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**Scale development study  
on pedagogical leadership  
based on Sergiovanni's approach**

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# Introduction

Pedagogy was first used together with the concept of leadership by Sergiovanni (1998).

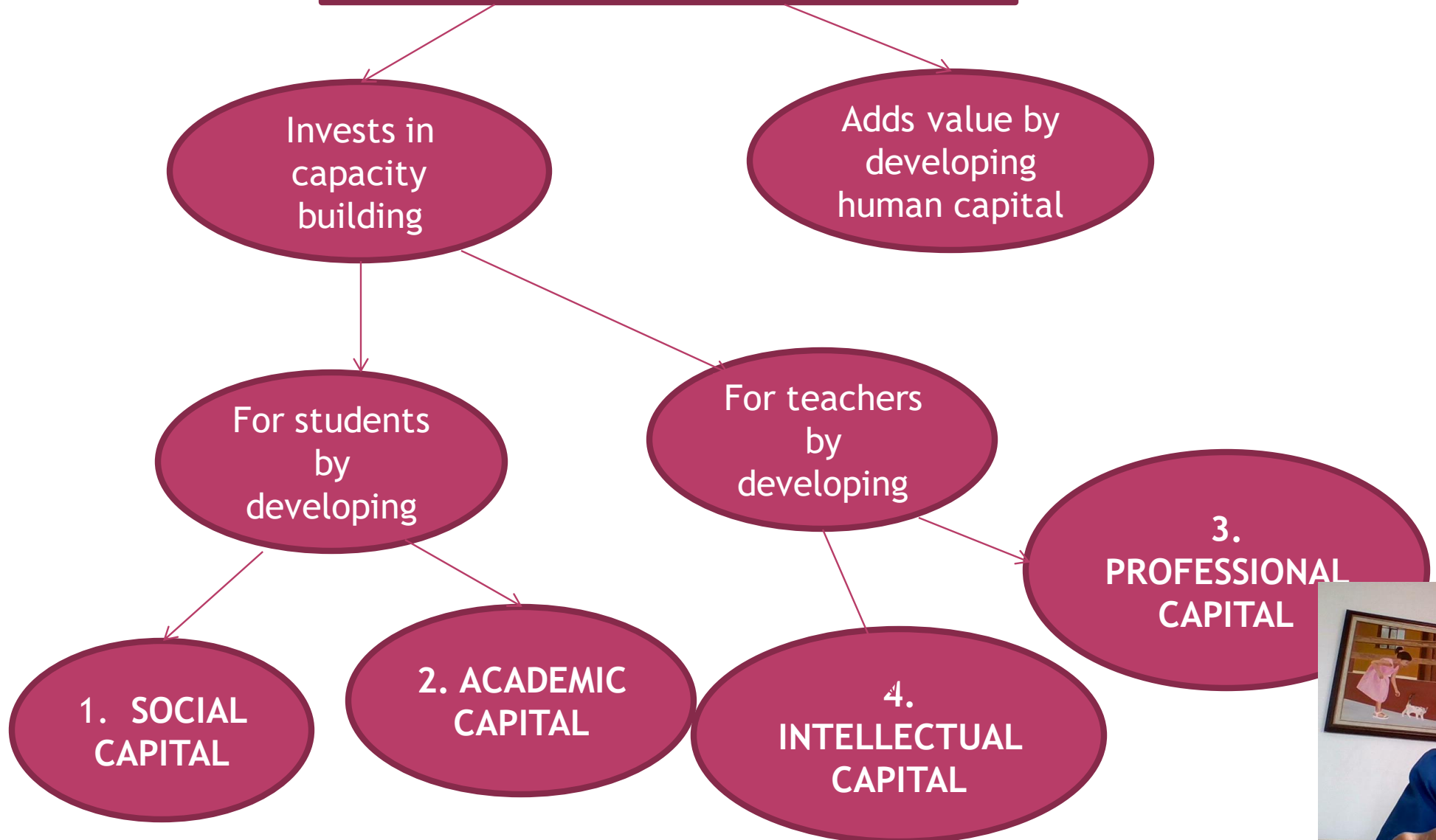
«Pedagogy, capital development and leadership as school activity.»

He argues:

Pedagogical leader can ensure the effectiveness of the school by developing human capital.



# PEDAGOGICAL LEADERSHIP



# SOCIAL CAPITAL

- ◉ is developed by schools through becoming caring communities.
- ◉ consists of norms, obligations and trust that are generated by relationship among people in a community, neighbourhood or society.
- ◉ provides the support students need for learning.
- ◉ is generated by students turning to their subculture if not.



# ACADEMIC CAPITAL

- is developed by schools through becoming focused communities that cultivate a deep culture of teaching and learning.
- consists of the rituals, norms, commitments and traditions that motivate and support student learning and development.
- provides basis for school decisions.



# INTELLECTUAL CAPITAL

- ◉ is developed by becoming inquiring communities.
- ◉ is the sum what everyone in the school knows and shares that can help the school be more effective in enhancing the learning and development of students.

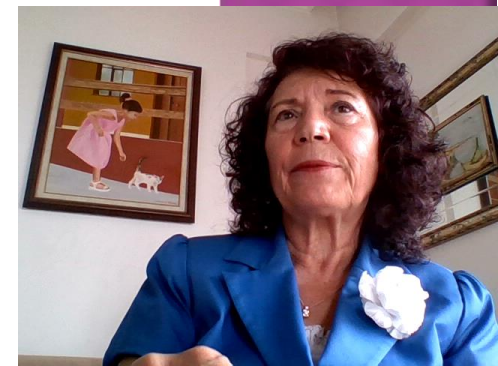
*As the amount of intellectual capital increases, the school's capacity to add value to the lives of students increases.*



# PROFESSIONAL CAPITAL

- ◉ is developed by taking collegiality seriously
- ◉ developed by striving to create a single practice of teaching in the school that is shared by many
- ◉ developed by cultivating communities of practice as a way to generate professional capital
- ◉ created as a fabric of reciprocal responsibilities

*Support is woven among the faculty that adds value to teachers and students alike.*



# Aim of the Study:

to develop

a valid and reliable pedagogical leadership  
perception scale

based on Sergiovanni's approach.





# The Development Process of the Scale

## Method

Mixed research design

"Perception of Pedagogical Leadership Scale (PPLS).

The five-stage mixed method suggested by Zhou (2019) was applied.

1. Qualitative analysis of the scale structure
2. Transforming the qualitative findings into scale items
3. Reviewing the content validity of the items with a qualitative and quantitative approach
4. Applying the scale to the target population
5. Examining the construct validity of the items by making qualitative analyzes



# Stage 1

- The concept of pedagogical leadership in the literature and the four dimensions of Sergiovanni's (1998) pedagogical leadership approach were examined and an interview form was designed to be applied to teachers.
- Two experts examined the draft form and suggested changes were made.



## Stage 2

- Face-to-face interviews with 16 participants (12 secondary school teachers and 4 department heads)
- Interview data were analyzed and an item pool was created in the four dimensions foreseen.



# Stage 3

- Items in the pool were converted into a questionnaire with a five-point Likert type scale.
- Opinions of the experts in the field of measurement/statistics were taken on the draft form. Necessary changes were made in line with their recommendations.



# Stage 4

- Since distance education was carried out due to the COVID-19 pandemic, the easily accessible sampling method was preferred.
- For this purpose, an online questionnaire was prepared and delivered to primary, middle and high school teachers.



# Stage 5

- Exploratory factor analysis (EFA)
- Confirmatory factor analysis (CFA)



## *Study Group*

The population consists of teachers who work in primary, middle and high schools in Turkey.

The sampling method:

Easy accessibility and maximum diversity.

Experienced teachers from different branches in the qualitative method.

In the quantitative study, it was aimed to ensure the minimum sample size and it was planned to reach 10 participants for each item in the draft scale (Kline, 2002).

Since there were 47 items in the draft scale, it was applied to 47 teachers for validity and reliability analysis.



# Data Collection Tool Analysis of Data

In order to test the comprehensibility and usefulness of the questionnaire, a pilot application was conducted in which 30 participants who were drawn from the same population were asked to fill in the tool and report the items that did not work before it was given to the sample.





Distance education due to the pandemic.

Online questionnaire was sent via e-mail to the teachers in the population.

481 questionnaires were filled.

Analyzes were made with 470 questionnaires after removing data that are out of normal distribution.

SPSS Statistic 25 and Lisrel 8.80 package programs were used for quantitative data analysis.



# *Validity and Reliability*

For the construct validity:

Exploratory Factor Analysis (EFA) was performed on 470 data of the 481 participants' data set.

Confirmatory Factor Analysis (CFA) was performed on 470 data in the second application.

## As a result of the EFA:

KMO = .96

Bartlett's Test of Sphericity = 9013.356

df = 300      P = .000)





**Graph 1. Scree Plot Obtained from EFA**



Considering the listed criteria, the research data were subjected to EFA. 22 items that were determined not to fit the criteria were removed and the remaining items were analyzed again.

It was determined that the scale formed a structure consisting of 4 dimensions and 25 items.



**Table 1. Factors' Names, Alpha Values and Variance Explanation Rates of the Scale**

Factors	Items	Number of items	Alpha values	Total variance explained
1. Social Capital	1, 2, 3, 4, 5, 11, 12	7	.925	19.939%
2. Professional Capital	27, 28, 29, 31, 32, 33	6	.914	17.969%
3. Academic Capital	16, 17, 19, 20, 23, 24	6	.876	16.285%
4. Intellectual Capital	37, 42, 43, 44, 45, 47	6	.922	16.254%
Total		25	.91	70



**Table 2. Results of Exploratory Factor Analysis Made for PPLS**

Items of the scale*	Factor 1	Factor 2
In our school:		
1. students are treated with affection. (1)	,790	
2. efforts are made for understanding the students. (3)	,785	
3. students are valued. (11)	,756	
4. cultural diversity of students is respected. (2)	,755	
5. students are treated fairly. (4)	,715	
6. teachers approach students with family affection. (12)	,681	
7. students' self-confidence is developed.(5)	,649	
8. there is a professional solidarity among teachers. (28)		,822
9. a positive dialogue is observed between experienced and young teachers. (27)		,770
10. we act with a sense of responsibility towards our colleagues..(31)		,730
11. group teachers act together. (32)		704
12. There are teachers who like and apply the teaching style developed by their colleague. (29)		
13. students are taught common values. (33)		

\* Numbers in parentheses indicate the number of items in the questionnaire.



**Table 2. Results of Exploratory Factor Analysis Made for PPLS (Cont.)**

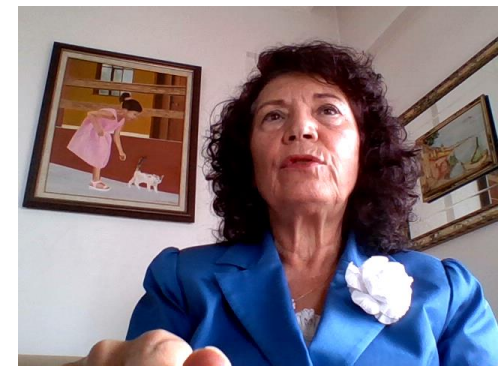
Items of the scale* In our school:	Factor 3	Factor 4
14. educational trips are organized. (17)	,728	
15. an environment of learning by doing is provided to the students. (23)	,710	
16. assignments are given that can be connected with real life. (19)	,691	
17. student activities are encouraged. (16)	,682	
18. the development of gifted students is supported. (24)	,668	
19. organizational culture focuses on teaching-learning. (20)	,587	
20. teachers' participation in decision making is ensured. (43)		,823
21. meetings are made solution-oriented (44)		,810
22. collaboration is appreciated by the management. (37)		,730
23. there is a climate that increases the enthusiasm for work. (42)		,715
24. new teachers adapt to the norms adopted. (45)		
25. participation in activities related to special days is encouraged. (47)		

\* Numbers in parentheses indicate the number of items in the questionnaire.



After this stage, the 4-dimensional structure of the scale, which was determined as a result of EFA, was examined by Confirmatory Factor Analysis.

CFA is used to confirm the latent structure determined by exploratory factor analysis.





# Confirmatory Factor Analysis for the construct validity

Results:

$$\chi^2 /df = 3,14$$

When this value is between 0 and 3, the data and model are valid. When this value is equal to or less than 5 it is still acceptable (Hooper & Mullen, 2008).

Since  $\chi^2$  value is sensitive to sample size, other measures related to the structural equation model were also studied.

$$GFI=0,88; AGFI=0,85; NFI=0,98; RFI=0,97; CFI=0,$$

Since all values are close to 1.0, the data is found to be compatible with the research



**Table 3. Confirmatory Factor Analysis Fit Index Values**

<b>Goodness of fit values</b>	<b>Fit indices obtained</b>	<b>References for Criteria</b>
$\chi^2$	832.09	(Munro, 2005)
$\chi^2/sd(832.09/264)$	3.14*	(Marsh & Hocevar, 1988; Hooper, Coughlan, & Mullen, 2008)
<b>RMSEA</b>	0.067*	(Schermelleh-Engel, Moosbrugger, & Müller, 2003)
<b>RMSEA %90 confidence interval</b>	0.062 ; 0.072**	(Terzi, 2019)
<b>RMR</b>	0.049	(Schermelleh-Engel, Moosbrugger, & Müller, 2003)
<b>GFI</b>	0.88	GFI $\geq$ .85 (Çokluk et al., 2010)
<b>AGFI</b>	0.85*	(Schermelleh-Engel, Moosbrugger, & Müller, 2003)
<b>CFI</b>	0.98**	(Schermelleh-Engel, Moosbrugger, & Müller, 2003)
<b>NFI</b>	0.98**	NFI $\geq$ .95 (Hu and Bentler, 1999)
<b>NNFI</b>	0.98**	NNFI $\geq$ .95 (Hu and Bentler, 1999).
<b>RFI</b>	0.97**	(Demir and Akengin, 2010)

\* Acceptable fit    \*\* Good fit



# CONCLUSION

## Perception of Pedagogical Leadership Scale (PPLS)

### Dimensions:

1. Social Capital (Items 1-7)
2. Professional Capital (Items 8-13)
3. Academic Capital (Items 14-19)
4. Intellectual Capital (Items 20-25)

The internal-consistency and reliability coefficient of the total scale: .91



# Five-point Likert-type scale

**Strongly agree (5)**

Mostly agree (4)

Neutral (3)

Somewhat agree (2)

**Strongly disagree (1)**



As a result of all analyses and applications, when the data is evaluated as a whole, we can argue that the fit indices of the tested model are either at an acceptable or good fit, so the model is approved and the scale has model fit (Seçer, 2015).

Therefore, it can be accepted that «Perception of Pedagogical Leadership Scale (PPLS)» is a suitable and valid research instrument.

The results of the validity and reliability show that PPLS can use for determining the perceptions of teachers working in primary, middle and high schools towards the relevant feature.



# Last Word

This scale was developed with the data obtained only from teachers working in Turkey's schools.

For this reason, PPLS still needs to be tested by being applied in different geographies and cultures.

We hope that the scale attracts the attention of researchers and be strengthened by continuous testing.





Thank You  
for  
listening



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