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Research Article

Self-efficacy of teachers in special education schools for teaching through play

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Abstract: This study aims to ascertain the degree to which special education teachers believe they can effectively teaching through play. A descriptive survey model was used in the research. Our study sample consisted of 241 teachers working in special education in a state institution under the Konya Provincial Directorate of National Education. The data collection tool of the research is the 18-item "Self-Efficacy Scale for Teachers Working in Special Education in the Process of Teaching Through Play" developed by the researchers. As a result of the research, it was concluded that the teachers participating in the study had very high self-efficacy perceptions in terms of planning instruction according to program stages and developmental characteristics, as well as in the application process and evaluation related to developmentalcharacteristics. However, their perceptions of self-efficacy regarding the application method were high. Regarding gender, it was shown that female teachers have stronger self-efficacy, and preschool instructors have higher average scores than class teachers and special education teachers based on the undergraduate graduation variable. In addition, it was determined in the research that the self-efficacy perceptions of teachers in terms of the process of teaching through play are similar according to the professional seniority and the disability type of students they work with.

1. INTRODUCTION

Play is an activity that makes the child happy while engaging them actively in the process and sustaining their attention. It is mostly an activity in which the child participates willingly. Play, which is of great importance in the child's development, is important for the development of the student. Clues obtained from the child's behaviors during play provide important information about his/her development. Play is a way for children to explore themselves and the world, as well as to express themselves (Pehlivan, 2014). Through play, children develop language, personality, and behavior, and thus prepare for situations they may encounter later in life (Manwaring, 2011). In other words, through play, students prepare for their future lives. Students can simulate dangerous situations in real life through play. In this way, they can learn what they need to learn about life through play. Additionally, when used in an academic environment, play provides a natural and enjoyable teaching environment for the child, enriching and diversifying the child's surroundings (Tuğrul, 2014). A child who experiences

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the feeling of success through play will show an increased interest in learning experiences that will affect other areas of life (Tuzcuoğlu & Tuzcuoğlu, 2004). Developing games suitable for the level of communication initiation and maintenance necessary in the communication process for individuals with special needs, who experience limitations, should be ensured. Thus, by having an active role in the game, their communication skills develop, and they learn to understand social roles, control their reactions, and direct their feelings (Akandere, 2003; Stagnitti O'Connor, 2012).

Teachers of individuals with special needs have responsibilities to fulfill in order to provide the mentioned benefits of the teaching process through games. When using play in the education of individuals with special needs, it should be remembered that students also have limitations during play and need help in initiating and sustaining play. In teaching play skills, first of all, there should be a rich environment for the individual and this environment in which the child is involved should be designed per the needs and characteristics of the child (MEB, 2014). The process of designing this environment should start with games and toys that the child knows and feels comfortable with. The game should be played with the same person at the beginning and there should be no change in the game for a while for the child to get used to the game. The play environment should appeal to multiple senses. In addition, having a familiar person with the child makes it easier for the child to adapt to the game and continue playing (Sarı, 2017). In addition to music and fun in the game, the child should be encouraged with various reinforcement schedules, and guidance should be given to the child without letting him/her feel it. The game should be stopped if it is thought that it is moving away from the targeted goal, and the student should be left alone by not insisting on its continuation. In addition to giving the child the joy of learning, the child should also be given the chance to make mistakes in the game (Güneş, 2015). Teachers should plan the process, purpose, and content of teaching through play well. Objectives should be appropriate for students and content should be enriched within the possibilities. The process of teaching through play should be continued by taking into account the age group, disability type, and needs of individuals with special needs. Students should be active in play and control the rules themselves during the play process. Teachers should consider the sequential nature of the subject in the process of teaching through play. At the same time, the subjects in the game should be suitable for the complementary nature of the subjects through play. Evaluation criteria in the process of teaching through play should be clear, understandable, and appropriate for the student level. At the end of the evaluation, it should be checked whether the achievements have been attained or not. Play is a method for the development and learning of individuals with special needs. However, when teachers transfer the game to educational environments, they need to pay attention to some situations. Since individuals with special needs experience problems in interest and concentration, it is important to provide diversity in play tools and materials. While normal individuals can manage themselves with any toy and play, individuals with special needs may need adaptations in toys and guidance in the game (Brodin, 1999). For example, if our student with special needs has a disability that prevents him/her from holding a toy, some arrangements need to be made for the student to play with this toy.

Some of these studies are as follows: Kaya (2010) examined the effectiveness of a play intervention program (OMP) on the cognitive skills of 3-5-year-old children with special needs, and found that their performance improved positively after the intervention. Ergin (2017) investigated the effectiveness of teaching by increasing the variety of imaginary play behaviors of children with autism spectrum disorder (ASD) with increasing hints and found that all participants in the study acquired and retained the play gains included in the play theme. Kaptan (2018) studied the effectiveness of video modeling in teaching sociodramatic play to children with autism spectrum disorder. The research concluded that video modeling is effective in teaching sociodramatic play to children with autism spectrum disorder. Kaplan (2019) examined the effectiveness of teaching counting skills through play for students with

intellectual disabilities and showed that play was effective and that students were able to exhibit and generalize these gains after the applications. In another study examining the effect of play on the social development of children with special needs, teacher opinions were included and it was stated that play has a positive effect on attention, and teachers play games that reinforce cooperation, sharing, and classroom activities and that they are good at creativity, enrichment, and drama (Yaman, 2019). Janson (2001) analysed the joint play interaction of visually impaired and sighted preschool children by stating that co-play involves common physical space, social thought and experience, and common symbols rather than just sharing the physical environment. The findings of the study revealed that children with disabilities could not use common symbols in joint play. Therefore, it was found that they experienced difficulties in joint play. The study concluded that individual characteristics are the points to be considered in joint play. Stanley (2003) conducted a study on the relationship between symbolic play and other developmental areas (non-verbal cognitive competence, receptive language, expressive language, and social development) and found that there is a strong relationship between the symbolic play behaviors of autistic children and their non-verbal cognitive competence and that social development is related to verbal competence and social competence is the determining feature of symbolic play. Fridenson Hayo *et al*. (2017) investigated the outcomes of "Emotiplay," a cross-cultural serious game developed to teach emotions to children with autism. The study concluded that Emotiplay is an effective and motivating psycho-educational intervention. It was found to teach the recognition of cross-cultural expressions from faces, voices, and body language, and to integrate these skills contextually for children with high-functioning autism. Cano *et al*. (2019) showed that using Game Analytics information is an effective way to evaluate both the game design and implementation, especially when other evaluation types requiring user participation are limited. The study was based on an evidence-based evaluation of a learning game for users with intellectual disabilities. Jeong *et al*. (2020) conducted a study on the development of 'ZOOCUS,' a board game with multiple experiences for intellectually disabled students. This study aimed to improve the attention and concentration of intellectually disabled students by combining board games and AR applications in "ZOOCUS," an AR board with multiple experiences developed to improve the social skills, concentration, and working memory of intellectually disabled students. This study found that the attention and concentration of intellectually disabled students were improved, and by adding an AR function to the board game, various visual-auditory elements were provided to maximize feedback according to the game behavior. As seen in many previous studies, board games can develop some basic skills necessary for intellectually disabled students. However, among the many board games used in the studies, there is no case where a board game specifically developed for intellectually disabled students is used and developed commercially.

In the literature, there are studies determining teacher competence. Some of these studies conducted on teacher competence are as follows: Kadim (2012) examined the self-efficacy of preschool teachers in teaching through play according to various variables. No significant difference was found in teachers' self-efficacy in implementing and evaluating play activities according to gender, age, education status, seniority, education age group, class size, school location, and school type variables. Significant differences were obtained only in terms of age levels for preschool teachers' professional self-efficacy in play teaching. Pıştav Akmeşe and Kayhan (2017) examined the self-efficacy of teachers working in special education in teaching through play. The study used the "Preschool Period Play Teaching Self-Efficacy Questionnaire" developed by Kadim (2012) to determine the self-efficacy of teachers working in special education in play teaching. The findings of the study showed that there was a significant difference in planning, implementation, and evaluation of self-efficacy according to the graduation field, receiving education related to play, and professional seniority variables. Another result of the study is that the education level variable is effective in evaluating play-teaching activities, professional self-efficacy, and play-teaching effectiveness. In terms of the

gender variable, its effect was observed in the sub-dimension of implementing play activities. Celep (2020) examined the self-efficacy levels of teachers working in preschool special education schools and their creative personality characteristics and the relationship between them. In the research, the "Personal Information Form", "Preschool Period Play Teaching Self-Efficacy Questionnaire", and "Creative Personality Traits Scale" were used as data collection tools. The findings of the research showed that there was a significant difference in the self-efficacy levels of teachers working in preschool special education schools according to variables. At the same time, it was found that the creative personality characteristics of teachers showed significant differences according to variables such as gender, age, professional seniority, class size, presence of auxiliary staff in the classroom, receiving education related to play at the university, following publications related to play, and receiving education related to play and creativity. Additionally, a significant high relationship was found between the self-efficacy levels of teachers working in preschool special education schools and their creative personality characteristics.

Special needs individuals' educational needs can vary, with each individual showing individual differences based on their needs. In consideration of these differences, teachers in special education use different teaching methods and techniques. It is important that these methods and techniques enrich the education of special needs students and be engaging. One of the most effective and engaging ways to enrich teaching is to incorporate play into education, in other words, to teach through play. Teaching through play aims to meet the educational needs of special needs students engagingly and enjoyably, unlike typically developing students. In this context, for teachers to effectively use teaching through play in their educational activities with students, they need to have certain competencies. It is necessary to determine the competencies of teachers in teaching through play, which they use to meet the educational needs of special needs of individuals. Based on the studies conducted in the field, a scale determining the competence of teachers of students with special needs has not been found utilized in the present research. Therefore, it is considered important to develop a scale called "Special Education Teachers' Self-Efficacy in the Teaching through Play Process" by the researcher to determine the self-efficacy of special education teachers in teaching through play and to determine the self-efficacy of special education teachers in teaching through play according to various variables using this scale. In this regard, this study aims to determine the self-efficacy of special education teachers in the teaching through play process. In line with this aim, the following sub-problems will be addressed in the research:

1. How confident are special education teachers in their ability to educate through play?
2. Does the gender variable have a significant impact on the self-efficacy of special education instructors in the process of teaching via play?
3. Does the professional seniority variable significantly affect the self-efficacy of special education teachers in the process of teaching via play?
4. Does a special education teacher's field of graduation affect how confident they feel about themselves when it comes to the play-based learning process?
5. Does the self-efficacy of special education instructors in the play-based learning process vary depending on the disability group they work with?

2. METHOD

In this section, information about the research model, population and sample, data collection tools, and data analysis is provided.

2.1. Research Model

This study aims to determine the self-efficacy of special education teachers in the teaching through play process. In line with this aim, a descriptive survey model was used in the study. Studies conducted using the descriptive survey model aim to reveal the characteristics of

individuals or groups. According to the descriptive survey model, research aims to describe a current or past situation as it is. The case, person, or objects that constitute the subject of the research are tried to be described without any intervention under existing conditions (Karasar, 2009).

2.2. Population-Sample

The target population of this study consists of 632 special education teachers working in state institutions affiliated with the Konya Provincial Directorate of National Education in the 2021-2022 academic year. The number of teachers that need to be randomly selected to represent 632 special education teachers with a confidence interval of 95% (α= .05) is 239 (Yazıcıoğlu &Erdoğan, 2014). Within the scope of the research, the participation of 241 special education teachers randomly selected was ensured, thus meeting the required sample size.

2.2.1. *Information about the population and sample*

The distribution of the teachers working in special education who participated in the study according to the memorable characteristics is shown in Table 1.

Table 1. *Distribution of participants by diagnostic characteristics.*

		f	%
Seniority	0-10 years	140	58.1
	11-20 years	68	28.2
	20 years and above	33	13.7
Field of Undergraduate	Special Education Teaching	151	62.7
	Classroom teaching	51	21.2
	Pre-school teaching	39	16.2
Disability group	Mildly Mentally Disabled	73	30.3
	Medium-Severe Mentally Disabled	82	34.0
	Autism	75	31.1
	Hearing loss	7	2.9
	Blind	4	1.7
Gender	Woman	133	55.2
	Male	108	44.8
	Total	241	100.0

When Table 1 is examined, it is understood that 58.1% of the participants have 0-10 years, 28.2% have 11-20 years, and 13.7% have 20 years and more professional seniority. A large proportion of the participants (62.7%) graduated from the special education department. 30.3% of the participants stated that they work with mildly intellectually disabled, 34% with moderate to severe intellectually disabled, 31.1% with autism, 2.9% with hearing loss, and 1.7% with visually impaired groups. 55.2% of the participants are female, and 44.8% are male.

2.3. Data Collection Tool

2.3.1. *Development of items for the self-efficacy scale of teachers working in special education for the teaching through play process*

This study aims to determine the self-efficacy of teachers working in special education in the teaching through play process. In line with this aim, a Likert-type competency scale was developed following the steps of scale development (DeVellis, 2017; Tezbaşaran, 2008). The scale development steps followed in the study are as follows;

- Literature review
- Development of item pool by deciding on the appropriate measurement tool

• Presenting the item pool to experts
• Preparing the draft scale
• Conducting pilot studies
• Data collection
• Validity and reliability studies
• Finalizing the scale (DeVellis, 2017).

The conceptual structure and sub-dimensions of the scale were determined by conducting a literature review on the self-efficacy of teachers working in special education in the teaching through play process (Cano *et al*., 2019; Celep, 2020; Ergin, 2017; Fridenson Hayo *et al*., 2017; Janson, 2001; Jeong *et al*., 2020; Kadim, 2012; Kaplan, 2019; Kaptan, 2018; Kaya, 2010; Piştav Akmeşe & Kayhan, 2017; Stanley, 2003; Yaman, 2019). Based on this literature review, a draft item pool consisting of 54 items was created under three sub-dimensions: planning, implementation, and evaluation. The items were formulated considering the steps in planning, implementing, and evaluating the teaching process in special education. Additionally, care was taken to ensure that the items did not encompass multiple behaviors, judgments, or attitudes. Opinions on the 54 items in the item pool were gathered from academics and experts actively engaged in the field. The aim of obtaining expert opinions was to determine the content validity, which indicates the extent to which the items measure the intended aspects and their adequacy in terms of quantity and quality (Büyüköztürk, 2015). It is crucial for the researchers developing the measurement tool and the experts evaluating the scale to have a shared understanding of the scale's content (DeVellis, 2017; Tavşancıl, 2018). Opinions were obtained from 6 Special Education Teachers, 4 Preschool Teachers, 2 Physical Education and Play Teachers working in special education, 1 Play Therapist, 3 faculty members from the Special Education Department at Necmettin Erbakan University, and 1 scale development (statistics) expert. Based on the feedback, attention was paid to ensuring the items were easily comprehensible by the participants and written in clear and concise language. Following expert feedback and a literature review, the scale was reduced to 37 items without compromising content validity

Before the pilot application, our scale, which was prepared as a 37-item Likert scale, was applied to 30 third-year special education teacher candidates for pre-application. After the application, 2 items that the teacher candidates stated were not fully understood were revised. Apart from this change, no other change was needed. It was determined that teacher candidates filled the draft scale in an average of 20 minutes, so the filling time of the scale was determined as 20 minutes. After the pilot application, the Pilot Scale Form, prepared after the pre-application, was applied to 143 special education teachers working in state institutions affiliated with Ankara and Kırıkkale Provincial Directorates of National Education.

2.3.2. *Results of exploratory factor analysis*

Factor analysis, known as a multivariate analysis technique, aims to select the most correlated variables among many variables to create fewer conceptually meaningful new variables (Çokluk *et al*., 2010). Sample sufficiency and the suitability of the data for factorization should be checked before the analysis. The calculated Kaiser-Meyer-Olkin (KMO= .88>.70) coefficient indicated that the sample size was sufficient. The result of the Barlett Sphericity test ($\chi^2(153) = 1323.10$; $p<.001$) indicated that the data were suitable for factor analysis.

The necessary assumptions were met, and factor analysis was conducted. Principal component analysis is one of the factor extraction methods. In this study, this method was used to conduct the factor analysis. The value of .32 was assigned as the cutoff point for factor loadings (Tabachnick & Fidell, 2007). As a result of applying factor analysis, it was observed that the eigenvalues of five factors were above one. Also, a plateau was formed in the eigenvalue factor graph after the fifth point. The contribution of the components after the fifth point to the variance is small. At the same time, it was observed that they were approximately the same. Based on these results, it was decided that the number of factors should be five. In the next step

after determining the number of factors and the decision, the scale items were forced into five factors for analysis. The Varimax orthogonal rotation method was used. Items with factor loadings below the cutoff point (m1, m9, m18, m19, m37) and overlapping items that loaded on multiple factors (m5, m10, m11, m12, m13, m14, m15, m16, m17, m20, m21, m27, m31, m33) were each removed from the scale, and the analysis was repeated. As a result of the final analysis, it was observed that 18 items remained on the scale. The factor structure of the Self-Efficacy Scale for the Teaching through Play Process is shown in Table 2.

Table 2. *Teachers working in special education exploratory factor analysis results of the self-efficacy scale for the game teaching process.*

Item number	Factor load					MOV*	DMTK**	self-worth	Variance explained (%)
	1	2	3	4	5				
m29	.80	.18	.20	.09	.26	.79	.81	7.32	40.69
m23	.78	.22	.17	.12	.09	.71	.74		
m24	.74	.18	.22	.03	.20	.67	.71		
m30	.73	.28	.32	.06	.04	.72	.75		
m28	.71	.09	.02	.22	.27	.63	.65		
m32	.57	.31	.26	.31	-.02	.58	.61		
m3	.25	.88	.06	.12	.15	.88	.84	1.74	9.66
m4	.22	.86	.21	.09	.07	.84	.80		
m2	.25	.80	.17	.25	.10	.80	.78		
m35	.13	.10	.84	-.03	.17	.77	.61	1.51	8.37
m36	.35	.14	.74	.11	.06	.71	.65		
m34	.25	.18	.72	.23	.10	.68	.62		
m8	.20	.12	.20	.81	.08	.77	.67	1.29	7.18
m6	.00	.11	.01	.81	.09	.67	.55		
m7	.19	.13	.03	.75	.06	.62	.57		
m22	.05	.17	.03	.02	.86	.77	.54	1.14	6.34
m25	.30	.10	.25	.09	.77	.80	.70		
m26	.30	-.01	.15	.23	.58	.60	.53		

*MOV= Item common variance , **DMTK= Corrected Item – Total Correlation

Exploratory Factor Analysis (EFA) revealed that the factor loadings of the items in the first factor ranged from .57 to .80, in the second factor from .80 to .88, in the third factor from .72 to .84, in the fourth factor from .75 to .81, and in the fifth factor from .58 to .86. The commonality values of the items in Factor Analysis need to be greater than .40 (Field, 2013). The results indicated that this condition was met for all items. The five-factor scale explained 72.24% of the total variance. It is considered important for the variance explained by the factors to exceed 50%, as this means more than half of the variance of the variables is explained. The representational power of the items is at a high level (Yaşlıoğlu, 2017). The first, second, third, fourth, and fifth factors were named Self-Efficacy for Implementation Process, Self-Efficacy for Planning Teaching According to Program Stages, Self-Efficacy for Evaluation, Self-Efficacy for Planning Teaching According to Developmental Characteristics, and Self-Efficacy for Implementation Method, respectively.

2.3.3. *Results of confirmatory factor analysis*

The results of the Exploratory Factor Analysis indicated that the Self-Efficacy Scale for Teachers Working in Special Education in the Teaching through Play Process had a five-factor structure. In the next step, it was tested whether the five-factor structure of the scale was confirmed with the collected data. For this purpose, confirmatory factor analysis (CFA), which aims to test the fit of the proposed factor structure, was conducted (Yurt, 2023). The analysis

was performed using the Maximum Likelihood Estimation method. The fit indices for the five-factor model are presented in Table 3, including the Root Mean Square Error of Approximation (RMSEA), Standardized Root Mean Residual (SRMR), Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), and Incremental Fit Index (IFI).

Table 3. *Fit values of the three-factor structure of the self-efficacy scale for the game teaching process of teachers working in special education.*

Criterion	Good Fit	Acceptance Possible Fit	Obtained Values	Source
(χ^2/df) -	≤ 3	≤ 4-5	1.37	Byrne, 1989
RMSEA	≤ .05	.06-.08	.05	Browne & Cudeck, 1993
SRMR	≤ .05	.06-.08	.06	
GFI	≥ .90	.85-.90	.88	Tanaka Huba, 1985; Jöreskog & Sörbom, 1984
AGFI	≥ .90	.80-.90	.84	
CFI	≥ .95	.90-.94	.96	Bollen, 1989
TLI	≥ .95	.90-.94	.95	
IFI	≥ .95	.90-.94	.96	

When Table 3 is examined, it is understood that the five-factor structure of the scale is in good agreement with the data obtained from the Self-Efficacy Scale for the Play Teaching Process of Teachers Working in Special Education, and the five-factor structure of the scale is confirmed. The five-factor model of the scale is shown in Figure 1. All factor loadings shown in the model are statistically significant at the p<.001 level.

Figure 1. *CFA diagram of the self-efficacy scale for the game teaching process*. χ^2=171.20; *df* =125; p<.001

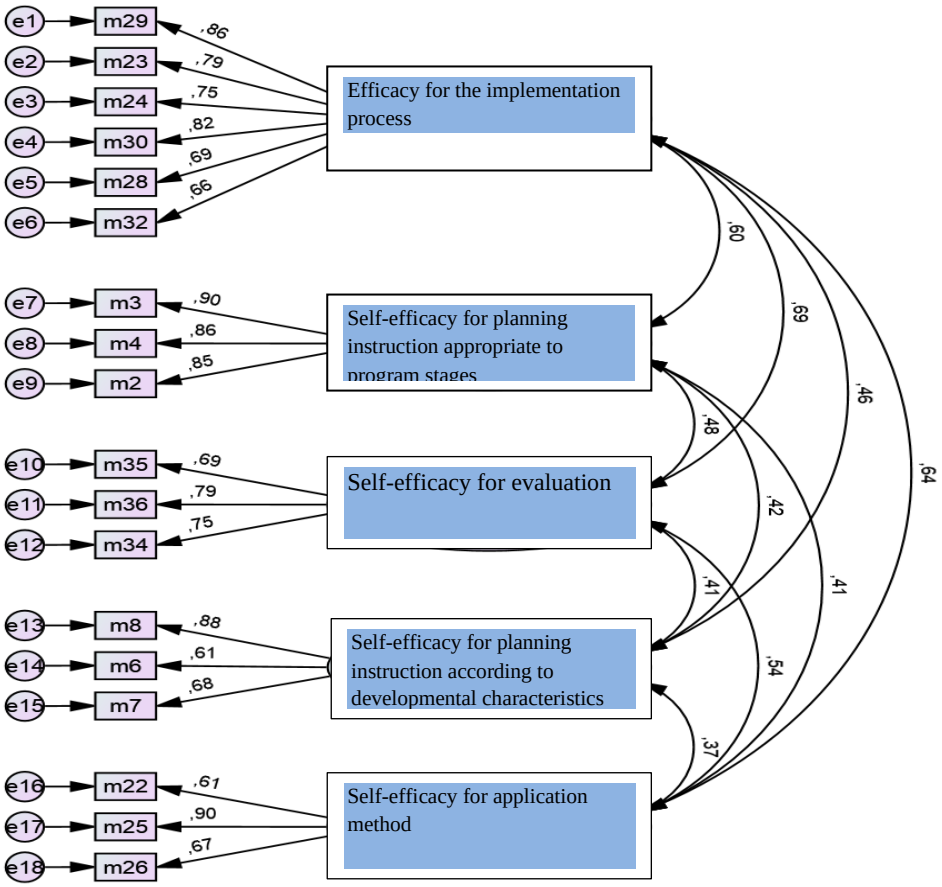

Table 4. *Confirmatory factor analysis results of special education teachers' self-efficacy scale for teaching through play process.*

Factor	Item number	Factor load	C.R.	AVE	MSV	MaxR (H)
Efficacy for the implementation process	m29	.87***	.89	.59	.47	.91
	m23	.79***				
	m24	.75***				
	m30	.82***				
	m28	.69***				
	m32	.66***				
Self-efficacy for planning instruction appropriate to program stages	m3	.90***	.90	.76	.36	.91
	m4	.86***				
	m2	.85***				
Self-efficacy for evaluation	m35	.69***	.79	.55	.47	.80
	m36	.79***				
	m34	.75***				
Self-efficacy for planning instruction according to developmental characteristics	m8	.88***	.77	.54	.21	.83
	m6	.61***				
	m7	.68***				
Self-efficacy for application method	m22	.61***	.78	.54	.42	.85
	m25	.90***				
	m26	.67***				

*** p<.001, C.R. = Composite reliability, AVE = Average variance extracted, MSV = Maximum shared variance, MaxR (H) = Maximum reliability.

Upon reviewing Table 4, it can be observed that the factor loadings of the items in the scale ranged from .61 to .90 as a result of the Confirmatory Factor Analysis (CFA). It was determined that the internal reliability criterion was met, with CR>.70 and AVE>.50. The criterion for convergent validity (CR>AVE) was also entirely met, indicating that convergent validity was achieved (Malhotra & Dash, 2011; Yurt, 2023). In terms of discriminant validity, it was observed that the condition MSV<AVE was entirely met. Additionally, it was found that the MaxR(H) reliability value was greater than the CR values, supporting the conclusion that discriminant validity was achieved (Hu & Bentler, 1999).

2.3.4. *Reliability analysis results*

Cronbach's Alpha coefficients were calculated to determine the reliability of the Self-Efficacy Scale for Teachers Working in Special Education in the Teaching through Play Process. Values between .60-.80 indicate that the measurement tool is quite reliable, while values between .81-1.00 indicate that the measurement tool is highly reliable (Özdamar, 2004).

Table 5. *Cronbach alpha coefficients of self-efficacy scale factors for the game teaching process.*

Dimension	Number of items	Cronbach Alpha
Self-efficacy for the implementation process	6	.89
Self-efficacy for planning instruction appropriate to program stages	3	.90
Self-efficacy for evaluation	3	.78
Self-efficacy for planning instruction according to developmental characteristics	3	.75
Self-efficacy for application method	3	.75
overall scale	18	.90

When Table 5 is examined, the alpha coefficients calculated for the factors of Self-Efficacy for Application Process, Self-Efficacy for Planning Instruction According to Program Stages, Self-

Efficacy for Evaluation, Self-Efficacy for Planning Instruction According to Developmental Characteristics, and Self-Efficacy for Application Method are .89, .90, .78, .75, and .75, respectively. The alpha coefficient calculated for the overall scale is .90. The obtained coefficients have shown that the reliability of the measuring instrument based on internal consistency is at a sufficient level.

According to the results of the validity analysis, it is understood that the Self-Efficacy Scale for Teaching through Play for Teachers Working in Special Education has a 5 factors structure. It has been observed that the six-factor structure is consistent with the collected data. The final form of the scale consists of 18 items. It has been determined that the reliability of the measuring instrument based on internal consistency is at a satisfactory level. The results obtained have shown that the measuring instrument can be used to determine the self-efficacy perceptions of teachers working in special education regarding the teaching through play process.

2.4. Data Analysis

In the scope of the research, descriptive analyses were conducted to examine the scores obtained from the Self-Efficacy Scale for Teaching through Play for Teachers Working in Special Education. Skewness and kurtosis coefficients were used to examine the distribution of scores obtained from the scale. Skewness and kurtosis coefficients were calculated, and the normal distribution assumption was examined for the scores obtained from the scales. Skewness and kurtosis coefficients within the ±1.5 range indicate that the normal distribution assumption is met (Tabachnick & Fidell, 2013). Skewness and kurtosis coefficients calculated for the scores obtained from the measuring instrument in this study were within the specified range (see Table 6). The results obtained have shown that the scores obtained from the Self-Efficacy Scale for Teaching through Play for Teachers Working in Special Education have a normal distribution. In this regard, data were analyzed using parametric analysis techniques.

Table 6. *Skewness and kurtosis coefficients of the scores obtained from the self-efficacy scale for the game teaching process of teachers working in special education.*

Variables	Distortion		Kurtosis	
	z	*SE*	*Z*	*SE*
Self-efficacy for planning instruction appropriate to program stages	-.66	.16	-.65	.31
Self-efficacy for planning instruction according to developmental characteristics	-1.35	.16	.80	.31
Self-efficacy for application method	.36	.16	-.53	.31
Self-efficacy for the implementation process	-.70	.16	.50	.31
Self-efficacy for evaluation	-.76	.16	.09	.31
Scale total score	-.57	.16	.08	.31

SE = Standart error

The study used an independent samples t-test to compare the scores obtained from the Scale of Self-Efficacy for Teaching with Games for Special Education Teachers according to the gender variable. One-way analysis of variance (ANOVA) was applied to compare the scores obtained from the scale according to the variables of professional seniority, the field of graduation, and the disability group. The Scheffe post hoc test was used to determine which groups the differences observed in the ANOVA were dependent on. The Scheffe test is used when the number of individuals in the groups is different, and the variances are homogeneous (Kayri, 2009). Some groups with a small number of participants were combined with other groups for analysis. A significance level of $p < .05$ was considered significant for the analyses. IBM SPSS 26.0 statistical package program was used for the analyses.

3. FINDINGS

Firstly, the levels of self-efficacy for teaching with games for special education teachers were examined according to the participants' scores. In the next step, the levels of self-efficacy for teaching with games for special education teachers were compared and examined according to the variables of gender, professional seniority, undergraduate graduation field, and the disability group worked with.

Table 7. *Descriptive statistics for scores obtained from the self-efficacy scale for teaching through play for teachers working in special education.*

Variables	Min.	Max.	Mean	Average / number of items*	*SD*
Self-efficacy for planning instruction appropriate to program stages	8	15	13.03	4.34	1.99
Self-efficacy for planning instruction according to developmental characteristics	10	15	14.07	4.69	1.34
Self-efficacy for application method	6	15	10.50	3.50	2.14
Self-efficacy for the implementation process	13	30	25.41	4.24	3.67
Self-efficacy for evaluation	7	15	12.85	4.28	1.92
Scale total score	49	90	75.83	4.21	8.76

*1.00-1.80 very low, 1.81-2.60 low, 2.61-3.40 medium, 3.41-4.20 high, 4.21-5.00 very high

When Table 7 is examined, it is understood that the mean scores for self-efficacy in planning instruction according to program stages, self-efficacy in planning instruction according to developmental characteristics, self-efficacy in application method, self-efficacy in application process, self-efficacy in evaluation, and total scale scores are calculated as 13.03 (*SD*=1.99), 14.07 (*SD*=1.34), 10.50 (*SD*=2.14), 25.41 (*SD*=3.67), 12.85 (*SD*=1.92), and 75.83 (*SD*=8.76), respectively. According to the obtained mean scores, it is understood that the self-efficacy perceptions of the special education teachers participating in the research regarding planning instruction according to program stages, planning instruction according to developmental characteristics, application process, and evaluation are at a very high level. The self-efficacy perceptions of the participating teachers regarding the application method are at a high level.

Table 8. *Self-Efficacy score means, standard deviations and independent groups t test results for the teaching through play process by gender*.

Variables	Gender	*n*	*Mean*	*SD*	*t*	*Df*	*p*
Self-efficacy for planning instruction appropriate to program stages	Woman	133	13.22	1.81	1.60	239	.11
	Male	108	12.81	2.19			
Self-efficacy for planning instruction according to developmental characteristics	Woman	133	14.33	1.20	3.42	239	.00*
	Male	108	13.75	1.44			
Self-efficacy for application method	Woman	133	10.57	2.02	.56	239	.58
	Male	108	10.42	2.28			
Self-efficacy for the implementation process	Woman	133	25.98	3.12	2.73	239	.01*
	Male	108	24.70	4.16			
Self-efficacy for evaluation	Woman	133	13.17	1.73	2.90	239	.00*
	Male	108	12.46	2.07			
Scale total score	Woman	133	77.25	7.61	2.82	239	.01*
	Male	108	74.09	9.75			

*$p<.05$

When examining Table 8, it is understood that there is no significant difference in the mean scores of self-efficacy for planning instruction according to program stages ($t_{(239)}$=1.60; p>.05) and self-efficacy for instructional methods ($t_{(239)}$=.56; p>.05) based on gender. However, there is a significant difference in the mean scores of self-efficacy for planning instruction according to developmental characteristics ($t_{(239)}$=3.42; p<.05), self-efficacy for instructional processes ($t_{(239)}$=2.73; p<.05), self-efficacy for evaluation ($t_{(239)}$=2.90; p<.05), and total scale scores ($t_{(239)}$=2.82; p<.05) based on gender. Female teachers had significantly higher mean scores in self-efficacy for planning instruction according to developmental characteristics, self-efficacy for instructional processes, self-efficacy for evaluation, and total scale scores.

Table 9. *Self-Efficacy score means, standard deviations, and ANOVA results for the teaching through play process by professional seniority.*

Variables	Professional seniority	*n*	*Mean*	*SD*	*F*	*p*
Self-efficacy for planning instruction appropriate to program stages	0-10 years	140	12.95	1.96	2.86	.06
	11-20 years	68	12.84	2.09		
	20 years and above	33	13.79	1.78		
Self-efficacy for planning instruction according to developmental characteristics	0-10 years	140	14.01	1.36	.35	.71
	11-20 years	68	14,12	1.41		
	20 years and above	33	14.21	1.11		
Self-efficacy for application method	0-10 years	140	10.54	2.14	.06	.94
	11-20 years	68	10.43	2.13		
	20 years and above	33	10.52	2.18		
Self-efficacy for the implementation process	0-10 years	140	25.37	3.88	.66	.52
	11-20 years	68	25,18	3.47		
	20 years and above	33	26.06	3.13		
Self-efficacy for evaluation	0-10 years	140	12.69	1.94	1.19	.30
	11-20 years	68	13.07	1.90		
	20 years and above	33	13.09	1.83		
Scale total score	0-10 years	140	75.54	8.95	.81	.45
	11-20 years	68	75.57	9.14		
	20 years and above	33	77.64	6.96		

When examining Table 9, it is understood that there is no significant difference in the mean scores of self-efficacy for planning instruction according to program stages ($F_{2;240}$=2.86; p>.05), self-efficacy for planning instruction according to developmental characteristics ($F_{2;240}$=.35; p>.05), self-efficacy for instructional methods ($F_{2;240}$=.06; p>.05), self-efficacy for instructional processes ($F_{2;240}$=.66; p>.05), self-efficacy for evaluation ($F_{2;240}$=1.19; p>.05), and total scale scores ($F_{2;240}$=.81; p>.05) based on years of professional experience. It is understood that the perception of self-efficacy for the use of games in the teaching process is similar among teachers with 0-10 years, 11-20 years, and 20 years and above of professional experience.

When examining Table 10, it is understood that there is no significant difference in the mean scores of self-efficacy for instructional methods ($F_{2;240}$=2.60; p>.05), self-efficacy for instructional processes ($F_{2;240}$=1.40; p>.05), self-efficacy for evaluation ($F_{2;240}$=.74; p>.05), and total scale scores ($F_{2;240}$=2.42; p>.05) based on undergraduate graduation field. However, it is observed that there is a significant difference in the mean scores of self-efficacy for planning instruction according to program stages ($F_{2;240}$=3.63; p<.05) and self-efficacy for planning instruction according to developmental characteristics ($F_{2;240}$=3.58; p<.05) based on the field of

graduation. According to the results, teachers who graduated from preschool teaching have significantly higher mean scores in self-efficacy for planning instruction according to program stages and self-efficacy for planning instruction according to developmental characteristics compared to teachers who graduated from special education teaching and classroom teaching.

Table 10. *Self-Efficacy score means, standard deviations, and ANOVA results for the teaching through play process by field of graduation.*

Variables	Undergraduate Graduation	*n*	*Mean*	*SD*	*F*	*p*	Post - Hoc
Self-efficacy for planning instruction appropriate to program stages	Special Education Teaching [a]	151	12.84	2.00	3.63	.03*	c >a, c >b,
	Classroom Teaching [b]	51	13.02	2.15			
	Preschool Teaching [c]	39	13.79	1.58			
Self-efficacy for planning instruction according to developmental characteristics	Special Education Teaching [a]	151	13.98	1.37	3.58	.03*	c >a, c >b,
	Classroom Teaching [b]	51	13.94	1.52			
	Preschool Teaching [c]	39	14.59	.79			
Self-efficacy for application method	Special Education Teaching	151	10.30	2.00	2.60	.08	-
	Classroom teaching	51	10.61	2.38			
	Pre-school teaching	39	11,15	2.22			
Self-efficacy for the implementation process	Special Education Teaching	151	25,26	3.75	1.40	.25	-
	Classroom teaching	51	25.18	3.58			
	Pre-school teaching	39	26.31	3.40			
Self-efficacy for evaluation	Special Education Teaching	151	12.96	1.91	.74	.48	-
	Classroom teaching	51	12.59	2.09			
	Pre-school teaching	39	12.79	1.70			
Scale total score	Special Education Teaching	151	75.30	8.83	2.42	.09	-
	Classroom teaching	51	75.27	9.73			
	Pre-school teaching	39	78.64	6.51			

[h] Scheffe Test, *p<.05

When examining Table 11, it is understood that there is no significant difference in the mean scores of self-efficacy for planning instruction according to program stages ($F_{3;240}$=.34; p>.05), self-efficacy for planning instruction according to developmental characteristics ($F_{3;240}$=.82; p>.05), self-efficacy for instructional methods ($F_{3;240}$=2.28; p>.05), self-efficacy for instructional processes ($F_{3;240}$=.88; p>.05), self-efficacy for evaluation ($F_{3;240}$=.96; p>.05), and total scale scores ($F_{3;240}$=1.03; p>.05) based on the disability group. It is understood that teachers working with mildly intellectually disabled, moderately to severely intellectually disabled, autism, hearing impaired, and visually impaired groups have similar perceptions of self-efficacy for the use of play-based teaching methods.

Table 11. *Self-efficacy score means, standard deviations, and ANOVA results for the teaching through play process by disability group.*

Variables	Disability group studied	*n*	*Mean*	*SD*	*F*	*p*
Self-efficacy for planning instruction appropriate to program stages	Mildly Mentally Disabled	73	12.88	2.12	.34	.80
	Medium-Severe Mentally Disabled	82	13.10	2.02		
	Autism	75	13.05	1.90		
	Hearing & Visually Impaired	11th	13.45	1.69		
Self-efficacy for planning instruction according to developmental characteristics	Mildly Mentally Disabled	73	13.92	1.48	.82	.48
	Medium-Severe Mentally Disabled	82	14.10	1.40		
	Autism	75	14.12	1.17		
	Hearing & Visually Impaired	11th	14.55	.93		
Self-efficacy for application method	Mildly Mentally Disabled	73	10.12	1.89	2.28	.08
	Medium-Severe Mentally Disabled	82	10.61	2.29		
	Autism	75	10.56	2.15		
	Hearing & Visually Impaired	11th	11.82	2.04		
Self-efficacy for the implementation process	Mildly Mentally Disabled	73	24.88	3.77	.88	.45
	Medium-Severe Mentally Disabled	82	25.79	3.52		
	Autism	75	25.44	3.67		
	Hearing & Visually Impaired	11th	25.91	4.16		
Self-efficacy for evaluation	Mildly Mentally Disabled	73	12.66	1.88	.96	.41
	Medium-Severe Mentally Disabled	82	12.90	1.97		
	Autism	75	13.08	1.82		
	Hearing & Visually Impaired	11th	12.27	2.37		
Scale total score	Mildly Mentally Disabled	73	74.42	8.66	1.03	.38
	Medium-Severe Mentally Disabled	82	76.43	9.00		
	Autism	75	76.24	8.46		
	Hearing & Visually Impaired	11th	78.00	9.59		

4. DISCUSSION and CONCLUSION

According to the results of the study determining the self-efficacy levels of teachers working in special education in the play-based teaching process, they consider themselves highly competent in planning instruction, implementing instructional processes, and evaluating instructional activities. The self-efficacy perceptions of the teachers participating in the study regarding instructional methods are also high. The study by Kadim (2012) on the self-efficacy beliefs of preschool teachers in the preschool education program supports our study as it shows that teachers' self-efficacy perceptions regarding planning are high. Guo, *et al*. (2014) found high self-efficacy perceptions among preschool special education teachers in their studies, which is similar to our study. The study by Pištav Akmeşe and Kayhan (2017) examined the self-efficacy of special education teachers in game-based teaching and found that their self-efficacy perceptions regarding planning were very high, supporting our study. In Celep's (2020)

study, which examined the levels of play-teaching self-efficacy and creative personality traits of teachers working in preschool special education schools and the relationship between them, it was found that teachers had high levels of self-efficacy related to play. This finding is similar to the results of our study. According to the findings of the study on the self-efficacy levels of teachers in the game-based teaching process based on the gender variable, it is understood that there is no significant difference in the mean scores of self-efficacy for planning instruction according to program stages and self-efficacy for instructional methods based on gender. However, it was found that the responses provided by female teachers had higher average self-efficacy scores in terms of developmental characteristics, planning instruction, implementation process, and evaluation. Koç's (2015) study on the self-efficacy beliefs of preschool teachers in activities in the preschool education program found a significant difference in favor of female teachers, supporting our study. In the study by Pıştav Akmeşe and Kayhan (2017), which examined the self-efficacy of special education teachers in play-based teaching, it was found that in terms of the gender variable, female teachers had a higher self-efficacy in the application dimension of game-based teaching, which supports our study. Tortop and Ocak (2010) examined the opinions of classroom teachers on educational game applications and found that contrary to our study, male teachers were found to be competent in educational game activities. They concluded that this situation was in parallel with doing sports in educational games and that male teachers do more sports than female teachers, so they are more competent in educational game activities.

In the study on the self-efficacy levels of teachers in the play-based teaching process based on professional seniority, it was found that teachers with 1-10 years, 11-20 years, and over 20 years of professional seniority have similar self-efficacy perceptions for game-based teaching. Other studies have also shown no significant difference between competence and professional seniority (Dickey, 2017; Semerci & Uyanık Balat, 2008).

Similarly, in a study determining the level of self-efficacy in the process of teaching through play among teachers working in special education, based on the variable of undergraduate degree, it was found that teachers who specified their undergraduate degree as preschool education had significantly higher mean self-efficacy scores in planning appropriate instruction and planning instruction according to developmental characteristics compared to teachers who specified their undergraduate degree as special education or elementary education. Our study is similar to the study by Pıştav Akmeşe and Kayhan (2017), which examined the self-efficacy of special education teachers in teaching through play. In their study they found that teachers with a degree in preschool education had higher self-efficacy in teaching through play compared to teachers with degrees in special education or elementary education. It can be considered that the higher self-efficacy of special education teachers who graduated from preschool education in planning instruction according to program stages, planning instruction according to developmental characteristics, application method, application process, and evaluation compared to teachers who graduated in hearing impairment, visual impairment, mental disabilities, and classroom teaching is due to the content of the courses on play and play-based teaching in the preschool education undergraduate program. The education of children in the preschool period in terms of cognitive, social, physical, and language development, the implementation of these educations with on-the-spot observation, and the fact that special education teachers who graduated in preschool education have higher self-efficacy scores in teaching through play.

When looking at the teachers working in special education, it is understood that the self-efficacy perceptions of teachers working with mild intellectual disabilities, moderate-severe intellectual disabilities, autism, hearing impairment, and visual impairment are similar in the teaching through play process. Kaner *et al*. (2007) state that the presence or absence of disabilities among students does not cause differences in teachers' beliefs in professional competence, which supports our research. Other studies show no difference in self-efficacy between disability

groups (Cantimer, 2015; Kaner, 2010). In light of the findings of the study, it is evident that teachers' self-efficacy in teaching through play is influenced by many factors. Considering that the majority of special education children are likely to be in the play stage, it is recommended to minimize factors that may hinder special education teachers' competence in teaching through play, increase the number of university-level courses on teaching through play, and provide in-service training.

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Contribution of Authors

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