



Investigation of the Relationship Between Preservice Teachers' Lifelong Learning Skills and Game Perceptions

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ABSTRACT

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In this study, in which the quantitative research approach was adopted, we examined the relationship between the lifelong learning skills of preservice teachers and their game perceptions with the relational survey model. We used the descriptive survey model to investigate whether the preservice teachers' lifelong learning skills and game perceptions differ according to gender, grade level, number of books read, maternal/paternal education level and family income level. The sample consists of 1071 (Female: 823; Male: 248) preservice teachers who have studied at various universities in Turkey in the 2021-2022 academic year. We used the convenience sampling model in the choosing of relevant universities. In the data collection process of this study, we used two different measurement tools, 30 items "Lifelong Learning Skills Scale" and 20 items "Game Perception Scale. The results show that there is a significant difference between the function of the game, the level of interest/interest/discovery in the game and gender in favor of female. We found that preservice teachers' increased grade level, increased frequency of reading books, and higher levels of maternal education enhance their lifelong learning skills. We observed that a positive and meaningful relationship between preservice teachers' lifelong learning skills and play perceptions. We also found that preservice teachers with a high level of education and income of parents have high communication skills in a foreign language. On the contrary, we observed that preservice teachers with lower levels of income have higher gaming perceptions.

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INTRODUCTION

Learning is an individual process that starts before birth and continues until death, in which individuals create meaning from their knowledge and experience in their lives through their own perceptions, thoughts and feelings. As a consequence of the extraordinary changes and improvements in knowledge, it has been revealed that new strategies should be considered not only about learning current information but also about how to reach information that is likely to be encountered in the future. In this context, the need for learning has increased and "lifelong learning" has come to the fore, which supports realization of learning independent of time and place, not staying within the boundaries of the school.

Lifelong learning, which has become increasingly important from the past to the present and has taken its place among the popular concepts of the 21st century, emerged for the first time by Lindeman (1925) as adult education that begins where vocational education ends and then continues throughout life. In Yeaxlee (1929), it was emphasized that lifelong learning should not be limited only to adults and it was stated that education would continue as long as the individual's life continues. The fact that education is more planned and programmed, and learning continues throughout life in a more individual, formally or informally, has revealed the concept of lifelong learning rather than lifelong education (Fischer, 2001). Lifelong education and lifelong learning concepts are two basic concepts that should not be confused with each other. Life-long education is all of the arrangements that cover all kinds of formal and non-formal education activities, aiming to renew the existing system and develop the potential of all activities inside and outside the education system. Lifelong learning has a wide scope that includes primary schools, secondary schools, high schools, universities and even family and social learnings. Lifelong learning is defined as the continuous, voluntary and free learning process of individuals in the light of their personal and professional knowledge in a constantly developing and changing information society (Toprak & Erdoğan, 2012). Moreover, lifelong learning is defined as an activity in which qualified and quality individuals will continue learning outside the traditional and formal education system and gain more knowledge throughout their lives (Fischer, 2001). Lifelong learning is a process that expresses the continuous development of knowledge and skills that individuals experience throughout their lives, and this process is a form of learning that occurs with formal or informal activities (Laal, 2011). Lifelong learning provides the opportunity to access the information needed from different sources, and the ability to use and evaluate the information obtained. In that case, lifelong learning, in its most common sense, emerges as a continuous process carried out to spread learning throughout life and to develop an individual's potential and competencies throughout life (Demirel, 2010). Lifelong learning consists of three basic elements: continuity, creativity and learning. As a matter of fact, the process we call education starts at a certain period of an individual's life and continues until his death. Creativity is creating original, original and socially aware products or ideas. Learning is another important element and in this process, individuals are expected to learn by themselves (Day, 1999). Another concept that is important in increasing creativity, applying the learned information and contributing to physical, mental, emotional and scientific development is 'game' (Güneş, 2015).

Games are a socio-cultural structure that existed since the birth of human history and contributes to the social, emotional, cognitive, physical and linguistic development of children (O. Kuzu, 2022). Games are activities that have their own rules, in a certain place and time, with physical and mental abilities around a goal. These are activities that involve social and emotional interaction with groups formed through voluntary participation, are based on talent, intelligence, attention, skill and coincidence, accompanied by a sense of tension, and provide pleasure without financial benefit (Hazar, 2000). As Eric Berne points out, the child, mother, father, adult sub-personalities that every person carries in the game have wishes on the self, and individuals need to play games with or without being aware of the wishes of their personalities. (Zülal, 2000). As a request, the game serves as a bridge

between generations as well as being a fun activity. In particular, children's games have been shaped by various changes from the past to the present and have gained a continuity between generations (Artar et al., 2002). These emerging changes are affected by the assimilation of the characteristics of the period, as well as the creative experiments on the games. The fact that games offer the freedom to make mistakes during the game and the voluntary acceptance of new rules offer a creative and wide area for lifelong learning of individuals (Nash, 1994). The game eliminates the fear of making mistakes for the players, enabling people to create creative experiences, as well as allowing the players to test their limits and develop new strategies (Ackerman, 1999; cited in Güleç-Özer & Turgay, 2016). In this respect, the game, which blends new experiences with active participation, creativity, social communication and pleasure, enables the mistakes to be noticed more easily and to learn the ways to correct them (Güneş, 2015). While individuals use their past learning against the problems they encounter throughout their lives, the learning provided by the games paves the way for effective solutions to the problems. With these aspects, games are closely related to continuity, creativity and learning, which are the three basic elements of lifelong learning. As an example of this, places called "Nest" were designed in Piacenza, Italy, where the elderly and children play and cook together. With the project titled "Old people and children together", children listened to fairy tales from their older friends and learned hand skills. Based on all these, although games find their place in the lifelong learning process, they have undergone changes under rapidly changing technology, environmental experiences, social orientations and creative changes. This change has also changed our perceptions of games that we may encounter throughout our lives (Kurt, 2015).

Game perception is defined as all of the positive or negative perceptions of individuals about the behaviors revealed in playing games and the results of these behaviors. The game, which is shaped by the perspectives of cultures and generations, is seen as a means of entertainment, pleasure and happiness for adults (Erbay and Durmuşoğlu-Saltalı, 2012). On the other hand, while adults tend to spend more time in games, the fun element of games comes to the fore for children. However, children complain that their parents or elders narrow down the playgrounds and impose some restrictions on games, and adults state that they set these rules for safety concerns. However, recent studies have revealed that games create an area that facilitates learning, and are a tool for trial and error, learning by experience (Yıldız & Perihanoğlu, 2004). However, games with a universal and transcendent structure are an indispensable part of life. The involvement of adults in games with their children strengthens the bonds of children with their families, increases intra-family cooperation and social support of family members to each other (Çalışandemir, 2014). Through games, the individual learns the social rules such as obeying the rules, respecting the rights of others, taking on the assigned tasks, accepting the role, making and applying decisions, and being able to cooperate (Kuşçu, 2014). Individuals who learn these rules can more easily adapt to the problem situations they encounter in real life. Play, which is a preparation process for problem situations, shapes our learning and experiences whether we are involved in lifelong or not. In this sense, it is expected that the perception of games will also affect learning in life. Our study aims to reveal the relationship between preservice teachers' lifelong learning skills and their perceptions of games. Considering the role of play in lifelong learning skills, it is thought that preservice teachers' perceptions of games are related to their lifelong learning skills.

METHOD

In this section, informations about the research design, research sample, research instruments and processes are presented.

Research Design

Quantitative research approach was adopted in this study, in which preservice teachers' lifelong learning skills, game perceptions, relationships between them and whether they differ according to various variables (gender, grade level, number of books read, maternal/paternal education level and family income level). While the lifelong learning skills and game perceptions of the preservice teachers

were examined with the descriptive survey model (Büyüköztürk et al., 2008), the relational survey model (Fraenkel et al., 2012) was used to investigate the relationship between them.

Research Sample

The sample of this research consisted of 1071 (Female: 823; Male: 248) preservice teachers studying at various universities in Türkiye in the 2021-2022 academic year. While the convenience sampling method (Patton, 2005) was used in choosing universities, the purposive sampling method (Bernard, 2002) was used in choosing the preservice teachers at these universities.

Research Instruments and Processes

Two different measurement tools were used in this study. The first of these is “Lifelong Learning Skills Scale (LLSS)” developed by Çiftçi et al. (2020) and this scale consists 30 items, four factors and Cronbach Alpha value of .871. The “communication and productivity” factor of this scale has 12 items and Cronbach Alpha value .886. While Cronbach Alpha value of the four-item “communication in a foreign language” factor is .808, the Cronbach Alpha value of the nine-item “cooperation and learning” factor is .849. The fourth factor of the scale, the “self-confidence” factor has five items; the items in this factor are presented as reverse items and also the Cronbach Alpha value of this factor is .636. The second scale in this study is the 20-item and three-factor “Game Perception Scale (GPS)” developed by Güneş, Tuğrul and Demir-Öztürk (2020) and has a Cronbach Alpha internal consistency coefficient of .728. This scale consists of a six-item “originality and purpose of the game” factor, a 10-item “function of the game and interest/curiosity/exploration in the game” factor, and a four-item “nature and source of the game” factor, and the scale includes 11 reverse items in total. Positive items in these two scales, developed in accordance with the 5-Likert type, are as “1: I strongly disagree - 5: I strongly agree”; negative items were rated from 1 to 5 as “1: I strongly agree - 5: I strongly disagree”. While the highest average score that can be obtained from the scales is 5, the lowest average score is 1. In this context, in this study, interpretation was made on the averages of the total scores from these two scales and the ranges were determined on the average score. In interpreting the scores obtained from the scales, the study by Kuzu (2021) was taken into account. Accordingly, five levels were evaluated as; $1 \leq \text{score} < 1.80$: Very low; $1.80 \leq \text{score} < 2.60$: Low; $2.60 \leq \text{score} < 3.40$: Moderate; $3.40 \leq \text{score} < 4.20$: High; $4.20 \leq \text{score} \leq 5.00$: Very high. In this study, the data obtained from 1071 preservice teachers were transferred to the SPSS 23 program during the data analysis process. For data cleaning purposes, outliers for each item were calculated with “Outliers” and z-score values. As a result of the examinations, it was seen that there were outliers in 2 data and the z score of each item was calculated out of 1069 data. When the z scores of the items were analyzed, data with a z score greater than 4 or less than -4 were excluded from the analysis process (Mertler & Vannatta, 2005). As the relationship between the preservice teachers’ lifelong learning skills and game perceptions will be examined in this study, the z scores of the two scale items were examined together and normality analysis was performed on 992 data by removing 77 data from the analysis process. In this process, histogram, box, normal probability graphs were examined and the extreme values were deleted and the analysis process was continued on 985 data.

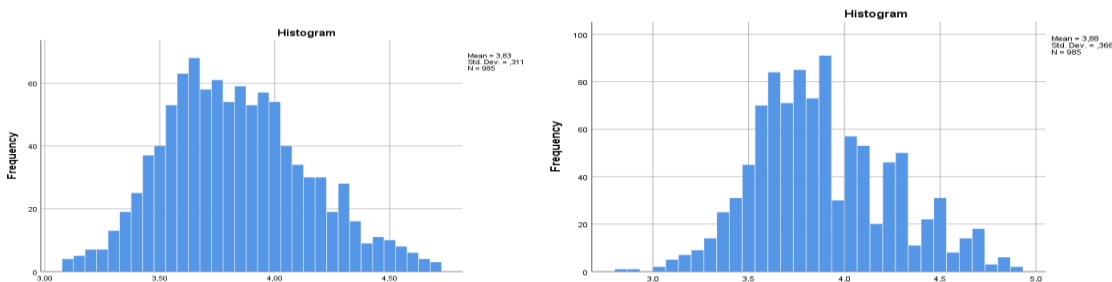


Figure 1. Histogram of the Game Perception Scale and the Lifelong Learning Skills Scale

In this study, it was observed that values such as arithmetic mean, mode and median of the distributions were close to each other and both skewness and kurtosis coefficients remained between -2 and +2 values (George & Mallery, 2010). Although the Kolmogorov-Smirnov test results for the normality of the distribution were $p < .05$, when the descriptive and graphical results were also evaluated, it was concluded that the distribution in this study was normal. The descriptive statistics results of the distribution of the data are given in Table 1.

Table 1. Results of Data Distribution

	Mode	Median	\bar{X}	Sd	Skewness	Kurtosis	Min	Max	Kolmogorov Simirnov
LLSS	4.00	3.83	3.88	.366	.401	-.201	3.00	5.00	.00
CP	4.00	4.08	4.15	.424	.212	-.357	3.00	5.00	.00
CIFL	3.00	3.00	2.97	.1005	.130	-.493	1.00	5.00	.00
CL	4.00	4.22	4.30	.398	-.011	-.539	3.00	5.00	.00
SC	3.00	3.20	3.18	.682	-.231	.359	1.00	5.00	.00
GPS	3.65	3.80	3.82	.31	.325	-.233	3.10	4.70	.00
OPG	3.33	3.5	3.47	.47	.164	-.141	2.00	4.83	.00
FGIG	4.00	4.3	4.29	.36	.044	.622	3.20	5.00	.00
ODK	3.00	3.25	3.20	.52	.203	.154	1.50	5.00	.00

LLSS: Lifelong learning skills scale; CP: Communication and productivity; CIFL: communication in a foreign language; CL: cooperation and learning; SC: Self-confidence; GPS Game Perception Scale; OPG: originality and purpose of the game; FGIG: function of the game and interest/curiosity/exploration in the game; NSG: nature and source of the game.

After testing the normality assumptions, confirmatory factor analysis (CFA) was performed using the LISREL 8.80 (Linear Structural Relations 8.80) package program to verify construct validity of the two scales used in this study. Suggested modifications were made for the scales with low fit indices, and the CFA results before and after the modification of the four scales are presented in detail in Table 2.

Table 2. CFA Results

	LLSS						GPS					
	FL		SL		Fit		FL		SL		Fit	
	BM	AM	BM	AM	FL	SL	BM	AM	BM	AM	FL	SL
χ^2/df	8.59	2.21	8.65	2.29	Perf.	Perf.	4.79	3.14	4.93	-	Acc.	Acc.
RMSEA	.088	.035	.88	.036	Perf.	Perf.	.062	.047	.062	-	Perf.	Acc.
S-RMR	.061	.037	.063	.041	Perf.	Perf.	.057	.047	.057	-	Perf.	Acc.
CFI	.92	.99	.92	.99	Perf.	Perf.	.91	.95	.91	-	Perf.	Acc.

FL: First level; SL: Second level; BM: Before modification; AM: After modification; Perf: Perfect fit; Acc: Acceptable fit; LLSS: Lifelong learning skills scale; GPS Game perception scale; df : degrees of freedom

In the study by Bollen (1989), it was emphasized that the χ^2/df value should be below 2, 3 or 5. Schermelleh-Engel and Moosbrugger interpreted CFI (Comparative Fit Index) value greater than .95; SRMR (Standardized Root Mean Square Residual) and RMSEA (Root Mean Square Error of Approximation) values less than .05 as perfect fit indicators. If the CFI value is between .90 and .95, and the SRMR and RMSEA values are between .05 and .10, it is expressed as acceptable fit values. It has been stated that there is no need to use and report other indices (Brown, 2006; Kline, 2005). Accordingly, it is observed that the CFA fit indexes of scales in this study are within the desired ranges. In addition, the Cronbach Alpha internal consistency coefficients were calculated in this study (Table 3), and the obtained values were found to be reliable (Sumintono & Widhiarso, 2015; Yockey, 2016).

Table 3. Reliability Results for Scales and Their Factors

Cronbach Alfa (α)	LLSS	.865	CP	CIFL	CL	SC
		GPS	.731	.883	.912	.815

LLSS: Lifelong learning skills scale; CP: Communication and productivity; CIFL: Communication in a foreign language; CL: Cooperation and learning; SC: Self-confidence; GPS Game perception scale.

After the validity and reliability analysis, the lifelong learning skills and game perceptions of the preservice teachers were examined with descriptive statistics. Moreover, whether the preservice teachers' levels of these situations differed according to the two-category variables (gender) were investigated with the t-test for independent groups at a significance level of .05. In this process, it was examined whether the equality of variances was achieved ($p > .05$) or not achieved ($p < .05$) with the Levene test, and these results were taken into account in the interpretation process (Y. Kuzu, 2022). ANOVA test was used to examine whether the preservice teachers' levels differed according to three or more category variables (grade level, number of books read, maternal/paternal education level, income level). In this process, Post-Hoc analysis techniques were used to determine which variables differed in statistically significant results. Tukey HSD was used in cases where homogeneity of variances was provided ($p > .05$) with Levene test, and Games-Howell multiple comparison techniques were used in cases where it was not ($p < .05$) (Y. Kuzu, 2022). In addition, in this study, the relationship between preservice teachers' lifelong learning skills and game perceptions was examined with Pearson Correlation, and whether they predicted each other using simple and multiple regression analyzes. The obtained correlation coefficient (r) is very weak if $r < .20$; If $.20 < r < .40$, weak; If $.40 < r < .60$, medium; If $.60 < r < .80$ it is high; $r > .80$ indicates that there is a very high level of relationship (Evans, 1996).

FINDINGS

In this study it was observed that the preservice teachers' lifelong learning skills were at a high level ($\bar{X} = 3,88$). When examined in terms of factors, cooperation and learning skills are very high ($\bar{X} = 4,30$), communication and productivity skills are high ($\bar{X} = 4,15$); self-confidence ($\bar{X} = 3,18$) and foreign language communication skills ($\bar{X} = 2,97$) were determined to be at medium level. On the other hand, it was observed that the game perception skills of the preservice teachers were at a high level ($\bar{X} = 3,82$). When examined according to the factors, it was obtained that the preservice teachers' skills were very high ($\bar{X} = 4,29$) in terms of the function of the game and interest/curiosity/exploration in the game, and high ($\bar{X} = 3,47$) in terms of the originality and purpose of the game. Finally, in terms of the nature and source of the game, the preservice teachers' skills were determined at a medium ($\bar{X} = 3,20$) (see Table 1). Whether there is a statistically significant difference between preservice teachers' lifelong learning skills and game perceptions according to gender was examined with the independent samples t-test and the findings are given in Table 4.

Table 4. *t-Test Results Regarding the Differentiation of Preservice teachers' Lifelong Learning Skills and Game Perceptions by Gender*

	Genders	N	\bar{X}	Sd	t	p
LLSS	Female	762	3.88	.37		.84
	Male	223	3.87	.36		
CP	Female	762	4.14	.42	-1.81	.07
	Male	223	4.19	.43		
CIFL	Female	762	2.99	.98	1.19	.23
	Male	223	2.89	1.09		
CL	Female	762	4.30	.39	.26	.80
	Male	223	4.30	.41		
SC	Female	762	3.20	.66	1.48	.14
	Male	223	3.12	.75		
GPS	Female	762	3.83	.31	.42	.67
	Male	223	3.82	.31		
OPG	Female	762	3.46	.48	-1.57	.12
	Male	223	3.52	.47		
FGIG	Female	762	4.31	.37	2.57	.01*
	Male	223	4.24	.37		
NSG	Female	762	3.19	.53	-1.11	.27
	Male	223	3.24	.51		

* $p < .05$; LLSS: Lifelong learning skills scale; CP: Communication and productivity; CIFL: communication in a foreign language; CL: cooperation and learning; SC: Self-confidence; GPS Game Perception Scale; OPG: originality and purpose of the game; FGIG: function of the game and interest/curiosity/exploration in the game; NSG: nature and source of the game.

According to Table 4, there is no significant difference between preservice teachers' genders and both lifelong learning skills and game perceptions. On the other hand, a significant difference was obtained in favor of female in term of function of the game and interest/curiosity/exploration in the game. Whether preservice teachers' lifelong learning skills and game perceptions differ according to the level of their education was examined with ANOVA test and the findings are given in Table 5.

Table 5. ANOVA Results on the Differentiation of Preservice Teachers' Lifelong Learning Skills and Game Perceptions According to the Grade Level

	Grade Level	N	\bar{X}	Sd	F	p	Difference
LLSS	1: 1 st grade	243	3.81	.33	7.19	.00*	1<4
	2: 2 nd grade	193	3.85	.36			2<4
	3: 3 rd grade	385	3.89	.37			3<4
	4: 4 th grade	164	3.98	.39			
CP	1: 1 st grade	243	4.08	.40	7.09	.00*	1<4
	2: 2 nd grade	193	4.12	.45			2<4
	3: 3 rd grade	385	4.15	.41			3<4
	4: 4 th grade	164	4.27	.43			
CIFL	1: 1 st grade	243	2.78	.89	6.32	.00*	1<4
	2: 2 nd grade	193	3.01	1.02			2<4
	3: 3 rd grade	385	2.96	.98			3<4
	4: 4 th grade	164	3.21	1.14			
CL	1: 1 st grade	243	4.27	.37	2.16	.09	-
	2: 2 nd grade	193	4.28	.42			
	3: 3 rd grade	385	4.31	.40			
	4: 4 th grade	164	4.36	.41			
SC	1: 1 st grade	243	3.19	.63	1.59	.19	-
	2: 2 nd grade	193	3.09	.70			
	3: 3 rd grade	385	3.21	.67			
	4: 4 th grade	164	3.20	.75			
GPS	1: 1 st grade	243	3.82	.30	.19	.91	-
	2: 2 nd grade	193	3.83	.33			
	3: 3 rd grade	385	3.83	.31			
	4: 4 th grade	164	3.84	.31			
OPG	1: 1 st grade	243	3.52	.45	1.07	.36	-
	2: 2 nd grade	193	3.44	.47			
	3: 3 rd grade	385	3.47	.49			
	4: 4 th grade	164	3.45	.49			
FGIG	1: 1 st grade	243	4.27	.35	.57	.64	-
	2: 2 nd grade	193	4.30	.37			
	3: 3 rd grade	385	4.30	.38			
	4: 4 th grade	164	4.31	.37			
NSG	1: 1 st grade	243	3.16	.52	1.55	.20	-
	2: 2 nd grade	193	3.23	.56			
	3: 3 rd grade	385	3.19	.51			
	4: 4 th grade	164	3.26	.53			

*p<.05; LLSS: Lifelong learning skills scale; CP: Communication and productivity; CIFL: communication in a foreign language; CL: cooperation and learning; SC: Self-confidence; GPS Game Perception Scale; OPG: originality and purpose of the game; FGIG: function of the game and interest/curiosity/exploration in the game; NSG: nature and source of the game.

According to the Table 5, there is a significant difference between preservice teachers' grade levels and both their lifelong learning skills and its communication and productivity, communication in a foreign language factors. Games-Howell multiple comparison technique was used to examine between which groups this differentiation occurred. It was observed that as the grade level increased, the lifelong learning skills of the preservice teachers increased and the lifelong learning skills of the 4th grade preservice teachers were at the highest level. It was determined that the communication and productivity skills of the preservice teachers in the 4th grade and their communication skills in a foreign language were higher than the other grade levels. Whether preservice teachers' lifelong learning skills and game perceptions differ according to the frequency of reading books was examined with ANOVA test and the findings are given in Table 6.

Table 6. ANOVA Results on the Differentiation of Preservice Teachers' Lifelong Learning Skills and Game Perceptions According to the Frequency of Reading Books

	Frequency of Reading Books	N	\bar{X}	Sd	F	p	Difference
LLSS	1:Almost never	27	3.81	.28	8.04	.00*	1<5
	2:Rarely	135	3.82	.38			2<5
	3:Sometimes	404	3.83	.35			3<4
	4:Most of the time	331	3.92	.35			3<5
	5:Almost always	88	4.03	.41			
CP	1:Almost never	27	4.01	.30	7.01	.00*	1<4
	2:Rarely	135	4.08	.43			1<5
	3:Sometimes	404	4.11	.41			2<5
	4:Most of the time	331	4.19	.42			3<5
	5:Almost always	88	4.32	.46			
CIFL	1:Almost never	27	3.14	1.10	4.11	.00*	3<4
	2:Rarely	135	2.97	1.15			3<5
	3:Sometimes	404	2.83	.99			
	4:Most of the time	331	3.04	.90			
	5:Almost always	88	3.24	1.11			
CL	1:Almost never	27	4.31	.37	3.08	.02*	3<5
	2:Rarely	135	4.27	.41			2<5
	3:Sometimes	404	4.27	.39			
	4:Most of the time	331	4.32	.39			
	5:Almost always	88	4.42	.43			
SC	1:Almost never	27	2.95	.86	2.98	.02*	
	2:Rarely	135	3.08	.66			
	3:Sometimes	404	3.15	.65			
	4:Most of the time	331	3.25	.67			
	5:Almost always	88	3.26	.81			
GPS	1:Almost never	27	3.86	.30	.93	.45	-
	2:Rarely	135	3.87	.32			
	3:Sometimes	404	3.81	.30			
	4:Most of the time	331	3.84	.30			
	5:Almost always	88	3.82	.35			
OPG	1:Almost never	27	3.60	.51	2.52	.04*	3<1
	2:Rarely	135	3.56	.51			4<1
	3:Sometimes	404	3.46	.47			5<1
	4:Most of the time	331	3.47	.45			5<2
	5:Almost always	88	3.39	.53			
FGIG	1:Almost never	27	4.25	.35	2.36	.05	-
	2:Rarely	135	4.27	.37			
	3:Sometimes	404	4.26	.36			
	4:Most of the time	331	4.33	.36			
	5:Almost always	88	4.35	.39			
NSG	1:Almost never	27	3.27	.53	2.369	0.051	-
	2:Rarely	135	3.30	.54			
	3:Sometimes	404	3.22	.50			
	4:Most of the time	331	3.15	.52			
	5:Almost always	88	3.14	.62			

*p<.05; LLSS: Lifelong learning skills scale; CP: Communication and productivity; CIFL: communication in a foreign language; CL: cooperation and learning; SC: Self-confidence; GPS: Game Perception Scale; OPG: originality and purpose of the game; FGIG: function of the game and interest/curiosity/exploration in the game; NSG: nature and source of the game

According to the Table 6, there is a significant difference between preservice teachers' frequency of reading books and both their lifelong learning skills and its communication and productivity, communication in a foreign language, cooperation and learning factors. Post-Hoc analysis techniques were used and Games-Howell multiple comparison technique was used to examine between which groups this differentiation occurred. Accordingly, it was observed that as the frequency of reading books increased, the lifelong learning skills of the preservice teachers increased, and that the lifelong learning skills and skills related to the sub-dimensions of the preservice teachers who almost always read books were at the highest level. When the game perception of preservice teachers is examined, it is seen that there is a differentiation in terms of the originality and purpose of the game. It has been determined that the preservice teachers who almost never read books have higher perceptions of the originality and purpose of the game. Whether preservice teachers' lifelong learning skills and game perceptions differ according to the maternal education level was examined with ANOVA test and the findings are given in Table 7.

Table 7. ANOVA Results on the Differentiation of Preservice Teachers' Lifelong Learning Skills and Game Perceptions According to the Maternal Education Level

	Maternal Education Level	N	\bar{X}	Sd	F	p	Difference
LLSS	1:Illiterate	100	3.74	.34	4.78	.00*	1<2
	2:Literate (Not a school graduate)	46	3.92	.38			1<3
	3:Primary school graduate	445	3.86	.35			1<4
	4:Secondary school graduate	139	3.91	.39			1<5
	5:High school graduate	165	3.95	.38			1<6
	6:Graduate of an associate degree or higher	90	3.89	.36			
CP	1:Illiterate	100	4.05	.43	2.47	.03*	1<5
	2:Literate (Not a school graduate)	46	4.24	.43			1<2
	3:Primary school graduate	445	4.14	.40			1<3
	4:Secondary school graduate	139	4.16	.45			1<4
	5:High school graduate	165	4.21	.44			
	6:Graduate of an associate degree or higher	90	4.12	.43			
CIFL	1:Illiterate	100	2.57	.96	8.37	.00*	1<3
	2:Literate (Not a school graduate)	46	2.89	.95			1<4
	3:Primary school graduate	445	2.88	.95			1<5
	4:Secondary school graduate	139	3.02	1.09			1<6
	5:High school graduate	165	3.23	1.02			3<5
	6:Graduate of an associate degree or higher	90	3.30	.96			3<6
CL	1:Illiterate	100	4.22	.43	1.60	.16	-
	2:Literate (Not a school graduate)	46	4.32	.43			
	3:Primary school graduate	445	4.31	.38			
	4:Secondary school graduate	139	4.33	.42			
	5:High school graduate	165	4.32	.42			
	6:Graduate of an associate degree or higher	90	4.24	.35			
SC	1:Illiterate	100	3.07	.71	1.66	.14	-
	2:Literate (Not a school graduate)	46	3.27	.53			
	3:Primary school graduate	445	3.15	.70			
	4:Secondary school graduate	139	3.29	.67			
	5:High school graduate	165	3.20	.66			
	6:Graduate of an associate degree or higher	90	3.20	.68			
GPS	1:Illiterate	100	3.86	.33	1.11	.35	-
	2:Literate (Not a school graduate)	46	3.79	.31			
	3:Primary school graduate	445	3.84	.32			
	4:Secondary school graduate	139	3.83	.30			
	5:High school graduate	165	3.83	.30			
	6:Graduate of an associate degree or higher	90	3.77	.29			
OPG	1:Illiterate	100	3.50	.45	.81	.54	-
	2:Literate (Not a school graduate)	46	3.44	.58			
	3:Primary school graduate	445	3.50	.48			
	4:Secondary school graduate	139	3.46	.44			
	5:High school graduate	165	3.45	.46			
	6:Graduate of an associate degree or higher	90	3.41	.52			
FGIG	1:Illiterate	100	4.32	.41	.49	.78	-
	2:Literate (Not a school graduate)	46	4.30	.36			
	3:Primary school graduate	445	4.30	.38			
	4:Secondary school graduate	139	4.30	.35			
	5:High school graduate	165	4.29	.36			
	6:Graduate of an associate degree or higher	90	4.24	.34			
NSG	1:Illiterate	100	3.27	.55	1.59	.16	-
	2:Literate (Not a school graduate)	46	3.04	.45			
	3:Primary school graduate	445	3.21	.52			
	4:Secondary school graduate	139	3.20	.56			
	5:High school graduate	165	3.23	.51			
	6:Graduate of an associate degree or higher	90	3.14	.55			

*p<.05; LLSS: Lifelong learning skills scale; CP: Communication and productivity; CIFL: communication in a foreign language; CL: cooperation and learning; SC: Self-confidence; GPS: Game Perception Scale; OPG: originality and purpose of the game; FGIG: function of the game and interest/curiosity/exploration in the game; NSG: nature and source of the game

According to the Table 7, there is a significant difference between preservice teachers' maternal education level and both their lifelong learning skills and its communication and productivity, communication in a foreign language, cooperation and learning factors. Post-Hoc analysis techniques were used to examine between which groups this differentiation occurred and TUKEY HSD multiple comparison technique was used. Accordingly, it was observed that the preservice teachers with higher maternal education level had higher lifelong learning skills. In addition, it was observed that the preservice teachers with a high

level of maternal education also had significantly higher foreign language communication skills. Whether preservice teachers' lifelong learning skills and game perceptions differ according to the father's education level was examined with ANOVA test and the findings are given in Table 8.

Table 8. ANOVA Results on the Differentiation of Preservice Teachers' Lifelong Learning Skills and Game Perceptions According to Father's Education Level

	Paternal Education Level	N	\bar{X}	Ss	F	p	Difference
LLSS	1-2:Illiterate or literate (Not a school graduate)	32	3.81	.39	1.35	.25	-
	3:Primary school graduate	285	3.88	.36			
	4:Secondary school graduate	200	3.84	.34			
	5:High school graduate	255	3.91	.39			
	6:Graduate of an associate degree or higher	213	3.89	.36			
CP	1-2:Illiterate or literate (Not a school graduate)	32	4.04	.50	1.02	.39	-
	3:Primary school graduate	285	4.17	.42			
	4:Secondary school graduate	200	4.13	.40			
	5:High school graduate	255	4.17	.44			
	6:Graduate of an associate degree or higher	213	4.13	.42			
CIFL	1-2:Illiterate or literate (Not a school graduate)	32	2.79	1.13	3.24	.01*	3<6
	3:Primary school graduate	285	2.87	1.00			
	4:Secondary school graduate	200	2.86	.93			
	5:High school graduate	255	3.06	1.04			
	6:Graduate of an associate degree or higher	213	3.12	1.00			
CL	1-2:Illiterate or literate (Not a school graduate)	32	4.33	.42	.44	.78	-
	3:Primary school graduate	285	4.32	.42			
	4:Secondary school graduate	200	4.28	.39			
	5:High school graduate	255	4.31	.40			
	6:Graduate of an associate degree or higher	213	4.29	.38			
SC	1-2:Illiterate or literate (Not a school graduate)	32	3.13	.76	.96	.43	-
	3:Primary school graduate	285	3.17	.71			
	4:Secondary school graduate	200	3.12	.61			
	5:High school graduate	255	3.24	.70			
	6:Graduate of an associate degree or higher	213	3.20	.68			
GPS	1-2:Illiterate or literate (Not a school graduate)	32	3.90	.39	.65	.63	-
	3:Primary school graduate	285	3.83	.31			
	4:Secondary school graduate	200	3.84	.33			
	5:High school graduate	255	3.82	.29			
	6:Graduate of an associate degree or higher	213	3.81	.30			
OPG	1-2:Illiterate or literate (Not a school graduate)	32	3.63	.49	1.78	.13	-
	3:Primary school graduate	285	3.45	.46			
	4:Secondary school graduate	200	3.53	.51			
	5:High school graduate	255	3.45	.47			
	6:Graduate of an associate degree or higher	213	3.45	.47			
FGIG	1-2:Illiterate or literate (Not a school graduate)	32	4.36	.44	.99	.41	-
	3:Primary school graduate	285	4.32	.38			
	4:Secondary school graduate	200	4.27	.38			
	5:High school graduate	255	4.30	.35			
	6:Graduate of an associate degree or higher	213	4.27	.36			
NSG	1-2:Illiterate or literate (Not a school graduate)	32	3.20	.67	0.277	0.893	-
	3:Primary school graduate	285	3.18	.52			
	4:Secondary school graduate	200	3.22	.53			
	5:High school graduate	255	3.20	.51			
	6:Graduate of an associate degree or higher	213	3.22	.53			

*p<.05; LLSS: Lifelong learning skills scale; CP: Communication and productivity; CIFL: communication in a foreign language; CL: cooperation and learning; SC: Self-confidence; GPS Game Perception Scale; OPG: originality and purpose of the game; FGIG: function of the game and interest/curiosity/exploration in the game; NSG: nature and source of the game

According to the Table 8, there is a significant difference between preservice teachers' father's education level and communication in a foreign language, cooperation and learning factors. Post-Hoc analysis techniques were used to examine between which groups this differentiation occurred and TUKEY HSD multiple comparison technique was used. Accordingly, it was observed that the preservice teachers with higher paternal education level had higher communication skills in foreign languages. Whether preservice teachers' lifelong learning skills and game perceptions differ according to the family income level was examined with ANOVA test and the findings are given in Table 9.

Table 9. ANOVA Results on the Differentiation of Preservice Teachers' Lifelong Learning Skills and Game Perceptions According to Family Income Level

	Income level (TL)	N	\bar{X}	Sd	F	p	Difference
LLSS	1:0-4000	385	3.87	.36	2.03	.09	-
	2:4001-7000	332	3.86	.37			
	3:7001-10000	145	3.94	.37			
	4:10001-13000	72	3.85	.34			
	5:13001 and higher	51	3.93	.41			
CP	1:0-4000	385	4.15	.43	1.32	.26	-
	2:4001-7000	332	4.12	.42			
	3:7001-10000	145	4.22	.40			
	4:10001-13000	72	4.16	.43			
	5:13001 and higher	51	4.15	.45			
CIFL	1:0-4000	385	2.93	.98	3.28	.01*	1<5
	2:4001-7000	332	2.99	1.03			4<5
	3:7001-10000	145	3.01	1.00			2<5
	4:10001-13000	72	2.72	1.01			
	5:13001 and higher	51	3.36	.96			
CL	1:0-4000	385	4.30	.41	1.35	.25	-
	2:4001-7000	332	4.29	.40			
	3:7001-10000	145	4.36	.39			
	4:10001-13000	72	4.30	.38			
	5:13001 and higher	51	4.23	.38			
SC	1:0-4000	385	3.15	.69	1.78	.13	-
	2:4001-7000	332	3.15	.67			
	3:7001-10000	145	3.29	.69			
	4:10001-13000	72	3.19	.67			
	5:13001 and higher	51	3.32	.66			
GPS	1:0-4000	385	3.87	.31	5.06	.00*	5<1
	2:4001-7000	332	3.82	.31			
	3:7001-10000	145	3.80	.31			
	4:10001-13000	72	3.81	.32			
	5:13001 and higher	51	3.69	.26			
OPG	1:0-4000	385	3.53	.48	4.90	.00*	3<1
	2:4001-7000	332	3.47	.46			5<1
	3:7001-10000	145	3.37	.50			5<4
	4:10001-13000	72	3.52	.50			3<4
	5:13001 and higher	51	3.30	.39			
FGIG	1 0-4000	385	4.33	.38	3.22	.01*	5<1
	2:4001-7000	332	4.26	.36			2<1
	3:7001-10000	145	4.32	.36			5<3
	4:10001-13000	72	4.25	.36			
	5:13001 and higher	51	4.19	.35			
NSG	1:0-4000	385	3.24	.52	2.66	0.03*	5<1
	2:4001-7000	332	3.21	.51			3<1
	3:7001-10000	145	3.13	.52			5<2
	4:10001-13000	72	3.17	.54			
	5:13001 and higher	51	3.03	.60			

*p<.05; LLSS: Lifelong learning skills scale; CP: Communication and productivity; CIFL: communication in a foreign language; CL: cooperation and learning; SC: Self-confidence; GPS: Game Perception Scale; OPG: originality and purpose of the game; FGIG: function of the game and interest/curiosity/exploration in the game; NSG: nature and source of the game

According to the Table 9, there is a significant difference between preservice teachers' family income level and communication in a foreign language. Moreover, there is a significant difference between the family income level and game perception in terms of both the total score of the scale and its factors: "the originality and purpose of the game", "function of the game and interest/curiosity/exploration in the game", "nature and source of the game". Post-Hoc analysis techniques were used to examine between which groups this differentiation occurred and TUKEY HSD multiple comparison technique was used. Accordingly, it was determined that families with high income levels had higher communication skills in a foreign language. On the other hand, when the game perceptions of the preservice teachers were examined in terms of both the overall scale and its sub-dimensions, it was seen that these variables were higher in the preservice teachers with low income. In other words, preservice teachers with low income levels have higher game perceptions. The relationship between preservice teachers' lifelong learning skills and game perceptions was examined with the Pearson Correlation test and the findings are presented in Table 10.

Table 10. *The Relationship Between Preservice Teachers' Lifelong Learning Skills and Game Perceptions*

	LLSS	CP	CIFL	CL	SC	GPS	OPG	FGIG	NSG
LLSS	1	.860*	.546*	.775*	.476*	.281*	.082*	.391*	.037
CP		1	.289*	.684*	.213*	.347*	.147*	.423*	.087*
CIFL			1	.162*	-.024	.074*	.024	.061	.081*
CL				1	.231*	.415*	.207*	.475*	.116*
SC					1	-.137*	-.203*	.056	-.228*
GPS						1	.759*	.773*	.577*
OPG							1	.302*	.359*
FGIG								1	.126*
NSG									1

*p<.05; LLSS: Lifelong learning skills scale; CP: Communication and productivity; CIFL: communication in a foreign language; CL: cooperation and learning; SC: Self-confidence; GPS Game Perception Scale; OPG: originality and purpose of the game; FGIG: function of the game and interest/curiosity/exploration in the game; NSG: nature and source of the game

When Table 10 is examined, a positive weakly significant correlation was observed between preservice teachers' lifelong learning skills and game perceptions ($r=.281$). When the correlation between lifelong learning skills and sub-dimensions of the game perception was examined, it was seen that the highest correlation in the function of the game and interest/curiosity/exploration in the game sub-dimension ($r=.391$). When the correlation between game perception and sub-dimensions of the lifelong learning skills was examined, it was seen that the highest correlation in the cooperation and learning sub-dimension ($r=.415$). When the correlation between sub-dimensions of the both game perception and lifelong learning skills was examined, it was seen that the highest correlation in the between "cooperation and learning" and "function of the game and interest/curiosity/exploration in the game" ($r=.475$).

CONCLUSION AND DISCUSSION

When the findings of the research were examined, no statistically significant difference was found between the lifelong learning skills and game perceptions of the preservice teachers and their gender. However, a significant difference was found in favor of female between the function of the game, the level of interest/curiosity/exploration in the game and their gender. In this context, it can be thought that female preservice teachers are willing and open to change, contrary to tradition. It seems that there are studies supporting this finding. Pilten and Pilten (2013) stated that especially female preservice teachers studying in later grades tend to play educational games. However, Bakar et al., (2008) observed that most of the preservice teachers who emphasized educational and personal development features were girls and that these preservice teachers generally used the game for learning purposes during the practices. From these results, it can be deduced that the game perceptions of female are based on learning. However, it is important for teachers to focus on individual differences, not gender, in order to understand their preservice teachers' learning styles. This will help teachers understand the individual differences of preservice teachers to enable them to best progress in the learning process.

In this study, it was observed that as the grade level increased, the lifelong learning skills of the preservice teachers increased and the lifelong learning skills of the 4th grade preservice teachers were at the highest level. In addition, it was determined that the communication and productivity skills of the preservice teachers studying in the 4th grade and their communication skills in a foreign language were higher than the other grade levels. Tunca, Alkın-Şahin, Aydın (2015) determined that second grade preservice teachers have higher average than fourth graders. It was concluded that the fourth-grade preservice teachers had a lower average than the other grade levels. The reason for this is that Public Personnel Selection Examination (KPSS) is the primary target of the 4th grade preservice teachers. In this context, preservice teachers aimed to find the right answer in a short time. Therefore, our study shows different results with the low level of lifelong learning skills of the 4th grade preservice teachers. According to Baykara Pehlivan's (2005) study, it was determined that there was a significant difference in favor of the 4th grades on the basis of preservice teachers' communication skill perception level averages. These results show that preservice teachers' lifelong learning skills can improve over time and increase as the education process progresses. At the same time, this may suggest that preservice teachers' lifelong learning skills may increase during the education process, starting from the preschool period. These results emphasize that teachers should monitor and support the development of their preservice teachers' lifelong learning skills. Thus, they can ensure that preservice teachers' progress in their learning processes in the best way possible. Therefore, teachers need to use various activities and materials to support and improve preservice teachers' foreign language learning

processes. This will help preservice teachers develop their communication skills in a foreign language and be able to compete in the global world.

It has been observed that as the frequency of reading books increases, the lifelong learning skills of the preservice teachers increase and the lifelong learning skills of the preservice teachers who almost always read books are at the highest level. It has been determined that the preservice teachers who almost never read books have higher perceptions of the originality and purpose of the game. When Arslan, Bıçakçığıl Özsoy and Aslan (2019) studies are examined, it is seen that preservice teachers' lifelong learning positively affects their attitudes towards reading habits. Ayra and Kösterelioglu (2015) found in her study that there is a correlative relationship between teachers' lifelong learning tendencies and their frequency of reading books. Bulaç and Kurt (2019) stated in their study that the habit of reading books contributes to the personal and professional development of preservice teachers. Karaduman (2015) concluded that there is a significant difference between reading books and lifelong learning tendencies. Reading can help improve access to information, language skills, vocabulary, and cognitive functions. These are also important factors in the development of lifelong learning skills. In addition, there are not enough studies in the literature in the context of high game perceptions of the preservice teachers who do not read books. When the studies in the literature are examined, it can be said that the habit of reading books positively affects lifelong learning.

It has been observed that the lifelong learning skills of the preservice teachers with higher maternal education level are higher. In addition, it was observed that the preservice teachers with a high level of education in the mother and father also had significantly higher communication skills in a foreign language. These results show the effect of the family on the education of preservice teachers. The education level of the parents can affect the education level of the preservice teachers and increase their lifelong learning skills. In addition, it is important that parents support and set an example in matters such as learning a foreign language. Highly educated parents can provide their preservice teachers with opportunities to learn foreign languages and help them improve their communication skills in a foreign language. Mothers and fathers have a significant influence on children's attitudes towards foreign languages (Gardner, 1968). This view of Gardner also supports our study. These results also show that schools should care about the support and participation of preservice teachers' families. By involving parents in the education process, schools can help increase the education level of preservice teachers and improve their communication skills in foreign languages. It has been determined that families with high income levels have higher communication skills in foreign languages. On the other hand, it was seen that the game perceptions of the preservice teachers with low income level were higher. These results show that families and the environment can affect preservice teachers' language learning processes and game perceptions. In order to learn a foreign language, preservice teachers must have access to resources such as adequate materials, suitable environments and opportunities. Since families with higher incomes have more access to these resources, their children may also have higher communication skills in a foreign language. On the other hand, families may not be able to provide enough opportunities for their children when they have a low income level. This can increase productivity in children. The fact that low-income preservice teachers have higher game perceptions indicates that these preservice teachers are richer in terms of imagination and creativity. These results highlight the need for teachers to plan their education taking into account the different abilities and needs of preservice teachers. In addition, these results show that schools should help each student reach their full potential by providing equal opportunities to all preservice teachers.

A positive and significant relationship was observed between preservice teachers' lifelong learning skills and game perceptions. While learning skills include the ability to acquire, understand, remember, synthesize and apply knowledge, game perception refers to one's awareness of games, the ability to perceive the purpose and features of games. The fact that there is a positive relationship between these two concepts shows that the games have an effect on the learning process. Bardak (2018) stated that game is the first natural learning method used while meeting all of his physical and spiritual needs, except for sleep. Games can make learning more fun and enjoyable by improving people's learning skills. Thanks to the game, people can learn while having fun.

RECOMMENDATIONS

Based on the findings of the study, the following recommendations can be made:

- In order to use different techniques such as teaching with games in schools, it may be beneficial to give importance to practical courses as well as theoretical courses.
- Game materials that support teaching can be sent to schools by the Ministry of National Education

and preservice teachers and teachers can diversify the materials by taking examples from these materials.

- Academic studies on the role of games in teaching can be increased.
- Since there is a significant difference between the frequency of reading books and lifelong learning, it may be beneficial for teachers to direct preservice teachers to read more books.
- The educational needs of children can be supported by improving the financial means of families with low income.
- It would be beneficial to conduct similar studies with larger study groups to obtain better results.

Ethics Committee Approval Information

This study was approved for scientific research ethics in accordance with the Kırşehir Ahi Evran University Social Sciences and Humanities Publication Ethics Committee decision dated 21.04.2022 and numbered 2022/03/66.

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REFERENCES

- Arslan, A., Bıçakçığıl-Özsoy, R., & Aslan, R. (2019). Investigation of attitudes of vocational school students about lifetime learning tendencies and book reading habits. *Journal of International Social Research*, 12(66), 730–747. <https://doi.org/10.17719/jisr.2019.3622>
- Artar, M., Onur, B., & Çelen, N. (2002). Çocuk oyunlarında iç kuşakta görülen değişimler [Changes in the inner generation in children's games]. *Çocuk Forumu [Children Form]*, 5(1), 35–39. Retrieved August 20, from <https://dergipark.org.tr/tr/download/article-file/186025>
- Ayra, M., & Kösterelioğlu, İ. (2015). The relationship between teachers' lifelong learning tendencies and their perceptions of professional self-efficacy. *NWSA-Education Sciences*, 10(1), 17–28. <https://doi:10.12739/NWSA.2015.10.1.1C0630>
- Bakar, A., Tüzün, H., & Çağıltay, K. (2008). Students' opinions of educational computer game utilization: A social studies course case *Hacettepe University Journal of Education*, 35, 27–37. Retrieved August 20, from <http://www.efdergi.hacettepe.edu.tr/yonetim/icerik/makaleler/539-published.pdf>
- Bardak, M. (2018). Oyun temelli öğrenme [Game-Based learning]. In A. Gürol (Ed.), *Erken çocukluk döneminde öğrenme yaklaşımları [Learning approaches in early childhood]* (pp. 207-230). İstanbul: Efe Academy Publishing.
- Baykara-Pehlivan, K. (2005). A Study on perception of communication skills of preservice teachers. *Elementary Education Online*, 4(2), 17–23. Retrieved August 20, from <https://ilkogretim-online.org/fulltext/218-1596619966.pdf?1692521997>
- Bernard, H. R. (2002). *Research methods in anthropology: Qualitative and quantitative approaches* (3rd Ed.). Walnut Creek, CA: Alta Mira Press.
- Bollen, K. A. (1989). A new incremental fit index for general structural equation models, *Sociological Methods & Research*, 17(3), 303–316. <https://doi.org/10.1177/0049124189017003004>
- Brown, T. A. (2006). *Confirmatory factor analysis for applied research*. New York: The Guilford Press.
- Bulaç, E., & Kurt, M. (2019). Investigation of tendencies of prospective teachers towards lifelong learning. *Amasya Education Journal*, 8(1), 125–161. Retrieved August 20, from <https://dergipark.org.tr/tr/download/article-file/736604>
- Çiftcibaşı, F., Korkmaz, Ö., & Karamustafaoğlu, S. (2020). Lifelong learning skills scale for secondary

- school students: validity and reliability study. *Erzincan University Journal of Education Faculty*, 22(1), 211-226. <https://doi.org/10.17556/erziefd.618167>
- Erbay, F., & Durmuşoğlu-Saltalı, N. (2012). The place of play in six-year-olds' daily life and mothers' play perception *Ahi Evran University Journal of Kırşehir Education Faculty*, 13(2), 249–264. Retrieved August 20, from <https://dergipark.org.tr/tr/download/article-file/1491847>
- Evans, J. D. (1996). *Straight forward statistics for the behavioral sciences*. CA: Brooks/Cole Publishing. Online, Pacific Grove.
- Fraenkel, J. R., Wallen, N. E. & Hyun, H. H. (2012). *How to design and evaluate research in education* (8th Ed.). New York: McGraw Hill.
- Gardner, R. C. (1968). Attitudes and motivation: Their role in second-language acquisition. *TESOL Quarterly*, 2(3), 141–15. Retrieved August 20, from <https://files.eric.ed.gov/fulltext/ED024035.pdf>
- George, D. & Mallery, M. (2010). *SPSS for windows step by step: A simple guide and reference, 17.0 update* (10th ed.) Boston: Pearson.
- Güleç-Özer, D., & Turgay, O. (2016). Yaratıcılık ve oyun kavramlarının bilgisayar destekli tasarım sürecinde incelenmesi [Investigating the concepts of creativity and play in the computer aided design process]. *Online Journal of Art and Design*, 4(3), 71–89. Retrieved August 20, from <http://www.adjournal.net/articles/43/435.pdf>
- Karaduman, A. (2015). *The relationship between the lifelong learning tendencies of undergraduate students and their self-efficacy perceptions*. Unpublished Master Thesis, Bartın University, Bartın.
- Kline, R. B. (2005). *Principles and practice of structural equation modeling*. New York: Guilford Press.
- Kurt, Ş. H. (2015). *A research on the perception of play in parents and children from different cultures*. Unpublished Master Thesis. Çukurova University, Adana.
- Kuşçu, Y. (2014). *Play rating scale Turkish adaptation and investigation of the behavior of children 36-72 months game*. Unpublished Master Thesis, Selçuk University, Konya.
- Kuzu, O. (2021). Diagnostic assessment of preservice mathematics and science teachers' attributes on integral. *Yüzüncü Yıl University Journal of Education Faculty*, 18(1), 249–283. <https://doi.org/10.33711/yyuefd.859592>
- Kuzu, O. (2022). Dijital çağda matematik öğretiminde önemli bir ihtiyaç: Oyun tabanlı öğrenme [An important need in mathematics teaching in the digital age: Game-based learning]. In B. Gülbahar (Ed.), *Eğitimin güncel konuları üzerine [On current issues of education]* (pp. 259-289). Ankara: Nobel Academic Publishing.
- Kuzu, Y. (2022). Ortalamalar arası farkın test edilmesi [Testing the difference between the means]. In S. Göçer-Şahin & M. Buluş (Eds.), *Adım adım uygulamalı istatistik [Step by step applied statistics]* (pp. 105-156). Ankara: Pegem Academy Publication.
- Laal, M. (2011). Lifelong learning: What does it mean?. *Procedia-Social and Behavioral Sciences*, 28, 470-474. <https://doi.org/10.1016/j.sbspro.2011.11.090>
- Lindeman, E. C. (1925). *The meaning of adult education*. New York: New Republic. (Republished in 1961 by Harvest House.)
- Nash, D. A. (1994). The life-Long Learning imperative... ends and means. *Journal of Dental Education*, 58(10), 785–79. Retrieved August 20, from https://uknowledge.uky.edu/cgi/viewcontent.cgi?article=1021&context=ohs_facpub
- Patton, M. Q. (2005). *Qualitative research*. New York: John Wiley & Sons, Ltd.

- Pilten, P., & Pilten, G. (2013). Okul çağı çocuklarının oyun kavramına ilişkin algılarının ve oyun tercihlerinin değerlendirilmesi [Evaluation of school-age children's perceptions of the concept of play and their game preferences]. *Mersin University Journal of the Faculty of Education*, 9(2), 15–31. Retrieved August 20, from <https://dergipark.org.tr/tr/download/article-file/160849>
- Schermelleh-Engel, K., Moosbrugger, H., & Müller, H. (2003). Evaluating the fit of structural equation models: Tests of significance and descriptive goodness-of-fit measures. *Methods of psychological research online*, 8(2), 23–74. Retrieved August 20, from https://www.stats.ox.ac.uk/~snijders/mpr_Schermelleh.pdf
- Sumintono, B., & Widhiarso, W. (2014). *Aplikasi model Rasch Untuk penelitian ilmu-ilmu sosial*. Trim Komunikata Publishing House.
- Toprak, M., & Erdoğan, A. (2012). Lifelong learning: Concept, policy, instruments and implementationa. *Journal of Higher Education and Science*, (2), 69–91. Retrieved August 20, from <https://dergipark.org.tr/en/download/article-file/1711466>
- Yıldız, P. R., & Perihanoğlu, P. (2004). Okulöncesi eğitimde araç – gereç bulunma düzeyi ile öğrencilerin gelişim düzeyleri arasındaki ilişki [The relationship between the level of availability of tools and equipment in preschool education and the development levels of students]. *Yüzüncü Yıl University Journal of Education Faculty*, 1(2), 1–15. Retrieved August 20, from <https://dergipark.org.tr/tr/pub/yyuefd/issue/13722/166077>
- Yeaxlee, B. A. (1929). *Lifelong education: A sketch of the range and significance of the adult education movement*. Cassell.
- Yockey, R. D., (2016). *SPSS demystified: A simple guide and reference (2nd ed.)*. United Kingdom: Taylor & Francis.
- Zülal, A. (2000). Oyun oynamak herkesin hakkı [Everyone has the right to play games]. *TUBITAK Science and Technical Journal*, 393, 62–64. Retrieved August 20, from <https://bilimteknik.tubitak.gov.tr/node/52171>