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Cognitive Flexibility Levels and Self-Efficacy Perceptions of Preservice Teachers

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Abstract

The aim of this study was to examine the correlation between preservice teachers' cognitive flexibility levels and their teaching self-efficacy perceptions. Convenience sampling was used for the sample group of the study conducted according to the correlational survey model. The sample group consisted of 4th-year students who were studying in the departments of 'Computer and Instructional Technologies Education', 'Classroom Teaching', 'Art Teaching', 'Mathematics Teaching', 'Turkish Teaching', 'Social Studies Teaching', 'Preschool Teaching', and 'Science Education', under the body of Faculty of Education, Fırat University during the 2019–2020 academic year. The "Cognitive Flexibility Scale", which was developed by Martin and Rubin (1995) and adapted into Turkish by Çelikkaleli (2014), and "Teachers' Sense of Efficacy Scale," which was developed by Tschannen-Moran and Woolfolk Hoy (2001) and adapted into Turkish by Çapa, Çakıroğlu and Sarıkaya (2005), were used as data collection tools in the study. The data were analysed using a computer-aided statistical program. Kolmogorov-Smirnov test was applied to meet the normality assumption of the data. Since the data met the assumption of normality, independent samples t-test was used to compare student views according to the variable of gender. Analysis of variance was used to make comparison based on the variables of department, grade point average and expectation to pass PPSE (Public Personnel Selection Examination). Pearson's correlation coefficients were used to determine the correlation between the scales. As a result of the study, both the cognitive flexibility levels and the levels of teaching self-efficacy perception were found to be high in preservice teachers. While the cognitive flexibility level of female preservice teachers was higher than male preservice teachers, the cognitive flexibility levels and teaching self-efficacy perceptions were higher than others in preservice teachers having a high grade point average and a high expectation to pass PPSE. Finally, it was determined that levels of cognitive flexibility and teaching self-efficacy perception affected one another positively and significantly.

Keywords: cognitive flexibility, preservice teacher, teaching self-efficacy

Introduction

Cognitive flexibility is defined as one's being aware of available options and alternatives in any situation, having the desire to be flexible and adapt to the situation, and having self-efficacy to be flexible (Martin & Rubin, 1995, p. 623). It refers to new and unexpected changes in complex behaviours (Canas, Fajardo, & Salmeroni, 2006, p. 296). In other words, it is described as the ability to adapt cognitive processing strategies to new and unexpected conditions in the environment (Canas, Antoli, Fajardo, & Salmeroni, 2005, p. 95). Cognitive flexibility is the ability to flexibly switch between tasks. It is a fundamental dimension of executive functions that allows controlling actions and adapting flexibly to changing environments (Buttelmann & Karbach, 2017). A cognitively flexible person needs to restructure their knowledge and handle and interpret the new situation in order to adapt their behavioural strategies to changes and to interpret new situation-task requirements effectively (Canas, Fajardo, & Salmeroni, 2006, p. 296). People who recognize the need for different behavioural adjustments in different situational factors are more cognitively flexible than people who only see appropriate or correct behavioural responses (Martin & Anderson, 1998, p. 2).

Cognitive flexibility is the ability to simultaneously take multiple contradictory representations of a single object or event into consideration. The consequences of cognitive flexibility, which is a feature of human cognitive function, on behaviour are clear (Jacques & Zelazo, 2005). In order to acquire a flexible behaviour, such as solving a problem in a new way, it requires the interaction of various mechanisms such as attention, disagreement, and perception that respond to certain environmental demands (Ionescu, 2012, p. 191). It is particularly dependent on attention processes and information representation. To be cognitively flexible, a person must regularly pay attention to changing conditions and perceive environmental conditions that may interfere with the task at hand (Canas, Fajardo, & Salmeroni, 2006, p. 296). A part of cognitive flexibility is self-efficacy because even if people are aware of alternative behaviour options in a given situation and are willing to be flexible, they also need to believe that they have self-efficacy in exhibiting the desired behaviour (Martin & Anderson, 1998, p. 2).

Cognitive flexibility, which is the ability to adapt to changing tasks or problems (Deak & Wiseheart, 2015, p. 31), begins to develop rapidly in the preschool period and increases continuously until adolescence by reflecting the growth of neural networks involving the prefrontal cortex (Buttelmann & Karbach, 2017). For this reason, school experiences are crucial in terms of individuals' cognitive flexibility gains. The effect of teachers on students' gaining ability to adapt to changing tasks and problems, both at school and in real life, is an undeniable fact.

In order to reach a sustainable future, radical changes based on a sustainable life are required in all areas from food to the economy (Casanova-Correa, Vargas-Vergara, Aragon, & Gomez-Chacon, 2022). Education is one of these areas. Ideas and innovations in education can be implemented by developing sustainable measurement tools in education (Ediyanto, Sunandar, Ramadhani, & Aqilah, 2022). Teachers can encourage lifelong learning by using sustainable assessment practices (Makovskaya, 2022). Or, it can be ensured that teachers have sustainable pedagogy competence. In changing and developing conditions, teachers need to improve and express their pedagogy and know how to sustain it. In other words, they should have sustainable pedagogical competence. Sustainable pedagogy is a means for teachers to protect themselves and maintain their professio-

nalism (White, 2008, pp. 1–6). For a sustainable pedagogy, it is important that teachers and preservice teachers have high cognitive flexibility levels. This is because, in order for the teachers to adapt their pedagogical infrastructure to changing and developing situations, they must first be able to adapt and transition to these situations. In other words, they should have a flexible cognitive structure. Furthermore, it is thought that teachers' self-efficacy perceptions about their profession are important and effective for this change and development. Starting from this point of view, the aim of this study was to determine whether or not there is a correlation between preservice teachers' cognitive flexibility levels and teaching self-efficacy perceptions.

The Aim of the Study

The aim of this study is to examine the correlation between preservice teachers' cognitive flexibility levels and teaching self-efficacy perceptions. For this purpose, answers to the following questions were sought:

1. Do preservice teachers' cognitive flexibility levels and teaching self-efficacy perceptions differ according to the variable of gender?
2. Do preservice teachers' cognitive flexibility levels and teaching self-efficacy perceptions differ according to the variable of department?
3. Do preservice teachers' cognitive flexibility levels and teaching self-efficacy perceptions differ according to the variable of grade point average?
4. What is the level of correlation between preservice teachers' cognitive flexibility levels and their teaching self-efficacy perceptions?

Research Design

In this study, the correlational survey model was used to examine the correlation between the preservice teachers' cognitive flexibility levels and their teaching self-efficacy perceptions. Correlational survey model aims to determine the existence and degree of covariance between two or more variables. Although the correlations between the variables are not a real cause and effect, they can be regarded as a clue in that direction (Karasar, 2018, pp. 114–116).

The Sample

While determining the sample group, convenience sampling was used. In this sample, which is based on the basic idea that the most easily found subject is the most ideal, a large sample size is reached with the least effort and financial expenditure. People who are close and easily accessible are selected as sample (Yazıcıoğlu & Erdoğan, 2014, p. 83; Gliner, Morgan, & Leech, 2015, p. 125). The sample group consisted of 4th-year students who were studying in the departments of 'Computer and Instructional Technologies Education (CITE)', 'Classroom Teaching', 'Art Teaching', 'Mathematics Teaching', 'Turkish Teaching', 'Social Studies Teaching', 'Preschool Teaching', and 'Science Education', under the body of Faculty of Education, Fırat University during the 2019–2020 academic year. There are 389 students in total, 293 female and 96 male, in the study group.

Data Collection Tools

Two scales were used as data collection tools in the study. The first scale was the "Cognitive Flexibility Scale", which was developed by Martin and Rubin (1995) and adapted into Turkish by Çelikkaleli (2014). The scale that determines the cognitive flexibility level consists of 12 items and a single factor. Items 2, 3, 6 and 10 are reversely scored. All items in the 6-point Likert-type scale are rated from "1-Strongly Disagree" to "6-Strongly Agree". The lowest and highest scores of the scale are 12 and 72, respectively. Cronbach's Alpha reliability coefficient of the scale is 0.80.

The second scale was the "Teachers' Sense of Efficacy Scale" which was developed by Tschannen-Moran and Woolfolk Hoy (2001) and adapted into Turkish by Çapa, Çakıroğlu and Sarıkaya (2005). This 9-point Likert type scale consists of 24 items and 3 subscales; 'student engagement', 'instructional strategies', and 'classroom management'. While the Cronbach's Alpha reliability coefficients for the subscales are 0.82, 0.86 and 0.84, respectively, the Cronbach's Alpha reliability coefficient for the overall scale is 0.93.

Data Analysis

A computer-aided statistical program was used for the data analysis. First, it was tested whether or not the data were normally distributed. Kolmogorov-Smirnov normality test was applied because the size of the sample group was more than 50. In cases where $p > 0.05$ in the Kolmogorov-Smirnov test, it is interpreted as the fact that the data are normally distributed. However, when $p < 0.05$, it is interpreted that the data do not show a normal distribution. In this case, the skewness and kurtosis coefficients are checked. If these coefficients are in the range of -2 and +2, the data meet the normality assumption (Büyüköztürk, 2007, p. 42; Kalaycı, 2010, p. 212; Yazıcıoğlu & Erdoğan, 2014, pp. 246–247). Table 1 shows the Kolmogorov-Smirnov test for the scales.

Table 1

Kolmogorov-Smirnov Test for the Scales on Teachers' Sense of Efficacy Scale

		K-S	p	Coefficient of skewness	Coefficient of kurtosis
Cognitive Flexibility Scale		0.063	0.001	-0.359	0.005
Teachers' Sense of Efficacy Scale	Student engagement	0.077	0.000	-0.584	0.424
	Instructional strategies	0.088	0.000	-0.746	0.510
	Classroom management	0.075	0.000	-0.681	0.760
	Overall scale	0.078	0.000	-0.732	0.748

Since the Kolmogorov-Smirnov test result was $p < 0.05$ for the cognitive flexibility scale and the teachers' sense of efficacy scale and its subscales, skewness and kurtosis coefficients were examined. Since the skewness and kurtosis coefficients for both scales were between -2 and +2, the data met the normality assumption. For this reason, parametric tests were used in the data analysis. Independent samples t-test was used to compare the views of the preservice teachers according to variable of gender. The analysis of variance was employed in the comparison according to the variables of department, grade point average and PPSE expectation.

The Pearson's Correlation coefficients of the scales were examined in order to determine the level of correlation between them. When a correlation is sought between the variables, 3 situations arise. The first case is that if Pearson's Correlation = 1.00, there is an excellent positive correlation between the scales. If the score from one variable increases, the score from the other variable also increases, and if the score from one variable decreases, the score from the other variable also decreases. There is a positive relationship between these two variables. The second case is that if Pearson's Correlation = -1.00, there is an excellent negative correlation between the scales. If the score for one variable increases, the score for the other variable decreases. In this case, there is an inverse correlation between these two variables. Finally, the third case is that if Pearson's Correlation = 0.00, there is no correlation between the scales. In other words, there is no correlation between the score obtained from one variable and the score obtained from the other variable to predict each other. As the correlation value between two variables increases, it becomes possible to determine the value of one variable based on the other variable. In the interpretation of the Pearson's Correlation coefficient in terms of magnitude, the range of 0.00–0.30 is defined as a low level of correlation, the range of 0.30–0.70 as a moderate level of correlation, and the range of 0.70–1.00 as a high level of correlation (Büyüköztürk, 2007, p. 32; Büyüköztürk et al., 2012, p. 185; Karasar, 2018, pp. 115–116).

Research Findings

This section gives information about the analysis of data obtained from cognitive flexibility scale and teachers' sense of efficacy scale.

Table 2

Independent Samples t-Test Results of the Cognitive Flexibility Scale According to the Variable of Gender

	Gender	n	$\bar{X}$	ss	sd	t	p
Cognitive Flexibility Scale	Female	293	53.72	8.77	387	1.977	0.049*
	Male	96	51.67	9.02			

When Table 2 was evaluated, the views of the preservice teachers about their cognitive flexibility levels [$t(387) = 1.977$; $p < 0.05$] differed significantly in favour of women in the context of gender variable. Cognitive flexibility levels of both female ($\bar{X} = 53.72$) and male ($\bar{X} = 51.67$) preservice teachers were high.

In Table 3, the variance test performed in the views of the preservice teachers about their cognitive flexibility levels according to the variable of department [$F(7\text{-}388) = 0.494$; $p > 0.05$] did not reveal a significant difference. When the arithmetic means were evaluated, the highest level of cognitive flexibility was observed in preservice teachers studying in the department of art teaching ($\bar{X} = 54.29$); whereas the lowest level of cognitive flexibility was determined in preservice teachers studying in the department of classroom teaching ($\bar{X} = 51.07$).

Table 3

Results of Variance Test for the Cognitive Flexibility Scale According to the Variable of Department

	Department	n	$\bar{X}$	ss	V.K.	K.T.	sd	K.O.	F	p	LSD
Cognitive Flexibility Scale	CITE	39	53.51	9.56	Intergroup	274.022	7	39.146	0.494	0.839	–
	Classroom	41	51.07	8.84	Intragroup	30209.268	381	79.289			
	Art	35	54.29	8.81	Total	30483.290	388				
	Mathematics	52	52.63	9.04							
	Turkish	61	53.46	9.39							
	Social Studies	60	53.62	9.71							
	Preschool	47	53.32	8.51							
	Science	54	53.67	7.03							

In Table 4, the variance test performed in the views of the preservice teachers about their cognitive flexibility levels in the context of the grade point average variable [$F(2\text{-}388) = 5.524$; $p < 0.05$] revealed a significant difference. This difference was determined between the preservice teachers whose grade point average was in the range of 3.01–4.00 and those whose grade point average was between 2.01–3.00 and 1.00–2.00. When examining the arithmetic means, the highest level of cognitive flexibility was found in preservice teachers whose grade point average was between 3.01–4.00 ($\bar{X} = 54.70$).

Table 4

Results of Variance Test for the Cognitive Flexibility Scale According to the Variable of Grade Point Average

Grade Point Average	n	$\bar{X}$	ss	V.K.	K.T.	sd	K.O.	F	p	LSD
1(3.01-4.00)	166	54.70	8.52	Intergroup	848.259	2	424.130	5.524	0.004*	1-2,3
2(2.01-3.00)	188	52.52	8.86	Intragroup	29635.031	386	76.7759			
3(1.00-2.00)	35	49.89	9.40	Total	30483.290	388				

In Table 5, the self-efficacy perceptions of the preservice teachers regarding the teaching profession did not differ significantly in student engagement [$t(387) = 1.956$; $p > 0.05$], instructional strategies [$t(387) = 1.271$; $p > 0.05$] and classroom management [$t(387) = 0.564$; $p > 0.05$] subscales and the overall scale [$t(387) = 1.314$; $p > 0.05$] in terms of gender variable. Both female ($\bar{X} = 6.75$) and male ($\bar{X} = 6.57$) preservice teachers had high self-efficacy perceptions on teaching.

In Table 6, the teaching self-efficacy perceptions of the preservice teachers did not differ significantly in student engagement [$F(7\text{-}388) = 0.900$; $p > 0.05$], instructional strategies [$F(7\text{-}388) = 1{,}221$; $p > 0.05$] and classroom management [$F(7\text{-}388) = 1.413$; $p > 0.05$] subscales and the overall scale [$F(7\text{-}388) = 1.143$; $p > 0.05$] did not differ significantly in terms of the variable of department. However, when examining the arithmetic means, the highest self-efficacy level for both the subscales and the overall scale was observed in preservice teachers studying in the Department of Art Teaching.

Table 5

Independent Samples t-Test Results of the Teachers' Sense of Efficacy Scale According to the Variable of Gender

	Gender	n	$\bar{X}$	ss	sd	t	p
Student engagement	Female	293	6.75	1.20	387	1.956	0.051
	Male	96	6.48	1.17			
Instructional strategies	Female	293	6.78	1.25	387	1.271	0.205
	Male	96	6.60	1.21			
Classroom management	Female	293	6.71	1.24	387	0.564	0.573
	Male	96	6.62	1.22			
Overall scale	Female	293	6.75	1.18	387	1.314	0.190
	Male	96	6.57	1.15			

Table 6

Results of Variance Test for the Teachers' Sense of Efficacy Scale According to the Variable of Department

	Department	n	$\bar{X}$	ss	V.K.	K.T.	sd	K.O.	F	p	LSD
Student engagement	CITE	39	6.64	1.29	Intergroup	9.067	7	1.295	0.900	0.506	–
	Classroom	41	6.52	1.38	Intragroup	548.360	381	1.439			
	Art	35	7.07	0.88	Total	557.427	388				
	Mathematics	52	6.56	1.01							
	Turkish	61	6.83	1.37							
	Social Studies	60	6.59	1.30							
	Preschool	47	6.67	1.09							
	Science	54	6.66	1.10							
Instructional strategies	CITE	39	6.64	1.23	Intergroup	13.058	7	1.865	1.221	0.290	–
	Classroom	41	6.65	1.47	Intragroup	582.283	381	1.528			
	Art	35	7.12	1.05	Total	595.341	388				
	Mathematics	52	6.55	1.02							
	Turkish	61	6.97	1.28							
	Social Studies	60	6.61	1.46							
	Preschool	47	6.81	1.03							
	Science	54	6.61	1.20							
Classroom management	CITE	39	6.74	1.31	Intergroup	15.052	7	2.150	1.413	0.198	–
	Classroom	41	6.54	1.39	Intragroup	579.752	381	1.522			
	Art	35	7.25	0.97	Total	594.804	388				
	Mathematics	52	6.51	1.11							
	Turkish	61	6.74	1.21							
	Social Studies	60	6.64	1.45							
	Preschool	47	6.54	1.04							
	Science	54	6.68	1.23							

See next page for continuation of table

Continuation of Table 6

Overall scale	CITE	39	6.67	1.23	Intergroup	10.965	7	1.566	1.143	0.335	–
	Classroom	41	6.57	1.36	Intragroup	522.013	381	1.370			
	Art	35	7.15	0.90	Total	532.978	388				
	Mathematics	52	6.54	0.97							
	Turkish	61	6.85	1.23							
	Social Studies	60	6.61	1.36							
	Preschool	47	6.67	1.00							
	Science	54	6.65	1.14							

Table 7

Results of Variance Test for the Teachers' Sense of Efficacy Scale According to the Variable of Grade Point Average

	Department	n	$\bar{X}$	ss	V.K.	K.T.	sd	K.O.	F	p	LSD
1st subscale	1(3.01-4.00)	166	6.85	1.12	Intergroup	19.888	2	9.944	7.141	0.001*	3-1,2
	2(2.01-3.00)	188	6.66	1.21	Intragroup	537.539	386	1.393			
	3(1.00-2.00)	35	6.02	1.31	Total	557.427	388				
2nd subscale	1(3.01-4.00)	166	6.92	1.15	Intergroup	19.887	2	9.943	6.670	0.001*	3-1,2
	2(2.01-3.00)	188	6.69	1.27	Intragroup	575.454	386	1.491			
	3(1.00-2.00)	35	6.11	1.26	Total	595.341	388				
3rd subscale	1(3.01-4.00)	166	6.78	1.17	Intergroup	15.172	2	7.586	5.052	0.007*	3-1,2
	2(2.01-3.00)	188	6.72	1.25	Intragroup	579.632	386	1.502			
	3(1.00-2.00)	35	6.06	1.34	Total	594.804	388				
Scale	1(3.01-4.00)	166	6.85	1.10	Intergroup	17.692	2	8.846	6.627	0.001*	3-1,2
	2(2.01-3.00)	188	6.69	1.19	Intragroup	515.286	386	1.335			
	3(1.00-2.00)	35	6.07	1.21	Total	532.978	388				

In Table 7, the teaching self-efficacy perceptions of the preservice teachers differed significantly in student engagement [$F(2\text{-}388) = 7.141$; $p < 0.05$], instructional strategies [$F(2\text{-}388) = 6.670$; $p < 0.05$] and classroom management [$F(2\text{-}388) = 5.052$; $p < 0.05$] subscales and the overall scale [$F(2\text{-}388) = 6.627$; $p < 0.05$] in the context of the variable of grade point average. The difference in both the subscales and in the overall scale was observed between the preservice teachers whose grade point average was between 1.00–2.00 and those whose grade point average was between 2.01–3.00 and 3.01–4.00 with a grade point average. The highest self-efficacy level for both the subscales and the overall scale was observed in preservice teachers whose grade point average was between 3.01–4.00.

Table 8

Correlation Results Between the Preservice Teachers' Cognitive Flexibility Levels and Teaching Self-Efficacy Perceptions

		Cognitive Flexibility Scale	Student engagement	Instructional strategies	Classroom management	Teachers' Sense of Efficacy Scale
Cognitive Flexibility Scale	P.Correlation	1	.539''	.492''	.502''	.534''
	Sig. (2-tailed)		.000	.000	.000	.000
	N	389	389	389	389	389
Student engagement	P.Correlation	.539''	1	.874''	.877''	.958''
	Sig. (2-tailed)	.000		.000	.000	.000
	N	389	389	389	389	389
Instructional strategies	P.Correlation	.492''	.874''	1	.868''	.956''
	Sig. (2-tailed)	.000	.000		.000	.000
	N	389	389	389	389	389
Classroom management	P.Correlation	.502''	.877''	.868''	1	.957''
	Sig. (2-tailed)	.000	.000	.000		.000
	N	389	389	389	389	389
Teachers' Sense of Efficacy Scale	P.Correlation	.534''	.958''	.956''	.957''	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000
	N	389	389	389	389	389

In Table 8, it was concluded that there was a moderately positive and significant correlation ($r = 0.534$, $p < 0.05$) between the cognitive flexibility levels of the preservice teachers and their self-efficacy perceptions on teaching profession. In this sense, it can be asserted that cognitive flexibility and teaching self-efficacy perception levels were positively correlated with one another.

Discussion

The study aimed to examine the cognitive flexibility levels of preservice teachers and their teaching self-efficacy perceptions in terms of some variables and to determine the correlation between them. As a result of the analysis, it was found that the cognitive flexibility levels of the examined preservice teachers were high. However, the cognitive flexibility levels of female preservice teachers were higher than those of male preservice teachers. Although no statistically significant difference was determined in the context of the department variable, the arithmetic means of cognitive flexibility levels between departments are taken into account pointed out that the highest mean belonged to the preservice teachers studying in the Department of Art Teaching. The higher level of cognitive flexibility of the preservice teachers studying in this department can be explained by their attention and environmental sensitivity in relation to the field of art.

Similarly, Esen-Aygün (2018) conducted a study with education faculty students and determined that preservice teachers' cognitive flexibility levels were high, women

had more cognitive flexibility than men, and there was no difference on the basis of department. In the study conducted by Pepe (2021) it was also found that the cognitive flexibility levels of preservice teachers were high. In the study conducted by Melek (2020), on the other hand, it was found that the cognitive flexibility levels of preservice teachers were moderate. Another result was that as the grade point averages of preservice teachers increased, their cognitive flexibility levels also increased. It is an expected result that pre-service teachers who can easily adapt to different alternatives and have high cognitive flexibility have high academic success.

Teaching self-efficacy perceptions of female and male preservice teachers were found to be high in the context of ensuring student engagement, using instructional strategies, and providing classroom management. Likewise, Wolf, Foster & Birkenholz (2010) concluded in their study that preservice teachers had high teaching self-efficacy perceptions. No significant differences were found in the self-efficacy perceptions of the examined preservice teachers in terms of both gender and department variables. However, as the grade point averages of the preservice teachers increased, their self-efficacy perceptions both in subscales and in overall scale also increased. In their study, Clark & Newberry (2018) reported that teacher self-efficacy was associated with motivation and determination. It is an expected result that high academic success of preservice teachers causes an increase in professional self-efficacy in content and pedagogical context.

Finally, there was a positive and significant correlation between the preservice teachers' cognitive flexibility levels and their teaching self-efficacy perceptions. As the level of cognitive flexibility increased, the self-efficacy perception levels of the preservice teachers for ensuring student engagement, using instructional strategies, and providing classroom management also increased. This is because the ability to adapt to changing and developing situations brings along the necessary competencies in the classroom environment. This result confirmed the research problem. Likewise, in the study by Edmunds (2007) it was determined that as the preservice teachers' cognitive flexibility level increased, their sense of self-efficacy as a teachers also improved.

Conclusions

As a result of the study, the cognitive flexibility levels of the the examined preservice teachers were found to be high. However, when evaluated in the context of gender, the cognitive flexibility levels of female preservice teachers were higher than the cognitive flexibility levels of male preservice teachers. No significant difference was found in the context of the department variable; however, when the arithmetic means were evaluated, the highest level of cognitive flexibility was observed in preservice teachers studying in the department of art teaching; whereas, the lowest level of cognitive flexibility was found in the preservice teachers studying in the department of classroom teaching. Another result was that as the grade point average increased, the cognitive flexibility levels of the preservice teachers also increased.

Another result of the study was that preservice teachers' teaching self-efficacy perceptions were high in terms of ensuring student engagement, using instructional strategies, and providing classroom management. Although no significant result was obtained in the context of the gender variable, the arithmetic means revealed that female preservice teachers had higher self-efficacy regarding ensuring student engagement, using instructional strategies, and providing classroom management. Likewise, although there was no signifi-

cant difference in the context of the department variable, the self-efficacy of the preservice teachers studying in the Department of Art Teaching for ensuring student engagement, using instructional strategies, and providing classroom management was higher compared to the preservice teachers studying in the other departments. When evaluated in the context of the grade point average variable, the self-efficacy perception levels of the preservice teachers increased in parallel with their grade averages in terms of ensuring student engagement, using instructional strategies, and providing classroom management.

The final result of the study was that the cognitive flexibility levels of the preservice teachers and their self-efficacy perceptions on teaching were positively correlated in the context of ensuring student engagement, using instructional strategies, and providing classroom management.

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