to 25 years and one academician. The highest score that students can get from the exam is "100" and the lowest score is "0". The duration of the exam was determined as 40 minutes.

FPLT Sample Question

A small iron nail sinks in water, but large ships made of iron do not sink in water. The state of an object sinking, floating, or suspended in a liquid is related to the density of the object and the liquid.

Objects with a density equal to that of the liquid remain in equilibrium at any point so that all of them remain in the liquid, while objects with a density greater than the liquid sink in the liquid and objects with a density less than the liquid floats.

I- Which of the following is the reason for large air tanks built in the lower sections of the ships?

A- To increase the sinking volume of the ship

B- To make the ship move fast

C- To take shelter in these air tanks in case the ship sinks

D- To reduce the iron ratio and increase the air ratio in order to ensure that the total density of the ship is smaller than the liquid.

E- To keep the ship level

II- In a container filled with liquid, an apple stays in balance at a depth of 10 cm from the liquid surface and lemon at a depth of 20 cm from the liquid surface without touching the bottom of the container. Therefore, the density of lemon is greater than the density of apple

TRUE (...) FALSE (...)

III- Ali throws his plastic toy into the water, then heats the water. He observes that as the temperature of the water increases, the toy sinks more into the water. Explain the reason for this event, taking into account the change in the density of the water and the toy with temperature.

LTGT: Originally developed by Roadranga, Yeany, and Padilla in 1982, the 21-item test was formed by selecting items with high validity and reliability from tests that measure students' different reasoning abilities (Ankney & Joyce, 1974; Burney, 1974; Lawson, 1978; Longeol, 1968; as cited in Korkmaz, 2002). The LTGT was translated into Turkish in 1989, first administered to 192 university students, then to 1298 middle and high school students. The validity and reliability studies were also conducted. The alpha reliability coefficient was found to be 0.78. Korkmaz (2002) administered the test to 7th grade students to measure their problem-solving skills. The results revealed that the test could be used to measure the logical thinking and problem-solving skills of middle school students in Turkey. In the present study, the LTGT was used to measure students' problem-solving skills. The test consists of 18 multiple-choice questions and three open-ended questions. In the first 18 questions of the test, the student who answered the question correctly and provided an acceptable reason for his/her answer was given a "1" point, and the student who answered the question or the reason wrong was given a "0". The correct answer to the last three open-ended questions was scored as "1" and the wrong answer were scored as "0". The duration of the exam was determined as 40 minutes.

PLAS: Developed by Kocakulah and Kocakulah (2006), the PLAS was used to examine the effect of the application of the FCM in physics lessons on the students' attitudes towards the physics lesson. The five-point Likert type scale was labeled as "totally agree, agree, undecided, disagree, and strongly disagree". There are 15 positive and 15 negative items on the scale. "I would like to learn more about physics subjects" is a sample from the positive items, and "The subjects taught in physics class bore me" is a sample from the negative items. The reliability coefficient of the scale was calculated as 0.96 for the pretests and 0.97 for the posttests for this study. The administration time was determined as 20 minutes. The scale was administered to the experimental and control groups as a pretest and posttest.

DATA ANALYSIS

Before analyzing the data collected in the study, the assumption of normality was tested. The experimental and control groups' pretest and posttest scores met the assumptions of normality for all the variables. Shapiro-Wilk test was applied in accordance with the number of participants (Razali & Wah, 2011). The p values of these tests calculated using the Shapiro-Wilks analysis were found to be

greater than .05. Thus, it can be said that the assumption of normality was met. In this context, in order to test whether there was a significant difference between the variables of academic achievement, physics performance level, problem-solving skills, and attitude towards the lesson between the experimental and control groups, the collected data were analyzed using the t-test for independent groups in the SPSS program. In the independent samples t-test analysis, calculations were made on the difference scores between the posttest and pretest scores of these four variables. In order to test whether there was a difference between the pretest and posttest scores of the experimental and control groups, dependent samples t-test analysis was performed. For interpretation, the significance level for the hypothesis tests was set to 0.05.

FINDINGS

In this section, the findings of the sub-problems obtained as a result of the application are included, and the obtained data are explained with tables. Findings, interpretations and tables are arranged in order of research sub-problems.

1. Is there a significant difference between the academic achievement scores of the experimental group in which the FCM was applied and that of the control group who were taught according to the physics curriculum?

The independent samples t-test analysis results for the first sub-problem are given in Table 2.

Table 2. *Independent Samples t-Test Analysis Results of the Experimental and Control Groups According to the Academic Achievement Variable*

<i>Group</i>	<i>N</i>	\bar{x}	<i>S</i>	<i>sd</i>	<i>t</i>	<i>p</i>
Experimental	59	20.99	7.66	119	3.452	.001
Control	62	15.37	10.02			

p<.01

Table 2 shows that there was a significant difference between the academic achievement scores of the experimental and control groups (t(119)=3.452, p<.01, $\eta^2=0.09$). The academic achievement scores of the experimental group ($\bar{x}=20.99$) were higher than that of the control group ($\bar{x}=15.37$). According to this result, in terms of academic achievement variable, the FCM led to a significant difference in favor of the experimental group.

2. Is there a significant difference between the physics performance level scores of the students in the experimental group in which the FCM was applied and that of the control group who were taught according to the physics curriculum?

The independent samples t-test analysis results for the second sub-problem are given in Table 3.

Table 3. *Independent Samples t-test Analysis Results of the Experimental and Control Groups According to the Physics Performance Variable*

<i>Group</i>	<i>N</i>	\bar{x}	<i>S</i>	<i>sd</i>	<i>t</i>	<i>p</i>
Experimental	59	20.66	10.63	119	4.168	.000
Control	62	12.59	10.63			

p<.01

Table 3 shows that there was a significant difference between the physics performance level scores of the experimental and control groups. (t(119)=4.168, p<.01, $\eta^2=0.13$). Experimental group physics performance level scores ($\bar{x}=20.66$) were higher than the control group scores ($\bar{x}=12.59$). According to this result, in terms of the physics performance variable, the FCM led to a significant difference in favor of the experimental group.

3. Is there a significant difference between the problem-solving skills scores of the students in the experimental group in which the FCM was applied and that of the control group who were taught according to the physics curriculum?

The independent samples t-test analysis results for the third sub-problem are given in Table 4.

Table 4. *Independent Samples t-Test Analysis Results of the Experimental and Control Groups According to the Problem-Solving Skills Variable*

Group	N	\bar{x}	S	sd	t	p
Experimental	59	3.42	2.71	119	1.055	.294
Control	62	2.83	3.33			

p>.05

Table 4 shows that no significant difference was found between the problem-solving skill scores of the experimental and control groups ($t(119)=1.055$, $p>.05$). Although the problem-solving skill scores of the experimental group ($\bar{x}=3.42$) were higher than that of the control group scores ($\bar{x}=2.83$), the difference was not significant.

4. Is there a significant difference between the attitudes towards the physics lesson scores of the students in the experimental group in which the FCM was applied and that of the control group who were taught according to the physics curriculum?

The independent samples t-test analysis results for the fourth sub-problem are given in Table 5.

Table 5. *Independent Samples t-Test Analysis Results of the Experimental and Control Groups According to the Attitudes Towards the Physics Lesson Variable*

Group	N	\bar{x}	S	sd	t	p
Experimental	59	6.27	16.81	119	2.427	.017
Control	62	-1.48	18.25			

p<.05

Table 5 shows that there was a significant difference between attitudes towards the physics lesson scores of the experimental and control groups ($t(119)=2.427$, $p<.05$, $\eta^2 =.05$). The attitudes towards physics lesson scores of the experimental group ($\bar{x}=6.27$) were higher than that of the control group scores ($\bar{x}= -1.48$). According to this result, in terms of the attitudes towards the physics lesson variable, the FCM led to a significant difference in favor of the experimental group.

DISCUSSION AND CONCLUSION

According to the study findings, in terms of students' academic achievement levels, there was a significant difference between the experimental group, in which the FCM was used, and the control group, in which the curriculum-based teaching, was done in favor of the experimental group. Accordingly, it can be said that the FCM was effective in increasing students' academic achievement levels.

In the literature, there are many studies that concluded that the FCM increases academic achievement (Finkenber & Trefzger, 2019; Ismail & Abdulla, 2019; Limueco & Prudente, 2018). In his study, Yestrebky (2015) divided his students into four levels A, B, C, D according to their achievement level in chemistry, and determined that the applications of the FCM model increased academic achievement in groups A and B with high achievement levels. Another study conducted by Leo and Puzio (2016) concluded that the FCM was effective in increasing the academic achievement of 9th grade students in biology. Similarly, Yurtlu (2018) reported that the application of the FCM in science classes increased achievement. Also, Akgün (2015) obtained data showing that the FCM increased academic achievement in the Information Technologies and Software lesson. In the present study, it

can be said that the academic achievement of the control group may have increased due to the successful implementation of the methods required by the Physics Curriculum. However, according to the achievement scores of both groups, the achievement level of the experimental group, in which the Flipped Model was used, was significantly higher than that of the control group. Accordingly, it can be stated that the FCM is more effective than the methods offered by the Physics Curriculum. The fact that the students did more activities in groups in the experimental group, and that they came ready to the class due to the theoretical knowledge they received before the activities can be shown among the reasons for the achievement difference between the two groups.

There was a significant difference between the physics performance level scores of the experimental group, in which the Flipped Model was used, and the control group, in which the methods offered by the Physics Curriculum were used. Accordingly, it can be said that the FCM was effective in increasing the physics performance levels of the students.

In the literature, many studies revealed that the FCM improves learning performance (Lai & Hwang, 2016; Strelan et al., 2020; Tune et al., 2013; Weaver & Sturtevant, 2015). A study on engineering education by Baytiyeh and Naja (2017) concluded that the model deepened students' learning and improved their problem-solving and critical thinking skills. Another study on the Algebra lesson by Kadry and Hami (2014) put forth that the model increases the learning performance and recall levels. Bawang and Prudente (2018) concluded in their study that the FCM is effective in increasing students' performance in physics. In the present study, although the physics performance variable was related to academic achievement, it mostly focused on students' higher-order thinking skills such as analysis, synthesis, and evaluation. The fact that the students had the opportunity to practice more with various materials in the classroom environment with their theoretical knowledge ready may have affected their physics performances positively. In their study, Acar and Öğretmen (2012) revealed that as the time allocated to learning at school increased, students' science performance increased, and as the time allocated to learning at home increased, performance decreased. At this point, it is of great importance what kind of work students do at home and how they use their time during the learning stage. The fact that the theoretical contents required by the FCM and the instructional applications changed places in the present study increased students' physics performance during the applications in school.

No significant difference was found between the problem-solving skill scores of the experimental group, in which the FCM was applied, and the control group, in which the curriculum-based instruction was used. In this context, one possible explanation to this finding is that the outcomes of the program were meticulously fulfilled by the teacher in the control group, where lessons were taught in accordance with the Physics curriculum. In addition, the FCM has been limited to the subject of "pressure and buoyancy" within the scope of the research. Considering a skill that requires comprehensive thinking processes such as problem-solving skills, it can be said that the application time is insufficient for the development of this skill. In a study conducted by Jensen et al., (2015), the FCM was not found to be effective for basic learning and deep learning. The results of the study, in which the FCM was used in the experimental group and the constructivist approach and active learning were used in the control group, show that the communication time that the students spend with their teachers at school is more effective on their learning than the time they spend at home. According to Odabaşı (1997) and Uşun (2000), it is emphasized that many factors such as individual differences, cooperation, cognitive skills, the teacher's role as a guide, learning by doing are necessary for the development of problem-solving skills.

Various studies in the literature revealed that the FCM improves problem-solving skills (Alias et al., 2020; Bawang & Prudente, 2018; Lin, 2019; Zappe et al., 2009). In the present study, unlike the studies in the literature, no difference was found between the problem-solving skills of the control group, who were taught in accordance with the curriculum, and the experimental group students. The examination of 2007, 2013, and 2017 science and physics curricula show that the curricula are

centered around the research-examination strategy and that a perspective that will contribute to the development of students' problem-solving skills has gained importance. In this context, it can be said that the outcomes of the program were meticulously fulfilled in the present study by the teacher in the control group, where lessons were taught based on the physics curriculum. In addition, in the present study, the FCM was limited to the subject of "Pressure and Buoyancy". Considering a skill that requires comprehensive thinking processes such as problem-solving skills, it can be said that the application time was insufficient for the development of this skill. In a study conducted by Jensen et al. (2015), The FCM was not found to be effective for basic learning and deep learning. The results of the aforementioned study, which used the FCM with the experimental group students and used the constructivist approach and active learning with the control group students, showed that the communication time that the students spend with their teachers at school was more effective on their learning than the time they spend at home. According to Odabaşı (1997) and Uşun (2000), many factors such as individual differences, cooperation, cognitive skills, the teacher's role as a guide, learning by doing are necessary for the development of problem-solving skills.

Furthermore, in the present study, a significant difference was determined in favor of the experimental group, between the attitudes towards the physics lesson scores of the experimental group, in which the FCM was applied, and the control group, which followed the curriculum. In the literature, there are studies that revealed the FCM positively affected the attitude towards the lesson variable (Guerrero et al., 2015; Koray et al., 2018; Yurtlu, 2018). Bell (2015) concluded that the application of the FCM in the physics lesson positively affected students' attitudes towards the physics lesson. Bell (2015) put forth that the students in the group in which the FCM was applied had high attitude scores because they had the opportunity to work in cooperative groups, they used various materials in the context of the subjects, they had the chance to review their homework together with their teacher, and they had the opportunity to watch the theoretical lessons at the speed and frequency they wanted in a very comfortable environment. In their study, Steen-Utheim and Foldnes (2018) emphasized that the FCM increased the participation of Norwegian university students in math, thus increasing the learning experience of the students. In the same study, students also found the model effective in terms of feeling safe in the classroom, using the physical environment and communicating with their peers and teachers. The study conducted by Smallhorn (2017) emphasized that the FCM improved students' communication skills with each other and with their teachers and increased their participation in academic life, rather than increasing students' academic achievement.

The following recommendations can be made in line with the study results: It is important that the students who will use the FCM have individual learning and self-learning skills. By determining these skills in advance, choosing the extracurricular and in-class activities and materials to be prepared according to students' characteristics can facilitate the fulfillment of the expected goal. One of the problems faced by the practitioner in the FCM is related to the follow-up of responsibilities outside the classroom. Platforms where the practitioner can check whether or not students fulfilled their responsibilities regarding materials developed within the framework of out-of-class responsibilities in the FCM should be built and these platforms can send warning notices. In the present study, the FCM was applied to teach the "Pressure and Buoyancy" unit. The effects of using the FCM to teach the other units in the physics curriculum can be discussed and examined. In order to popularize the use of the FCM, the data obtained can be made available to teachers and students by creating a common platform and archive. New studies can be conducted to measure the effectiveness of the FCM on students' satisfaction. The lack of qualitative studies on the FCM is emphasized by researchers like Clark (2013) and Coufal (2014). In this context, researchers can design qualitative studies using the FCM.

LIMITATIONS and ETHICAL CONSIDERATIONS

The limitations of the present study are as follows: The study is limited to the subject of “Pressure and Buoyancy” and was applied over a five-week period. The students in the group in which the model was applied encountered this model for the first time.

Interpretation of the results in this study depends on the effects of threats to the internal validity of the study. In determining the equivalence of the classes, the year-end physics lesson achievement averages and year-end general achievement averages of the previous year were taken into consideration. If there is a maturation effect, both groups will be the same or similar to each other in the post-tests after the application. In addition, since there was no significant event related to the dependent variables of the study and the application process before the application, any past effects did not affect the study. There was no participant who left the study for any reason during the study.

Measuring tool impact, as a different type of threats, was checked in both applications using the same items, the order of application of the tools, and the same data collector. Another consideration related to instrument application, five weeks have been accepted as enough to prevent the testing effect. Access to the video links of the control group participants was not allowed in order to avoid interaction between the groups.

The study was approved by the decision of the Human Research Ethics Committee of Zonguldak Bülent Ecevit University, dated 31.01.2018 and issued 303.

AUTHOR CONTRIBUTION

-First author have made substantial contributions to conception and design, analysis and interpretation of data, and given final approval of the version to be published.

-The second author have made acquisition and analysis of data, and been involved in drafting the manuscript.

-The third author have been involved in drafting the manuscript and given final approval of the version to be published.

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General Trends in Research on the Fact of Migration in Turkish and Social Studies Education *

Ebru Demirciođlu, Assoc. Prof. Dr., Trabzon University, Türkiye, isiginkizi@yahoo.com.tr

 0000-0001-8675-5276

ilke Altuntaş Gürsoy, Assoc. Prof. Dr., Gendarmerie and Coast Guard Academy, Türkiye

altuntasilke@gmail.com  0000-0003-1394-5778

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Abstract

Migration is known to cause problems in many areas such as economic, social, cultural, legal, security and education. In this context, migration leads to some changes and transformations that will require social and cultural harmony. Adapting to these changes is through education. When it comes to social and cultural harmony, Turkish and Social Studies education comes to mind. Therefore, it is necessary to examine the studies dealing with how the phenomenon of migration and its elements are transferred to the Turkish and Social Studies educational environment and teaching processes. In this study, it is aimed to systematically analyze the researches on the phenomenon of migration in Turkish and Social Studies education as a whole and to determine its general tendency. In this qualitative study, data were collected by document review. A total of 12 studies, four in Turkish education and eight in Social Studies education, were examined. Descriptive content analysis was used in the analysis of these studies. As a result of the analyzes, it was determined that the researches were mostly structured with a qualitative approach and the type and size of the sample/workgroup/data source, data collection methods/tools, and data analysis methods supported this. When the research results are evaluated in general, it is recommended to increase the number of studies on the phenomenon of migration in Turkish and Social Studies education and the number of studies that determine the general trend of these studies.

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INTRODUCTION

Migration is a multidimensional and universal phenomenon. It is possible to understand this from the definitions made. The Turkish Language Association (2022) defines migration as “The act of moving individuals or communities from one country to another, from one settlement to another for economic, social and political reasons”. In the Glossary of Migration Terms (IOM, 2009: 22), migration is defined as the population movements in which people change their places regardless of their duration, structure and reason. IOM's (International Organization for Migration) appears to define migration in a broad sense, not narrow. According to Adıgüzel (2016: 1), migration is “The geographical displacement of people due to social, economic, political or natural reasons and they migrate individually or en masse, forced or voluntarily”. Koçak & Terzi (2012) attribute migration to social, political, economic and cultural reasons emphasizing its universal nature with a similar definition. In short, there are reasons for migration arising from environmental and natural situations, social, cultural, political, economic conditions and globalization. Therefore, immigration is not just a movement of displacement, it is a phenomenon that affects all elements of the social structure (Çağlar, 2018; Mutluer, 2003) regardless of its reasons, internal-external, individual-massive, voluntary-compulsory, by any means. Adıgüzel (2016) states that migration necessitates a new form of social relationship for both immigrant individuals and receiving societies. While establishing a new form of relationship, problems arise in the economic, social, cultural, legal, security and educational areas, in short, in all areas of life. This leads to some changes and transformations that will require providing social and cultural harmony.

Although the phenomenon of migration is in the field of interest of many disciplines such as sociology, law, political science, social work, history, geography, international relations, etc., education is the basis of adapting to the changes mentioned. Educational institutions are at the forefront of institutions that are affected by changes and developments (Demircioğlu, 2013) and since it is an environment of social harmony, they are the center of education and training activities for cultural harmony (Özgüzel, Tümkaya, Aybek, İşcan, & Çelebi, 2020). Since Turkey has witnessed migration movements throughout history due to its geographical location, and has become a center of attraction its regional power and with the migrations starting from Syria since 2011, it requires a social acceptance and cultural harmony. This situation brings the Turkish and Social Studies education in our education system to mind, because learning the language, gaining cultural awareness in the context of language awareness and language-culture relationship, and forming social belonging are through these courses. Turkish, which is a language teaching course, meets the language learning needs; On the other hand, the Social Studies course is vital in terms of gaining Turkish culture and values in the context of citizenship education and raising citizens who are loyal to national values; namely they are two of the most dominant courses. In this context, it is important to reveal how the phenomenon of migration and its elements are transferred to the educational environment and teaching materials, and in which aspects they are handled in the education process, education which is a universal human right and guaranteed in the Universal Declaration of Human Rights¹, more specifically in Turkish and Social Studies education. What will reveal this is the researches made in the mentioned fields. It is possible for education to reach its goals, to take steps in line with objective data at every stage from planning to evaluation by determining the general trends of research that will provide these objective data. Thus, in this study, it is aimed to analyze the researches on the phenomenon of migration in Turkish and Social Studies education as a whole, systematically and to determine the general tendency.

¹ Article 26: Everyone has the right to education. Education shall be free, at least in the elementary and fundamental stages Elementary education shall be compulsory. Education shall be directed to the full development of the human personality and to the strengthening of respect for human rights and fundamental freedoms. It shall promote understanding, tolerance and friendship among all nations, racial or religious groups, and shall further the activities of the United Nations for the maintenance of peace. Retrieved from <https://www.hsk.gov.tr/Eklentiler/Dosyalar/9a3bfe74-cdc4-4ae4-b876-8cb1d7eae05.pdf>

It is thought that the evaluation of the researches will reveal the existing situation and will guide the researches that will be executed with the effective use of the results obtained. There are studies examining the studies carried out on the phenomenon of migration. However, in the national and international literature, a study could not be found within the available resources, which analyzes the researches on the phenomenon of migration in both Turkish education and Social Studies education in a holistic and systematic way. Some of the studies are within the field of public administration/urbanism (Ağın, Zengin-Çelik & Tezan, 2021; Aksu-Kocatürk, 2021), social work (Apak, 2018), economics (Haydaroğlu, 2022), painting and music (Bastaban & Yılmaz, 2022), psychology (Kabasakal & Soylu, 2021) and focused on the research year, subject, type, design/method and department. Although researches in the field of education have been identified among the studies examining academic research on the phenomenon of migration (Avcioglu, 2020; Canbey-Özgüler, 2019; Coşkun, Sarılioğlu & Dinçer, 2020), regardless of the field of science in Yerli (2018), Açıkalın & Neyişçi (2020), Alkar & Atasoy's (2020) studies, they have not been separated as Turkish and Social Studies education.

Looking at the studies conducted directly in the field of education, it was determined that Kardeş (2021) did not focus on the theses in Turkish and Social Studies education his research in which he examined postgraduate theses. Bozkaya (2021) did not only separate the doctoral theses he examined as Turkish and Social Studies education but he also came across only three theses. Lastly, Dündar & Usluoğlu (2022) examined only the studies on primary school education. When examining the studies in the field of education although criteria such as research year and subject, university/department, design/method, data collection method/tool, and data analysis method were used, in-depth studies were not carried out as in this study. Because the studies within the scope of this study are analyzed according to the type, publication year, subject and purpose, question, approach and design, sample/study group/data source, sample/study group/data source size, data collection method/tool, data analysis method and results without any year limitation. In this context, the general aim of the study is to determine the general trend of research on the phenomenon of migration in Turkish and Social Studies education. In line with this general purpose, answers to the following questions were sought:

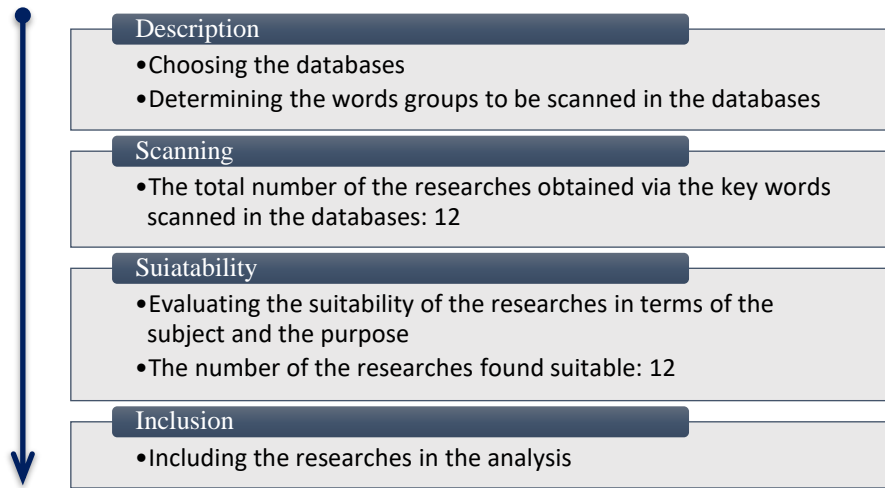
1. What is the type distribution of the researches on the phenomenon of migration in Turkish and Social Studies education?
2. What is the distribution of researches on the phenomenon of migration in Turkish and Social Studies education according to their aims and questions?
3. What is the distribution of researches on the phenomenon of migration in Turkish and Social Studies education according to their approach and design?
4. What is the distribution of researches on the phenomenon of migration in Turkish and Social Studies education according to their sample/study group/data source?
5. What is the distribution of researches on the phenomenon of migration in Turkish and Social Studies education according to their data collection method/tool?
6. What is the distribution of researches on the phenomenon of migration in Turkish and Social Studies education according to data analysis methods?
7. What are the results of the researches on the phenomenon of migration in Turkish and Social Studies education?
8. What are the similarities/differences when the researches on the phenomenon of migration in Turkish and Social Studies education are compared?

METHOD

RESEARCH DESIGN AND DATA COLLECTION PROCESS

In this qualitative study, data were collected by document review. The researches within the scope of the study were selected by scanning key word groups "Migration in Turkish/Social Studies education", "Migration in teaching Turkish/Social Studies", "Migration in Turkish/Social Studies courses", "Turkish/Social Studies Education Migration", " Teaching Turkish/Social Studies Migration", "Turkish/Social Studies courses Migration", "Migration in Turkish/Social Studies" in different combinations in Turkish and English among the researches included in the national and international Google Scholar, Dergipark, Sobiad, Eric databases and the national thesis center database of the Council of Higher Education. The studies were structured on the basis of the phenomenon of migration and attention was paid to the fact that the focal points were migration. As a result of the scans, a total of 12 researches were included in the study, 4 of which were in Turkish education and 8 in Social Studies education. Figure 1 shows the steps of how the process progresses.

Figure 1. *The Diagram Showing the Steps regarding Determining the Documents*



DATA ANALYSIS

Descriptive content analysis was used in the analysis of these researches, four of which were in English and eight in Turkish. Since the purpose of descriptive content analysis is to examine the qualitative and quantitative studies conducted independently of each other and to determine the general trends in the field (Çalık & Sözbilir, 2014), it was thought to be the most appropriate analysis method for the nature of this research. The studies within the scope of the article were examined by both researchers. It was checked whether these reviews were significant and consistent. According to Miles and Huberman's (1994) code test, the percentage of agreement between codes/themes was found to be 95.55%. In the creation of the tables in the findings, the opinions of another expert working as an instructor in Turkish education were consulted. While determining the researches, no time limit was applied, and many criteria were used in the examination. The processes of collecting, categorizing and preparing the data for external reliability were carried out sequentially. At the stage of describing the findings, the T1, T2, T3... codes appearing in the tables are the researches in Turkish education; SS1, SS2, SS3... codes were used for research in Social Studies education. It has been revealed that some of the findings obtained for external validity are also found in previous similar studies. Frequency distribution is given based on the view of Creswell (2003: 213, 214) that "in qualitative studies, the findings of the analysis can be quantified, and the findings of the quantitative analysis can also be qualified". Lastly, in the analysis process, the specified themes (type, publication year, subject and purpose, question, approach and design, sample/study group/data source, sample/study group/data

source size, data collection method/tool, data analysis method and the result) were written separately for each research, and then tables suitable for each theme were created to be used in the findings section.

FINDINGS

FINDINGS ON THE TYPES OF THE RESEARCHES

The distribution of the researches on the phenomenon of migration in Turkish and Social Studies education by publication year and types is presented in Table 1.

Table 1. *The Distribution of the Researches According to Their Publication Years and Types*

Year	TURKISH		SOCIAL STUDIES	
	Article	Proceedings	Article	Thesis
2008	-	-	SS1	-
2012	-	-	-	SS7
2014	-	-	-	SS8
2015	-	-	SS4	-
2016	-	T3	-	-
2017	T4	-	-	-
2018	T1	-	-	-
2019	-	-	-	SS3
2020	T2	-	SS5	-
2021	-	-	SS2, SS6	-
<i>Total</i>	3	1	5	3

Most of the studies within the scope of the study (f:8) are in the article type. In Turkish education, only a study was produced from full-text papers and no research was conducted before 2016. It has been observed that there has been an increase in studies in Social Studies education after 2012.

FINDINGS ON THE AIMS AND THE QUESTIONS OF THE RESEARCHES

The distribution of the researches on the phenomenon of migration in Turkish and Social Studies education according to their aims is presented in Table 2.

Table 2. *The Distribution of the Researches According to Their Aims*

<i>Courses</i>	<i>Aims</i>	<i>Researches</i>	<i>f</i>
<i>TURKISH</i>	Examining the handling of concepts/values related to migration and migration in textbooks	T1, T3	2
	Determining the effects of migration and migration-related concepts on Syrian students and to identify the problems these students face in	T2	1
	Determining the perceptions/opinions of preservice teachers about migration and its impact on education	T4	1
<i>SOCIAL STUDIES</i>	Examining the handling of the phenomenon of migration in textbooks and curricula	SS2, SS8	2
	Determining students' views on migration	SS3, SS6	2
	Evaluating the effect of using drama technique on learning while dealing with migration	SS4, SS5	2
	Examining migration and the concepts/values related to migration in Life and Social Studies textbooks in Turkey and the USA	SS7	1
	Evaluating the effect of using folk songs on learning while dealing with migration	SS1	1

The aim of two studies (T1, T3) in Turkish education is *to examine the handling of concepts/values related to migration and immigration in textbooks*, the aim of one study (T2) is *to determine the effects of migration and migration-related concepts on Syrian students and to identify the problems these students face in teaching Turkish*, the aim of another study (T4) is *to determine the perceptions/opinions of preservice teachers about migration and its impact on education*.

In Social Studies, there are studies with different aims (for example, SS1, SS7) although the topics are the same. The aim of the two studies (SS2, SS8) is *to examine the handling of the phenomenon of migration in the textbooks and curricula*, the aim of SS3 and SS6 is *to determine the views of the students on the subject of migration*, and the aim of the other two studies (SS4, SS5) is *to evaluate the effect of using drama technique on learning*. *Examining the handling of migration and the concepts/values related to migration in Life and Social Studies books in Turkey and the USA*, and *evaluating the effect of using folk songs on learning while dealing with the subject of migration* are the aims of other studies (SS7, SS1).

The distribution of the researches on the phenomenon of migration in Turkish and Social Studies education according to their questions is presented in Table 3.

Table 3. *The Distribution of the Researches According to Their Questions*

<i>Courses</i>	<i>Questions</i>	<i>Researches</i>	<i>f</i>
<i>TURKISH</i>	The frequency of elements/metaphors related to phenomenon of migration	T1, T4	2
	-	T2, T3	2
<i>SOCIAL STUDIES</i>	Whether there is a significant difference between the experimental group and the control group/Pretest-posttest	SS1*, SS4, SS5	3
	Whether it differs by demographic features	SS3*, SS1	2
	Frequency of elements related to phenomenon of migration	SS2, SS8	2
	-	SS6, SS7	2
	In which students' opinions are determined	SS3	1

* It refers to studies with two different research questions.

The questions of two researches in Turkish and Social Studies education were not specified. The question of the other two researches in Turkish education is *to determine the frequency of the*

elements/metaphors related to the phenomenon of migration. Three of the studies in Social Studies education (SS1, SS4, SS5) are about whether there is a significant difference between the experimental-control group/pre-post-test. In two of them (SS3, SS1) it was investigated whether the results differed according to demographic characteristics, and in the other two, the frequency of the items related to the phenomenon of migration. The question of one research is what the students' opinions are.

In addition to the aims and questions of the studies on the phenomenon of migration in Turkish and Social Studies education, their distribution according to their subjects was also examined and this distribution is presented in Table 4.

Table 4. Distribution of Studies According to Their Subjects

Courses	Subjects	Researches	f
TURKISH	The phenomenon of migration in the textbooks	T1, T3	2
	Perception/opinion about the phenomenon of migration	T4	1
	The phenomenon of migration and migrants' problems in Turkish education	T2	1
SOCIAL STUDIES	The phenomenon of migration in textbooks and curricula	SS2, SS7, SS8	3
	Teaching the phenomenon of migration with different techniques	SS1, SS4, SS5	3
	Perception/opinion about the phenomenon of migration	SS3, SS6	2

The subject of two studies in Turkish education is *the phenomenon of migration in textbooks*. *The phenomenon of migration and the migrants' problems in Turkish education* and *the perception/opinion about the phenomenon of migration* were studied once. When Table 2 is examined, it can be seen that the subjects of the studies conducted in Social Studies education are more integrated. While *the phenomenon of migration in textbooks and curricula* and *teaching the phenomenon of migration with different techniques* are the subjects of three researches, *perception/opinion about the phenomenon of migration* is the subject of two researches. As can be seen, there are common subjects of research in Turkish and Social Studies education.

FINDINGS ON THE APPROACH AND DESIGN OF THE RESEARCHES

The distribution of studies on the phenomenon of migration in Turkish and Social Studies education according to their approaches and designs is presented in Table 5.

Table 5. The Distribution of the Researches According to Their Approaches and Designs

TURKISH		SOCIAL STUDIES				
Approach	Design	Researches	f	Design	Researches	f
Quantitative	Experimental	-	-	Experimental	SS1, SS4, SS5	3
	Case Study /Descriptive	T1, T3	2	Case Study /Descriptive	SS2, SS6, SS7, SS8	4
Qualitative	Review	T2	1	-	-	-
	Phenomenological	T4	1	-	-	-
Mixed		-	-		SS3	1

All of the researches on Turkish education is qualitative. They are *descriptive* (T1, T3), *phenomenological* (T4) and *review* (T2) designs. The researches in Social Studies education are designed as quantitative, qualitative and mixed. Half of the researches are (SS2, SS6, SS7, SS8)

qualitative and *descriptive* designs. While three researches (SS1, SS4, SS5) are quantitative and *experimental* designs, one research (SS3) is mixed.

FINDINGS ON SAMPLE/STUDY GROUP/DATA SOURCE OF RESEARCHES

The distribution of the researches on the phenomenon of migration in Turkish and Social Studies education according to their sample/study group/data source type is presented in Table 6.

Table 6. *Distribution of Studies According to Sample/Study Group/Data Source Type*

Course	Sample/study group/data source	Researches	f
TURKISH	Textbooks	T1, T3	2
	Preservice teachers	T4	1
	Theoretical (review) study	T2	1
SOCIAL STUDIES	Students	SS3, SS4, SS5, SS6	4
	Textbooks/Curricula	SS2, SS7, SS8	3
	Preservice teachers	SS1	1

The data source of 2 (T1, T3) studies in Turkish education is *textbooks*. The study group of a research (T4) is *preservice teachers*. The sample/study group of half of the studies in Social Studies education (SS3, SS4, SS5, SS6) are *students*, and *the preservice teachers* in a study (SS1). The data source for three of them (SS2, SS7, SS8) is *textbooks/curricula*.

In addition to the sample/study group/data source type, the distribution of the researches on the phenomenon of migration in Turkish and Social Studies education according to their size is also examined, and this distribution is presented in Table 7.

Table 7. *Distribution of Studies According to the Sample/Study Group/Data Source Size*

TURKISH		SOCIAL STUDIES	
Size	f	Size	f
Between 1-10	2	Between 1-10	2
Between 11-30	1	Between 11-30	1
Between 31-100	-	Between 31-100	3
Between 101-300	-	Between 101-300	2
Theoretical (review) study	1	Theoretical (review) study	-

The study group and data source of the studies in Turkish education are small-scale. Research in Social Studies education is relatively large scaled. The sample/study group of three studies was between 31 and 100, and 2 of them were between 101 and 300.

FINDINGS ON THE DATA COLLECTION METHODS/TOOLS OF RESEARCHES

The distribution of the studies on the phenomenon of migration in Turkish and Social Studies education according to data collection methods/tools is presented in Table 8.

Table 8. *The Distribution of the Researches According to the Data Collection Methods/Tools*

Courses	Data collection methods/tools	Researches	f
ISH	Document review	T1, T3, T4	3
	Theoretical studies	T2	1
SOCIAL STUDIES	Document review	SS1, SS2, SS6, SS7, SS8	5
	Test	SS4, SS5	2
	Survey/Interview	SS3	1

As seen in Table 8, except for one of the studies in Turkish education (T2, since it is *theoretical*), the data collection method is *document review*. The data collection method of more than half of the researches in Social Studies education (SS1, SS2, SS6, SS7, SS8) is document review. While data were collected through *testing* in two studies (SS4, SS5), both *surveys* and *interviews* were used in one study (SS3).

FINDINGS ON THE DATA ANALYSIS METHODS OF RESEARCHES

The distribution of studies on the phenomenon of migration in Turkish and Social Studies education according to their data analysis methods is presented in Table 9.

Table 9. *The Distribution of the Researches According to Their Data Analysis*

Courses	Analysis Methods	Researches	f	
TURKISH	Qualitative data analysis	Descriptive Analysis	T1, T3	2
		Content analysis	T4	1
	Theoretical study	T2	1	
SOCIAL STUDIES	Quantitative data analysis	Descriptive statistics	SS1	1
		Parametric statistics	SS4*, SS5*	2
		Nonparametric statistics	SS3*	1
	Qualitative data analysis	Descriptive analysis	SS8	1
		Content analysis	SS2, SS6, SS7	3

* It refers to the researches with descriptive statistics along with parametric and nonparametric statistics.

Since the researches in Turkish education are qualitative, data analysis methods were chosen accordingly; In the researches, *descriptive* (T1, T3) and *content* (T4) *analysis*, which are qualitative data analysis methods, were used. Since half of the studies in Social Studies education are qualitative, the data in them were analyzed with *descriptive* (SS8) and *content* (SS2, SS6, SS7) analysis. In the other half of the studies, quantitative data analysis methods, *parametric statistics* (SS4, SS5), *nonparametric statistics* (SS3) and *descriptive statistics* (SS1) were used.

FINDINGS ON THE RESULTS OF THE RESEARCHES

The results of the researches on the phenomenon of migration in Turkish and Social Studies education are given in Table 10 in a thematic way.

Table 10. *The Results of the Researches*

<i>TURKISH</i>	<i>SOCIAL STUDIES</i>
<i>Results</i>	<i>Results</i>
Insufficient coverage of migration and concepts related to migration in textbooks	Insufficient coverage of migration and concepts related to migration in textbooks/ curricula
Having negative perceptions about migration and migration-related concepts	Handling the concept of migration with different techniques which has a positive effect on student success
Insufficient language teaching models used in Turkish teaching	That Turkish students have negative perceptions on the phenomenon of migration while Syrian students have positive views
	Inclusion of different information about immigrants in textbooks in Turkey and the USA

Since the results of the researches were diverse, only a thematic representation was possible in the table. If the results shown in the table in a thematic way are explained, it should be noted that the results of the studies conducted in Turkish are negative, migration and the concepts related to migration are not included in the textbooks at a sufficient level and there are negative perceptions towards them, and the language teaching models used in Turkish teaching are not sufficient.

According to the results of the researches conducted in Social Studies it has been determined that the subject of migration, which is taught with different techniques, has a positive effect on student success and the significant difference is in favor of the experimental group, migration and the concepts related to migration are given a limited place in the curricula and textbooks, and this limitation has changed little from 2005 to 2020, while Syrian students have positive views on the phenomenon of migration in Turkey, secondary school Turkish students have negative perceptions, and lastly the textbooks in Turkey provide information on the integration of migrants with the society, and the difficulties faced by migrants are emphasized in the textbooks in the USA.

DISCUSSION AND CONCLUSION

How the phenomenon of migration and its elements are handled in the researches in Turkish and Social Studies education; therefore, determining the general tendencies of the researches in line with objective data is important for every stage from the planning of the education process to its evaluation. Therefore, in the study, it is aimed to determine the general trend of the research on the phenomenon of migration in Turkish and Social Studies education. Twelve researches within the context of the study were examined in depth according to types, publication year, subject and aim, question, approach and design, sample/study group/data source, sample/study group/data source size, data collection method/tool, data analysis method and result. Most of the studies are in the type of articles and their number has increased since 2012. There is only one research in Social Studies education conducted before 2012. The reason for this may be the intensive migrations to Turkey since 2011. It can be said that the number of the studies has increased as the school-age migrant children in Turkey started their education life. Kardeş (2021), in his study examining postgraduate researches in the field of education, found that the first thesis was done in 2011. Yerli (2018) and Açıkalın & Neyişçi (2020) similarly concluded in their researches that postgraduate theses on migration and refugees have increased since 2011-2012.

In the researches in Turkish education, *the phenomenon of migration in the textbooks, the phenomenon of migration and the migrants' problems in Turkish education and the perception/opinion about the phenomenon of migration* have been studied. The subjects of researches in Social Studies

education are relatively similar. In the studies, *the phenomenon migration in textbooks and curricula* and *teaching the phenomenon of migration with different techniques* are predominant. *Perception/opinion about the phenomenon of migration* has also been the subject of 2 studies. In line with these results, it can be stated that common subjects (*the phenomenon of migration in the textbooks and the perception/opinion about the phenomenon of migration*) are studied in the researches in Turkish and Social Studies education. When the subjects and the aims of the researches are examined together, it has been determined that the aims of the researches in Turkish education are parallel to their subjects. However, in Social Studies education, there are studies that have different aims even though their subjects are the same.

There are researches in both Turkish and Social Studies education whose questions were not specified. Since the researches in Turkish education are structured in accordance with the qualitative approach, the question of the research is to determine *the frequency of the elements/metaphors related to the phenomenon of migration*. Since half of the studies in Social Studies education are quantitative (including one of them being mixed), the questions are about *whether there is a significant difference between the experimental-control group/pre-post-test* and *whether the results differ according to demographic characteristics*. Since the other studies, on the other hand, are qualitatively structured, their research questions focus on *the frequency of the elements related to the phenomenon of migration* and *what the students' opinions are*. When the approaches of the researches come to be mentioned, it should be noted that there are researches in Turkish education in *case study/descriptive and phenomenological* designs, and the researches in Social Studies education are mostly structured in *case study/descriptive* and *experimental* design.

Approximately 75% of the reviewed studies are structured according to the qualitative research approach. Qualitative research is not like quantitative research that collects data from larger samples, although it offers the opportunity to examine the subject in depth. Quantitative approach in the research is limited. There is only one mixed research, which provides quantitative and qualitative data diversity, in Social Studies education. Similar results are also found in the studies in which Alkar & Atasoy (2020) examined the doctoral theses on migration, and Bastaban & Yılmaz (2022) examined the postgraduate theses on migration in the field of painting and music. Researchers examining studies in the field of education (Bozkaya, 2021; Dündar & Usluoğlu, 2022; Kardeş, 2021) have also determined that qualitative approach is mostly preferred. It has been determined that more qualitative studies are conducted in studies examining the tendency of research on the education of immigrants (Aydın & Altuntaş-Gürsoy, 2022; Kara & Özenç, 2021). According to Aydın & Altuntaş-Gürsoy (2022), qualitative research is almost four times more than quantitative research. However, in the studies in the fields of social work (Apak, 2018), economics (Haydaroğlu, 2022) and psychology (Kabasakal & Soylu, 2021), it was determined that most of the researches are structured with a quantitative approach.

The structuring the studies mostly qualitatively affected the type and size of the sample/workgroup/data source. Except for a theoretical research in Turkish education, in the studies, *textbooks/curricula* were studied with *students* and *preservice teachers*. Considering the information that the data revealed by the textbooks in social studies are interpreted and perceived in different ways (Demircioğlu, 2013, 120), the importance of studying with textbooks will be better understood.

When the researches are evaluated in general, it can be stated that they mostly study with students, and these are in Social Studies education. It has been determined that the sample/study group/data source is small-scale (under 30) in qualitative research, and mostly large-scale (over 30) in quantitative and mixed studies.

It was concluded that among the data collection methods/tools in the studies, *document review* was mostly used. Alkar & Atasoy (2020) also determined that mostly document review and interview were used in the researches. Aydın & Altuntaş-Gürsoy (2022), in their study examining the researches on the education of immigrants, concluded that the data were collected mostly through interviews

and document analysis. The reason why document analysis is preferred more in the studies conducted in Turkish and Social Studies education may be that the researches are structured with a more qualitative approach. It may also be due to the fact that textbooks and curricula are more accessible than interview and observation.

When the data analysis methods were evaluated, it was concluded that *descriptive* and *content analysis* of qualitative data analysis methods were mostly used. In half of the studies in Social Studies education *parametric, nonparametric* and *descriptive statistics*, which are quantitative data analysis methods, were used. In the study of Dündar & Usluoğlu (2022), it was determined that the researches were mostly subjected to descriptive and content analysis. Kara & Özenç (2021), Aydın & Altuntaş-Gürsoy (2022) also found that content analysis was mostly used in the researches.

Finally, if the results of the researches are evaluated, it can be stated that the results of the researches conducted in Turkish are negative, *there are deficiencies in the textbooks and language teaching models, and there are negative perceptions about the phenomenon of migration*. The results of the researches conducted in Social Studies are various. These results show that *the subject of immigration, which is taught with different techniques, has a positive effect on student success, there are deficiencies in the textbooks and the curricula, there are positive perceptions about the phenomenon of migration in one study but in another study negative perceptions were said to be possessed, while the books in Turkey provide information on the integration of immigrants with the society, in the textbooks in the USA the difficulties faced by immigrants are emphasized*. It is thought that it is important to detect deficiencies or negativities in academic studies in order to make legal arrangements, both for books and other components of the teaching process by taking necessary precautions.

Considering that the researches within the scope of the study are mostly structured with a qualitative approach, it is understood that the type and size of the sample/study group/data source, and data collection methods/tools and data analysis methods also support this. When the results of the researches are evaluated in general, it is recommended to increase both the number of studies on the phenomenon of migration in Turkish and Social Studies education and the number of studies that determine the general tendency of these studies. In addition, it can be said that more mixed studies, which provide data diversity, structured with a quantitative approach and should be done, as they allow data collection from large-scale samples. Thus, it will diversify with data collection methods/tools and data analysis methods. The lack of a quantitative approach, especially in the researches in Turkish education, can be considered as a deficiency. The fact that the research aims and questions focus on revealing the current situation despite being very diverse can also be considered as a limitation. In fact, in a more general sense, it should be stated that the number of researches in Turkish education should be increased, regardless of being qualitative and quantitative. Considering that immigration is a fact of Turkey and immigration to the country continues, it is clear that there will be a need for researches on immigration. In this direction, the phenomenon of migration in the process and materials of Turkish and Social Studies education will assume a primary responsibility to provide a life in harmony, away from discrimination and marginalization for school-age children who are living and will live together in a narrow framework, and for all people living in the country in a broad framework. The researches within the scope of this study are structured on the basis of the phenomenon of migration and their focal points are the phenomenon of migration. In the trend studies to be carried out in the field of Turkish and Social Studies education, different concepts of the phenomenon of migration or immigrants can be focused.

AUTHOR CONTRIBUTION

Both authors have made substantial contributions to conception and design, acquisition of data, analysis and interpretation of data.

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* Even though there is no cited in the article, it shows the studies examined within the context of the article.

An Evaluation of the Studies on Self-Regulated Learning in Primary Education: A Bibliometric Mapping Analysis


Yavuz Sökmen, Assoc. Prof. Dr., Atatürk University, Türkiye, yavuzsokmen@atauni.edu.tr

 0000-0001-7723-0144

Yasemin Taş, Assoc. Prof. Dr., Atatürk University, Türkiye, yasemintas@atauni.edu.tr

 0000-0002-3553-8711

İsmail Sarıkaya, Assoc. Prof. Dr., Bayburt University, Türkiye, ismailsarikaya@bayburt.edu.tr

 0000-0002-4870-8345

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Abstract

This research emerged to get an overview of the choices made in the field of self-regulation in primary education. The purpose of this research is to examine the bibliometric properties of studies on self-regulated learning at primary school level and scanned in the Web of Science database. In accordance with this purpose, by using key words of "self-regulation" or "self-regulated learning" and topics of "primary school" or "primary education", 526 studies conducted between 1994-2020 have been reached. By selecting "education" or "psychology" categories, bibliometric mapping analysis was performed with 392 studies suitable for the scope of the study. The bibliometric mapping analysis of the studies reached by using the Vosviewer software tool was performed, bibliometric networks were created and presented visually. In the studies, the most used keywords, words in the abstracts, citation analysis and co-citation analysis were done. As a result, it has been revealed that the majority of the publication language of the studies within the scope of the study is English, studies have increased since 2007, the most used words in keywords are self-regulation, self-regulated learning and motivation, the most cited authors according to co-citation analysis are Zimmerman, Pintrich and Schunk, the most cited journals according to co-citation analysis are Journal of Educational Psychology, Journal of Educational Psychology, Child Development and Developmental Psychology, and the most cited countries according to citation analysis are United States, Germany and Netherlands. The results of the research provide general information about the self-regulation studies carried out at primary school level and it is thought that it will be useful for the researchers who will conduct research on this subject.

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INTRODUCTION

The concept of self-regulation is available in different definitions as it has been used in different areas in recent years. *Self-regulated learning (or self-regulation)* is defined as “self-generated thoughts, feelings, and actions that are planned and cyclically adapted to the attainment of personal goals” (Zimmerman, 2005, p. 14). Self-regulated learners are aware of their strengths and weaknesses. They set goals for themselves, use strategies to achieve their goals, monitor their behavior and self-reflect on the effectiveness of the strategies they have used. Effective consequences of their behaviors contributes to self-regulated learners’ motivation to develop their learning methods (Zimmerman, 2002).

From a social cognitive perspective, reciprocal interactions among personal, behavioral, and environmental factors constitute self-regulation (Bandura, 1986). Although some factors predominate at particular times, in a classroom environment the three factors generally interact. For instance, as a teacher instructs students, students reflect on teaching and thus environment influence person’s cognition. If students are confused, they ask questions to the teachers which show that cognition affects behavior. The teacher instruct the material rather than passing the new topic indicating that behavior affects environment (Pintrich & Schunk, 2002).

One of the components of self-regulation is metacognition which “includes skills that enable learners to understand and monitor their cognitive processes” (Schraw et al., 2006, p. 112). Metacognition is generally divided into two components which are knowledge of cognition and regulation of cognition (Brown, 1987; Schraw & Moshman, 1995). Besides, metacognitive awareness, self-beliefs and affective reactions have significant roles in individuals’ self-regulation (Zimmerman, 1995), such as self-efficacy and intrinsic interest (Zimmerman, 2002). Indeed, self-regulation is an umbrella term that encompass various social, motivational, and behavioral processes (Zimmerman, 1995).

According to Zimmerman’s (2005) self-regulation model, there is a cyclical and interrelated relationship between self-regulatory processes. Accordingly, three phases of self-regulation is (a) forethought, (b) performance or volitional control, and (c) self-reflection. Forethought phase precede efforts and includes categories of task analysis (goal setting and strategic planning) and self-motivational beliefs (self-efficacy, outcome expectations, value, and goal orientation) (Zimmerman, 2005). For instance, effective people believe in their abilities to perform a given task and self-efficacy influence individuals’ choices, effort, and persistence (Bandura, 1986). Goal orientation, another component in forethought phase, refers to individuals’ purposes of engaging in achievement behavior (Ames & Archer, 1992; Dweck, 1986). While some individuals are concerned with improving their competence and set self-referenced standards (i.e., mastery goals), some individuals focus on demonstrating their abilities to others and pursue normatively based standards (i.e., performance goals) (Ames & Archer, 1992; Meece et al., 1988).

Performance or volitional control phase involves processes that happens during the performance efforts and help individuals focus on the task and adjust their enterprise. Self-control (self-instruction, imagery, focused attention, and task strategies) and self-observation (self-recording and self-experimentation) constitute this phase (Zimmerman, 2005). For instance, focused attention is related to one’s increasing his/her concentration and exclusion of external circumstances (Zimmerman, 2005). Self-observation is another component under performance phase and refers to learner’s tracking of his/her own performance and its consequences (Zimmerman & Paulsen, 1995).

Self-reflection phase, on the other hand, refers to after performance processes like self-judgment (self-evaluation and causal attribution) and self-reaction (self-satisfaction and adaptive-defensive inferences) (Zimmerman, 2005). Self-evaluation is related to one’s comparison of his/her performance against a standard or goal (Bandura, 1986). Individuals can make normative

comparison, social comparison, self-comparison, or collective comparison (Bandura, 1986). Furthermore, individuals make causal attributions for their performance (Zimmerman, 2005). According to Weiner (1986) these attributions can be categorized along dimensions of stability (stable or unstable), locus (internal or external), and control (controllable or uncontrollable). For instance, a student who attributes his /her performance to long-term effort is making stable, controllable, and internal attribution while a student who attributes his /her performance to chance is making unstable, uncontrollable, and external attribution (Weiner, 1986). These dimensions are related to students' expectancy beliefs (Pintrich & Schunk, 2002). For instance if a student attributes his success to aptitude, which is perceived to be generally internal and stable, his expectation to achieve in the future will be high. On the other hand, if he attributes his success to luck which is unstable, his expectation to succeed in the future will be low (Pintrich & Schunk, 2002). Moreover, these dimensions influence individuals' emotions (Weiner, 1986). Locus dimension is related to feelings of pride and self-esteem; stability dimension is related to helplessness and hopefulness; and controllability dimension is related to shame and guilt (Weiner, 1994, as cited by Pintrich & Schunk, 2002). Self-reflection processes affect forethought phase thus making up a cycle (Zimmerman, 2005).

From a self-regulation perspective, self-regulation is responsible for individual differences in students' learning (Zimmerman, 2002). Inadequacies in students' self-regulatory processes can be responsible for students' underachievement because these students are not good at setting goals and assessing their abilities, and they have low efficacy beliefs opposite to students who accurately execute self-regulatory processes (Borkowski & Thorpe, 1994). Self-regulated learners, on the other hand, set specific and proximal goals, use appropriate strategies to reach their goals, monitor their progress, make adjustments in their environment in order to ease attainment of their goals, make adaptive causal attributions for consequences of their performances, and adapt their methods of learning for future use (Zimmerman, 2002). Empirical evidence support that students who have high achievement implement self-regulatory processes more effectively than students with low achievement (e.g., Risemberg & Zimmerman, 1992; Zimmerman & Martinez-Pons, 1990). Due to its association with students' learning, self-regulation has attracted attention of researchers and numerous studies have been conducted so far at different school levels (Cleary & Chen, 2009; Cleary & Zimmerman, 2004; Dignath & Büttner, 2008; Dignath et al., 2008; Tarchi et al., 2022). In the present study, we focus on studies which were done in primary school because importance of self-regulation has been especially emphasized in primary school. For instance, according to the results of their meta-analysis, Dignath et al. (2008) revealed that self-regulated learning education programs have a positive effect on primary school students' learning outcomes, strategy use and motivation. This study aims to provide a bibliometric mapping analysis of studies on self-regulation in primary education. Bibliometric mapping analysis allows the bibliography of scientific publications to be evaluated using mathematical methods (Zan, 2019). It also allows researchers to obtain information about the structure of their field (Al and Coştur, 2007). For example, revealing the most cited studies in the related literature can be considered as a measure of the impact or / and visibility of the relevant researchers (Lv et al., 2011). Along with bibliometric studies, it can be thought that the relevant researchers will have the chance to conduct more original and new studies by evaluating the current situation (Karagöz and Şeref, 2019). In addition, clustering techniques play an significant role in bibliometric research, as it allows to identify relevant publications, authors, and journal groups (Van Eck and Waltman, 2017). Thus, it is thought that this study will reveal the current situation regarding self-regulated learning and can be a guide for the researchers who will work in this field. The studies covered in the research will be examined in terms of (1) publication language, (2) publication year, (3) most cited publications, (4) the most used keywords in studies, (5) the most used words in the abstract, (5) the most cited authors, (6) the most cited journals, and (7) the most-cited countries.

METHOD

This research was conducted according to the quantitative research design. Within the scope of this study, the studies in the field of self-regulation in primary education were examined through Web of Science databases in all years. The purpose of this study is to examine the studies on self-regulation at the primary school level that are scanned in the Web of Science database, covering all years. In addition, SSCI, SCI-EXPANDED, A & HCI, CPCI-S, CPCI-SSH, and ESCI indexes in the Web of Science Core Collection: Citation Indexes were selected to ensure selection of high quality publications and to identify articles published only in refereed academic journals (Shen and Ho, 2020). In this context, 526 studies have been reached by entering the keywords in the Web of Science database (self-regulation or self-regulated learning) and (primary school or primary education) topic option (Access date: March 6, 2020). According to the categories in the Web of Science, the “education” and “psychology” areas of these studies were selected and bibliometric mapping analysis was performed with 392 studies suitable for the purpose of the research.

DATA ANALYSIS

The term bibliometric was first used by Alan Pritchard in 1969 (Leung et al., 2017). Bibliometric analysis reveals a general picture of a research that can be classified by articles, authors and journals (Merigó & Yang, 2017). With the studies obtained within the scope of the research, bibliometric analysis was carried out through the VOSviewer software program developed by Van Eck and Waltman (2010). In addition to being a software tool used to create and visualize bibliometric networks (Van Eck & Waltman, 2017), VOSviewer can also be used to aggregate publications and analyze emerging clustering solutions (Van Eck and Waltman, 2010, 2014). The data were analyzed in terms of (1) publication language, (2) publication year, (3) most cited publications, (4) the most used keywords in studies, (5) the most used words in the abstract, (5) the most cited authors, (6) the most cited journals, and (7) the most-cited countries, which were discussed within the scope of the research.

FINDINGS

Within the scope of the research, 392 studies obtained between 1994 and 2020 in the Web of Science database were examined in terms of (1) publication language, (2) publication year, (3) most cited publications, (4) the most used keywords in studies, (5) The most used words in the abstract, (5) the most cited authors, (6) the most cited journals, and (7) the most-cited countries.

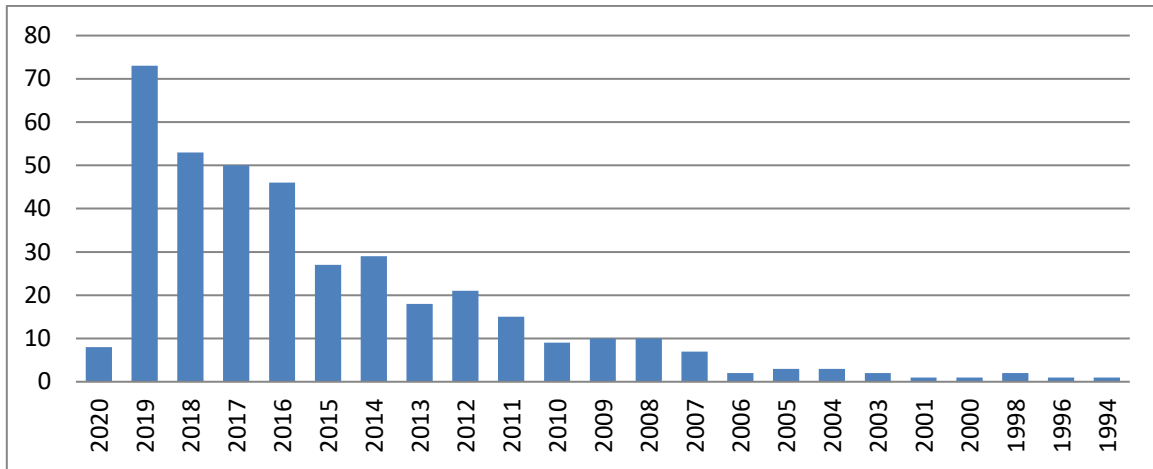
PUBLICATION LANGUAGE

The numbers of the publication language of 392 studies obtained in the study are as follows: English (355), Spanish (17), German (7), Russian (6), Latvian (2), Turkish (2), Dutch (1), French (1), and Japanese (1). It is seen that the majority of the language of the publications related to the study (91%) is English.

PUBLICATION YEAR

The distribution of the 392 publications included in the study as of 6. 3. 2020 is shown in Figure 1. 8 of the publications included in the study were published in 2020; 73 in 2019; 53 in 2018; 50 in 2017; 46 in 2016; 27 in 2015, 29 in 2014; 18 in 2013; 21 in 2012; 15 in 2011; 9 in 2010; 10 in 2009, 10 in 2008; and 7 of them were published in 2007. It is seen that the number of publications per year between 2006 and 1994 varies between 1 and 3. Thus, starting from 2007, it can be said that there has been an increase in the studies on SRL at primary school level.

Figure 1. Publication Years in the Studies Related to Self-Regulated Learning in Primary Education



MOST CITED PUBLICATIONS

The 10 most cited publications are presented in Table 1. It is understood that the majority of the studies obtained within the scope of the study are articles.

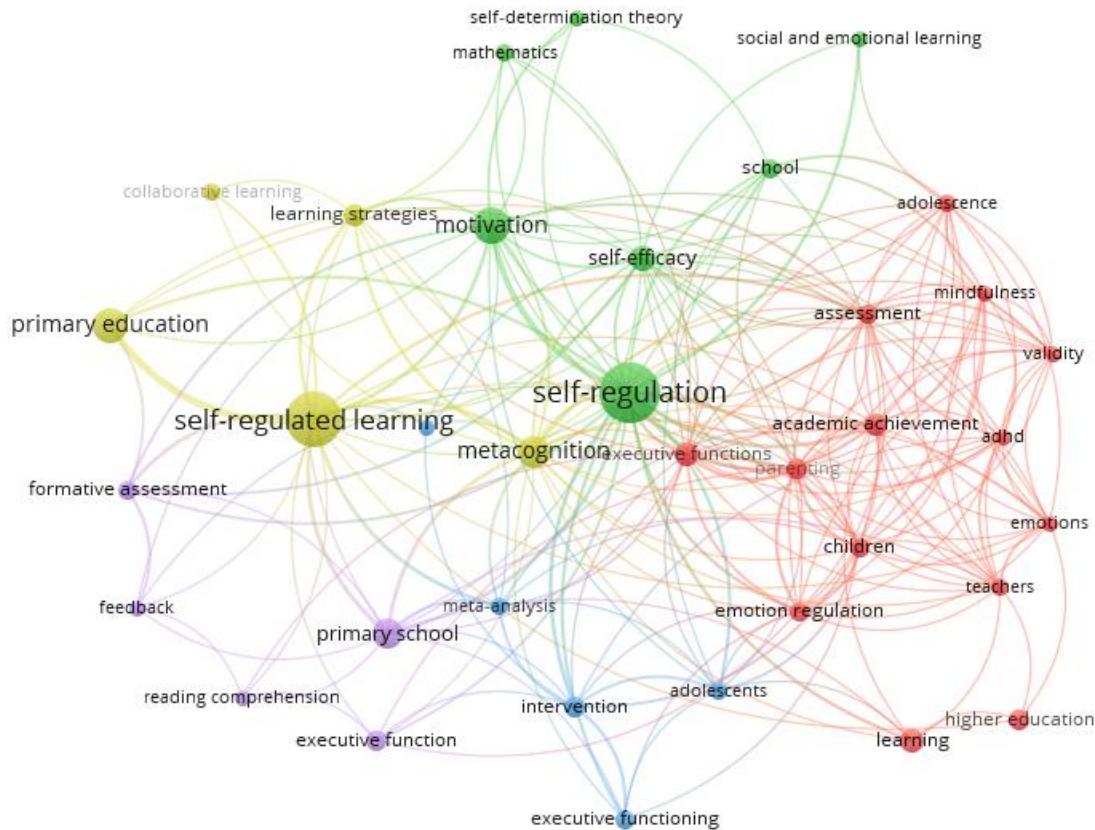
Table 1. Top 10 Most Cited Publications Within the Scope of the Study

Publication Name	Journal	Year	(WoS) The Number of Citation
The development of competence in favorable and unfavorable environments - Lessons from research on successful children	American Psychologist	1998	1317
How can primary school students learn self-regulated learning strategies most effectively? A meta-analysis on self-regulation training programmes	Educational Research Review	2008	269
The contribution of children's self-regulation and classroom quality to children's adaptive behaviors in the kindergarten classroom	Developmental Psychology	2009	262
Components of fostering self-regulated learning among students. A meta-analysis on intervention studies at primary and secondary school level	Metacognition and Learning	2008	238
Using self-determination theory to promote physical activity and weight control: A randomized controlled trial in women	Journal of Behavioral Medicine	2010	193
Motivation and self-regulation as predictors of achievement in economically disadvantaged young children	Journal of Experimental Education	2003	127
The relationship between epistemological beliefs, implicit theories of intelligence, and self-regulated learning among Norwegian postsecondary students	British Journal of Educational Psychology	2005	107
Self-regulation, motivation, and math achievement in middle school: Variations across grade level and math context	Journal of School Psychology	2009	104
Science achievement gaps begin very early, persist, and are largely explained by modifiable factors	Educational Researcher	2016	79
Self-regulation in higher education teacher learning	Higher Education	2005	78

THE MOST USED KEYWORDS IN STUDIES

To create a map based on text data for the most-used keywords, co-occurrence analysis and author keywords were selected. Minimum number of occurrences of a keyword was determined as 5 and the number of keywords to be selected was automatically stated as 33. Created map is displayed in Figure 2.

Figure 2. *The Most Used Keywords in the Studies Related to Self-Regulated Learning in Primary Education.*



There are six clusters in Figure 2 as depicted from different colors. Some of the most used keywords are given in Table 2. The most frequently used key words are self-regulation ($f= 71$) and self-regulated learning ($f= 60$) which were followed by motivation ($f= 27$), primary education ($f= 25$), and metacognition ($f= 21$). When the keywords are examined, it is understood that the words used are directly related to self-regulation or emphasize cognitive components.

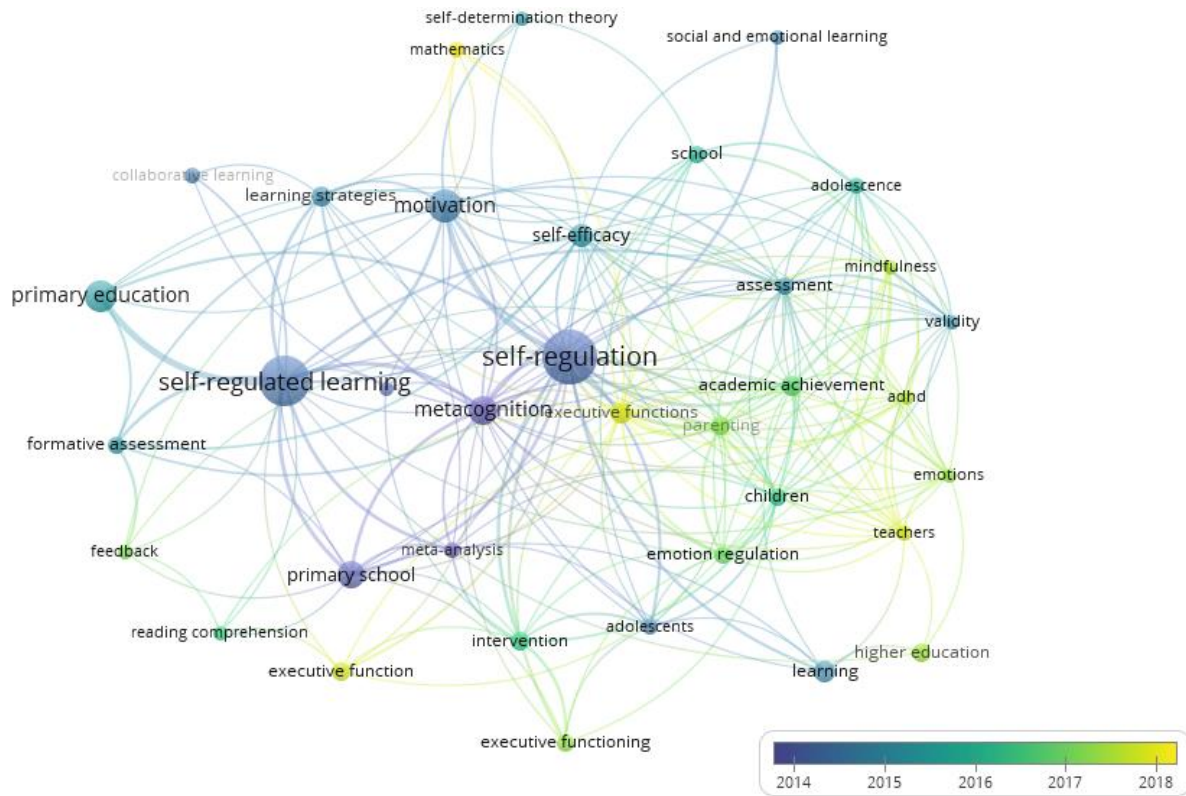
Table 2. *The Most Used Keywords in the Studies Related to Self-Regulated Learning in Primary School Education*

Keywords	f	Keywords	f
Self-regulation	71	Intervention	14
Self-regulated learning	60	Self-efficacy	13
Motivation	27	Executive functions	11
Primary education	25	Learning strategies	10
Metacognition	21	Learning	10
Primary school	18	Academic achievement	9

It is seen that the studies dealing with the research were first published in 1994 in the Web of Science database. In the analysis made through the VOSviewer program, the distribution of the keywords used in the studies conducted at primary school level was analyzed by years. The map

showing distribution of studies using the keywords according to years is shown in Figure 3. In recent studies it is understood that the frequently used keywords, which was shown as yellow color, are mathematics, teachers, executivite function.

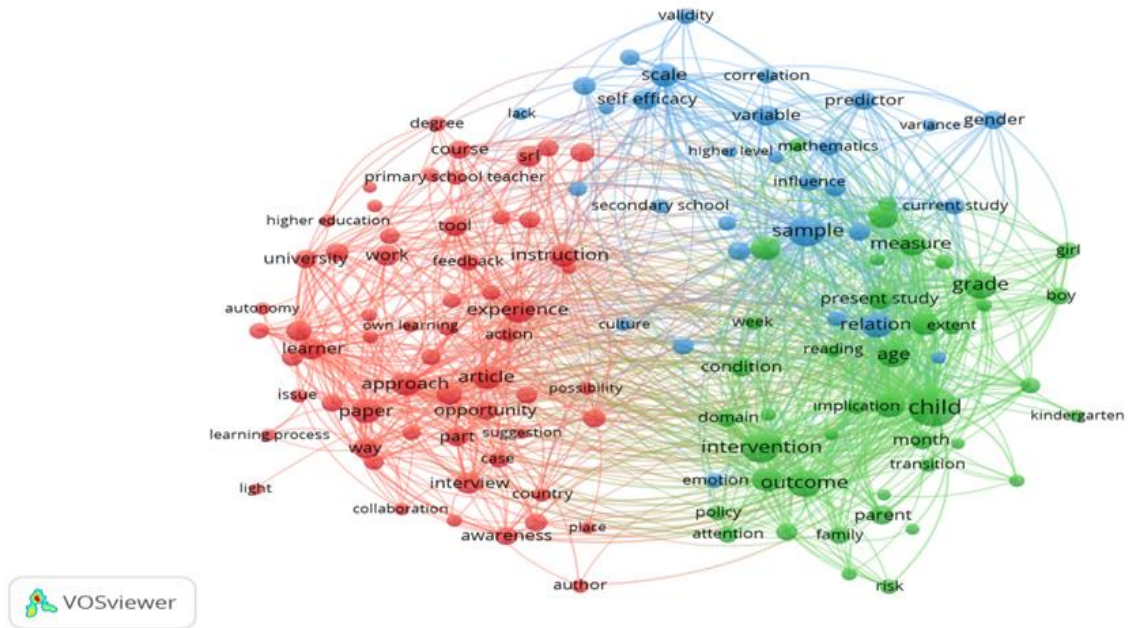
Figure 3. *The Distribution of the Studies Using the Keywords by Years (Overlay visualization).*



THE MOST USED WORDS IN THE ABSTRACT

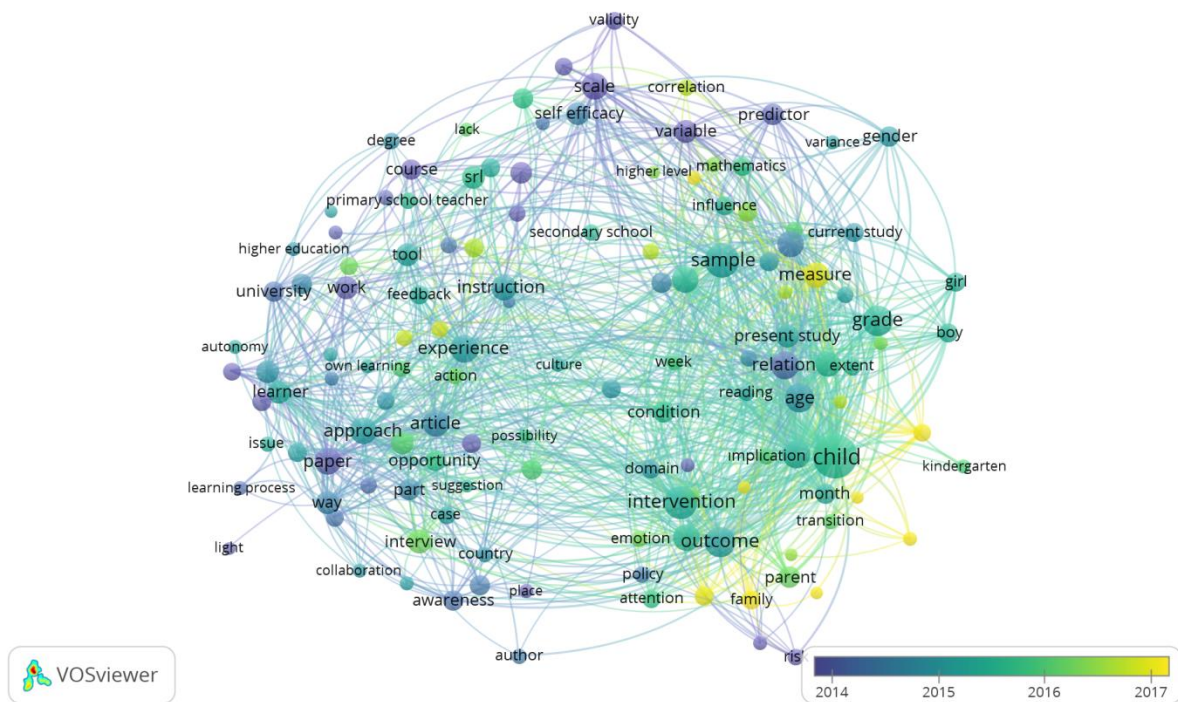
In order to identify the most used words in the summary section of the studies, bibliometric networks were created by selecting the abstract field in the VOSviewer software tool. The map created in this context is presented in Figure 4. It is seen that the studies were collected in 3 clusters (red, green and blue) and 133 words were reported automatically. The most frequently used words in the summary section are child ($f= 130$), sample ($f= 75$), intervention ($f=71$), outcome ($f= 62$), grade ($f= 61$)

Figure 4. *The Most Used Words in the Abstract Sections of the Studies*



In addition, an analysis was carried out to determine the distribution of the words in the summary section by years. The distribution of the words used in the summary section of the studies by years is presented in Figure 5. It is seen that the words that come to the fore in the abstract section in recent years are executive functions, measure, family, improvement, positive effect.

Figure 5. *The Distribution of the Studies Using Abstract Sections by Years*



THE MOST CITED AUTHORS

Within the scope of the study, in order to determine the most cited authors, citation analysis and authors option was chosen first in the program. According to this analysis, at least three documents of an author are selected. As a result of this, information obtained from 23 authors was reported automatically. The created map is shown in Figure 6. According to the results of the report, the documents and citations information of the 16 most cited authors are presented in Table 3.

Figure 6. *The Most Cited Authors (Citation Analysis)*

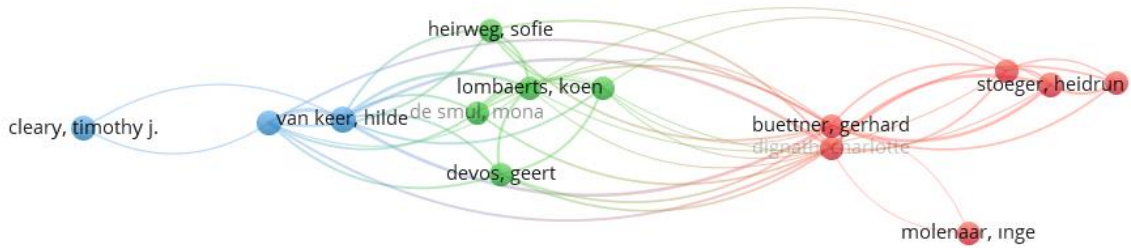


Table 3. *The Most Cited Authors (Citation Analysis)*

Author	Documents	Citations	Author	Documents	Citations
Buettner	4	521	Obergriesser	3	41
Dignath	3	517	Vandevelde	5	40
Cleary	6	217	Molenaar	4	32
Van gog	4	78	Baars	3	32
Lombaerts	4	67	De bruin	3	32
Stoeger	7	66	Paas	3	32
De backer	3	56	Melhuish	3	29
Van keer	9	43	Steinbach	3	26

Then the co-citation analysis and cited-authors option was selected. In the analysis, the minimum number of citations of an author was adjusted 23 and the number of authors to be selected was automatically stated as 64. According to the results of the analysis, it is seen that the authors are gathered in five clusters. The created map is presented in Figure 7. In addition, according to co-citation analysis, the most cited 21 authors are shown in Table 4.

Figure 7. *The Most Cited Authors (Co-Citation Analysis)*

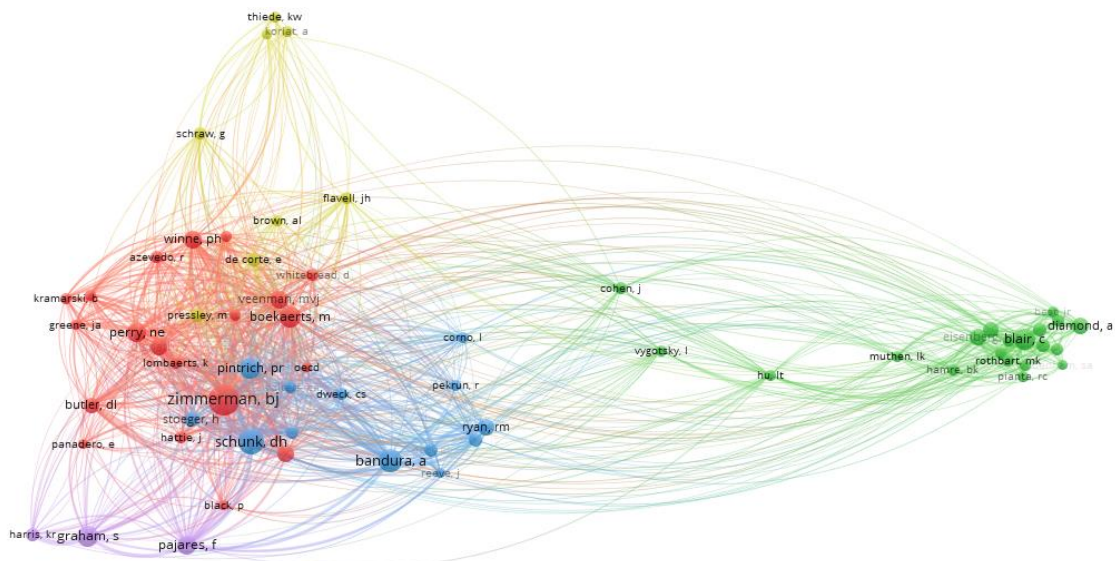


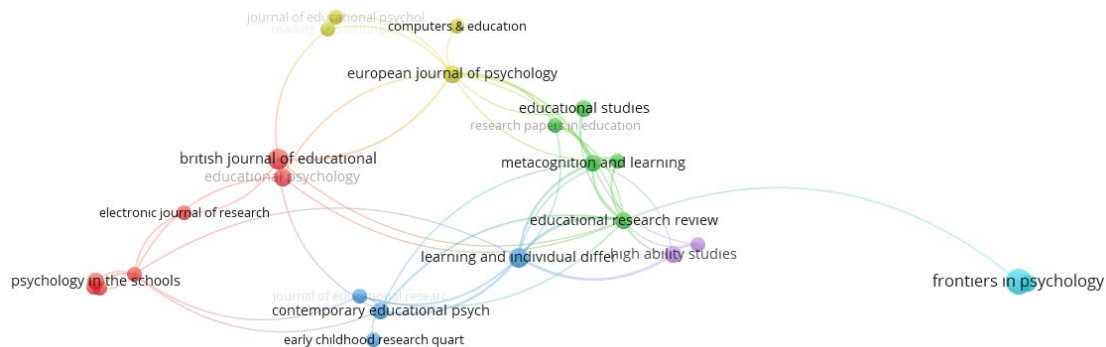
Table 4. *The Most Cited Authors (Co-Citation Analysis)*

<i>Cited-author</i>	<i>Citations</i>	<i>Cited-author</i>	<i>Citations</i>	<i>Cited-author</i>	<i>Citations</i>
Zimmerman	385	Graham	103	Cleary	63
Pintrich	185	Winne	102	Diamond	61
Schunk	174	Pajares	80	Deci	57
Bandura	139	Veenman	76	Butler	55
Blair	113	Dignath	75	McClelland	54
Boekaerts	109	Ryan	68	Stoeger	50
Perry	107	Eisenberg	65	Paris	47

THE MOST CITED JOURNALS

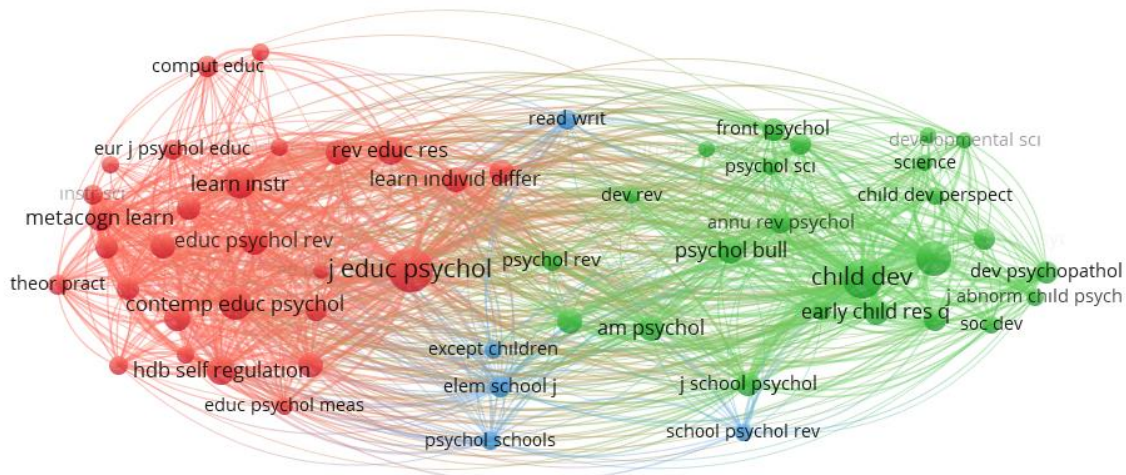
The citation analysis and sources options are selected to determine the most-cited journal. Also, within the scope of the analysis, the minimum number of documents of a source was adjusted as 3 and the number of sources to be selected was automatically stated as 32. The map created in Figure 8 is presented. The most cited journals were Educational Research Review (Document = 4, Citations = 329), Metacognition and Learning (Document = 4, Citations = 289), British Journal of Educational Psychology (Document = 7, Citations = 195), Journal of School Psychology (Document = 3, Citations = 158), Journal of Educational Psychology (Document = 3, Citations = 146).

Figure 8. *The Most Cited Journals (Citation Analysis)*



In order to create a map for the most-cited journal (co-citation analysis) co-citation analysis and cited sources were selected. The created map is shown in Figure 9. According to the analysis results the most cited (co-citation analysis) journals are Journal of Educational Psychology (Citations = 698), Child Development (Citations = 505), Developmental Psychology (Citations = 347), Contemporary Educational Psychology (Citations = 275), Learning and Instruction (Citations = 265).

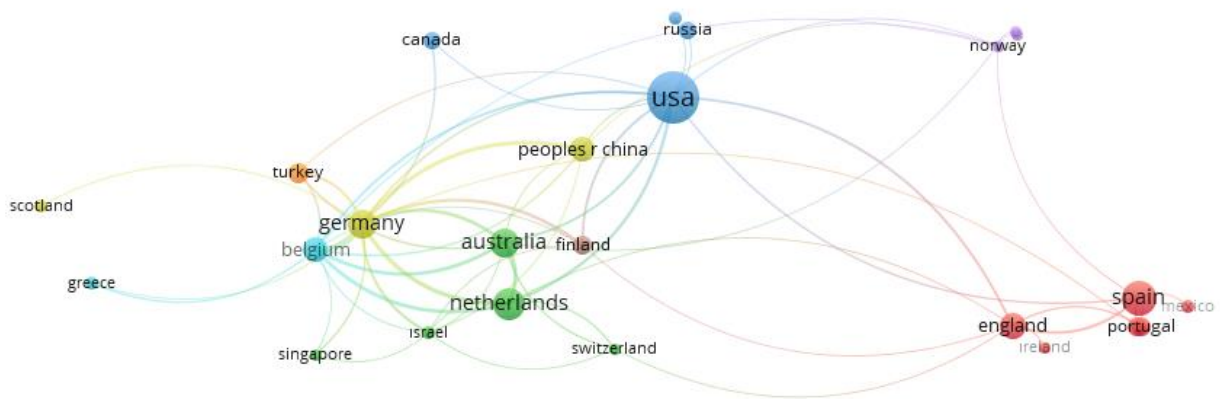
Figure 9. *The Most Cited Journals (Co-Citation Analysis)*



THE MOST-CITED COUNTRIES

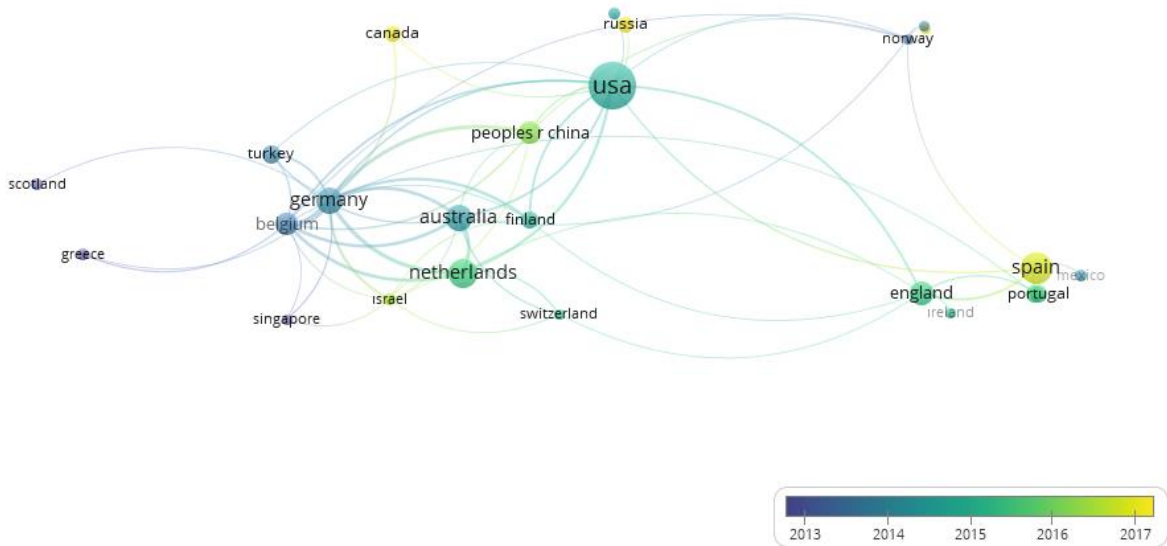
In order to create a map for the most-cited countries citation analysis and countries were selected. The created map is presented in Figure 10. According to the results of the analysis, the countries that the authors refer to most are United States (Document = 94, Citations = 3004), Germany (Document = 27, Citations = 769), Netherlands (Document = 34, Citations = 373), Australia (Document = 29, Citations = 294), Portugal (Document = 12, Citations = 292), Belgium (Document = 21, Citations = 196), Greece (Document = 5, Citations = 143), Norway (Document = 4, Citations = 134), Spain (Document = 39, Citations = 131), England (Document = 23, Citations = 104), China (Document = 21, Citations = 97).

Figure 10. *The Most Cited Countries*



In addition, the distribution of citations by countries is examined (See Figure 11). It is seen that the countries that the authors have cited most recently are Spain, Canada and Russia.

Figure 11. *The Most Cited Countries by Years*



CONCLUSION, DISCUSSION AND SUGGESTIONS

Studies using bibliometric analysis with different variables were carried out at different school levels. For instance, Aktoprak and Hursen (2022) conducted a bibliometric analysis of studies on critical thinking at primary school level. In another study, Yilmaz et al. (2021) performed bibliometric analysis of studies on foreign language teaching in early childhood education. Shen and

Ho (2020) performed bibliometric analysis in their studies on technology-enhanced learning in higher education. Moreover, Arici et al. (2019) used it in bibliometric analysis studies in the field of augmented reality in science education. The purpose of this research is to examine the bibliometric properties of studies on self-regulated learning at primary school level and scanned in the Web of Science database.

Within the scope of this study, 392 studies on self-regulation at primary school level were examined. Studies were analyzed by bibliometric mapping analysis. Firstly, the studies were examined according to the languages of the publication and it was seen that approximately 91% of the publications made were in English ($f= 355$). This is followed by studies in Spanish ($f= 17$), German ($f= 7$) and Russian ($f= 6$), respectively. It can be said that English is the undisputed, international academic language (Altbach, 2007) in the emergence of this situation. In the bibliometric analysis of the critical thinking at primary school level field they made in Aktoprak and Hursen (2022), it was understood that the majority of the publications were in English. As a matter of fact, when the language teaching studies in the literature are examined, the most study is done on English teaching; it is reported that Spanish instruction follows (Barac et al., 2014; Hammer et al., 2014). This situation also reveals the significant given to English globally (Satria et al., 2017). When the distribution of self-regulation related studies in primary school by the year of publication is examined, it is understood that the first study was conducted in 1994 (Luminet, 1994), the studies carried out increased especially since 2017 and 73 studies were conducted in 2019. Self-regulation is becoming an increasingly popular topic in psychology (Sarıkaya, 2019). This may be due to the fact that self-regulation has been working with different variables recently. For instance, in the meta-analysis study conducted it was found that self-regulation was effective in mathematics performance, motivational outcomes, and also the use of cognitive and metacognitive strategies (Dignath et al., 2008).

As a matter of fact, Farley and Kim-Spoon (2014) report that the number of studies containing the keyword self-regulation in 2012 was three times higher than in 2002 during their literature review. This indicates that studies on self-regulation will increase further in the future.

The findings of this study also reveal the self-regulation studies carried out at the primary school level in the literature (Bai & Guo, 2021; Dignath et al., 2008). Lv et al. (2011) emphasizes that the determination of the most cited studies in the literature is significant. Indeed, this is considered as a measure of both impact and visibility; It also provides access to cult publications for new works planned to be carried out. As a result of the analysis, it was seen that the most cited publication was "The development of competence in favorable and unfavorable environments - Lessons from research on successful children" (Masten, & Coatsworth, 1998) which was published in the journal *American Psychologist* (WoS Citation Number = 1317). Other publications are as follows "How can primary school students learn self-regulated learning strategies most effectively? A meta-analysis on self-regulation training programmes" (Dignath et al., 2008) (WoS Citation Number = 269)" published in the journal "Educational Research Review" and "The contribution of children's self-regulation and classroom quality to children's adaptive behaviors in the kindergarten classroom (Rimm-Kaufman et al., 2009)" (WoS Citation Number = 262) published in the journal "Developmental Psychology" respectively.

It is worth noting that the first two most cited studies are compilation research. In his study, Aksnes (2005) reports that review articles are cited more frequently than research articles. MacRoberts and MacRoberts (1996) and Ding et al. (2017) also emphasize the same situation. Ding et al. justifies this situation by review articles leading the researchers and contributing to the identification of original studies.

The most used keywords were also examined in the study. Keywords provide clues about the content and structure of a study (Karagöz, & Şeref, 2020). While these words summarize the study,

they can reveal the relationship between two or more concepts. Keywords can also provide information about trends in literature (Garfield, 1990). Identifying the areas where the keywords are concentrated will enable the literature to be evaluated thematically. As a result of the analysis, it was determined that the most used keywords in the studies are self-regulation, self-regulated learning, motivation, primary education and metacognition, respectively. In relation to self-regulation, the keyword self-regulated learning appears to be widely used (Stoeger et al., 2015). It is noteworthy that the keyword self-regulated learning is often used in conjunction with primary education (Vandavelde et al., 2012; Vandavelde et al., 2013). In addition, some studies show that the keywords of cognitive components are used with self-regulation (Dignath et al., 2008; Dignath & Büttner, 2008). Since there are metacognition, motivation, cognition concepts that are self-regulation learning components (Schraw et al., 2006), it can be said that these words are frequently used in studies on self-regulation or self-regulated learning. When the distribution of keywords by years is examined, it is seen that mathematics, teachers, executive function are in the foreground in recent years. It can be stated that, with the understanding of the significant of self-regulation, this is especially related to the increase in the number of studies on problem solving, teacher training and teacher self-regulation. In addition, we think that the relation of self-regulation with cognition, metacognition and executive function (Efklides & Misailidi, 2010, p.14; Fox & Riconscente, 2008) is effective in keyword selection.

The most-cited and co-cited authors and journals were also examined. Buettner (Citations=521, Documents=4), Dignath (Citations=517, Documents=3), and Cleary (Citations=217, Documents=6) are the most-cited authors. On the other hand, the most-cited (co-citation) authors are Zimmerman (Citations=385), Pintrich (Citations=185) and Schunk (Citations=174). The most-cited journals are Educational Research Review (Document=4, Citations=329), Metacognition and Learning (Document=4, Citations=289), British Journal of Educational Psychology (Document=7, Citations=195), Journal of School Psychology (Document=3, Citations=158) and Journal of Educational Psychology (Document=3, Citations=146) in the studies. The most-cited journals (co-citation) are Journal of Educational Psychology (Citations=698), Child Development (Citations=505), Developmental Psychology (Citations=347), Contemporary Educational Psychology (Citations=275) and Learning and Instruction (Citations=265). When the most cited journals are examined, it is noteworthy that almost all of them are journals with educational psychology content.

Another result of the study is that the authors are related to the countries to which they refer most, and to the countries that are most frequently cited recently. The most cited countries were identified as United States (Document = 94, Citations = 3004), Germany (Document = 27, Citations = 769), Netherlands (Document = 34, Citations = 373). In the bibliometric analysis studies conducted in different fields in the field of education, it has been revealed that the most productive country is the USA (Aktoprak & Hursen 2022; Yilmaz et al., 2021). The fact that the most cited authors work in the mentioned countries is an effective factor in this situation. In addition, the countries that the authors have been citing the most recently are Spain, Canada and Russia. These findings reveal that other countries are also conducting studies related to self-regulation in primary school and the studies are becoming more and more widespread. As a result, it is seen that studies related to self-regulation increase and become widespread in primary school. When the keywords in the studies are examined, it is understood that the studies mostly focus on cognitive and metacognitive structures that are related to self-regulation. It is seen that the citation rates of the compilation studies on the subject are high and in recent researches, citations are made to different countries and academic journals.

- Based on the results of this study, the following recommendations are presented: Self-regulation has become one of the popular concepts of today. It is possible to come across many studies on self-regulation in the literature. In this context, conducting new researches is inevitable. For this reason, researchers who will publish on self-regulation in primary school are recommended to conduct a detailed literature review. When the most cited

journals are examined, it is understood that these are journals with educational psychology content. It can be suggested to publish in journals based on primary school education or to make the journals more specific.

- When the keywords used are examined, it is noteworthy that the words focus more on self-regulation, self-regulated learning and motivation. In recent studies, it is seen that the keywords of mathematics, teacher and executivity function are used. In the studies to be designed, it can be suggested to examine the effect of self-regulation on language skills and arithmetic skills of primary school students.
- In this study, the data were examined in terms of bibliometric properties. Although the findings obtained in this context presented a general trend in the field, different studies can be conducted to reach more detailed information (research pattern, data collection tools, sampling, etc.).

AUTHOR CONTRIBUTION

- First author have made substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data
- The second author have been involved in drafting the manuscript or revising it critically for significant intellectual content
- The third author have given final approval of the version to be published

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An Investigation of Variables Predicting the Reading Literacy in PISA 2018


Savaş Pamuk, Ph.D. Researcher, Akdeniz University, Türkiye, savaspamuk@gmail.com

 0000-0001-8661-4262


Devrim Alıcı, Prof. Dr., Mersin University, Türkiye, devrimozdemir@mersin.edu.tr

 0000-0001-5542-0609


Mehtap Aktaş, Assist. Prof. Dr., Kafkas University, Türkiye, mhptaktas@gmail.com

 0000-0002-3192-7445

Hüseyin Selvi, Assoc. Prof. Dr., Mersin University, Türkiye, hsyn_selvi@yahoo.com.tr

 0000-0002-3513-0003

N. Bilge Uzun, Assoc. Prof. Dr., Mersin University, Türkiye, n.bilgeuzun@gmail.com

 0000-0003-2293-4536

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Abstract

This study aims to determine variables predicting students' reading literacy in the PISA application. Turkey's PISA 2018 sample data that consisted of 186 schools and 6890, representing 12 regions from Turkey were analyzed by conducting a two-level hierarchical linear modeling to examine students' reading literacy at the student and school levels. The results indicated that, according to the student-level predictors, female students had higher reading literacy and the reading literacy was positively influenced by an increase in predictors of father's education level, predictors showing metacognition levels, socioeconomic levels, parents' emotional support to the students, reading pleasure levels, and reading attitudes. Considering the school-level predictors, deficiencies in educational materials and student behaviors hindering learning reduced achievement, whereas teacher behaviors hindering learning had a positive effect on achievement. Offering extracurricular creative activities in the school environment reduced the negative impact of the educational status of the mother to a certain extent. The sub-dimension of the metacognitive level assessment had an increased impact on reading literacy, but student behaviors hindering learning had a negative effect on it. Considering the findings, the reasons for the low level of reading literacy of students and how it can be increased were discussed.

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INTRODUCTION

The Program for International Student Assessment (PISA), developed in 1997, is a follow-up study projected by the Organization for Economic Cooperation and Development (OECD), targeting the evaluation of the utilization level of knowledge and skills of 15 years old students in daily life in member and participating countries. The PISA application aims at determining the mathematic literacy, scientific literacy, and reading literacy of 15 years old students. In the light of the findings obtained from the PISA application, countries are expected to direct their education policies and increase the quality of their education systems by making them more functional.

The concept of literacy highlighted in PISA is an important concept that supports the individual, social and economic development of people in today's society. According to Hauser, Eley, Koenig, and Elliott (2005, 23-24),

Literacy is important for all aspects of an individual's life, from handling personal affairs, to raising children, to engaging in the workforce, to participating in a democratic society. ... In the home, individuals use their literacy skills for a wide range of activities, such as reading mail, paying bills, handling contracts and leases, and helping children with school matters. Regardless of one's occupation, literacy skills are needed in a variety of work contexts—applying for a job, traveling to and from work, choosing a benefits package, and understanding and handling paychecks. Literacy skills are also needed for adults to participate in a democratic society. Such activities as keeping apprised of local and national issues, understanding one's rights and responsibilities, reading ballots, and voting all require literacy skills.

The concepts of reading literacy in PISA are defined clearly by the OECD (2019). Accordingly, "reading literacy is understanding, using, reflecting on and engaging with written texts, in order to achieve one's goals, develop one's knowledge and potential, and participate in society. This definition acknowledges the diversity and complexity of the processes involved in daily reading activities" (OECD, 2019, 27).

In the OECD (2020) PISA 2018 Turkey report, students in Turkey are stated to have scored below the OECD average in reading where the proportion of students achieving proficiency levels of five or six in at least one field was lower than the OECD average. Yet, a small proportion of students reached the minimum level of proficiency (2 and above) in at least one domain. In the same report, it was stated that 74% of the students in Turkey achieved at least a second-level reading proficiency (OECD average: 77%) in the findings related to reading literacy. As per this finding, these students can identify the main idea of a medium-length text, find information based on clear, but sometimes complex criteria, and reflect on the aim and form of the texts when clearly guided. Yet, about 3% (OECD average 9%) of the students in Turkey's sample demonstrated the best performance, achieving level five or six in the PISA reading test. At these levels, students can comprehend long texts, deal with abstract or counterintuitive concepts, and make distinctions between facts and opinions based on implicit clues to the content or source of information.

Compared to reading literacy tests conducted in the past years, PISA 2018 Turkey average (466 points) was below the OECD average, but higher than in 2003 (441 points) and 2006 (447 points). According to the results in 2009, there was no significant difference (466 points). The 2012 average (457 points) also remained below the desired score. Despite experiencing a serious decline in all three areas compared to all years, it was quite high compared to the 2015 (428 points) average. Noting that the decline in PISA 2015 results was negligible, OECD (2020) declared that the decline between 2012 and 2015 or the revival between 2015 and 2018 does not reflect the long-term trajectory. These findings revealed that there are significant problems in our country regarding the literacy competency of students of age 15. Thus, identifying factors affecting reading literacy is important in terms of supporting individual, social, and economic development.

There are plenty of studies examining the PISA reading literacy level in the literature. For instance, these studies cover different predictors such as gender (Batyra, 2017), socioeconomic status and in-school predictors (teaching strategy, assessment and evaluation strategy, classroom climate, teacher-student communication, the reading strategy used by the student) (Güzle Kayır, 2012), school location, reading habits, learning strategies (Arıcı & Altıntaş, 2014), parents' educational status, cultural opportunities, and education resources in the home (Gülleroğlu, Bilican Demir, & Demirtaşlı, 2014), familial factors (Avşar & Yalçın, 2015), financial assets, cultural assets, education resources in the home, information communication technology resources, parents' profession, and the number of books in the home (Urfalı Dadandı, Dadandı, & Koca, 2018).

There are also studies in the literature examining PISA reading literacy at both student and school levels with hierarchical linear modeling. For instance, Arı and Keskin (2021) examined factors affecting Turkish students' perceptions of the reading task difficulty in PISA 2018 using a two-level HLM. The study findings revealed that the between-school differences predict around 9.8% of the difference in students' perception of the reading literacy task difficulty in PISA, while the rest were due to the between-student differences. Koyuncu and Fırat (2020) determined the most important factors affecting students' reading literacy in all three countries as economic, social, cultural status index, and metacognition.

Tavşancıl, Yıldırım and Bilican-Demir (2019) investigated the prediction power of students' learning strategies and reading enjoyment predictors in predicting their PISA 2009 reading achievement, and the mediating effect of reading enjoyment predictor on the relationship between reading achievement and learning strategies. The findings of the study revealed that the frequency of using control and recall strategies was significant in predicting students' reading performance, while the use of elaboration strategy was a non-significant predictor. Using two-level HLM, Erdoğan (2018) examined the relationship between students' socioeconomic characteristics and reading skills. The findings revealed an association between the reading skills and mother's education level, father's education level and home opportunities, lack of qualified teachers, residential area, number of activities organized at school, student-teacher ratio, and school size. Yıldırım (2012) conducted a study to determine student and school-level factors affecting the reading comprehension skills of the students in the sample of The Netherlands, Korea, and Turkey in the PISA 2009 application, and to reveal the similarities and differences between countries. When the student-level predictors were examined in terms of reading skills, the predictor variables of enjoying learning, the frequency of using understanding-remembering-summarizing strategies during reading, sociocultural characteristics, and economy were impactful on the reading skills of students in all three countries and there were differences in reading skills between countries in terms of these predictors. At the same time, the predictor variables of school size, teacher qualification, school management, and the education of teachers and responsibility in-school tasks were also influential.

While the student-level predictors of reading enjoyment and parents' emotional support as well as the school-level predictors of the shortage of educational materials, student behavior hindering learning and teacher behavior hindering learning given in Ertem's (2021) study are the same in the present study, other predictors are different in both studies. In this context, the present study may make a significant contribution to literature in terms of addressing different other predictors that will affect the PISA 2018 reading literacy. Although Koyuncu and Fırat's (2020) study also includes similar predictors, it differs from the current study in terms of purpose and the statistical techniques employed. Also, though Arı and Keskin's (2021) study was conducted based on the PISA 2018 data, the researchers did not study the factors affecting reading literacy, but examined the factors affecting students' perception of reading task difficulty. In this respect, the present study differs from the study conducted by Arı and Keskin (2021). This study is expected to identify both the student and school-level predictors affecting the reading of students in Turkey and to contribute to all stakeholders as

regards inquiring, researching, and implementing activities, regulations, and changes that can be fulfilled to increase reading literacy.

METHOD

This research is a relational study, which examines the relationships between student and school characteristics and reading literacy based on the PISA 2018 Turkey sample.

POPULATION AND SAMPLE

The population of the study consists of 15-year-old students in Turkey in the year 2018. According to Level-1 Nomenclature of Territorial Units for Statistics (İBBS) in Turkey, 186 schools and 6890 students representing 12 regions participated in the PISA 2018 (Ministry of National Education [MoNE], 2019).

Of the 15-year-old students represented in the PISA 2018 application, 43.7% attended Anatolian High Schools, 31.1% Vocational and Technical Anatolian High Schools, and 13.7% Anatolian Imam Hatip High School. Students studying at Science High Schools, Social Sciences High Schools, Multi-Program Anatolian High Schools, and Anatolian Fine Arts High Schools constituted 11.2% of the PISA 2018 Turkey sample. However, 0.3% of the students in the target group continued their education at the secondary school level. Further, 49.6% of Turkey's sample consisted of female and 50.4% male students. Examining the grade-level distribution of students, 78.8% were in grade 10, 17.7% in grade 9, and 2.9% in grade 11. The proportion of students in other grade levels was below 1% (MoNE, 2019).

DATA COLLECTION TOOLS

The data used in this study were obtained using the PISA 2018 student and school questionnaires prepared by the OECD. The predictors and levels in this study are elaborated below:

LEVEL-1 PREDICTORS

Level-1 predictors were determined as student characteristics in the study. These predictors were metacognition, enjoyment of reading, student gender, socioeconomic level, parents' emotional support to the student, and the education level of parents. Information concerning these predictors was obtained from the student questionnaire prepared by OECD within the scope of the PISA applications. This questionnaire was filled out by students participating in PISA 2018.

LEVEL-2 PREDICTORS

Level-2 predictors were determined as school characteristics in the study. These predictors were student-teacher ratio, class size, creative extracurricular activities, shortage of educational materials, student and teacher behaviors hindering learning. This questionnaire was filled out by school administrators

DATA ANALYSIS

In this study, data were analyzed using two-level HLM to reveal how the variability in students' reading literacy was affected by student (Level-1) and school (Level-2) predictors. This is because of the hierarchical and nested nature of the data used. The use of two-level HLM in datasets with this type of nesting is considered important for the validity of the findings (Raudenbush & Bryk, 2002).

FINDINGS

One-Way ANOVA Model, which was conducted in the first stage of the HLM, revealed that the weighted least squares estimate of the mean reading literacy score was 4592.78 and significantly differed from zero ($p < .05$) and the standard error was 49.94. The reliability value of the reading literacy

mean score was .98. The Intra-Class Correlation Coefficient (ICC) value of .385 showed that 38.5% of the total variance of reading literacy could be attributed to the predictors relating to schools and the remaining 61.5% to those of students.

The Random-Coefficients Regression Model revealed that the reading literacy of female students was higher than that of male students ($\gamma = 43.73$, $SE = 14.86$, $p < .05$). The reading literacy levels of students decreased as their mothers' education status increased ($\gamma = -20.94$, $SE = 4.86$, $p < .05$), but increased as their fathers' educational status increased ($\gamma = 13.94$, $SE = 3.99$, $p < .05$). Further, the reading literacy levels of students were positively affected by predictors showing their metacognition levels ($\gamma = 66.60$, $SE = 7.21$, $p < .05$ for Understanding and Remembering sub-dimension, $\gamma = 62.91$, $SE = 7.35$, $p < .05$ for Summarization sub-dimension, and $\gamma = 102.53$, $SE = 8.49$, $p < .05$ for Evaluation sub-dimension). Students' reading literacy increased as their socioeconomic levels ($\gamma = 26.92$, $SE = 9.35$, $p < .05$), parents' emotional to students ($\gamma = 39.99$, $SE = 6.13$, $p < .05$), levels of reading enjoyment ($\gamma = 91.09$, $SE = 7.94$, $p < .05$), and attitude ($\gamma = 16.21$, $SE = 5.87$, $p < .05$) increased. Another finding of the study, on the other hand, indicated that students with a high mastery goal orientation have low achievement ($\gamma = -30.39$, $SE = 6.54$, $p < .05$).

Predictors causing differences between-school differences in terms of the reading literacy levels of students are the mother's educational status, the evaluation sub-dimension of metacognition, socioeconomic level, levels of reading enjoyment, and mastery goal orientations. Finally, the study found that student predictors added to the null model reduced the Level-1 error variance by 18.88%.

According to the Intercepts and Slopes as Outcomes Model, students' reading skills differed differences as per all predictors included in the Level-1. Father's education level ($\gamma = 14.06$, $SE = 3.99$, $p < .05$), metacognition level ($\gamma = 66.58$, $SE = 7.21$, $p < .05$ for Understanding and Remembering Sub-Dimension, $\gamma = 62.34$, $SE = 7.34$, $p < .05$ for Summarization sub-dimension, and 103.24 , $SE = 8.09$, $p < .05$ for Evaluation sub-dimension), socioeconomic level ($\gamma = 25.55$, $SE = 9.43$, $p < .05$), family emotional support ($\gamma = 40.76$, $SE = 6.13$, $p < .05$), level of learning enjoyment ($\gamma = 89.63$, $SE = 7.85$, $p < .05$), and student attitude ($\gamma = 16.10$, $SE = 5.86$, $p < .05$) were predictors that had positive effects on the reading literacy of students. However, the mother's education level ($\gamma = -20.82$, $SE = 4.75$, $p < .05$) was a predictor, which had a negative effect. Considering this result, the reading literacy scores of students decreased as their mothers' education levels increased. On the other hand, the gender difference was also reflected significantly in the results ($\gamma = 43.98$, $SE = 14.83$, $p < .05$). Accordingly, female students were more successful in reading literacy than male students. Another surprising finding among the Level-1 predictors was observed in the mastery goal orientation ($\gamma = -30.84$, $SE = 6.46$, $p < .05$). As students' mastery goal orientations increased, their reading literacy decreased.

Findings obtained from the fourth stage of the HLM are summarized in Table 1.

Table 1. Final Estimation of Fixed Effects for the Students' Reading Skills.

<i>Fixed Effects</i>	<i>Coefficients</i>	<i>SE</i>
Model for Class Means ¹		
Intercept, γ_{00}	4528.13	46.95
Creative Activities, γ_{01}	106.56**	40.17
Educational Material Shortage, γ_{02}	-150.87**	43.57
Students' Behavior Hindering, γ_{03}	-300.27***	47.42
Teachers' Behavior Hindering γ_{04}	126.19**	46.39
Gender, γ_{10}	43.98**	14.83
Mother Education Level, γ_{20}	-20.82***	4.75
Creative Activities, γ_{21}	11.13**	4.02
Father Education Level, γ_{30}	14.06**	3.99
UNDREM, γ_{40}	66.58***	7.21
METASUM, γ_{50}	62.34***	7.34
METASPAM, γ_{60}	103.24***	8.09
Creative Activities, γ_{61}	16.20*	8.00
Students' Behavior Hindering, γ_{62}	-28.55**	8.23
Wealth, γ_{70}	25.55**	9.43
Family Emotional Support, γ_{80}	40.76***	6.13
Joyread, γ_{90}	89.63***	7.85
Creative Activities, γ_{91}	22.21**	7.32
ATTLNACK, γ_{100}	16.10**	5.86
Mastery Goals, γ_{110}	-30.84***	6.46
Students' Behavior Hindering, γ_{111}	16.26*	6.34

An examination of the effects of Level-2 predictors on reading literacy, providing creative extracurricular activities increases the level of reading literacy ($\gamma = 106.56$, $SE = 40.17$, $p < .05$). As expected, the shortage of educational materials ($\gamma = -150.87$, $SE = 43.57$, $p < .05$) and student behavior hindering learning ($\gamma = -300.27$, $SE = 47.42$, $p < .05$) reduced the reading literacy. By contrast, teacher behavior hindering learning positively affected reading literacy ($\gamma = 126.19$, $SE = 46.39$, $p < .05$). However, when the mediating role of these predictors between student predictors and reading literacy were examined, providing creative extracurricular activities in the school setting reduced the negative effect of the mother's education level to a certain extent ($\gamma = 11.13$, $SE = 3.63$, $p < .05$), increased the effect of the evaluation sub-dimension of metacognition on achievement ($\gamma = 16.20$, $SE = 7.78$, $p < .05$), and mediated the positive effect of reading enjoyment levels ($\gamma = 22.21$, $SE = 6.80$, $p < .05$). Another school-level predictor, student behaviors hindering learning negatively affected the reading literacy of the evaluation sub-dimension of metacognition level ($\gamma = -28.55$, $SE = 8.20$, $p < .05$), but reduced the negative effect of the mastery goal orientation ($\gamma = 16.6$, $SE = 6.26$, $p < .05$).

Considering the model with all these student and school predictors added, it reduced the unexplained school-level variance by 30.86%.

DISCUSSION, CONCLUSION AND IMPLICATIONS

This study attempted to explain the variability in the reading literacy of students in the PISA 2018 Turkey sample using a two-level HLM. The results, firstly, revealed that female students had higher reading literacy and the reading literacy was positively influenced by an increase in predictors of father's education level, predictors showing metacognition levels, socioeconomic levels, parents' emotional support to the students, reading pleasure levels, and reading attitudes. First of all, considering the education level of parents from Level-1 predictors, some of the studies conducted on this subject have concluded that the level of reading literacy of individuals increases as the education level of parents increases (i.e. Gülleroğlu et al., 2014; Gürsakal, 2012; Magnuson, 2007; Yıldırım, 2012). There are studies suggesting that this is due to the fact that parents provide richer learning

environments to their children as their education level increases and that this situation positively affects the reading literacy levels of students (Hernandez 1993 as cited in Lemke et al., 2005). In addition, there are also studies showing that the literacy level of individuals increases as the education level of the father increases, but the increase or decrease in the mother's education level does not have a statistically significant effect on their literacy levels (Magnuson, 2007). In the OECD (2012) report, it is stated that the education level of parents is theoretically more influential on student outcomes than their professions. Studies have shown that parents' education level affects the PISA scores of students (Anil, 2009). She states the variable predicting the science achievement of 15 years old students in Turkey is the "father's educational status".

As a result of this research, it was found that individuals' reading literacy decreases as the level of their mothers' education increases, but their reading literacy increases as the level of their father's education increases. Schnabel, Alfred, Eccles, Köller, and Baumert (2002) found that as the education level of mothers increases, the pressure they put on their children's school achievement increases. The findings of another study show that as the education level of the mother increases, the level of academic burnout experienced by her children increases (Naftali, 2010). In this study, the reasons why an increase in the education level of mothers has a negative impact on reading literacy could be linked to the pressure they put on their children and the level of academic burnout. In parallel to the findings of this study, other studies in the literature also report that the reading literacy level of individuals increases with an increase in the education level of their fathers (Gülleroğlu et al., 2014).

The subject of whether there is an association between the income level of students' families and their academic achievements has received profound attention in international studies in education (Bindak, 2018). At this point, it is stated that the current financial state of households provides more information than the income level predictor (OECD, 2012). Families with high socioeconomic levels have a positive effect on their children's achievements in terms of providing rich learning environments and housing resources (Gülleroğlu et al., 2014). This study also found that the reading literacy level of individuals increases with an increase in the socioeconomic level of families. These findings are also supported by the existing literature (Gülleroğlu et al., 2014). Studies in the literature also show that there is a significant relationship between students' gender and their reading skills (Shera, 2014). Female students are 1.71 times likely to be successful in PISA examinations than male students (Bindak, 2018). Significant evidence from the research reveals that girls, on average, outperform boys in reading achievement (Shera, 2014). Similar findings were obtained in this study, showing consistency with the literature. Furthermore, of Level-1 predictors, metacognition skills are active supporters of individuals' academic achievement (Grant & Dweck, 2003). In parallel to the past research findings, this study also showed that reading literacy increases with an increase in metacognition skills. Similarly, the study found that children's reading literacy levels increase as the emotional support from parents increases. This finding also supports the previous studies in the literature (Ertem, 2021). In addition to PISA results, there are also studies in the literature that show positive relationships between parent support and academic performance (Walker, Shenker, & Hoover-Dempsey, 2010).

There are studies in the literature suggesting that reading for pleasure, one of the Level-1 predictors, is closely related to reading comprehension (Unrau & Schlackman, 2006). Student higher-order reading competencies are believed to be influenced by the predictor of reading enjoyment. The literature review shows that reading activities that students enjoy can improve their high-order reading skills (Ertem, 2021; Kasapoğlu, 2009; Tavşancıl et al., 2019). An examination of the results of this study also indicated that enjoying reading has a positive effect the reading literacy. A positive attitude towards reading was another Level-1 predictor in this study. There are sources in the literature noting that positive attitudes toward reading could be an indicator of reading achievement (Wigfield & Guthrie, 1997). Research conducted in parallel with these studies has shown that having a positive attitude towards reading significantly contributes to high reading achievements (Quinn & Jadav, 1987).

Similarly, the results obtained within the scope of this study also showed that the reading literacy of individuals having a positive attitude toward reading increases.

Mastery goal orientation aims to achieve a standard of competence defined by self-development or skill development. Individuals with a mastery goal orientation either seek task-related personal development or try to gain mastery of the task. It reflects an individual's goal to learn as much as possible (Grant & Dweck, 2003). A large number of studies show that mastery goal orientation has a positive relationship with academic achievement (Grant & Dweck, 2003; Linnenbrink-Garcia et al., 2008). However, there are also studies in which no significant relationship was observed between mastery goals and academic achievement (Pekrun et al., 2009; Theis, Sauerwein, & Fischer, 2020). In contrast to research findings in the literature, this study determined that the reading literacy levels of individuals decrease as their mastery goal orientations increase.

The study concluded that extracurricular activities, of level-1 predictors, had a positive impact on reading literacy. This result is parallel with the results of many studies (e.g., Akar & Nayir, 2015, Hinck & Brandell, 1999). Existing studies support the fact that these activities provide opportunities to develop students' interests, skills, and achievements and that the relevant activities play a key role in students' lifelong achievements (e.g., Akar & Nayir, 2015). Although the principles of extracurricular activities carried out in schools in our country are clearly determined by the relevant regulations and the significance of these activities is supported by many studies as well as the current study, it is believed that many of these activities are either overlooked or not implemented in practice. For this reason, it is believed that extracurricular activities implemented in schools should be enriched and organized in line with the interests and needs of students. In addition, one could suggest working on the planning and execution of such activities and making collaborative arrangements that encourage school administrators, teachers, and students to carry out the activities.

As was expected, student behaviors hindering learning negatively affect students' reading literacy. This finding shows consistency with many studies (Arıcı, 2019; Berberoğlu, et al., 2019). In the study that Berberoğlu et al. (2019) conducted with PISA 2015 science literacy, the predictor that yielded the highest negative relationship was negative student behaviors at school. In the PISA 2015 report, it is mentioned that "teacher resistance to change" under this index is the teacher behavior that hinders student learning the most in OECD countries (PISA, 2015). In Turkey, however, it has been determined that teacher behavior that affects students' learning the most is not responding to individual differences and needs. This study found that teacher behaviors hindering learning have a positive impact on reading literacy. This unexpected finding of the study contradicts many studies (Hattie, 2009). These studies report that there is a positive relationship between student behaviors and teachers' supportive behaviors and that teachers' supportive behaviors increase the achievement of students. To discuss the true nature of this finding in more detail, it is imperative to consider and examine the behaviors under this index separately.

As expected, the presence of a negative relationship between one of the Level-1 predictors, i.e., the shortage of educational materials, and students' achievement is also supported by other studies in the literature (Berberoğlu et al., 2019; Üstün, Özdemir, Cansız, & Cansız, 2020). Considering this relationship, it is necessary to increase the improvements in educational materials and the compensatory measures for the deficiencies. As such, giving priority to the between-school differences during the improvements that will be done is considered important.

Finally, the mediating effect of the Level-2 predictors in the relationship between the Level-1 predictors and reading literacy was examined. As mentioned above, there was a negative relationship between the mother's education level and reading literacy. However, according to the HLM findings, providing creative extracurricular activities in the school setting reduced the negative relationship between the mother's education level and student reading literacy. Similarly, it strengthens the positive relationships between students' metacognition and reading enjoyment levels and their

reading literacy. The Education at a Glance report note that there are support courses for extracurricular activities and literacy workshops are provided, especially in Turkey (OECD, 2014). Although it is believed that the course syllabuses are prepared according to the interests and needs specified in line with the curriculum, there might be points that have not fully achieved the objectives. At this point, providing these activities, whose positive contributions have been shown in several studies (e.g., Hinck & Brandell, 1999), is also influential in filling up the gap caused by the negative impact of the education level of mothers. Hinck and Brandell (1999) emphasized that extracurricular activities positively affect the metacognition levels, motivation toward learning, and thus achievement. Hence, the positive contribution of creative extracurricular activities to the relationship between metacognition and reading enjoyment levels and reading literacy is an expected state. As indicated in the OECD (2014) report, this may have occurred as a result of support courses and literacy workshops.

Student behaviors hindering learning included in the PISA 2018 dataset and used as a school-level predictor negatively affect the positive relationship between metacognition and reading literacy. PISA (2016) has described these negative behaviors as students being absent from school, not attending lessons, disrespecting their teachers, using alcohol and illegal drugs, and bullying through mocking and similar behaviors. Some of the negative behaviors noted in this statement (e.g., absenteeism, not attending the lesson) may prevent students with high metacognition levels from reflecting this skill in their reading literacy. Turkey is above the OECD average in student behaviors hindering learning. Also, this proportion increases in disadvantaged schools. From this perspective, it is of primary importance to control student behaviors that prevent learning for a positive relationship between students' metacognition levels and reading literacy. On the other hand, the study found that student behaviors hindering learning the negative effect of mastery goal orientation. This finding emerged as an expected result as well as the negative effect of mastery goal orientations on reading literacy. Therefore, discussing this finding in detail and addressing the behaviors under this index separately is considered important.

Lastly, considering the research findings, it seems necessary to carry out various revisions, taking into account the predictors discussed in this study, to improve the literacy level in Turkey. In this context, improving teacher training and language education programs at different levels of education (reading literacy goals, course contents, teaching-learning processes, and assessment and evaluation) is considered to be beneficial. In addition, it is possible to say that school environments need to be regulated in terms of the school-level predictors that have a positive impact on students' reading literacy levels. Likewise, considering the significance of the affective support provided to students, training on raising awareness of parents on this issue would make a significant contribution to reading literacy.

AUTHOR CONTRIBUTIONS

During the research process, the examination and analysis of the PISA data and the organization of the research were conducted in the meetings held jointly by all the authors. The introduction part of the study was written by N. Bilge Uzun and Hüseyin Selvi. The method and findings parts of the study were written by Savaş Pamuk and Mehtap Aktaş. The discussion, conclusion, and implications part were shared and co-written by all authors. The general coordination, mentorship, review, and final reading of the research was done by Devrim Alici.

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CONTENTS

Research Articles

		Page
1.	Evaluation of Practice Schools and Teachers within the scope of Teaching Practice Lesson through Web Diaries by Pre-service Teachers <i>Emine Akkaş Baysal, Gürbüz Ocak</i>	1-21
2.	You Are Welcome Here: What Campus Resources Are Needed to Recruit, Retain, and Graduate International Students at Large Universities? <i>Kasım Kiroğlu, Michael Kung</i>	22-33
3.	Pre-school Teacher Candidates' Use of Mathematical Concepts in Daily Life <i>Mustafa Albayrak, Nurullah Yazıcı</i>	34-49
4.	Do Teachers Experience Social Anxiety When Using Social Media? <i>Mustafa Demir, Seda Aktı Aslan, Okay Demir</i>	50-68
5.	Culturagram of the Development and Education Processes of Children in Seasonal Agricultural Worker Families <i>Emine Saraç, Mustafa Kale, Nurgül Özpoyraz</i>	69-80
6.	Development and Testing of an EPSS for Secondary School Teachers to Develop Contents and Material <i>Cemre Arıkaya, Recep Çakır</i>	81-104
7.	An Adaptation Study of the Components of Emotion Understanding Test-24 (CEUT-24) to Turkish Context: An Investigation of the Internal Structure of the CEUT-24 at Item Level <i>Mehtap Sezgin, Johnny Fontaine</i>	105-117
8.	Uncovering Turkish Science High School Students' Learning Strategy, Inquiry-Oriented Self-efficacy, Task Value, Achievement Goals: A Structural Equation Modelling Analysis <i>Burak Feyzioğlu, Barış Demirdağ</i>	118-133
9.	Safety Problems at Schools According to School Administrators' Opinions <i>Halil Karadaş, Başak Coşkun, Sevdâ Kattas</i>	134-150
10.	Response to Intervention: What do Elementary School Teachers of Students with Specific Learning Disabilities in Inclusive Classrooms in Türkiye Know? <i>Macid Ayhan Melekoglu, Asuman Sağlam Ak, Sultan Kaya, Murat Ballıoğlu</i>	151-170
11.	Analysis of Dialogic Reading's Effects on Primary School 4th Graders' Views on Values Education and Attitudes towards Reading <i>Ergün Yurtbakan, Onur Batmaz</i>	171-184
12.	Examining the Relationship between Mother-Child Attachment Styles and Creativity <i>Ayşe Alptekin, Ayşegül Sarıkaya, Mustafa Güler</i>	185-195
13.	Opinions and Experiences of Social Studies Pre-service Teachers on Web 2.0 Tools <i>Ceren Utkuğün</i>	196-216
14.	Factors Affecting Vocational College Instructors' Usage of LMS in the Post-Pandemic Normal <i>Umur Birkan Özkan, Harun Çiğdem, Gökhan Yazar</i>	217-236
15.	Psycho-Educational Effect of Motivational Interviewing on School Burnout <i>Yunus Hastunç, Fuat Tanhan</i>	237-248
16.	Predictive Roles of Language Learning Strategies, Academic Self-concept, Gender and Grade Level in English Language Learning Achievement <i>Cemal Bıyıklı</i>	249-272
17.	Effects of Using Virtual Tour Applications in Social Studies on Academic Achievement, Motivation, and Attitude <i>İskender Daşdemir, Nusret Koca</i>	273-288
18.	The Effect of the Flipped Classroom Model on Students' Achievement, Problem-Solving Skills and Attitudes towards Physics Lesson <i>Özlem Koray, Veli Çakar, Abdullah Koray</i>	289-305

Review Articles

19.	General Trends in Research on the Fact of Migration in Turkish and Social Studies Education <i>Ebru Demircioğlu, İlke Altuntaş Gürsoy</i>	306-320
20.	An Evaluation of the Studies on Self-Regulated Learning in Primary Education: A Bibliometric Mapping Analysis <i>Yavuz Sökmen, Yasemin Taş, İsmail Sarıkaya</i>	321-337
21.	An Investigation of Variables Predicting the Reading Literacy in Pisa 2018 <i>Savas Pamuk, Devrim Alıcı, Mehtap Aktas, Hüseyin Selvi, N. Bilge Uzun</i>	338-349