Validity and Reliability of the Pedagogical Leadership Scale: Mixed Methods Research

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Abstract. This research, which aims to determine the validity and reliability of the pedagogical leadership scale, is a mixed method research that includes quantitative and qualitative research approaches as a method. This research used a multi-phase mixed design based on examination through a cycle of quantitative and qualitative research aligned sequentially with each new approach that builds on what has already been learned. It can be said that this research, in which the paradigm of the research, quantitative and qualitative approaches are used, is gathered under the umbrella of pragmatism, which brings together the philosophy of both realism and idealism, which is a final world view oriented to practice whatever works. The universe of the research was determined as the education administrators working in public schools in Karatay, Meram and Selçuklu districts located in the city center of Konya. By calculating the sample size, n=234 education administrators were reached. For the analysis of the data, exploratory and confirmatory factor analyzes and reliability analyzes were performed. As a result of the findings, it was concluded that the pedagogical leadership scale is a valid and reliable measurement tool in general.

Keywords: pedagogical leadership, validity, reliability

Introduction

In the 21st century, pedagogical leadership has been accepted as an effective alternative style, which is most practiced in countries such as Australia, Finland, Hungary, New Zealand, Sweden, etc. As ETUCE (2012) identified, 21st century school leaders interact closely with teachers by means of democratic leadership, which includes all relevant actors in and around the school. Initially, pedagogical leadership was first proposed by Sergiovanni (1998) in his seminal work on "*Leadership as pedagogy, capital development and school effectiveness"*. Pedagogical leadership has recently attracted more and more attention among scholars and researchers. However, less research has been done on pedagogical leadership than on instructional leadership. Sergiovanni (1998) emphasized that pedagogical leadership invests in capacity building by developing social and academic capital for students and intellectual and professional capital for teachers. Based on him, capital refers the value of something that when properly invested produces more of that thing which then increases overall value. It's consistent

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with Marriam-Webber Online Dictionary (2016) which defines that being relating to or being assets that add to the long-term net worth of a corporation. For Sergiovanni, community building is a powerful way for school leaders to develop capital. The value of capital is generated as schools become communities that play main roles in determining a school's success than its physical and financial assets. He raises five reasons which persuade that community is so important in schools.

Besides the core tasks, pedagogical leaders' obligation is to generate four other types of capitals in purpose of promoting effectiveness in their school. They build social and academic capital for students and intellectual and professional capital for teachers. OECD (2007) defines social capital as common norms as networks and shared values that facilitate cooperation between groups. Bourdieu (1986) defines social capital as the sum of actual or potential resources attached to property. To develop social capital, the school is necessary to be transformed itself to become caring community that consists of norms, obligations, expectation and trust which are generated through changing in the relations among persons that facilitate action (among people in a community, neighbourhoods or society) through social structure (Coleman, 1988). As such relationships develop, social capital can serve as a resource that supports young people's cognitive and social development through social responsibility. Based on Nahapiet and Ghoshal (1998), the central proposition of social capital theory is that networks of relationships constitute a valuable resource for the conduct of social affairs, providing their members with "the collectivity-owned capital, a 'credential' which entitles them to credit, in the various senses of the word" (Bourdieu, 1986). the significance of social capital in the form of social status or reputation can be derived from membership in specific networks, particularly those in which such membership is relatively restricted (Bourdieu, 1986; Burt, 1992; D'Aveni & Kesner, 1993).

Different authors define different definition of academic capital, based on the theoretical framework of academic capital formation (ACF) introduced by St. John, Fisher and Hu (2011), academic capital formation is the fusion of cultural capital, social capital, and human capital. For pedagogical leadership, Sergiovanni (1998) places emphasis on focused community that schools develop academic capital by cultivating a deep culture of teaching and learning. The rituals, norms, commitments and traditions of this culture are the components of the academic capital that motivates and supports student learning and development. Leaders in focused communities are committed to the principle that "form should follow function". They strive to embody this principle when decisions are made about organization, staff, time, money, space and other resources, curriculum focus, content, implementation and assessment, teacher development, supervision and evaluation and other matters that impact the quality of teaching and learning. In a focused community, there is a strong and clear commitment to academic achievement as evidenced by rigorous academic work, teachers' personal concern for student success, and the expectation that students will work hard, come to class prepared and complete assignments.

Another component of pedagogical leadership is intellectual capital. Sergiovanni (1998) define intellectual capital as the total result of what everyone among the colleagues in the school knows and shares with each other that can help the school to be more effective in advocating students learning and development. Edvinsson and Malone (1997) define intellectual capital as the possession of knowledge, applied experience, organizational technology, customer relationships and professional skills that provide the firm with a competitive edge in the market. These definitions give a systematic view on intellectual capital, as a dynamically structured macro-asset of the organization, which has an internal, an external and an interface component (Prejmerean & Vasilache, 2008). How is school able to create intellectual capital? According to Basile (2011), there are three components of intellectual capital: external capital, internal capital and human capital. External capital includes the school district, the greater school community, parents, local businesses, and external organizations that have a role in the school, such as a local university. Internal capital includes governance structures; curriculum development; management processes; hiring, recruiting, and retaining teachers and administrator's procedures; and renewal or reform processes. Professional capital, which constitutes the fourth dimension of pedagogical leadership which is also an important component. Hargreaves and Fullan

(2012) suggest that professional capital takes the basic and powerful idea of capital and articulates its importance for professional work, professional capacity and professional effectiveness-particularly in teaching profession. Wenger, McDermott and Snyder (2002) mention that it is not necessary for people to work together every day, but they meet because they find the value in their interactions.

In conclusion, these four dimensions are the core components of pedagogical leadership. Technically, social and academic capital were built by pedagogical leader for the sake of student learning improvement whereas intellectual and professional capital were fostered to promote teacher's professional development. Fruitfully, building successful social capital creates a caring community which flourishes student learning and development. However, when social capital is not available, students generate it for themselves by turning more and more to the student subculture for support. Reversely, the development of those norms and codes of conduct work against what schools are trying to do. Academic capital was built to nurture focused community centring the cultivation of teaching and learning culture. Teaching and learning in focused communities are characterized by assignments and teaching strategies that encourage students to create knowledge for themselves; to practice what they learn in frameworks, theories and disciplinary structures; and to link this learning to real world problems. On the other hand, intellectual capital was developed in purpose of establishing the inquiring communities that encourage teachers to share power, knowledge, experiences and problems with each other as learning communities. Similar to intellectual capital for their implementation, professional capital is also needed in educational institutions to develop the community of practice. In line with this need, Sorm (2019) conducted a research on the pedagogical leadership practices of the school administrator in nurturing of teaching and learning quality. In this research conducted with a mixed exploratory sequential design, the categories of pedagogical leadership were revealed. When the relevant literature is scanned, it is seen that this research on pedagogical leadership is the first and a measurement tool for pedagogical leadership does not exist yet. Thus, the purpose of this research is to develop the pedagogical leadership measurement tool with multiphase mixed methods design in the second phase (QUAN) based on what was revealed in the first stage with the sequential exploratory mixed methods design (QUAL → quan).

Method

This section consists of the model and paradigm of the research, the universe and its sample, standardization of the scale items and expert opinion, data interpretation and analysis.

Model and paradigm of research

This research, which aims to determine the validity and reliability of the pedagogical leadership scale, was carried out as a mixed method research that includes quantitative and qualitative research approaches. Mixed methods research is based on approaches that offer alternatives to the researcher in achieving the goals of "depth and detail", where quantitative research is weak, and "generalization and estimation", where qualitative research is weak (Clark & Ivankova, 2018; Teddlie & Tashakkori, 2015; Axinn & Pearce, 2006; Mertens, 2010; Hay, 2016; Hesse-Pepper & Johnson, 2015). In this research a multi-phase mixed design or multistage evaluation design was used based on examination through a cycle of quantitative and qualitative research aligned sequentially with each new approach that builds on what has already been learned. The multi-phase mixed design or multistage evaluation design involves combining both sequential and convergent quantitative and qualitative phases in a certain time period (Creswell, 2009; Plano Clark & Ivankova, 2016). This research was also carried out with the general survey model, which is one of the quantitative research methods. General survey models are studies in which the characteristics and attitudes of the subjects included in the study are determined in order to reach a general conclusion about a population that contains many elements (Perecman & Curran, 2006; Stockemer, 2019; DeMarrais & Lapan, 2004; Griffiths, 1998). The paradigm of this research, which was carried out in a mixed method, is also the functional paradigm, which thinks that the social

world is relatively unchanging, concrete structures outside the consciousness of the individual, and the hermeneutic paradigm, which tries to empathize with what people feel and tries to reveal what people want in depth within the subjectivity of human life. In fact, it can be said that this research, in which quantitative and qualitative approaches are used, is gathered under the umbrella of pragmatism, which brings together the philosophy of both realism and idealism, which is a final world view "whatever works" (Gunbayi, 2018; Gunbayi, 2020; Gunbayi & Sorm, 2020). The theoretical model of the research is shown in Figure 1.

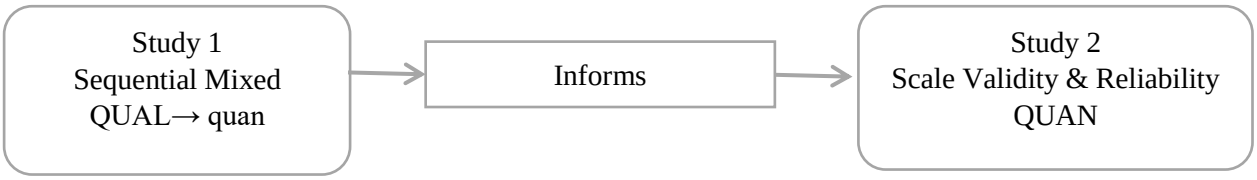

Figure 1. *Multi Phase Mixed Methods Design*

Source: Adapted from Creswell, 2015

Population and Sampling

The population of the research was determined as the education administrators working in public schools in Karatay, Meram and Selçuklu districts located in the city center of Konya. According to the 2020-2021 data obtained from the Strategy Development Unit of Konya Provincial Directorate of National Education, the number of education administrators working in Karatay district was α=464, the number of education administrators working in Meram district α=482 and the number of education administrators working in Selçuklu district as α=599. The total number of education administrators in these three districts was α=1545. The sample was determined at a 95% confidence level based on the minimum sample size (Vanderstoep & Johnston, 2009; Oddbjorn, 2019). Accordingly, it was determined that a minimum of n=308 subjects should be reached by calculating the current study population with the sample size formula. The sample size was stratified by the stratified sampling technique, which is one of the probabilistic techniques (Cassell & Symon, 2004). In Karatay district, n=93, in Meram district, n=96, and in Selçuklu district, n=119 education administrators were taken into the sample randomly. The determined education administrators were tried to be reached with simple random sampling techniques, in which equal chances were given to select each sample from the probabilistic techniques (Cohen, Manion & Morrison, 2018; Wagner, 2015). As a result of the survey studies, n=234 valid questionnaires were obtained from the education administrators.

Developing survey items and getting expert reviews: Phase I

In this study, which was carried out with a multi-phase mixed methods design categories and items developed for the pedagogical leadership practices of the school administrator were used in nurturing the teaching and learning quality by Sorm (2019). As a result of qualitative analyzes in the research, pedagogical leadership categories were formed Social capital, Academic capital, Intellectual capital and Professional capital building. Since the research was carried out in Cambodia, standardization of the scale was done in Turkey. The scale items were arranged “1-Strongly Disagree, 2-Disagree, 3-Undecided, 4-Agree 5-Strongly Agree” in a five-point Likert scale.

Analyzing data: Phase II

Exploratory and confirmatory factor analyzes were conducted for the data collected in the study. Exploratory Factor Analysis; is the analysis in which the researcher has no idea about the relationship between the variables (Tabachnick & Fidel, 2013; Field, 2018). Confirmatory Factor Analysis is an attempt to test the accuracy of a relationship previously determined by the researcher (Kline, 2016;

Thompson, 2004). Reliability is required for each dataset measurements. Reliability refers to the consistency of the questions in a test or scale and to what extent the scale used reflects the relevant problem (Hair et al., 2010).

Findings

In this section, exploratory and confirmatory factor analysis findings and reliability analysis findings and comments regarding the pedagogical leadership scale are included.

Pedagogical Leadership Scale Exploratory Factor Analysis and Reliability Analysis

The results of the exploratory factor analysis (EFA) and reliability analysis of the pedagogical leadership scale are shown in Table 1.

Table 1.

EFA and Reliability Analysis Results of the Pedagogical Leadership Scale

Item Number	Social Capital	Academic Capital	Intellectual Capital	Professional Capital
Item Number 1	,791			
Item Number 2	,824			
Item Number 3	,785			
Item Number 4	,777			
Item Number 5	,684			
Item Number 6	,492			
Item Number 7	,689			
Item Number 8		,480		
Item Number 9		,884		
Item Number 10		,570		
Item Number 11		,778		
Item Number 12		,541		
Item Number 13			,934	
Item Number 14			,812	
Item Number 15			,929	
Item Number 16			,874	
Item Number 17				,719
Item Number 18				,640
Item Number 19				,732
Eigen Values	5,996	3,389	2,177	1,466
Variance Explained %	31,560	17,837	11,455	7,716
Total Variance Eplained %		68,568		
Cronbach Alfa of Factors (α)	,901	,821	,941	,786
Cronbach Alfa of Scale(α)		,869		

In order to determine the structural validity of the developed scale, EFA was applied using principal component analysis and varimax axis rotation technique. As a result of EFA, it was determined that the Kaiser-Meyer-Olkin (KMO) sample adequacy value was .843 and the sample size was sufficient for factor analysis. The Bartlett globality test was significant sphericity [X^2 (171)=2776.010, p<.0001 suggesting correlations were substantially enough to justify factor analysis. (Mindrila, 2017; Denis, 2019 In EFA, factors were formed with eigenvalues greater than 1. As a result of the EFA analysis, a six-factor result was obtained. The variances explained by the factors were taken into account and the four-factor structure yielded to be more suitable. Finally, after performing a series of factor analyses for the scale refinement, the 19-item scale was formed in four-factors, explaining 68,568% of the total variance of factors and factor loads of items. The EFA results regarding the items and their factor loads

on this 19-item scale are shown in Table 1. Values with factor loadings below .45 are not shown in the table.

The results of the first and second level multi-factor model confirmatory factor analysis related to the pedagogical leadership scale are shown in Figure 2 and Figure 3, and the goodness of fit values are shown in Table 2 and Table 3.

Table 2.

First Level Multi-Factor (Latent Variable) Goodness of fitness Results of the Pedagogical Leadership Scale

Model goodness of fit	**Good fit**	**Acceptable fit**	**Model Result**
X^2 Goodness of fit test	0,05 < p ≤ 1	0,01 < p ≤ 0,05	,000
CMIN / SD	X^2 /sd ≤ 3	X^2 /sd ≤ 5	1,635
Comperative fit index			
CFI	,97 ≤ CFI	,95 ≤ CFI	,966
RMSEA	RMSEA ≤ 0,05	RMSEA ≤ 0,08	,052
Absolute fit index			
GFI	0,90 ≤ GFI	0,85 ≤ GFI	,905
Root-mean-square residual			
RMR	0 < RMR ≤ 0,05	0 < RMR ≤ 0,08	,065

Kaynak: Finch, Immekus & French, 2016; Kline, 2016; Keth, 2019; Loehlin & Beaujean, 2017

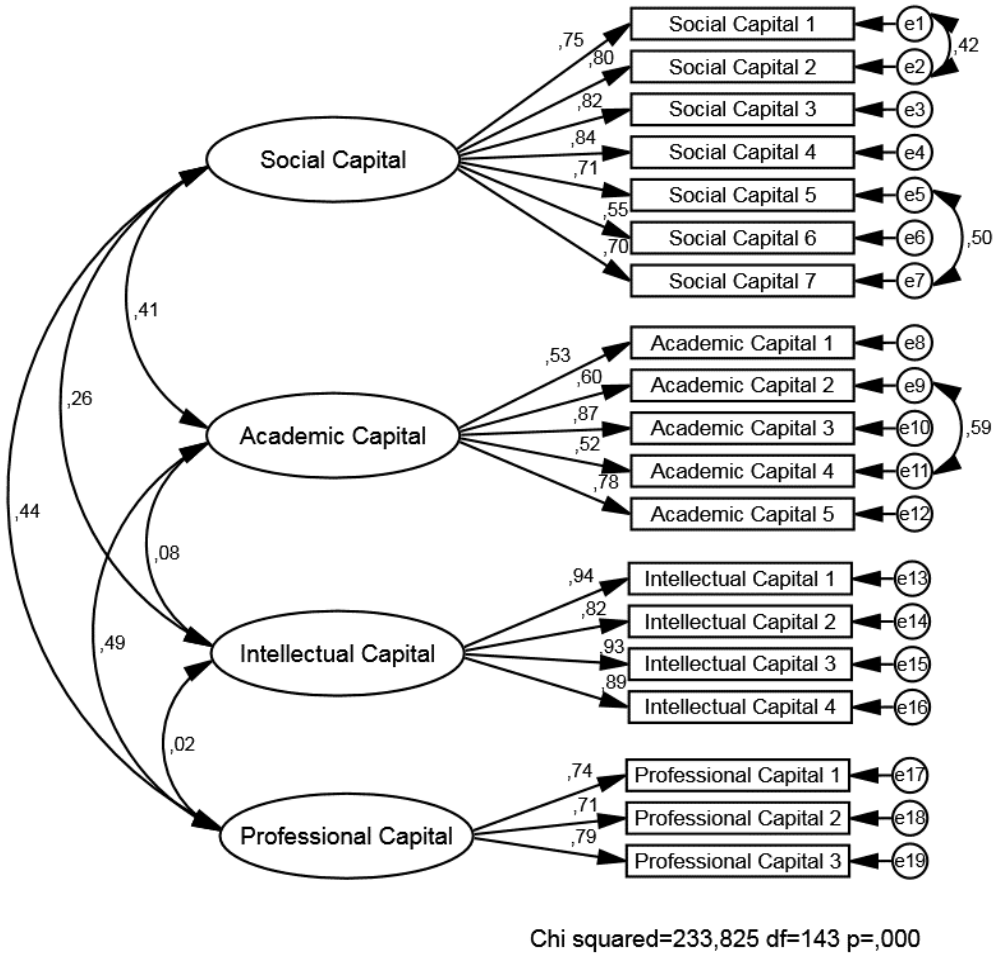

Figure 2. *Pedagogical Leadership Scale First Level Multi-factor (Latent Variable) Model*

As a result of the analysis, when Figure 2 and model fit values were examined in order to decide whether the first level multi-factor structure tested was confirmed with the data, Goodness-of-fit values as CMIN/df (1.635), CFI (.966) GFI (.905) SRMR (.065) RMSEA (.052) indicated that the model was acceptable (Byrne, 2016; Collier, 2020; Finch, Immekus & French, 2016; Kline, 2016; Keth, 2019; Loehlin & Beaujean, 2017). In the first level multi-factor model in which the observed variables in Figure 2 were gathered under more than one latent variable, factor load values were between .55 and .84 in Social Capital latent variable and .52 and .87 in Academic Capital latent variable and .82 and .94 in Intellectual Capital latent variable, .71 and .79 in Professional Capital latent variable. These values showed that the scale had high factor loading values under four latent variables (Kline, 2016). When the pedagogical leadership, four-factor measurement model was examined, the second-level confirmatory factor model is shown in Figure 3 and the goodness-of-fit values are shown in Table 3 in order to find the answer to how the pedagogical leadership scale is.

Table 3.

Second Level Multi-Factor (Latent Variable) Goodness of fitness Results of the Pedagogical Leadership

Model goodness of fit	**Good fit**	**Acceptable fit**	**Model Result**
X^2 Goodness of fit test	$0,05 < p \leq 1$	$0,01 < p \leq 0,05$	,000
CMIN / SD	$X^2/sd \leq 3$	$X^2/sd \leq 5$	1,686
Comperative fit index			
CFI	$,97 \leq$ CFI	$,95 \leq$ CFI	,963
RMSEA	RMSEA $\leq 0,05$	RMSEA $\leq 0,08$	,054
Absolute fit index			
GFI	$0,90 \leq$ GFI	$0,85 \leq$ GFI	,902
Root-mean-square residual			
RMR	$0 <$ RMR $\leq 0,05$	$0 <$ RMR $\leq 0,08$	,010

Kaynak: Finch, Immekus & French, 2016; Kline, 2016; Keth, 2019; Loehlin & Beaujean, 2017

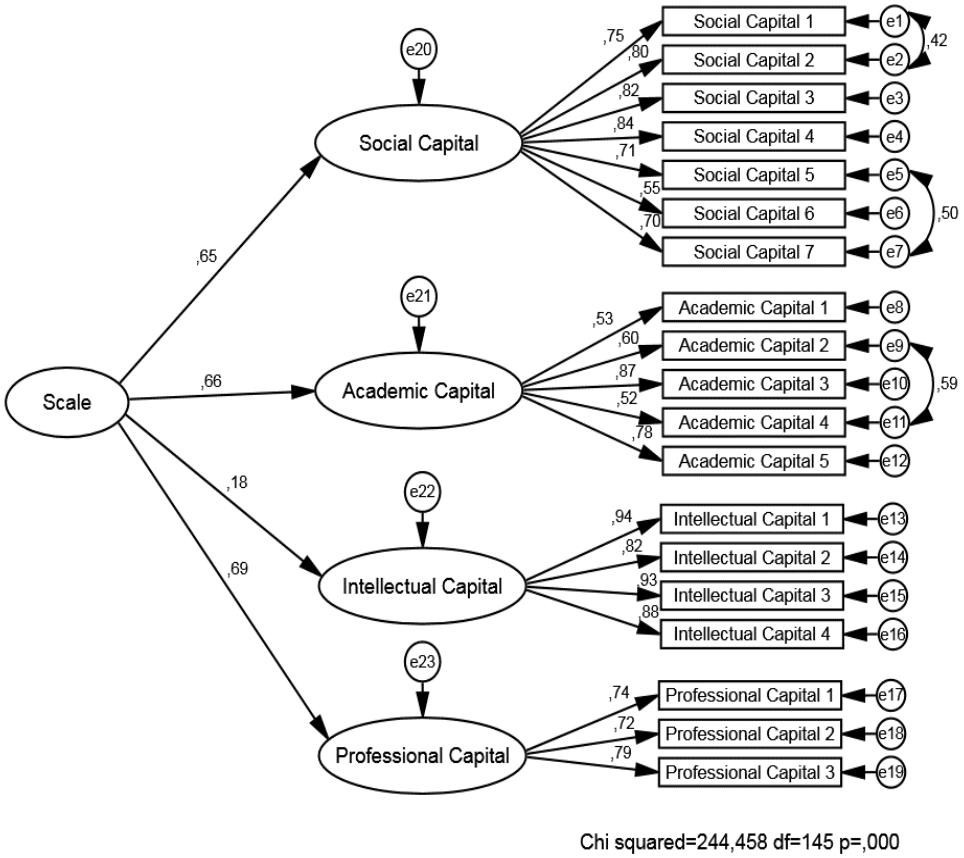

Figure 3. *Pedagogical Leadership Scale Second Level Multi-factor (Latent Variable) Model*

As a result of the analysis, when Figure 3 and model fit values were examined in order to decide whether the model of the second level multifactorial structure tested was confirmed with the data, goodness-of-fit values as CMIN/df (1.686), CFI (.963) GFI (.902) SRMR (.010) RMSEA (.054) indicated that the model was acceptable (Byrne, 2016; Collier, 2020; Finch, Immekus & French, 2016; Kline, 2016; Keth, 2019; Loehlin & Beaujean, 2017). In the second level multi-factor model in which the observed variables in Figure 3 were gathered under more than one latent variable and where the scale was tried to be found, factor load values were between .55 and .84 in Social Capital latent variable and .52 and .87 in Academic Capital latent variable, between .82 ile .94 in the in Intellectual Capital latent variable and 72 and .79 in Professional Capital latent variable. These values showed that the scale had high factor loading values (Kline, 2016). When the results of the first and second level confirmatory factor analyzes were considered together; It was seen that the latent variables that made up the variables observed at the first level had high factor load values around the four latent variables, likewise, the latent variables that made up the variables observed at the second level form the pedagogical leadership scale around the four latent variables. When both Table 1 CFA and reliability analysis results and Figure 2 and Figure 3 were evaluated together, it was seen that the construct validity and reliability of the pedagogical leadership scale was ensured and this structure was also confirmed.

Path Analysis Findings and Comments on Pedagogical

The results of the path analysis with latent variables related to pedagogical leadership and its sub-dimensions are given in Table 4.

As a result of the analysis, in order to decide whether the tested path analysis model was confirmed with the data, goodness of fit values as CMIN/df (1.686), CFI (.963) GFI (.902) SRMR (.010) RMSEA (.054). values indicated that they were acceptable (Byrne, 2016; Collier, 2020; Finch, Immekus, & French,

2016; Kline, 2016; Keth, 2019; Loehlin & Beaujean, 2017). Path coefficients analysis results are shown in Table 4.

Table 4.

Model Path Coefficients Analysis Results

Yol	Beta	Standardized β	Standard Error	t
Pedagogical leadership → Social Capital	,620	,653	,089	6,934*
Pedagogical leadership → Academic Capital	,310	,664	,054	5,778*
Pedagogical leadership → Intellectual Capital	,253	,177	,118	2,140*
Pedagogical leadership → Professional Capital	,383	,692	,056	6,846*

Not: (i) *p<0,05 level of significance, the relationship is significant

According to these findings, pedagogical leadership affected social capital [β=.653, p<0.05], academic capital [β=.664, p<0.05], intellectual capital [β= .177, p<0.05] and professional capital [β=.692, p<0.05] significantly

Conclusion and Discussion

In this study, to develop a scale to measure pedagogical leadership, first of all, the relevant literature on pedagogical leadership and its sub-dimensions were reviewed. In the study of Sorm (2019), in exploratory sequential mixed methods design, the qualitative and quantitative phases were completed. With this research, as a multi-phase mixed methods study, it was planned to complete the QUANTITATIVE second phase of the scale development after the sequential exploratory mixed methods QUALITATIVE → quantitative of the first phase. Since the research was conducted in Cambodia, the scale categories and themes were standardized in Turkish. After the expert opinion, the implementation phase was started. The application was carried on 308 education administrators working in Karatay, Meram and Selçuklu districts of Konya. However, analysis was carried out on 234 valid questionnaires. As a result of the EFA analysis on pedagogical leadership, the sample adequacy value of Kaiser-Meyer-Olkin (KMO) was .843. In this way, it was determined that the size of the sample was sufficient for factor analysis (Hair et al., 2010). The significance of the Bartlett test of sphericity [X2 (171)=2776.010, p<.0001] indicated that the correlation relationships between the items were suitable for factor analysis (Mindrila, 2017). When the eigenvalues were greater than 1 in the EFA, the factors were formed. As a result of the EFA analysis, a four-factor result was obtained. Considering the scree plot and the variances explained by the factors, the four-factor structure was found to be applicable. In this context, it was decided to exclude thirteen items from the scale on the grounds that thirteen items created new factors different from the predicted ones, their contribution to the explained variance was low, the items had high factor loading values, but the loadings was not consistent with the literature, and five items had a tendency to cross-loading. The values obtained as a result of the CFA analysis showed that the overall pedagogical leadership scale and its sub-dimensions had high reliability (Denis, 2019; Diggle & Chetwynd, 2011; Field, 2018; Finch, Immekus & French, 2016; George & Mallery, 2019).

First-level latent multi-factor confirmatory factor analysis of four dimensions obtained after exploratory factor analysis (EFA) was conducted. When the first level CFA results given in Figure 2 were examined, goodness of fit values as CMIN/df (1.635), CFI (.966) GFI (.905) SRMR (.065) RMSEA (.052) indicated that the model was acceptable (Brown, 2006). The factor load values of the model at the first level were also high. Then, a second-level latent multi-factor confirmatory factor analysis was conducted to find out how the pedagogical leadership scale was. When the second level CFA results given in Figure 3 wereexamined, goodness of fit values as CMIN/df (1.686), CFI (.963) GFI (.902) SRMR (.010)

RMSEA (.054) RMSEA (.060) were considered acceptable. (Byrne, 2016; Collier, 2020; Kline, 2016; Thompson, 2004; Finch, Immekus & French, 2016). Accordingly, the factor loading values of the second level model were also high.

As a result of verification and reliability analysis of the developed pedagogical leadership scale with the EFA, CFA, the latent variables related to pedagogical leadership and its sub-dimensions were tested by path analysis. When the model fit values were examined in Figure 2 and Figure 3, the goodness-of-fit values indicated that they were acceptable. When the significance of the standardized path coefficients was examined, pedagogical leadership significantly affected social capital, academic capital, intellectual capital and professional capital. As a result of these findings, it can be concluded that the developed pedagogical leadership scale is a valid and reliable measurement tool in general.

References

Axinn, W.G. & Pearce, L.D. (2006). *Mixed Method Data Collection Strategies*. New York: Cambridge University Press.

Basile, A. (2011). Networking system and innovation outputs: the role of science and technology parks. *International Journal of Business and Management, 6*(5), 3-15

Bourdieu, P. (1986). The Forms of Capital. In J. Richardson (Ed.). *Handbook of Theory and Research for the Sociology of Education. Greenwood*.

Brown, T.A. (2006). *Confirmatory Factor Analysis for Applied Research*. New York: The Guilford Press.

Burt, R. S. (1992). *Structural Holes.* Harvard University Press.

Clark, V. L.P. & Ivankova, N. V. (2018). *Karma Yöntem Araştırması Alana Yönelik Bir Kılavuz. (Çev Ed. Ö. Ç. Bökeoğlu)* Ankara: Nobel Yayıncılık. London: Routledge.

Cohen, L., Manion, L. & Morrison, K. (2018). *Research Methods in Education. Approaches*. London: Sage.

Coleman, S.J. (1988). Social capital in the creation of human capital. *American Journal of Sociology, 94,* S95-S120.

Collier, J.E. (2020). *Applied Structural Equation Modeling Using AMOS Basic to Advanced Techniques*. London: Routledge.

Creswell, J.W. (2009). *Research Design Qualitative, Quantitative, and Mixed Methods*

Creswell, J.W. (2015). *A Concise Introduction to Mixed Methods Research*. London: Sage.

Daneni, R.A.& Kesner, I.F. (1993). Top Managerial Prestige, Power and Tender Offer Response: A Study of Elite Social Networks and Target Firm Cooperation during Takeovers. *Organization Science, 4*(2), 123-151.

DeMarrais, K.& Lapan, S.D. (Eds.) (2004). *Foundations for Research Methods of Inguiry in Education and the Social Sciencs*. London: Lawrence Erlbaum Associates.

Diggle, P.J. & Chetwynd, A.G. (2011). *Statistics and Scientific Method An Introduction for Students and Researchers. New York*: Oxford University Press.

Edvinsson, L. & Malone, S.M. (1997). *Intellectual Capital: Realizing Your Firm's True Value by Finding its Hidden Brainpower*. New York: Harper Collins Publishers.

ETUCE (European Trade Union Committee for Education) (2012). *School Leadership in Europe: issues, challenges and opportunities*. ETUCE School Leadership Survey Report.

Field, A. (2018). *Discovering Statistics Using IBM SPSS Statistics*. London: Sage.

Finch, W.H., Immekus, J.C.& French, B.F. (2016). *Applied Psychometrics Using SPSS and AMOS*. USA: Information Age Publishing.

George, D. & Mallery, P. (2019). *IBM SPSS Statistics 25 Step by Step A Simple Guide and Reference*. New York: Routledge.

Griffiths, M. (1998). *Educational Research for Social Justice: Getting off the Fence.* Philedelphia: Open University Press.

Gunbayi, I. & Sorm, S. (2020). *Social Paradigms In Guiding Management, Social Development and Social Research*. Ankara: Pegem Akademi

Gunbayi, I. (2018). Social Paradigms in Guidings Social Research Desing: The Functional, Interpretive, Radical Humanist and Radical Structural Paradigms. *International Journal on New Trends in Education and Their Implications, 9*(2), 57-76.

Gunbayi, I. (2020). Knowledge-Constitutive Interests and Social Paradigms in Guiding Mixed Methods Research (MMR*). Journal of Mixed Methods Studies, 1*(1), 44-56.

Hargreaves, A. & Fullan, M. (2012). *Professional Capital: Transforming Teaching in Every School*. Teachers College, Columbia University.

Hesse-Biber, S.& Johnson, R.B. (Eds.) (2015). *The Oxford Handbook of Multimethod and Mixed Methods Research Inquiry*. New York: Oxford University Press.

Keth, T.Z. (2019). *Multiple Regression and Beyond An Introduction to Multiple Regression and Structural Equation Modeling*. New York: Routledge.

Kline, R.B. (2016). Principles and Practice of Structural Equation Modeling.New York: The Guilford Press.

Loehlin, J.C. & Beaujean, A. A. (2017). *Latent Variable Models An Introduction to Factor, Path, and Structural Equation* Analysis. New York: Routledge.

M.C and Vasilache, S. (2008). Three Way Analysis of the Academic of a Romanian University. *Applied Quantitative Megtods, 3*(2), 121-138.

Mertens, D.M. (2010). *Research and Evalutaion in Education and Psychology Integrating Diversity with Quantitative, Qualitative and Mixed Methods*. London: Sage.

Nahapiet, J. & Ghoshal, S. (1998) Social Capital, Intellectual Capital, and the Organizational Advantage. *Academy of Management Review, 23*(2), 242–266.

Oddbjorn, B. (2019). *Designing Social Science Research*. Switzerland: Palgraev Macmillan.

Perecman, E.& Curran, S.R. (Eds.) (2006). *A Handbook for Social Science Field Research*. London: Sage.

Plano Clark, V. L., & Ivankova, N. V. (2016). Mixed methods research: A guide to the field. Thousand Oaks, CA: Sage.

Prejmerean, M.C and Vasilache, S. (2008). Three Way Analysis of the Academic of a Romanian University. *Applied Quantitative Megtods, 3*(2), 121- 138.

Sergiovanni, T. J. (1998). Leadership as Pedagogy, Capital Development and School Effectiveness. *International Journal of Leadership in Education: Theory and Practice, 1*(1), 37-46. Doi: 10.1080/1360312980010104.

Sorm, S. (2019). *Kamboçya ilkokullarında öğretimin ve öğrenme kalitesinin geliştirilmesinde okul yöneticisinin pedagojik liderlik uygulamaları* (Yayımlanmamış doktora tezi). Akdeniz Üniversitesi/Eğitim Bilimleri Anabilim Dalı/Eğitim Yönetimi ve Denetimi, Antalya.

St. John, E.P., Fisher, A. S. & Hu, S. (2011). *Breaking through the access barrier: How Academic Capital Formation Can Improve Policy in Higher Education*. Routledge: Tylor and Francis Group.

Stockemer, D. (2019). Quantitative *Methods for the Social Sciences A Practical Introduction with Examples in SPSS and Stata*. Switzerland: Springer.

Tabachnick, B. G. & Fidel, L.S. (2013). *Using Multivariate Statistics. Boston: Pearson.*

Teddlie, C.& Tashakkori, A. (2009). *Foundations of Mixed Methods Research Integrating Quantitative and Qualitative Approaches in the Social and Behavioral Siciences*. London: Sage.

Thompson, B. (2004). *Exploratory and Confirmatory Factor Analysis*. Washington: American Psychological Association.

Wenger, E., McDermott, R. & Snyder, W. M. (2002). *Cultivating Communities of Practice: A Guide to Managing Knowledge.* Harvard Business School Press.

Appendix

Appendix I. Pedagogical Leadership Scale

Dear Education Managers;

With this research, it is aimed to conduct the validity and reliability study of the pedagogical leadership scale with a mixed methods research. The data obtained through the survey will be used for scientific purposes, and all personal information will be kept confidential under the terms of the privacy policy. It is important that you answer all the questions in order for the study to achieve its purpose. The questions express "1-Strongly Disagree, 2-Disagree, 3- Neither agree or disagree 4-Agree 5-Strongly Agree".

Please put an "X" in the box with the most appropriate answer for you while answering the questions. Thank you for your interest and contribution.

PEDAGOGICAL LEADERSHIP	**1**	**2**	**3**	**4**	**5**
Social Capital					
To build trust in my school, I keep good relation with all my colleagues.					
To build trust between my school and community, I keep good relation with community.					
To build trust between my school, and community, I exchange information with community.					
To build trust in my school, we try to keep honest to each other.					
To build trust in my school, we help each other.					
To build good relation in my school, we promote equality in our school.					
To build good relation between school and community, we create opportunities to exchange experiences.					
Academic Capital					
Most of the lesson in my school attaches to student's real lives.					
Most of my students come to school with well preparing.					
To make my students hardworking, I motivate them, who earn highest scores, by giving rewards.					
To help weak students, I have made good relation with them.					
I advise teachers to create and play game with students for education.					
Intellectual Capital					
I always share my knowledge as well as my experiences with the teachers in technical meetings.					
Teachers always share their experiences and problems with each other every week.					
Teachers in my school always participate with me in most of school decision making.					
Teachers always express their opinion and suggestion for further developing student learning.					
Professional Capital					
Teaching strategies of the teachers in my school are highly evidence-based.					
Teachers in my school are fully autonomous in pedagogical decision making in their class.					
I encourage the teachers to exchange skills with other teachers from other schools.					