



## Development and Validation of the Professional Development Needs Scale: Evidence from Turkish School Principals

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### Abstract

This study aims to develop a Professional Development Needs of School Principals Scale (PDNSP) to measure in-service training needs of school principals in Türkiye. The Turkish Ministry of National Education launched a new plan called Education Vision 2023 in November 2018. The Plan has emphasized the importance of supporting both administrative and leadership skills of school principals. The PDNSP was developed based on this policy reform and the current study presents validity and reliability evidence of the scale. The PDNSP was developed based on this policy reform, and the current study presents validity and reliability evidence of the scale. The exploratory, confirmatory factor analysis, and reliability analysis were conducted to evaluate the psychometric properties of the scale. The results suggest that the PDNSP is a reliable and valid tool to assess the professional development needs of school principals. Furthermore, the findings show that the Turkish school principals require professional development in specific areas such as financial management, leadership capacity, and vision and values.

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## INTRODUCTION

In contemporary education discourse, educators, curriculum developers, principals, and teachers are grappling with a common question: How can we effectively prepare students to thrive in the rapidly changing world of the 2040s or 2050s? The Australian Curriculum has boldly declared its commitment to "Preparing for a world yet to be imagined!" (EduGrowth, 2021), highlighting the unpredictability of future career paths and the need to equip students with adaptable skills rather than solely focusing on specific subject matter. Consequently, this ongoing debate has brought about a more complex approach to teaching and learning, as compared to traditional methods. As a result, the discussion has shifted towards the crucial role of educational and administrative elements in addressing the needs of learners in the contemporary age.

The quality of school organization and student learning are greatly impacted by effective leadership (Leithwood et al., 2006). The research showed that the persistence and motivation of effective teachers are highly related to the school leaders' effectiveness (Leithwood et al., 2004). Bredeson and Johansson (2000) proved that principals significantly influence teachers' professional development. Similarly, educational administration scholars mentioned that the school's and teachers' performance are also positively associated with the leadership skills, instruction, content, curriculum, and pedagogical knowledge of school principals (Radinger, 2014; Spillane, 2006; Wahlstrom & Louis, 2008). The way of reaching the ambitions of any educational reform or reform initiatives, the key roles depend on not only the characteristics of teachers but also the characteristics of school principals (Dempster, 2001; Pont et al., 2008; Sanders, 2014). Lambert (2005) defined continuously high-performing schools as "broad-based, skillful participation in the work of leadership" (p. 63). Fullan (2000) asserts that every improving school has principals who have the skills to lead the improvement. These principals' strategy of being frequently in classrooms and providing detailed feedback on the instructional practices returns to improving instruction and teacher self-efficacy (Freedman, 2003; Tschannen-Moran & Hoy, 2001). In other words, leadership has a key role in affecting the teacher's behavior directly, which, in turn, affects student success (Louis, et al., 2010; Teague & Anfara, 2012). For long before, many scholars have seen effective leadership as a "path" or find a "mediated" role to reach student achievement through leadership capacity (e.g., Bossert et al., 1982; Hallinger & Heck, 2002; Leithwood et al., 2010; Youngs & King, 2002). This means the school principals' leadership behavior is the second most crucial element influencing the students' academic life and outcomes (Bush, 2018).

Societies dealing with new challenges like immigration, labor market economy, disasters, new technologies, and change and development of knowledge expect different goals to be achieved by the schools (Dempster, 2001; Pont et al., 2008). The schools feel the pressure under these circumstances, and thus, the school principals. They must adapt to new pressure on the changing world and make a difference to succeed in the challenge created by the new demands. Widely cited research such as Marzano et al. (2005), Leithwood et al. (2008), and Day et al. (2009) proposed a long list of leadership behaviors of the school principals making a difference. In the last two decades, principals seem to be change agents (Provost et al., 2010), and their traditional managing role has shifted to different leadership roles, such as transformational leadership (Bass & Avolio, 1995; Leithwood & Jantzi, 2005), instructional leadership (Bolden, 2011; Kempster et al., 2014), social justice leadership (Brooks et al., 2007), and distributed leadership (Heck & Hallinger, 2009). All these roles bring some demanding responsibilities and accountability roles for principals, which lead to increasing kinds and numbers of professional development desires. In this context, the present study is focused on the professional development needs of school principals.

## TURKISH CONTEXT AND THE NEW EDUCATION PLAN

The Turkish education system has almost 1,2 million teachers, 19 million students, and 65 thousand schools (MoNE, 2022). The school principals have to have a higher education degree and

formerly teachers at public schools (to have at least two years of teaching experience) (Millî Eğitim Bakanlığına Bağlı Eğitim Kurumlarına Yönetici Seçme ve Görevlendirme Yönetmeliği, 2021). The candidates of principals should enter the written and oral exams. The candidates with the highest scores are assigned the needed schools accordingly.

The challenges of Turkish school principals' have been vastly discussed in the literature. Recently, as a new global problem, Syrian refugees coming with trauma and depression, bringing different cultural frameworks, and having language barriers create difficulty in managing the schools (Aydın & Kaya, 2019; Tamer, 2017). This problem creates a more demanding test for novice principals. They face not only refugee challenges in schools but also the problems of negative parental attitudes towards school, syndicalism, communication barriers with teachers, and undesired student behaviors (Bayar, 2016). Adopting new technologies is another struggle of the principals. A comprehensive study in Istanbul showed that almost half of the principals were described as low-profile technology leadership with a weak interest in information and communication technologies (Banoglu, et al., 2016). Turkish principals were also found insufficient to show instructional leadership behaviors, including change management, enhancing teacher professional development, creating a positive learning environment, and collaborating with teachers (Kalman & Arslan, 2016). They were also found to devote less time and effort to educational and instructional work (Gumuseli, 2009). Moreover, principals struggle with country-specific system challenges like large-scale, top-down educational changes and cultural difficulties. Kondakci et al. (2019) concluded that principals are reluctant in leadership functions such as finding resources, making preparations, and guiding teachers to implement changes. In addition, the lack of training and support and the limited autonomy given to schools are considered as main problems of the Turkish educational administration system (Arar et al., 2018). From a more cultural perspective, school principals in Türkiye are prone to decide alone, which prevents them from creating a communicative and collaborative organizational culture. Therefore, research indicated that the organizational climate of Turkish schools makes school principals feel lonely and need support in the school's leadership (Korumaz, 2016). In addition to these difficulties, gender is another challenging factor for female principals in some parts of the country (Celikten, 2005). The literature of Turkish principals reported that some of the challenges increase professional development needs. However, the number of comprehensive studies that worked specifically on the principals' professional development needs is limited.

Despite the notable effort put forth to develop a national standard for teacher education and general competencies by the Ministry of National Education (MoNE) in 2017, there has yet to be any significant work on establishing national standards for school principals and educational leadership in Türkiye. To address this gap, the MoNE has launched the Education Vision 2023 plan, which calls for changes and improvements to the school system across 17 chapters. The first five chapters of the plan focus on education management, including data-based management systems, measurement and evaluation, human resource development and management, financing of schools, and supervision and institutional guidance. The following five chapters address the most pressing challenges facing the education system, such as psychological counseling, special education, foreign language education, digital content, and transformation of the learning process. The remaining chapters are dedicated to goals from early childhood to secondary education. Throughout the plan, particular attention is given to the importance of school principals and teachers, and the quality of their work. This research serves as a foundation for planning and decision-making concerning the responsibilities and needs of school principals under the Education Vision 2023. The study aims to develop a scale that can be used to comprehend the professional development needs of school principals.

## RESEARCH CONTEXT

A noteworthy number of studies in the literature focus on the professional development needs of school principals. Their needs show a range of knowledge levels to a practical level as well as developing attitudes and belief systems on different concepts. DiPaola and Walther-Thomas (2003)

stated that principals in Florida need to have a comprehension of the laws regarding students with disabilities educational rights. Hong Kong principals reported their professional needs as empowering middle-tier leaders, motivating low-performing staff, practicing financial management techniques, improving the skills of dealing with illegal issues in school management, and developing instructional leadership skills (Ng & Szeto, 2016). Nigerian principals felt the professional development needs of communication, instructional supervisory, ICT development, and disciplinary skills (Peretomode & Dinzei, 2019). Ukrainian principals similarly desired to develop ICT skills (Mukan et al., 2017). Deutch principals reported a need for support in stimulating the teachers' motivation to learn and develop strategies to make a ground for the teacher professional development process (Gaikhorst et al., 2019). Virginia principals also reported their professional development needs in relation to instructional leadership; specifically, they desire to develop skills to make their teachers be trained in research-based instructional methods and increase the educational attainments of students with disabilities and living in poverty (Keith, 2008). Like the Virginia principals, the principals of rural schools in the USA needed professional development programs that could help them guide school reform and reach higher standards of student achievement (Salazar, 2007). Darling-Hammond et al. (2009) highlighted that effective leadership training programs that consider the professional needs of American principals were not widely available and yielded school improvement efforts suffer "in part due to a lack of support for developing such leadership" (p. vii).

School principals, as official administrative leaders, are expected to fulfill a variety of roles and responsibilities (DiPaola & Hoy, 2007). Apart from their day-to-day tasks, they are required to promote a school environment that supports continuous improvement. Management quality compasses a range of skills, competencies, and motivation. Accordingly, principals need to act efficiently and implement practices such as managing physical and human resources, collaborating with teachers, and creating healthy learning environments to enhance and deepen their professional skills (Elmore, 2000; Gaikhorst et al., 2019). Although some studies have explored the roles of school principals in school effectiveness, less is known about how to support them in developing new opportunities for school functioning and improving students' academic success (Davis et al., 2005). Recently, there has been a growing interest in enhancing professionalism, skills, and competencies of school principals (e.g., Admiraal et al., 2016; Gaikhorst et al., 2019; Hallinger et al., 2013; OECD, 2013; Radinger, 2014).

The studies presented in the international literature above are based on a strong theoretical foundation. Therefore, they provide a guiding framework to establish advanced standards for countries. However, at the national level, the needs of schools vary in terms of their interaction with each nation's own cultural structures and educational systems. Therefore, studies conducted in Türkiye regarding the professional development needs of school principals have also been carefully examined (e.g., Aktepe, 2014; Gumuseli, 2002; Gurkan & Toprakci, 2018). In these studies, which were designed in qualitative research design, it was determined that school principals needed in-service training in subjects such as educational technologies and curriculum development. However, the limitation of these studies is that they only captured the perspectives of school principals, neglecting international standards. Furthermore, the qualitative nature of these studies indicates a gap in terms of quantitative designs for identifying the professional development needs of school principals. Thus, this study aimed to develop a scale in international professional standards to measure the professional development needs of school principals in Türkiye.

## **METHOD**

### **RESEARCH DESIGN**

The survey research was designed in this study. The following steps were followed in the process of developing the Professional Development Needs of School Principals Scale (PDNSP): (I) Producing

the pilot survey, (II) Conducting the pilot survey, (III) The analysis of pilot results and revision, (IV) Conducting the revised survey and (V) The analysis of the results.

### **PARTICIPANTS**

The study was conducted on a population comprising all principals working in public primary and secondary schools. The pilot study sample was purposefully selected from this population and consisted of principals who voluntarily attended an in-service training program designed for them at the beginning of the 2018-2019 academic year. This sample can be considered an example of purposive sampling, which is a non-random sampling procedure where researchers use their judgment to select a sample that aligns with their research objectives. The justification for this sampling method is that researchers who are familiar with the population can select participants that are most suitable for their research goals (Campbell et al., 2020).

The survey was administered using a paper-and-pencil method to the principals who applied to the in-service training program, and the sample can be considered motivated and interested in professional development. Prior to administering the survey, informed consent forms were presented to the participants, outlining the purpose, benefits, and risks of the study, and they were informed that their identities would remain anonymous. However, after a preliminary analysis, participants who selected the same answer for the entire scale were eliminated from the data pool, and scales with more than 5% of items left blank were also excluded from the analysis.

Therefore, to reach the target group with the highest self-awareness about their professional development, the pilot data were gathered from this group of 652 school principals intentionally. 648 surveys were returned with usable data for a response rate of 99.4%. The mean age of participants was 42 (range 25-62 years), with 36.7% holding a graduate degree and 11.4% having more than 20 years of experience in school administration. About one-third of them work at the primary school level (33.6%,  $n=218$ ).

The data for the main study were gathered from 655 school principals at the end of the 2018-2019 academic year. Ultimately, 645 surveys were returned with a response rate of 98.5%. The mean of the participants' age was 47 (range 25-65 years), with 30.5% holding a graduate degree and 21.2% having more than 20 years of experience in school administration. About one-third of them work at the primary school level (33.2%,  $n=214$ ).

### **DEVELOPMENT OF THE SCALE**

The data was collected with the PDNSP that was developed by using Hinkin's (1995) guidelines for item generation and scale development: (1) Item generation, (2) Scale development, and (3) Scale evaluation. In the first phase, basic themes were identified, and an initial item pool was constructed, drawing from previous research and other related documents (MoNE in-service training course catalogs, several international standards for school principals, and teacher education programs). In particular, The Australian Professional Standard for Principals [APSP] (2014) references are considered in terms of school principals' general professional standards. The standards describe three leadership requirements common to all leaders: (1) Vision and values, (2) Knowledge and understanding, (3) Personal qualities, and social and interpersonal skills. Furthermore, Pont et al. (2008) suggestion of the core responsibilities of school leadership, namely: (1) Developing and evaluating teacher quality (2) Goal-setting, assessment, and accountability (3) Strategic resource management (4) Leadership beyond the school borders were also taken into account. The items like "developing a vision definition for the school" and "supporting collaboration among school stakeholders" were generated from the APSP perspective.

In addition to APSP, Professional Standards for Educational Leaders (PSEL) (2015) proposed by the National Policy Board for Educational Administration was also reflected in the item pool. PSEL proposes 10 standards for school leaders: (1) Mission, vision, and values, (2) Ethics and professional

norms, (3) Equity and cultural responsiveness, (4) Curriculum, instruction, and assessment, (5) Community of care and support for students, (6) Professional capacity of school staff, (7) Professional community for teachers and staff, (8) Meaningful participation of families and community, (9) Operations and management, (10) Improvement of the school. The items in the scale, such as "supporting teachers' professional development" and "being accessible to parents" were generated from the PSEL perspective.

Hallinger et al. (2013) reviewed a critical approach with the Principal Instructional Management Rating Scale (PIMRS). The scale is grounded in a conceptual framework proposing three dimensions in the instructional leadership role: (1) Defining the school mission, (2) Managing the instructional program, and (3) Developing a positive school learning climate. Some items (e.g., developing a mission statement for the school and creating an equitable and just school climate) were generated from this scale. Moreover, the policy framework in the French Community of Belgium defines three critical areas of competence for educational leaders: (1) Pedagogical leadership, (2) Interpersonal skills, and (3) Resource management. In France, school leaders are assessed on their performance in four competency areas: (1) General leadership (e.g., vision, core values, and ideals), (2) Pedagogical leadership (e.g., leadership for teaching and learning), (3) Community relationships (e.g., working with families, communities, and external partners) and (4) Resource management (e.g., administration of buildings, facilities, financial, human resources, and time resources of staff) (OECD, 2013). These dimensions were examined critically and reflected in the item pool generation process under three factors. For instance, the items like "developing a program planning, implementation, and evaluation system in line with the needs and interests of students" and "establishing an effective accounting system" were generated from these approaches.

In the second phase, the researchers integrated each conceptual dimension to make them more broadly applicable to school principals' professional development needs. In order to ensure the face and content validity of the instrument, the researchers requested expert opinions from six academics from the departments of Curriculum and Instruction, Educational Leadership and Administration, and Educational Evaluation and Measurement. Acting in line with expert opinions, the researchers reduced the scale from 57 items to 51 items. The scale was designed as a 5-point scale ranging from "Very little" to "Strong need." The scale was revised after the pilot study. The final version consisted of 39 items with three factors. These factors were labeled as *Leadership Capacity*, *Financial Management*, and *Vision and Values*.

In the third phase, exploratory and confirmatory analyses were conducted by using the data collected from the principal and vice principals as explained below. Additionally, we correlated factors to examine discriminant validity.

#### **DATA ANALYSIS**

The factor analysis was performed with data from the pilot and main PDNSP studies. In the pilot study, EFA was performed, and Cronbach Alpha values were calculated with the data gathered from 648 school principals. However, in the main study, which conducted factor analysis, the data gathered from 645 school principals was split into two random subsamples ( $n_1=323$ ,  $n_2=322$ ). The split-sample method is a cross-validation procedure for the raw data for exploration and confirmation in two random subsamples (Jöreskog & Sörbom, 2006; Thompson, 2004). EFA was conducted on  $n_1$  subsample and CFA was conducted on  $n_2$  subsample to ensure cross-validation. Descriptive statistics, EFA, and reliability analysis were conducted using SPSS 18, and the CFA was performed using LISREL 8.80 for Windows.

Before the analysis, the researchers tested the assumptions of the EFA. The correlations were above .30, Bartlett's Test of Sphericity was significant ( $p<.05$ ), and KMO (Kaiser-Mayer-Olkin) value was greater than .60 (KMO=.98) (Field, 2005; Tabachnick & Fidell, 2007). Univariate normality was tested by skewness and kurtosis values, the significance of the Kolmogorov-Smirnov test, and histograms with

normal curves. Kline (2011) considered values greater than 3 and 10, respectively, as cut-off points for determining univariate normality, especially for the skewness and kurtosis index. Since univariate normality is not a prerequisite for multivariate normality, Mardia's (1985) multivariate kurtosis coefficient was also examined in this study: for the normality assumption to be acceptable, the critical ratio for the coefficient must not exceed 1.96. Boxplots were also examined to determine univariate outliers, and it was found that there were no serious outliers in the data. Considering all the following criteria  $N/p > 5$ ,  $N/p > 6$ ,  $N/p > 10$ , or  $N > 250$ , the sample size of this study was acceptable (Cattell, 1978; Comrey & Lee, 1992; Everitt, 2001; Gorsuch, 1983). Tabachnick and Fidell (2007) state that in cases where scale factors are related ( $r \geq .32$ ), the oblique axis rotation approach can be preferred in rotation operations. In this study, the direct oblimin rotation technique was used because of the high level of relationships between sub-dimensions. The criterion for determining the factor number was a minimum Eigenvalue of 1.00. According to the advice of Field (2005, p. 692), the factor loadings less than .30 were suppressed.

The factor structure obtained with EFA was tested with confirmatory factor analysis (CFA). The criteria for assessing the conformity of the scale, the  $\chi^2$  value was calculated (Finney & DiStefano, 2013). The other goodness of fit indices were used by considering the following criteria; RMSEA is less than or equal to .06, SRMR is less than or equal to .08 (Hu & Bentler, 1999), GFI is greater than .90 (Marsh & Hau, 1996), CFI is greater than .95 (Browne & Cudeck, 1993), and IFI is greater than .90 (Byrne, 1998). Cronbach's alpha internal reliability coefficient and item-total correlations were used to determine the reliability of the whole scale and its sub-dimensions.

## RESULTS

### PILOT STUDY

To determine the factor structure of the scale, an EFA was performed. Before the analysis, the researchers tested the assumptions of the EFA: There was no correlation coefficient less than .30. The Bartlett test resulted in a significant value ( $p < .05$ ), and the KMO value exceeded the criterion value of .60. The skewness and kurtosis values, which are indicative of a normal distribution, were between -3 and +3. Since the Kolmogorov-Smirnov Test was found as significant ( $p < .05$ ), the histograms of the univariate normality were checked, and it was noticed that the univariate normality was not violated according to the histogram with normal curves. Cases that had Mahalanobis Distance values greater than the critical value were checked to detect multivariate outliers. The results were deemed appropriate to proceed with the factor analysis.

EFA showed that the scale factors were grouped into three dimensions. However, items 6, 15, 16, 18, 19, 20, 22, 23, 25, 26, 27, 28, 29, 30, 31, 32, 34, 35, 43, 44, and 46 of which factor loading values were less than .10, were removed from the scale (e.g., Being informed about the legislation rules/Feeling responsible for students' academic success/Stimulating teachers and students in line with the school goals/Following and implementing new approaches to learning and teaching/Supporting creative and innovative employees/Having critical thinking skills/Developing a program planning, implementation, and evaluation system in line with the needs and interests of students/Including stakeholders in the decision-making process/Solving the problems encountered in the teaching-learning process/Promoting the effective use of technology in teaching and learning/Improving the physical conditions of the school/Delegating authority to teachers and staff in meeting students' needs/Developing a corporate belonging/Supporting collaboration among school stakeholders/Creating a learning culture and climate at school/Creating an atmosphere of trust in the school/Planning the staff workload/Evaluating the development of teachers and staff based on data and research/Cooperation with parents and community/Effective communication with central administration/Social media management). Another EFA was applied to the remaining 30 items, and the analysis results revealed a three-factor structure that explained 79.62% of the variance: *Vision and*

*Values, Leadership Capacity, and Financial Management.* Following the pilot study, a scale with 30 items was developed. Cronbach's alpha values of the sub-dimensions were .95, .99, and .94, respectively. It was .99 for the total scale. The item-total correlations varied between .62 and .90. The main study started considering the pilot study's EFA findings and reliability values.

**EFA RESULTS OF THE MAIN STUDY**

Before the analysis, EFA assumptions were tested using the split-sample method ( $n_1=323$ ) in the main study. In checking the EFA assumptions, similar results were obtained with the pilot study, and the three-factor structure of the scale was tested. According to the EFA results regarding the main application, the scale had three factors and the three-factor structure explained 85.31% of the variance. The factor loadings, mean, and standard deviation values of the scale were given in Table 1.

**Table 1.** Factor Loads, Means and Standard Deviation Values for PDNSP

<i>Items</i>	<i>Leadership Capacity</i>	<i>Financial Management</i>	<i>Vision and Values</i>	<i>Mean</i>	<i>SD</i>
13. Having an equal and fair understanding of employees	.86			3.52	1.64
14. Being objective in his/her appraisals	.84			3.49	1.60
10. Creating an equitable and just school climate	.84			3.60	1.57
11. Having a value system regarding democracy and human rights	.83			3.56	1.54
45. Cooperating with teachers	.81			3.61	1.53
41. Communicating with teachers effectively	.80			3.65	1.47
8. Making decisions in accordance with the norms and ethical rules of the profession	.80			3.60	1.50
42. Being accessible to parents	.79			3.54	1.51
37. Getting to know the school neighborhood	.77			3.53	1.49
5. Adopting professional ethical values and acting in accordance with them	.76			3.61	1.50
40. Communicating with students effectively	.75			3.62	1.45
7. Being aware of his/her power and responsibilities	.75			3.69	1.48
9. Encouraging employees to work within the framework of ethical rules	.74			3.65	1.41
38. Introducing the school to its neighborhood	.73			3.57	1.41
21. Evaluating problems from a systematic and holistic perspective	.70			3.67	1.32
33. Supporting teachers' professional development	.69			3.79	1.36
39. Being a good speaker and listener	.67			3.72	1.32
12. Producing appropriate policies without prejudice against marginalized students	.67			3.64	1.28
36. Providing feedback to teachers and staff as a result of evaluations	.65			3.66	1.29
17. Being a source of inspiration in all matters of school	.61			3.66	1.27
24. Using assessment and evaluation data appropriately in decision-making processes	.60			3.66	1.27
50. Establishing an effective accounting system		.87		3.67	1.27
51. Budgeting		.78		3.71	1.30
49. Cooperating with the public and private sector		.76		3.70	1.28
48. Making an effort to create resources for the school within legal limits		.70		3.77	1.31
47. Knowing the legislation related to the management of financial resources		.68		3.71	1.33
1. Developing a vision definition for the school			.86	3.56	1.20
2. Developing a mission statement for the school			.86	3.59	1.22
4. Determining strategies to improve the values, norms, and myths of the school			.76	3.67	1.17
3. Developing the basic values of the school			.74	3.66	1.24
Mean	3.62	3.71	3.62		
Standard deviation (SD)	1.32	1.19	1.15		
Explained variance (%)	44.66	21.23	19.42		



**CFA RESULTS OF THE MAIN STUDY**

Factor structures based on EFA results were tested on the second sample ( $n_2=322$ ) with a robust maximum likelihood estimation by CFA, and the results proved that the three-factor structure showed good fit indices (Table 2). The  $\chi^2$  statistic value is the classical goodness of fit and tests whether the original variable matrix differs from the assumed matrix. Because the  $\chi^2$  statistic is sensitive to sample size (Jöreskog & Sörbom, 2006). There is no consensus regarding an acceptable ratio for this test, but recommendations range from as high as 5.0 (Wheaton et al., 1977) to as low as 2.0 (Tabachnick & Fidell, 2007).  $\chi^2/SD$ , RMSEA, CFI, and IFI values were in acceptable ranges. The standardized loadings of the three-factor structure of the PDNSP were .95 for *Leadership Capacity*, .93 for *Financial Management*, and .81 for *Vision and Values* (Figure 1).

**Table 2.** Comparison of the Goodness of Fit Index Values of PDNSP

PDNSP: Model Description	$\chi^2$	SD	( $\chi^2/SD$ )	RMSEA	SRMR	GFI	CFI	IFI
Three-factor model	1660.50	402	4.13*	.10	.07	.59	.99	.99

\* $p<.001$

Note. SD: Standard deviation, RMSEA: Root mean square error of approximation, SRMR: Standardized root mean square residual, GFI: Goodness of fit index, CFI: Comparative fit index, IFI: Incremental fit index.

The relationship between sub-dimensions and school principals' professional development needs was examined (see Table 3). The five-point scale was interpreted so that a response of 5.00-4.21: "strong need," 4.20-3.41: "regular need," 3.40-2.61: "occasional need," 2.60-1.81: "rare need," and 1.80-1.00: "very little" in accordance with Tekin's (1996) classification. It was found that school principals' professional development needs were "occasional need" ( $M=3.54, SD=1.24$ ). In detail, the highest need was in the *Financial Management* sub-dimension ( $M=3.62, SD=1.22$ ), and it was followed by *Leadership Capacity* ( $M=3.60, SD=1.22$ ) and *Vision and Values* sub-dimensions ( $M=3.54, SD= 1.10$ ). The items with the highest means were "Making an effort to create resources for the school within legal limits" in the *Financial Management* sub-dimension ( $M=3.77, SD=1.31$ ), "Supporting teachers' professional development" in the *Leadership Capacity* sub-dimension ( $M=3.79, SD=1.36$ ), and "Determining strategies to improve the values, norms, and myths of the school" in the *Vision and Values* sub-dimension ( $M=3.67, SD=1.17$ ), subsequently.

The Cronbach's alpha values (Cronbach, 1951) of the sub-dimensions ranged from .95 to .99, and it was measured .99 for the total scale. According to the Pearson correlation analysis, there was a positive and significant relationship between *Vision and Values*, and *Leadership Capacity* ( $r=.81, p<.01$ ), and *Financial Management* ( $r=.79, p<.01$ ). A similar correlation was observed between *Leadership Capacity* and *Financial Management* ( $r=.89, p<.01$ ). Item-total correlation values ranged between .84 and .95. The results yielded that all dimensions had a high degree of reliability.

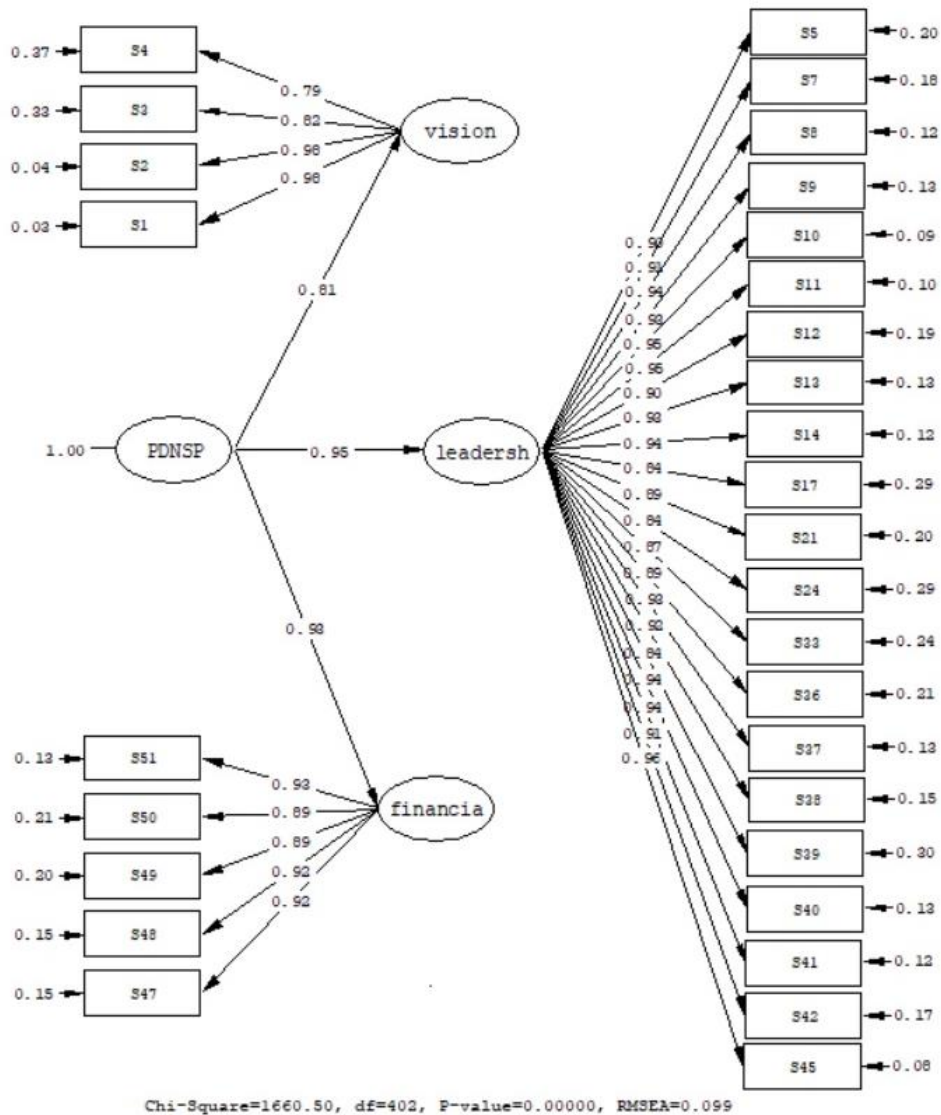
**Table 3.** PDNSP's Sub-Dimension Statistics

	CR	AVE	MSV	Mean	SD	CA	Vision and Values	Leadership Capacity	Financial Management
Vision and Values	.881	.659	.656	3.54	1.10	.95	<b>.82</b>		
Leadership Capacity	.950	.871	.792	3.60	1.22	.99	.81**	<b>.93</b>	
Financial Management	.872	.813	.792	3.62	1.22	.96	.79**	.89**	<b>.90</b>
Overall				3.54	1.24	.99			

\*\* Correlation is significant at the .01 level.

Note. CR: Composite reliability, AVE: Average variance extracted, MSV: Maximum shared variance, SD: Standard deviation, CA: Cronbach's alpha.

**Figure 1.** The Standardized Loadings of the Three-Factor Structure of the PDNSP



## DISCUSSION AND CONCLUSION

This study aimed to develop and validate a self-report scale on the professional development needs of school principals in Türkiye. In the scale development process, the guidelines of item generation, scale development, and evaluation proposed by Hinkin (1995) were followed. Firstly, the item pool was created considering national documents, as well as policy documents from countries such as the United States and Australia, which were examined, and based on this, an international professional development scale for school principals was designed. Going beyond the instruments developed by Aktepe (2014), Gumuseli (2002), and Gurkan and Toprakci (2018), this instrument takes a broader perspective by focusing not only on the qualitative research design studies but instead looking for aspects of a more quantitative design in order to also include the international professional development needs and competencies for school principals.

The item pool had 51 items in the pilot study. These items are the common professional development needs obtained from the documents defining the competence areas of school principals, such as OECD (2013), APSP (2014), and PSEL (2015). The EFA was used to reveal the factors and test content validity. This technique estimates the factors and structures that cannot be measured directly (Beavers et al., 2013). The results showed that twenty-one items provided an unexpected loading and

cross-loading model, after which these items were removed from the scale. The 30 items and three-factor structure were obtained.

The main study showed that the scale was a three-factor structure according to the EFA results obtained using the split-sample method. CFA was applied to the split-half samples and it was determined that the three-factor structure had good fit index values and reliable results. In conclusion, the *PDNSP* was finalized as a 30-item instrument, with sub-dimensions for vision and values (4 items), leadership capacity (21 items), and financial management (5 items).

The study results revealed that school principals in Türkiye need professional development in specific areas such as *financial management*, *leadership capacity*, and *vision and values*. Those needs comply with international standards and competencies in educational leadership (e.g., APSP, 2014; OECD, 2013; PSEL, 2015). *Financial management* is inevitable for schools; nevertheless, there are concerns regarding school leaders' ability to fulfill this responsibility effectively (OECD, 2017). In this sub-dimension, school principals' highest professional development need is "Making an effort to create resources for the school within legal limits." The literature reported that school leaders' capacity to create school resources might be limited due to a lack of training and interest (Ng & Szeto, 2016). The research findings with American and Chinese school principals revealed low self-efficacy problems in creating financial resources and needed professional development (Shoho & Barnett, 2010; Wong, 2004). Effective school leaders are accountable, ethical, and responsible stewards of the school's financial resources. They undertake effective financial planning and management practices to ensure the appropriate utilization of resources (PSEL, 2015). In doing so, they are expected to remain within legal limits and abide by the principle of transparency (Talikan, 2021). Financial management skill, which involves creating alternative financial resources, is challenging to acquire and needs to be supported by professional development opportunities (Lusardi, 2019). Financial resources need to be allocated effectively to maintain the school's day-to-day operations and assess the impact on student outcomes and value for money (PSEL, 2015).

School leaders need effective professional development practices to adopt *leadership capacity* which supports school improvement (Salazar, 2007). In this sub-dimension, school principals' emphasized that their highest professional development need is "Supporting teachers' professional development." This finding is consistent with Gaikhorst et al. (2019) and Meister (2010). Effective school principals can lead improvement and do so by providing teachers with professional development opportunities, encouraging them, visiting classrooms frequently, and providing detailed feedback on teaching practices, helping to increase teaching and teacher self-efficacy (Lambert, 2005; Leithwood et al., 2006; Radinger, 2014). In this respect, when the school principal gains the ability to support teachers in their professional development, they will be able to create a capacity by leading the desired changes, as well as exhibiting instructional leadership behaviors at school, and create a high standard capacity for the learning organization (Hooper & Bernhardt, 2016).

Finally, *vision and values* was found as another factor in the study. In this sub-dimension, school principals' highest professional development need is "Determining strategies to improve the values, norms, and myths of the school." School principals need to identify and implement strategies to collaborate with school and community members, use relevant data, and what practices to represent that promote the successful learning and development of each child to identify values, norms, and myths (PSEL, 2015). These strategies and adoption ensure that the school vision is clarified and adopted, which plays a critical role in school performance (Hallinger & Heck, 2002; Pont et al., 2008). Thus, school leaders' efforts to create vision and values increase their colleagues' motivation (Leithwood et al., 2006). Successful school leaders adopt personal, moral, and educational values and express them faithfully (Gold et al., 2003). It is about creating favorable conditions by applying many different things. The restructuring of the school in different ways rather than standard procedures may lead to anxiety. Thus, school principals may need professional development in creating vision and values (Dempster, 2001).

## EDUCATIONAL AND PEDAGOGICAL IMPLICATIONS

School effectiveness is a complex and multifaceted concept, encompassing various factors that influence school outcomes, such as student achievement (Heck & Hallinger, 2010; Leithwood & Jantzi, 1999). Although the role and importance of school principals in enhancing school outcomes are widely recognized, their impact on students is also mediated through teachers and school climate (e.g., Hallinger, 2003; Murphy et al., 2016). School principals can indirectly affect student performance by intervening in teachers' pedagogical strategies (Heck & Hallinger, 2014) or by fostering a positive learning environment through improving school culture (May & Supovitz, 2011).

The findings of this study have important implications for the professional development of school principals in Türkiye, especially in the areas of financial management, leadership skills, and vision and values. Developing financial management skills among school principals can lead to more efficient utilization of school resources, resulting in a better physical learning environment. Addressing the leadership capacity skill needs can support teachers' professional development and encourage positive teaching environments through instructional leadership behaviors (Hallinger, 2003). By fulfilling the vision and values-related skill needs of school principals, stronger school culture and effectiveness can be created, promoting a conducive learning environment and enhancing student outcomes (Turkmenoglu & Bulbul, 2015).

## LIMITATIONS AND FUTURE RECOMMENDATIONS

The exploratory, confirmatory factor analysis and the reliability analysis indicated that the PDNSP could be a useful instrument in researching principals' professional development needs. It is still thought that the instrument may contribute to the studies designed to develop professional development programs or in-service training content for school principals. Thus, further validation of the PDNSP is necessary for different contexts. As Leithwood et al. (2004) proposed that administrative skills vary according to the school types, and cultural and economic features, it should be considered that school principals' needs and preferences may differ in different school types and class levels. Besides, the data were collected only from school principals working at public schools. The items should be reviewed considering the private school conditions while investigating school principals' professional development needs at private schools. Such kind of scales can not be used as a single measure of the needs. As Guskey (1997) argued, the needs data should be triangulated by quantitative and qualitative analysis of multiple cases to develop a promising program that would yield valuable insights with practical significance.

## AUTHOR CONTRIBUTIONS

Both authors have made substantial contributions to the conceptual framework, acquisition of data, discussion, conclusion, and implications. Specifically, the first author has made contributions to the conception, design, analysis, and interpretation of data. The second author has been involved in drafting the manuscript and revising it critically for important intellectual content.

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