Id: 1746774

Participatory Educational Research (PER)
Vol.13(1), pp. 18-35, January 2026
Available online at http://www.perjournal.com
ISSN: 2148-6123
http://dx.doi.org/10.17275/per.26.02.13.1

Investigating the Effect of Drama Education on Metacognitive Skills of Preschool Children

Kübra ZİYA
Child Development Master's Program Student of Graduate Education Institute, KTO-Karatay University, Konya, Turkey
ORCID: 0009-0006-5402-371X

Filiz ERBAY *
Child Development Department, KTO-Karatay University, Konya, Turkey
ORCID: 0000-0002-9766-8570

Article history

Received:
20.07.2025

Received in revised form:
01.09.2025

Accepted:
12.09.2025

Key words:
Metacognitive knowledge, drama education, early childhood education, preschool children.

The aim of this research is to examine the effects of drama education on the metacognitive knowledge levels of preschool children. The research was designed using a quasi-experimental methodology, specifically a pretest–posttest control group design. The sample consisted of 33 preschool children enrolled in a public early childhood education institution affiliated with the Republic of Türkiye Ministry of National Education in the Etimesgut district of Ankara. Of these, 16 were assigned to the experimental group and 17 to the control group. Data were collected through the Metacognitive Knowledge Interview Form adapted into Turkish by Keleş-Ertürk and Tepeli (2023) and the Personal Information Form. In the analysis of the data, the Mann-Whitney U test was used for pretest and posttest comparisons between groups, and the Wilcoxon Signed Ranks Test was used to analyze the changes within the experimental and control groups (pretest and posttest). The effect size were calculated with the Rank-Biserial Correlation (rB). Findings indicated no statistically significant difference between the pretest mean scores of the experimental and control groups. While the control group showed no significant change between pretest and posttest scores, the experimental group demonstrated a statistically significant increase in favor of the posttest. Additionally, posttest scores of the experimental group were found to be significantly higher than those of the control group. In light of these findings, it can be concluded that drama-based pedagogical interventions contribute positively to the development of metacognitive knowledge in preschool-aged children.

Introduction

Early childhood is a critical developmental period encompassing the span from birth to approximately eight years of age (Likhar et al., 2022). During this stage, children's cognitive, motor, linguistic, social, and emotional development occurs at a significantly accelerated pace compared to other life stages (Özgen, 2023). Although learning and education are recognized as lifelong processes, a growing body of empirical research highlights early childhood as the most crucial period for foundational learning and educational interventions from a scientific

* Correspondency: filiz.erbay@karatay.edu.tr, filizerbay42@gmail.com

standpoint (Delihasanoğlu, 2021). At this age, children begin to exhibit heightened cognitive awareness, characterized by their ability to observe and interpret their environment, engage in empathetic thinking, and develop adaptive behavioral responses accordingly. These emerging capabilities collectively support the development of metacognitive skills, which are essential for regulating thought processes and fostering autonomous learning (Yalçın, 2017).

Metacognition can be broadly defined as an individual's awareness of their own mental processes and the capacity to regulate these processes in a deliberate and rational manner (Hıdıroğlu, 2018; Önsay et al., 2025; Perry, 2018). One of the core components of metacognition involves the ability to develop and apply strategies within one's own learning processes (Şerifoğlu, 2019). In other words, metacognition entails cultivating a conscious awareness of one's own thinking and learning activities, thereby enabling self-monitoring and self-regulation (Öztürk, 2017). Moreover, metacognitive competence extends beyond self-awareness to include the ability to understand and evaluate others' cognitive skills—making inferences through comparisons, recognizing similarities and differences, and forming judgments about oneself or others. Thus, the development of metacognitive skills plays a vital role not only in enhancing cognitive functioning but also in supporting social development (Altun & Yeşilpınar, 2023; Doğan & Şimşek, 2017; Kaya, 2024).

Empirical research has consistently demonstrated that the development of metacognitive skills significantly influences an individual's cognitive, academic, and social development (Arslan, 2021; Çalgıcı & Ogan-Bekiroğlu, 2021; Harmankaya & Melanlıoğlu, 2017; Oğuz & Kalender, 2018). Individuals with underdeveloped metacognitive awareness tend to give up easily when confronted with cognitive challenges, whereas those with well-developed metacognitive skills are more likely to experiment with alternative strategies and persist until they reach a solution (Altan, 2022). While individuals with limited metacognitive capacity often refrain from engaging in effort when a clear outcome is not guaranteed, metacognitively competent individuals place greater value on the learning process itself rather than merely on its outcomes. Similarly, underdeveloped metacognitive minds may be resistant to criticism, interpreting it as a threat, whereas those with advanced metacognitive skills perceive constructive feedback as an opportunity for growth (Grote et al., 2021). Moreover, individuals with low levels of metacognitive development may feel discomfort in the face of others' success, while metacognitively mature individuals view such success as a source of inspiration and learning (Güneş, 2015). Finally, whereas a metacognitively immature perspective often leads to egocentrism and self-interest-driven behavior, metacognitive maturity enables individuals to adopt universal value systems and exhibit empathic, prosocial behaviors (Ng, 2018).

In this context, the development of metacognition in individuals is important. However, it is widely recognized that metacognitive abilities begin to emerge in the earliest years of life (Aydın & Ünsever, 2024). Consequently, the development of both cognitive skills and metacognition is not only possible but also most effective during early childhood (Özyürek et al., 2022).Therefore, fostering metacognitive growth during the preschool years is of particular significance (Altan & Temel, 2022; Şahin & Akman, 2018).

The literature includes numerous studies emphasizing the importance of enhancing metacognitive abilities through education (Güven et al., 2018; Kaya & Çakır, 2023; Ocak et al., 2023; Sarıkahya, 2017; Toklu-Koblay, 2024). Nonetheless, the development of metacognitive skills in early childhood is only attainable through the use of developmentally appropriate pedagogical strategies. Among these are approaches that promote children's awareness of their own cognitive potential, their capacity to understand how learning occurs, their ability to

manage memory processes, and their skill in self-reflection through peer observation. Children who acquire metacognitive competence are able to cultivate awareness of their thinking and learning processes, enabling them to monitor and regulate their own cognitive behaviors (Doğan & Şimşek, 2017; Kaya, 2024).

Supporting metacognitive skills and levels of metacognitive knowledge through appropriate educational strategies has been shown to enhance children's motivation to learn and plays a crucial role in fostering meaningful, intentional learning. Accordingly, research in the field has emphasized that promoting metacognitive knowledge during the early years through well-structured educational planning positively influences children's academic and social development (Veenman, 2006; Whitebread & O'Sullivan, 2012). In light of these researchs, it is suggested that metacognitive knowledge can develop in a context where children are enabled to realize their potential, engage in self-analysis, and display empathic behaviors toward others (Smith & Mancy, 2018).

In this context, the quality of education given in early childhood provides faster results in the emergence of metacognitive skills in children whose brain development continues. (Turhan & Özbay, 2016; Zelazo, 2015). Therefore, educational approaches that stimulate cognitive functions and offer environments in which children feel safe, happy, and engaged are particularly effective. Drama-based activities, in this respect, provide scientifically grounded educational techniques that support experiential and participatory learning, enabling children to collaborate, explore, and learn through play in group settings (Demirci, 2015).

Drama education during the preschool period has been shown to positively contribute to the development and enhancement of children's cognitive functions (Yates & Twingg, 2017; Van-De-Water, 2021). The fundamental aim and core element of drama education is imagination, while its primary mediums include movement, doing, acting, and learning by doing (Mavroudis & Bournelli, 2016). By its very nature, drama serves as a universal language and pedagogy capable of bringing individuals together on common grounds (Mages, 2018). Educationally, drama encompasses a wide array of techniques. In the context of early childhood, drama education is believed to foster the development of cognitive functions such as exploration, creativity, focus, thinking, reasoning, problem-solving, and critique, alongside enhancing perceptual abilities and memory development (Çaykuş, 2015; Doğan, 2020; Erbay, 2009; Kıyaker, 2017). Drama activities are thought to stimulate various cognitive centers in the brain and support the growth of cognitive strategies (Özgür, 2024; Smith & Mancy, 2018). In this regard, metacognition has been emphasized as a key process whereby learners exercise self-control over planning, thinking, learning, problem formulation, and problem-solving processes (Baumanns & Rott, 2021).

Numerous academic studies in the literature have documented that drama education supports the cognitive functions and various developmental domains of preschool-aged children (Arias et al., 2024; Celume et al., 2020; Demir, 2018; Goldstein & Lerner, 2017; Khomais et al., 2019; Kıyaker, 2017; Muhamad & Luen, 2017; Okoye, 2022; Stephenson, 2023; Türkben, 2018; Yaman et al., 2015; Yılmaz, 2019; Walan & Enochsson, 2019; Wendy, 2018). However, research specifically examining the effects of drama education on metacognitive skills and levels of metacognitive knowledge in preschool children remains limited. Similarly, the literature addressing the development and support of metacognition in early childhood education is scarce. Altan and Temel (2022) investigated critical learning processes related to the development of metacognitive knowledge during the preschool period. Their findings suggest that educational planning designed to support metacognition in early childhood

enhances children's metacognitive skills and fosters readiness for learning. Nonetheless, there is a clear need for scientific evidence and studies examining whether educational interventions such as drama can effectively support preschool children's metacognitive knowledge levels. In this context, the present study aims to explore the impact of drama education on the metacognitive knowledge levels of preschool children. It is anticipated that this research will contribute to addressing the gap in the literature, strengthen the body of knowledge regarding metacognition in early childhood, and provide valuable insights into how drama-based education influences metacognitive development. Furthermore, understanding the effects of drama on metacognitive knowledge development is expected to guide the design and implementation of early childhood education programs.

In this context, the present study aims to investigate the effects of drama education on the metacognitive knowledge levels of preschool children aged 4 to 5 years. To this end, the study seeks to answer the following research questions:

(1) Is there a statistically significant difference between the pretest scores of the experimental and control groups on the Metacognitive Knowledge Interview Form for Children?
(2) Is there a statistically significant difference between the pretest and posttest mean scores of the control group on the Metacognitive Knowledge Interview Form for Children?
(3) Is there a statistically significant difference between the posttest scores of the experimental and control groups on the Metacognitive Knowledge Interview Form for Children?
(4) Is there a statistically significant difference between the pretest and posttest mean scores of the experimental group on the Metacognitive Knowledge Interview Form for Children?

Method

Research Design

This study employed a pretest-posttest control group experimental design. The experimental model is a scientific method used to evaluate a hypothesis and observe the relationships between variables (Gravetter & Forzano, 2012). In an experimental design, the primary aim is to determine the effect of the independent variable on the dependent variable (Ekiz, 2020).

In this research, the dependent variable is the level of metacognitive knowledge, while the independent variable is drama education. Both the experimental and control groups were administered a pretest prior to the intervention. Subsequently, the experimental intervention was conducted only with the experimental group, without involving the control group. The intervention process consisted of 24 sessions held twice a week over a 12-week period. Following the completion of the intervention, a posttest was administered to both the experimental and control groups in order to analyze the effect of the independent variable.

Participants

The study group for this study consisted of 33 children between the ages of 4 and 5, 16 of whom served as the experimental group and 17 as the control group, attending a public preschool affiliated with the Ministry of National Education in the Etimesgut district of Ankara

during the 2024-2025 academic year. The inclusion criteria for the study were considered children between the ages of 4 and 5 attending preschool and exhibiting typical development. Children with atypical development, children not aged 4 to 5, and children attending private preschools were excluded from the study. Convenience sampling was used to select the study school due to limited time and financial resources. This method was chosen for practical reasons, such as limited access for the researcher and its feasibility in terms of time and cost. The school where the study was conducted was selected because it was accessible to the researcher providing drama education, had pre-established communication channels with the school administration, and provided a suitable environment for the research to be conducted effectively. Two separate classrooms from the designated school were studied. One class constituted the control group, the other the experimental group. The experimental and control groups were assigned randomly. Among the participants, 51% were female and 49% were male. Regarding the mothers' educational backgrounds, 35% of the experimental group and 38% of the control group had completed secondary or high school education, while 65% of the experimental group and 62% of the control group had obtained undergraduate or graduate degrees. For the fathers, 24% of the experimental group and 19% of the control group had completed secondary or high school education, whereas 76% of the experimental group and 81% of the control group held undergraduate or graduate qualifications.

Instruments

The data for this study were collected using a "Personal Information Form" and the "Metacognitive Knowledge Interview Form."

Personal Information Form

This form includes information regarding the children's gender and the educational backgrounds of their family members.

Metacognitive Knowledge Interview Form

The original scale was developed by Marulis et al. (2016) and consists of two sections. The first section involves the Wedgits construction set task. The second section, which was also used in this study, is the Metacognitive Knowledge Interview Form (McKI). This form contains 15 questions, which are presented to children through the use of puppets. Responses are scored on a scale of 0, 1, and 2 points. Total scores range from 0 to 15, where scores below 15 indicate partial metacognitive knowledge and scores of 15 or higher indicate full metacognitive knowledge.

The Turkish validity and reliability study was conducted by Keleş-Ertürk and Tepeli (2023). In the Turkish adaptation, all items, the number of questions, activity durations, and scoring system are fully consistent with the original form. To assess the internal consistency reliability of the McKI, the Cronbach's alpha coefficient was calculated, while inter-rater reliability and test-retest reliability were evaluated using the Pearson correlation coefficient. The Cronbach's alpha internal consistency coefficient was found to be 0.81. Inter-rater reliability was 0.99, and test-retest reliability was determined as 0.72.

Data Collection Procedure

Prior to the commencement of the study, the necessary approvals were obtained from the relevant ethics committee of KTO Karatay University Faculty of Medicine Non-Drug and Medical Device Research Ethics Committee (Date: 26.12.2024, Decision Number: 2024/025)

and the Provincial Directorate of National Education. Initially, meetings were held with the school administrators of the selected institution, followed by discussions with preschool teachers working with the 4-5-year-old age group. Subsequently, informational meetings were conducted with the parents of the children in these classrooms to explain the purpose and procedures of the study. Consent forms were distributed to the parents both electronically and in written form. Children and parents participated voluntarily in the study. No parent or child was obligated to participate, and it was made clear that children could withdraw from the study at any time. Children were also provided age-appropriate explanations, and their consent was obtained. All personal information about the participating children was kept confidential; information such as their name, age, and school were not shared openly at any stage. The data included in the study was used solely for scientific purposes. All activities were planned in a safe and supportive manner, appropriate to the children's age and developmental level. All children were treated equally throughout the research process, and no child was discriminated against based on their gender, developmental level, or social characteristics.

The children in the experimental and control groups who were granted permission to participate in the study completed the Metacognitive Knowledge Interview Form (McKI) as a pre-test before the drama intervention and as a post-test after the intervention, administered in a suitable and quiet environment. Before the administration of the scale, children were informed that they had the right to skip any question they did not wish to answer and could discontinue the procedure at any time. The administration of the scale took approximately 20 to 25 minutes per child.

Preparation and Implementation of Drama Activities

In order to prepare the drama education sessions, a thorough literature review on metacognitive knowledge was first conducted. Subsequently, learning outcomes were developed and submitted to the evaluation of three field experts. Based on their feedback, the learning outcomes were revised accordingly. Following this, the drama activities were designed and sent to one preschool specialist, one child development expert, and one drama specialist for their professional opinions. In accordance with the experts' recommendations, the drama activities were refined and finalized for implementation.

The educational program incorporated various drama activities appropriate to the developmental characteristics of 4-5-year-old children, including movement exercises, pantomime, improvisation, role-playing, and creating games from stories. Each activity was carefully designed to achieve the predetermined learning objectives.

The prepared drama activities were implemented exclusively with the experimental group, while the control group did not receive this training. Both the experimental and control groups continued their regular preschool education during the intervention period. In each drama session, various materials were utilized to engage the children's attention and enhance their concentration on the activities. Each session lasted approximately 40 to 50 minutes. At the end of every session, an evaluation was conducted. During the evaluation, questions aimed at supporting metacognition were developed based on the targeted learning outcomes. Care was taken to ensure that these questions were clear and simple for the children to understand. Additionally, the evaluation process was enriched by incorporating diverse methods such as poster design, drawing, summarizing the day in one sentence, and creating a museum. Throughout the 12-week educational intervention, a total of 24 sessions were held, with targeted learning outcomes being revisited multiple times to reinforce the retention of knowledge.

Data Analysis

Prior to commencing data analysis, the normality of the data was assessed to determine the appropriate analytical methods. The skewness value of the experimental group's pre-test scores on the Metacognitive Knowledge Interview Form was calculated as -1.025, with a kurtosis value of 1.375. For the control group's pre-test scores, the skewness and kurtosis values were -0.630 and -0.088, respectively. The experimental group's post-test skewness and kurtosis values were found to be -1.252 and 1.819, respectively, while the control group's post-test skewness and kurtosis values were 0.613 and 1.413, respectively. Given the small sample size of the study ($n < 30$) and the skewness and kurtosis values exceeding the ±1.00 range, the data were determined not to conform to a normal distribution (Hair et al., 2013). Sümbüloğlu and Sümbüloğlu (2007) and George and Mallery (2010) recommend the use of non-parametric tests regardless of the normality assumption when sample sizes in groups are smaller than 30. Considering the sample size and distribution characteristics of the data in this study, appropriate tests were selected for within-group and between-group comparisons. The Mann-Whitney U test was employed to compare pre-test and post-test scores between the experimental and control groups. To analyze changes within the experimental and control groups (pre-test vs. post-test), the Wilcoxon Signed-Rank Test was utilized. In the interpretation of the results, both statistical significance levels and effect sizes were taken into account. For effect size measurement, the Rank-Biserial Correlation (rB) coefficient was calculated. The significance level was set at .05 for all analyses. Statistical analyses were conducted using SPSS version 22.

Findings

This section presents the results obtained from the statistical analyses conducted within the scope of the research objectives.

Table 1. *Mann-Whitney U Test Results for Between-Group Pre-Test Metacognitive Knowledge Scores of Experimental and Control Groups*

Dimension	Group	n	Mean Rank	Rank Sum	U	p
	Experimental	16	15,84	253,50	117,50	,504
	Control	17	18,09	307,50		

As seen in Table 1, there is no statistically significant difference between the experimental group children (Mean Rank = 15.84) and the control group children (Mean Rank = 18.09) in terms of their pre-test metacognitive knowledge scores ($U = 117.50$, $p > .05$). This result indicates that the children in the experimental and control groups exhibit similar characteristics regarding their metacognitive knowledge levels, suggesting that these groups are appropriate for inclusion in the experimental process of the study.

Table 2. *Wilcoxon Signed-Rank Test and Rank-Biserial Correlation (rB) Results for the Control Group's Pre-Test and Post-Test Metacognitive Knowledge Scores*

Dimension	Test Type	n	Mean Rank	Rank Sum	z	p	Rank-Biserial Correlation(rB)
	Negative Ranks	8	5,44	43,50			
	Positive Ranks	9	12,17	109,50	-1,567	,117	0,380
	Ties	0					

As indicated in Table 2, there is no statistically significant difference between the pre-test and post-test metacognitive knowledge scores of the control group ($z = -1.567$, $p = .117$). The calculated effect size denotes a small magnitude of change, which is not statistically significant

(rB = .380, p = .117). Accordingly, these findings suggest that the current preschool education program does not substantially contribute to the enhancement of children's metacognitive knowledge levels.

Table 3. *Wilcoxon Signed-Rank Test and Rank-Biserial Correlation (rB) Results for the Experimental Group's Pre-Test and Post-Test Metacognitive Knowledge Scores*

Dimension	Test Type	n	Mean Rank	Rank Sum	z	p	Rank-Biserial Correlation (rB)
	Negative Ranks	0	,00	,00			
	Positive Ranks	16	8,50	136,00	-3,529	,000	0,882
	Ties	0					

As shown in Table 3, there is a statistically significant increase in the post-test metacognitive knowledge scores compared to the pre-test scores in the experimental group (z = -3.529, p = .000). The calculated effect size indicates a large magnitude of difference (rB = .882). These findings suggest that the drama education positively contributed to the enhancement of children's metacognitive knowledge levels.

Table 4. *Mann-Whitney U Test and Rank-Biserial Correlation (rB) Results for Post-Test Metacognitive Knowledge Scores between Experimental and Control Groups*

Group	n	Mean Rank	Rank Sum	U	p	Rank-Biserial Correlation (rB)
Group	16	20,69	331,00	77,000	,033	,371
Control	17	13,53	230,00			

As shown in Table 4, the mean rank of the experimental group (20.69) was significantly higher than that of the control group (13.53) in terms of post-test metacognitive knowledge scores (U = 77.000, p = .033). The calculated effect size indicates a moderate difference between the metacognitive knowledge scores of children in the experimental and control groups (rB = .371). These results suggest that drama education more effectively supports the development of children's metacognitive knowledge levels compared to the existing preschool education program.

Discussion

This study aimed to examine the effects of drama education on the metacognitive knowledge levels of preschool children. The findings obtained are interpreted in this section and discussed in relation to the existing literature.

When examining the pre-test and post-test mean scores of the Metacognitive Knowledge Interview Form for both the experimental and control groups comprising the study sample, it was observed that the experimental group's pre-test mean score was 14.65, while the control group's pre-test mean score was 15.70. These results indicate that the metacognitive knowledge levels of children in both groups were similar prior to the intervention, demonstrating that the groups were equivalently matched for the experimental process. In pre-test-post-test, control-experimental group designs, it is an expected outcome that no statistically significant difference

occurs between the pre-test mean scores of the experimental and control groups (Kemiksiz, 2021).

According to the research findings, no statistically significant difference was observed between the pre-test and post-test mean scores of the children in the control group. Although an 8.08% increase was noted in the metacognitive knowledge levels of children in the control group, this improvement was not statistically significant. These data suggest that children attending preschool education exhibited cognitive development consistent with their age group. Furthermore, it can be argued that the existing 12-week preschool education program was insufficient in supporting the development of children's metacognitive knowledge levels. This outcome may be attributed to both educational policies and the fact that relevant teachers did not adequately incorporate instructional techniques and activities aimed at enhancing metacognitive knowledge and skills. Perry et al. (2018) indicate in their study that metacognition is insufficiently addressed within public education policies. They also emphasize the existence of studies demonstrating that metacognition-oriented instructional techniques have a significant impact on students' academic achievement. Another study advocates the view that, rather than age limitations, the efficiency of educational techniques and the quality of foundational education are the primary determinants in the development of metacognition (Schneider et al., 2022). In preschool education, children's metacognitive knowledge and skills can be enhanced through appropriate educational planning. This is because metacognitive knowledge developed via suitable instructional techniques plays a critical role in increasing children's learning motivation and fostering desired learning outcomes (Veenman et al., 2006; Whitebread & O'Sullivan, 2012).

In this study, the children in the control group attended independent preschools and received education solely within the scope of the Early Childhood Education Program implemented by the Ministry of National Education. The program includes learning outcomes that directly support metacognition, such as evaluating metacognitive knowledge levels, assessing predictions, planning, demonstrating critical thinking skills, questioning areas of curiosity, and generating solutions to problem situations. However, the program contains limited direct, systematic, and structured learning outcomes specifically aimed at the development of metacognitive knowledge. Most of the program's outcomes aim to support the development of metacognitive knowledge indirectly through incidental learning. Therefore, the limited opportunities for children to engage in metacognitive processes and their restricted awareness of the subject should be considered as important factors in interpreting the findings of the study.

Another finding of the study revealed that the mean scores of metacognitive knowledge levels in the experimental group were significantly higher in the post-test compared to the pre-test. In this context, it was observed that the drama education provided to the children in the experimental group increased their metacognitive knowledge levels. Therefore, it can be concluded that drama activities had a positive effect on the metacognitive knowledge levels of preschool children. Drama, through playful activities, enables children to concretize abstract concepts and learn through experience. Compared to traditional teaching methods, drama activities represent an active teaching approach that involves the child directly in the learning process (Papaioannou & Kondoyianni, 2019). The literature includes studies indicating that metacognition in early childhood can be developed through active participation-based educational techniques such as drama. According to Akyol and Akşar (2022), playful educational activities that provide children with opportunities to learn by doing and experiencing before starting primary education contribute to the development of their metacognitive knowledge levels. Educational techniques that offer active participation enable

children to acquire abilities such as logical reasoning, abstract thinking, and the capacity to view events from different perspectives. Another study emphasizes the significant role of playful activities and dramatizations, such as creating games from visual materials and stories, in enhancing the metacognitive skills of preschool children (Chen et al., 2022). Highlighting the importance of active learning outside of school in the development of metacognitive knowledge, Keleş-Ertürk (2023) states that involving children in the processes of a task together with their parents in their core living environments and providing experimental settings where they can develop subjective ideas about the progression of these processes are effective in fostering metacognitive awareness. Ermiş (2018) emphasizes that, for metacognitive awareness to develop at an early age, children should be taught thinking strategies that enable logical reasoning and evaluation of different variations, rather than merely providing definitional knowledge. Accordingly, supporting the development of metacognitive knowledge at an early age facilitates children's more effective management of their learning processes and the advancement of their own learning strategies. Therefore, alternative educational techniques such as drama during early childhood are crucial for fostering metacognitive awareness and enhancing metacognitive knowledge development (Whitebread & O'Sullivan, 2012).

The final findings of the study indicate that the post-test mean scores of metacognitive knowledge levels for children in the experimental group were statistically significantly higher compared to those in the control group. Based on this, it can be asserted that significant changes occur in the metacognitive knowledge levels of preschool children through the application of appropriate educational techniques. Early childhood is a developmental period in which children, due to their age and brain development, are attentive, sensitive, curious, extroverted, and physically active towards the events occurring around them (McGovern, 2017). The effectiveness of drama activities in enhancing children's metacognitive knowledge levels can be attributed to several factors, including providing a play-based educational technique where children can freely express themselves (Baldwin, 2019; Lum, 2018), foster team spirit, cooperation, social skills (Mages, 2018), and develop empathetic thinking (Cremin et al., 2018). Drama activities create mental spaces where children can regulate their cognitive processes. In particular, group activities engage mental processes such as observation, planning, analysis, empathy, and self-regulation (Erbay, 2020; Capio et al., 2024). These mental processes are collectively referred to as metacognition. Metacognition is defined as an individual's knowledge and awareness of their own learning processes. The controllability and manageability of metacognition at early ages are crucial for its development. However, the enhancement of metacognitive development is possible only through the application of appropriate educational techniques starting from the earliest years of life (Altan & Temel, 2022; Karaman et al., 2014).

Supporting the development of metacognitive knowledge at an early age assists children in becoming aware of their learning, perception, attention, memory, and overall cognitive abilities (Altan, 2022; Ayar, 2022; Demirci, 2015). Metacognitive knowledge enables children to develop awareness regarding their thinking and learning processes, thereby facilitating self-regulation (Doğan & Şimşek, 2017; Kaya, 2024). In this respect, drama activities play a significant role in enhancing children's metacognitive knowledge levels. Through the skills acquired in drama activities, children with developed metacognitive knowledge can plan and evaluate how and within what timeframe they can solve encountered problems (İsmayilli, 2025; Yıldırım, 2018). Children who learn by doing and experiencing in drama activities increase their metacognitive awareness; consequently, children with improved metacognitive knowledge can relate newly acquired information to prior knowledge (Harris, 2021). In role-playing activities, children assess the appropriateness of both their peers' roles and their own

roles for themselves or others, and accordingly develop behaviors (Gündoğan & Ergenekon, 2019). During improvisation activities, children can develop responses to spontaneously occurring events and situations. In this context, children observe events, generate new methods according to the flow of events, and attempt to apply learned information in new situations. These gains may contribute to the enhancement of children's metacognitive knowledge levels (Aygün, 2024; Özcan & Uysal, 2021).

Prior to the implementation of the drama sessions applied to the children in the experimental group, a comprehensive literature review was conducted, and based on the items and guidelines of the Metacognitive Knowledge Interview Form for Children, 27 metacognitive knowledge objectives were developed. These objectives were integrated and synthesized to create the drama session plans. Each session included at least two of these objectives, and some objectives were addressed multiple times across different weeks. The designed activities were implemented over 24 sessions throughout a 12-week period. The drama sessions were structured to include warm-up, enactment, and evaluation phases. During the warm-up phase, children engaged in appropriate physical activities accompanied by music and sounds related to the topic and objectives, or were asked to creatively perform bodily movements through imagined scenarios. Beyond mere physical movement, the warm-up exercises aimed to foster children's observational skills regarding the group, thereby promoting group awareness and enhancing their metacognitive awareness levels. Additionally, it was expected that children would develop their social communication skills with peers, thereby increasing their metacognitive knowledge in areas such as group belongingness, social behavior development, and taking responsibility. During the enactment phase of the drama sessions, activities such as role-playing, pantomime, improvisation, and creating plays from stories were employed based on the predetermined learning objectives. Children were encouraged to perform these enactments individually, in pairs, or in both small and large groups. Through this enactment phase, it was expected that children would engage cognitive processes such as imagination, creativity, planning, problem-solving, self-regulation, and empathic thinking, thereby fostering the development of their metacognitive knowledge. In the evaluation phase of the drama sessions, children were asked to reflect on the day's learning by responding to questions derived from the day's objectives and topics. Additionally, evaluation methods were enriched by incorporating activities such as poster design, drawing, summarizing the day in a sentence, and creating a museum exhibit. These activities aimed to enhance children's imagination, originality, critical thinking skills, and cognitive functions, which in turn were expected to contribute to an increase in their metacognitive knowledge levels. Accordingly, it can be asserted that hands-on, experiential learning techniques such as drama activities in early childhood education are effective in enhancing children's learning awareness (Çelik, 2022; Demir, 2018; Özgür, 2024) and supporting the development of their metacognitive knowledge.

Metacognitive knowledge comprises three types: declarative knowledge, which refers to "what" we know (content knowledge); procedural knowledge, which involves "how" to do something (methodological knowledge); and conditional knowledge, which includes "when" and "why" to apply certain strategies (situational knowledge) (Horasan-Doğan & Özdemir-Şimşek, 2017). Throughout the drama education process, participants create narratives and enactments based on their prior knowledge and experiences. Drama can be defined as enactments created by participants drawing from their own lived experiences (Papaioannou & Kondoyianni, 2019). From this perspective, the content knowledge component of metacognitive knowledge is actively engaged, simultaneously fostering awareness of "what" is known. Furthermore, participants are expected to make decisions regarding how to enact the narratives they create and the instructions they receive, including how to speak during these

enactments, how to use materials, and how to respond to others' behaviors, reflecting these decisions in their performances. This active engagement constitutes the use of procedural knowledge, or the "how" aspect of metacognitive knowledge. The active use of procedural knowledge may further facilitate its development. Lastly, conditional knowledge, which encompasses answers to the questions "when" and "why," is another type of metacognitive knowledge encountered during drama education processes. When children are engaged in drama activities, they are required to respond to "when" and "why" questions and enact scenarios based on these contexts. For example, a role-play about when to apologize also provides children with the experience of how to apologize, thereby serving as a practical illustration of the application of metacognitive knowledge. As observed, the relationship between drama and metacognitive knowledge is explicit. Well-structured and purposefully designed drama education programs are likely to support and enhance metacognitive knowledge.

Previous studies in the literature, conducted with older age groups, have reported that creative drama education supports participants' metacognitive levels. Horasan-Doğan and Özdemir-Şimşek (2017) provided creative drama training to prospective English teachers and concluded that this training enhanced their metacognition. Additionally, participants in these studies reported that drama education increased their awareness of what they know, helped them reassess themselves, view situations from different perspectives, and gain the ability to anticipate how to behave confidently in front of others. Johnson (2002) also stated that drama can facilitate individuals' deeper understanding of their own thinking processes, thereby fostering metacognition. Although these studies did not involve the same age group as the current research, their findings and perspectives align with and support the results of this study.

Conclusion and Recommendations

The study concluded that drama education is an effective instructional method for enhancing the metacognitive knowledge levels of children aged 4 to 5, and that drama education supports children's metacognitive knowledge levels more effectively than the existing preschool education program. Based on these findings, the following recommendations have been proposed:

The study sample consisted of children aged 4 to 5. Future researchers may include children from different age groups to examine the effects of drama education on their metacognitive knowledge levels. Additionally, researchers could design new studies to evaluate the impact of drama education on various cognitive skills and knowledge levels in preschool children. Furthermore, the effects of drama education on metacognitive knowledge levels could be investigated within the context of children from diverse cultural backgrounds and varying developmental characteristics.

Practitioners in early childhood education institutions can integrate the learning outcomes developed within the scope of this study, aimed at fostering metacognitive knowledge development, into their educational plans and design their instructional processes accordingly. It is recommended that educators and specialists working with children participate in practical training programs related to drama to enhance their competencies in planning, implementing, and evaluating drama activities that support the development of metacognitive knowledge.

Practitioners in early childhood education institutions can integrate the competencies developed within the scope of this study, which aim to enhance metacognitive knowledge development, into their educational plans and design their instructional processes accordingly. It is

recommended that educators and specialists working with children participate in practical training related to drama to improve their competencies in planning, implementing, and evaluating drama activities aimed at supporting the development of metacognitive knowledge.

Declarations

Acknowledgments

We would like to thank the children who participated in this study and everyone who made our research possible. This article is derived from the master's thesis of the first author.

Funding

The authors declare no financial support was received for this research.

Ethics Statements

This study was approved by the KTO-Karatay University Faculty of Medicine Non-Drug and Medical Device Research Ethics Committee.

Conflict of Interest

Authors declare no conflicts of interest.

Informed Consent

All participants and their parents provided informed consent prior to their participation. The privacy and confidentiality of participants were maintained throughout the research process.

Data availability

Data available on request from the authors.

References

Akyol, N. A., & Aşkar, N. (2022). 21st century skills in early childhood period. *Gazi University Journal of Gazi Faculty of Education, 42*(3), 2597–2629.

Aygün, H. (2024). The effect of metacognitive awareness related to reading strategies on academic achievement in social studies: A path analysis (Master's thesis). Fırat University, Elazığ.

Arias, M. A., Pineiro, M. R. N., Lavin, T. P., & Rodriguez, C. (2024). A drama-based intervention to improve emotional intelligence in early childhood education. *European Journal of Psychology of Education, 40*(13), 2–26.

Arslan, A. (2021). Examining the relationship between middle school students' academic motivations and mathematical metacognitive awareness. *Journal of Computer and Education Research, 9*(18), 655-681.

Altan, R. Y. (2022). The effect of a geometry education program supported by metacognitive strategies on preschool children's metacognition and executive function skills (Doctoral thesis). Gazi University, Ankara.

Altan, R., & Temel, Z. F. (2022). An examination of learning processes supporting metacognitive skills in preschool education. *Journal of Social, Human and Administrative Sciences*, *5*(5), 582–602.

Altun, H., & Yeşilpınar Uyar, M. (2023). An investigation of seventh grade students' reading strategies, metacognitive awareness, and problem posing skills. *Trakya Journal of Education*, *13*(3), 1519–1535.

Ayar, A. (2022). The effect of mind and intelligence games on 4th grade primary school students' creative thinking, metacognitive awareness, attention, and social skills (Master's thesis). Ege University, İzmir.

Aydın, E., & Ünsever, Ö. (2024). The nature, support, and assessment of metacognition in early childhood. *Journal of Yaşadıkça Education*, *38*(2), 482–500.

Baumanns, L., & Rott, B. (2021). Metacognitive behaviour in problem posing – a case study. *International Journal of Science and Mathematics Education, 21*, 1381–1406.

Baldwin, P. (2019). *Drama yoluyla okul gelişimi: Tüm sınıf ve tüm okullara uygulanabilecek yaratıcı bir yaklaşım [School development through drama: A creative approach that can be applied to all classes and all schools].* (Trans Ed.: Z. Özen & İ. Metinnam). Ankara: Pegem Akademi.

Capio, C. M., Mendoza, N. B., Jones, R. A., Masters, R. S., & Lee, K. (2024). The contributions of motor skill proficiency to cognitive and social development in early childhood. *Scientific Reports, 14*(1), 27956.

Celume, M. P., Goldstein, T., Besançon, M., & Zenasni, F. (2020). Developing children's socio-emotional competencies through drama pedagogy training: An experimental study on theory of mind and collaborative behavior. *Europe's Journal of Psychology, 16*(4), 707–726.

Chen, C., Wu, J., Wu, Y., Shangguan, X., & Li, H. (2022). Developing metacognition of 5-to 6-year-old children: Evaluating the effect of a circling curriculum based on Anji Play. *International Journal of Environmental Research and Public Health, 19*(18), 11803.

Cremin, T., Flewitt, R., Swann, J., Faulkner, D., & Kucirkova, N. (2018). Story-telling and story-acting: Co-construction in action. *Journal of Early Childhood Research, 16*(1), 3–17.

Çalgıcı, G., & Ogan-Bekiroğlu, F. (2021). Examining the relationship between middle school students' metacognitive awareness and their learning levels. *Muğla Sıtkı Koçman University Faculty of Education Journal, 8*(1), 182–194.

Çaykuş, E. T. (2015). Investigation of student guidance services concepts within a creative drama program (Master's thesis). Cumhuriyet University, Sivas.

Çelik, Ö. (2022). *Dramanın özellikleri ve işlevi, erken çocukluk döneminde drama ve uygulama örnekleri* [Characteristics and functions of drama, drama and application examples in early childhood]. Ankara: Pegem Akademi.

Delihasanoğlu, M. (2021). An investigation of preschool teachers' attitudes toward creative drama and their self-efficacy in using the creative drama method (Master's thesis). Bolu Abant İzzet Baysal University, Bolu.

Demir, E. (2018). The effect of drama education on the cognitive skills of preschool children (Master's thesis). Ankara Yıldırım Beyazıt University, Ankara.

Demirci, N. (2015). The effect of metacognitive inquiry-based learning in science course on fourth grade students' scientific process skills, academic achievement, and metacognitive processes (Master's thesis). Adnan Menderes University, Aydın.

Doğan, S. H., & Şimşek, P. Ö. (2017). Developing metacognitive awareness through creative drama. *Bartın University Faculty of Education Journal*, 6(3), 804–816.

Doğan, A. (2020). The effect of musical creative drama education on preschool children's self-confidence levels (Master's thesis). Tokat Gaziosmanpaşa University, Tokat.

Ekiz, D. (2020). *Bilimsel araştırma yöntemleri* [Scientific research methods]. Ankara: Anı Yayıncılık.

Erbay, F. (2009). *An investigation of the effects of creative drama education on auditory reasoning and processing skills of six-year-old kindergarten-aged children* (Doctoral thesis). Selçuk University, Konya.

Erbay, F. (2020). Yaşamın ilk yıllarında dil gelişimi, gelişim bağlamında yaşamın ilk yılları-Erken çocukluk döneminde gelişim [Language development in the first years of life, the first years of life in the context of development - Development in early childhood]. (Tans. Ed.: H. G. Ogelman). (pp. 269-332). Ankara: Eğiten Kitap.

Ermiş, E. N. (2018). A developmental examination of the predictive effects of social cognition and need for cognition on metacognitive awareness. (Doctoral thesis). Maltepe University, Graduate School of Social Sciences, Istanbul.

George, D., & Mallery, P. (2010). *SPSS for Windows step by step: A simple guide and reference, 17.0 update* (10th ed.). Allyn & Bacon.

Goldstein, T. R., & Lerner, M. D. (2017). Dramatic pretend play games uniquely improve emotional control in young children. *Developmental Science, 21*(4), 1–13.

Gravetter, F. J., & Forzano, L. B. (2012). *Research methods for the behavioral sciences* (4th ed.). Wadsworth.

Grote, K. S., Russell, E. E., Bates, O., & Gonzalez, R. (2021). Bilingual cognition and growth mindset: A review of cognitive flexibility and its implications for dual-language education. *Current Issues in Education, 22*(2).

Güneş, F. (2015). Oyunla öğrenme yaklaşımı [Learning with game Approach]. *Turkish Studies: International Periodical for the Languages, Literature and History of Turkish or Turkic*, *10*(11), 773–786.

Gündoğan, A., & Ergenekon, E. (2019). "Drama is life": A metaphor analysis study. *Kastamonu Education Journal*, *27*(4), 1777–1786.

Güven, Ç., Selvi, M., & Dökme, İ. L. B. (2018). Academic achievement in teaching practices based on metacognitive strategies: Example of science. *Journal of Research in Education and Teaching*, *7*(1), 67-77.

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2013). *Multivariate data analysis*. Pearson Education Limited.

Harmankaya, M. Ö., & Melanlıoğlu, D. (2017). The effect of metacognitive strategy training on middle school students' listening comprehension skills, attitudes toward listening, and listening anxiety. *Electronic Turkish Studies*, 12(18).

Harris, P. L. (2021). Early constraints on the imagination: The realism of young children. *Child Development, 92*(2), 466–483.

Hıdıroğlu, Ç. N. (2018). A critical perspective on the concept of metacognition and its role in the problem-solving process, *Pamukkale University Institute of Social Sciences Journal*, 23, 87–103.

Horasan Doğan, S., & Özdemir Şimşek, P. (2017). Developing metacognitive awareness through creative drama. *Bartın University Faculty of Education Journal*, 6(3), 804–816.

İsmayilli, N. (2025). An investigation of the effects of academic self-efficacy, self-regulation, and metacognitive awareness on middle school students' computational thinking skills (Master's thesis). Istanbul University, İstanbul.

Johnson, C. (2002). Drama and metacognition. *Early Childhood Development and Care*, 172(6), 595-602.

Karaman, P., Şahin, Ç., & Durukan, H. (2014). An examination of metacognition in terms of learning, teaching, and assessment. *Uşak University Journal of Social Sciences*, 7(2), 187–202.

Kaya, Z. (2024). The effect of metacognitive strategies on 5th graders' academic achievement and metacognitive skills regarding electricity (Master's thesis). Muğla Sıtkı Koçman University, Muğla.

Kaya, Z., & Çakır, N. K. (2023). The effect of metacognitive strategies on 5th grade students' academic achievement and metacognitive awareness in the topic of electricity. *Ege Scientific Research Journal*, 6(1), 1–10.

Kemiksiz, Ö. (2021). An analysis of theses prepared on the development of writing skills: Quasi-experimental studies. *OPUS International Journal of Society Researches*, 18(41), 3172–3203.

Keleş-Ertürk, C. (2023). The effect of social information processing, self-regulation, and metacognitive variables on theory of mind: A structural equation modeling (Doctoral thesis). Selçuk University, Konya.

Keleş-Ertürk, C., & Tepeli, K. (2023). Validity and reliability study of metacognitive knowledge interview form (MCKI) for 3–5 year children. *International Online Journal of Education and Teaching (IOJET), 10*(4), 2480–2493.

Khomais, S., Al-Khalidi, N., & Alotaibi, D. (2019). Dramatic play related to self-regulation in preschool age. *Current Issues in Educational Research, 12*(4), 103–112.

Kıyaker, S. (2017). The effect of an educational drama program on self-regulation skills of 62–72-month-old children (Master's thesis). Okan University, İstanbul.

Likhar, A., Baghel, P., Patil, M., & Patil, M. S. (2022). Early childhood development and social determinants. *Cureus, 14*(9). https://doi.org/10.7759/cureus.29500

Lum, C. H. (2018). Musings about creative movement: Coming to terms with music, movement and drama. *Research in Dance Education, 19*(2), 140–151.

Mages, W. K. (2018). Does theatre-in-education promote early childhood development?: The effect of drama on language, perspective-taking, and imagination. *Early Childhood Research Quarterly, 45*, 224–237.

Marulis, L. M., Palincsar, A. S., Berhenke, A. L., & Whitebread, D. (2016). Assessing metacognitive knowledge in 3–5 year olds: The development of a metacognitive knowledge interview (McKI). *Metacognition and Learning*, *11*(3), 297–319. https://doi.org/10.1007/s11409-016-9157-7.

Mavroudis, N., & Bournelli, P. (2016). The role of drama in education in counteracting bullying in schools. *Cogent Education, 3*(1233843), 1–12.

McGovern, R. K. (2017). Conceptualizing drama in the second language classroom. *Scenario: A Journal of Performative Teaching, Learning, Research, XI*(1), 4–16.

Muhamad, J., & Luen, L. C. (2017). Validation of creative movement module in drama elements (petif-ma) for preschool children. *International Journal of Academic Research in Business and Social Sciences, 7*(10), 653–661.

Ng, B. (2018). The neuroscience of growth mindset and intrinsic motivation. *Brain Sciences*, 8(2), 20, 1-10.

Ocak, G., Karakuyu, A., & Küçükçınar, A. (2023). The relationship between middle school students' attitudes towards English course and their metacognitive awareness. *Western Anatolia Journal of Educational Sciences, 14*(1), 392–408.

Okoye, C. M. (2022). Drama and cognitive development in young children: A study of a UNIZIK applied theatre project in demonstration school. *Human Nature Research Publisher*, 3, 15–24.

Oğuz, A., & Kalender, D. K. (2018). The relationship between middle school students' metacognitive awareness and self-efficacy perceptions. *Theory and Practice in Education, 14*(2), 170–186.

Özcan, Ş., & Uysal, B. (2021). Creative drama in the context of renewed primary education curricula. *The Journal of Academic Social Science*, *(109)*, 222–232.

Özgen, E. U. (2023). An investigation of the effects of drama education on the character strengths of 48–60-month-old children (Master's thesis). İstanbul Aydın University, İstanbul.

Özgür, B. (2024). An investigation of problem-posing skills and metacognitive awareness in problem-posing activities using creative drama (Master's thesis). Istanbul University, İstanbul.

Önsay, Y. H., Yılmaz, D., & Alkın-Şahin, S. (2025). An examination of the metacognitive awareness of primary and secondary school students in terms of various variables. *Manas Journal of Social Studies, 14*(1), 184–198.

Öztürk, B. K. (2017). Determining the metacognitive strategies used by middle school students for listening skills. *Theory and Practice in Education, 13*(1), 158–182.

Özyürek, A., Korkut, E. S. & Yavuz, E. C. (2022). Instruments used in the assessment of cognitive development in early childhood. *Journal of Child and Development, 5*(9), 78–96.

Papaioannou, T., & Kondoyianni, A. (2019). Promoting the acceptance of the 'other' through drama in education. *Creative Drama Journal, 14*(2), 309–320.

Perry, J., Lundie, D., & Golder, G. (2018). Metacognition in schools: What does the literature suggest about the effectiveness of teaching metacognition in schools? *Educational Review, 71*(4), 483–500.

Sarıkahya, E. (2017). An analysis based on graduate theses on the use of the metacognition concept in science teaching. *Eskişehir Osmangazi University Center for Turkish World Practice and Research Education Journal*, *2*(1), 1–20.

Schneider, W., Tibken, C., & Richter, T. (2022). The development of metacognitive knowledge from childhood to young adulthood: Major trends and educational implications. *In Advances in Child Development and Behavior*, JAI, 63, pp. 273-307.

Smith, J. M., & Mancy, R. (2018). Exploring the relationship between metacognitive and collaborative talk during group mathematical problem-solving – what do we mean by collaborative metacognition? *Research in Mathematics Education, 20*(1), 14–36.

Stephenson, L. (2023). Collective creativity and wellbeing dispositions: Children's perceptions of learning through drama. *Thinking Skills and Creativity, 47*, 1–14.

Sümbüloğlu, K., & Sümbüloğlu, V. (2007). *Biyoistatistik* [Biostatistics]. Ankara: Hatiboğlu Basım ve Yayım.

Şahin, M. K., & Akman, B. (2018). The development of thinking skills in early childhood. *National Education Journal*, *47*(218), 5–20.

Şerifoğlu, B. (2019). The relationship between middle school students' metacognitive awareness levels and self-efficacy perceptions (Bahçelievler district sample) (Master's thesis). Marmara University, İstanbul.

Toklu Koblay, R. (2024). The relationship of metacognition, cognitive emotion regulation strategies, and cognitive flexibility with anxiety level (Master's thesis). Istanbul Sabahattin Zaim University, İstanbul.

Turhan, B., & Özbay, Y. (2016). Early childhood education and neuroplasticity. *International Journal of Early Childhood Education Studies*, *1*(2), 54–63.

Türkben, T. (2018). Examining the effects of drama practices on child development from teachers' perspectives. *International Journal of Languages Education and Teaching*, *6*(4), 559–578.

Veenman, M. V. J., Van Hout-Wolters, B. H. A. M., & Afflerbach, P. (2006). Metacognition and learning: Conceptual and methodological considerations. *Metacognition and Learning, 1*(1), 3–14.

Van-De-Water, M. (2021). Drama in education: Why drama is necessary. *SHS Web of Conferences, 98*, 02009. Education and City 2020, 1-5.

Walan, S., & Enochsson, A. B. (2019). The potential of using a combination of storytelling and drama, when teaching young children science. *European Early Childhood Education Research Journal, 27*(6), 821–836.

Wendy, K. M. (2018). Does theatre-in-education promote early childhood development? The effect of drama on language, perspective-taking, and imagination. *Early Childhood Research Quarterly, 45*, 224–237.

Whitebread, D., & O'Sullivan, L. (2012). Preschool children's social pretend play: Supporting the development of metacommunication, metacognition and self-regulation. *International Journal of Play, 1*(2), 197–213.

Yalçın, D. (2017). Investigation of the effect of paid teaching practice on students' attitudes towards mathematics. *Journal of Educational Theory and Practice Research, 3*(11), 1–11.

Yaman, E., Danacı, M. Ö., & Eran, N. (2015). The effect of creative drama on developmental characteristics of 4-5 year-old children. *Theory and Practice in Education, 11*(3), 876–893.

Yates, E., & Twigg, E. (2017). Developing creativity in early childhood studies students. *Thinking Skills and Creativity, 23*, 42–57.

Yıldırım, Z. (2018). The adaptation of the inquiry learning community metacognition scale into Turkish: Validity and reliability study. *Ahi Evran University, 19*(1), 665–679.

Yılmaz, G. (2019). The effect of creative drama education on emotion regulation and social problem-solving skills of preschool children] (Master's thesis). Kırklareli University, Kırklareli.

Zelazo, P. D. (2015). Executive function: Reflection, iterative reprocessing, complexity, and the developing brain. *Developmental Review, 38*, 55–68.