

## The effect of creative drama courses taken by teacher candidates on critical thinking standards

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### Abstract

Critical thinking is a way of thinking that allows all aspects of life to be effectively used. These stages, which continue from collecting to organizing information, express the steps of thinking skills that take their place in the field literature as critical thinking. Education and training activities are the biggest factors in the acquisition of critical thinking skills at the information society stage. Critical thinking is a way of thinking that allows all aspects of life to be effectively used. It is known that at the beginning of the creative drama course, all life skills are used. This study aimed to determine the changes in the critical thinking standards of candidate teachers after creative drama courses. The study used an experimental model with a pre-test post-test single-group experimental model as the descriptive research method. The study was carried out during the 14-week course period in the fall and spring semesters of the 2021-2022 and 2022-2023 academic years, and the study was carried out with the students enrolled in the course. "Critical Thinking Standards Scale for Teacher Candidates" developed by Aybek, Aslan, Dinçer & Coşkun Ansoy (2015) was used as a data collection tool. Analysis of the collected data revealed that creative drama course students positively affected their critical thinking skills.

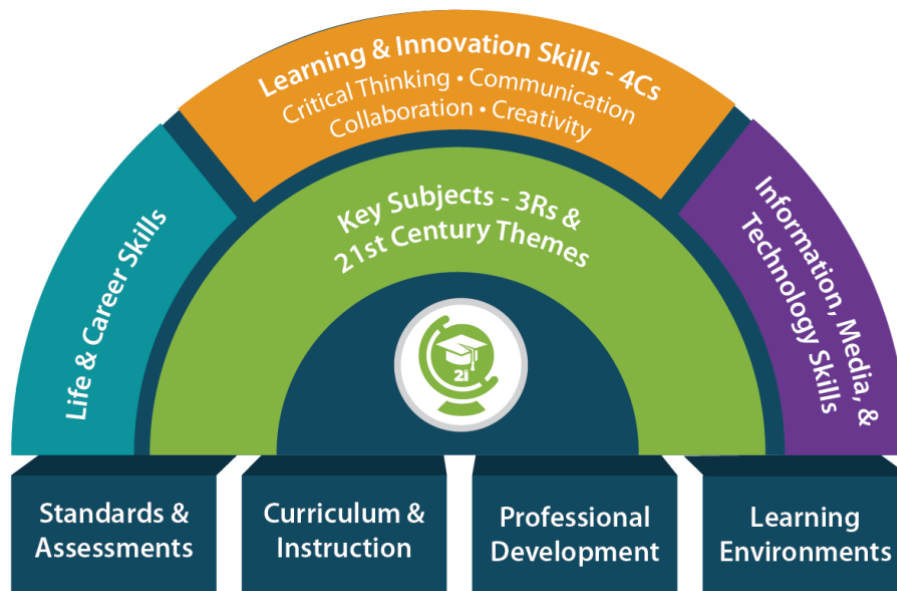
## 1 Introduction

The main purpose of education is to enable individuals to use the knowledge they have acquired to solve the problems they encounter in their daily lives. In the new global world, access to information is facilitated by advanced technology. It is important to be able to utilize the existing knowledge to solve complex problems. Therefore, educational programs propose the development of skills, such as critical thinking, creative thinking, problem-solving, effective communication, decision-making, risk-taking, entrepreneurship, computer literacy, and flexibility. The P21 Framework for 21st-Century Learning, developed with input from educators, education experts, and business leaders, aims to define and illustrate the skills, knowledge, expertise, and support systems that students need to succeed in work, life, and citizenship (Europass Teacher Academy, 2023; The Partnership for 21st Century Skills, 2023). These skills include creativity, innovation, critical thinking, problem-solving, communication, collaboration, information literacy, media literacy, ICT (information, communications, and technology) literacy, flexibility, and

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adaptability, initiative, and self-direction, social and cross-cultural skills, productivity and accountability, leadership and responsibility. In Turkey, the teaching of critical thinking skills has been incorporated into educational programs since 2004 (Ministry of National Education [MoNE] 2005a, 2005b, 2009).

It is crucial for university students to use critical thinking skills when discussing open-ended, complex, and multidimensional topics. Determining whether students show positive improvements in their critical thinking skills through the use of the creative drama method is important for the development of these skills. Thus, establishing a connection between the Ministry of National Education curriculum and teacher candidates is vital to enhance 21st-century teaching skills. This is because it contributes to identifying whether individuals in future societies will engage in critical thinking. In particular, conducting a study on the level of critical thinking skills among candidate teachers in educational facilities and the factors affecting these skills are deemed significant in terms of reaching the goals of educational programs and determining the status of individuals who will contribute to shaping future generations.



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**Figure 1** Level of critical thinking skills

At the core of a knowledge-based society, individuals are information-literate. Information literacy requires individuals to gather, evaluate, organize, and critically assess information from various sources (Başaran 2005; Erdem & Akkoyunlu 2002). Indeed, critical thinking skills have been included among the desired abilities to be acquired by students in Turkey's curriculum since the 2004-2005 academic year (Ministry of National Education [MEB] 2005a, 2005b, 2009). Researchers have provided various definitions for critical thinking. Paul and Elder (2007) defined critical thinking as the art of analyzing and evaluating thinking to improve it, while Çelikkaya (2012) defined it as a process that requires the use of higher-order cognitive skills, such as analysis, synthesis, and evaluation, when assessing the accuracy of a situation. As evident from the aforementioned definitions, critical thinking is a mode of thinking that enables the effective utilization of all aspects of life (Kökdemir, 2003). Individuals with critical thinking skills are expected to approach problems from multiple perspectives, reach solutions more easily, and support their claims and proposals using evidence. Therefore, it is crucial to instill critical thinking

skills in students at all levels of education, from primary school to university (Şahinel, 2007). However, certain standards are necessary for acquiring these skills. Determining the critical thinking skills and standards of teachers who play the most effective role in imparting critical thinking skills to students before they commence their duties could contribute to literature. Considering that teacher candidates will educate future generations, it is essential for them to possess critical thinking skills in order to be able to instill this higher-order thinking skill in students. This study aimed to determine changes in critical thinking standards among candidate teachers after a creative drama course.

This study, titled “The Impact of Creative Drama Course on Pre-Service Teachers’ Critical Thinking Standards,” aims to examine the influence of creative drama courses on pre-service teachers’ critical thinking skills. Critical thinking is crucial for teachers to guide their students effectively, support their problem-solving skills, and enable them to view alternative perspectives. Therefore, developing pre-service teachers’ critical thinking skills is of great importance to their professional development. Creative drama courses provide a conducive environment for pre-service teachers to enhance their emotional, social and cognitive development. This study aimed to explore the impact of a creative drama course on pre-service teachers’ critical thinking skills, and how it can contribute to their development in this area. The significance of this study lies in highlighting the pedagogical value of creative dramas. The findings support the inclusion of the creative drama course in teacher education programs and emphasize its impact. The incorporation of critical thinking in the realm of creative drama plays a significant role in the educational landscape. The choice of critical thinking as a focal point of this study stems from its paramount importance in equipping students, especially candidate teachers, with the necessary cognitive tools to navigate the complexities of our rapidly changing world. Critical thinking enables individuals to analyze, evaluate, and synthesize information; foster their ability to make well-informed decisions; and construct innovative solutions. By harnessing the power of creative drama as an educational method, this study aimed to investigate how the immersive and interactive nature of creative drama can enhance critical thinking skills among university students. Understanding this relationship is crucial, as it not only contributes to the advancement of teaching strategies, but also empowers future educators with the capacity to nurture critical thinking in their students, thereby cultivating a generation of agile and analytical thinkers.

Furthermore, the results of this study can be combined with those of other teaching methods and strategies to strengthen pre-service teachers’ critical thinking skills. The importance of this research lies in providing evidence-based insights to enhance pre-service teachers’ critical thinking skills and emphasizing the pedagogical value of the creative drama course. This study aimed to provide valuable information on teacher education and pedagogical practice. Can the results of this study focus on the use of creative drama and integrate it with other teaching methods and strategies to effectively enhance preservice teachers’ critical thinking skills, thus contributing to the pedagogical value of creative drama courses in teacher education?

## 2 Method

The study used an experimental model with a pre-test post-test single-group experimental model as the descriptive research method. This research method aimed to investigate the impact of creative drama courses on candidate teachers’ critical thinking standards. The study was conducted during the 14-week course period in the fall and spring semesters of the 2021-2022 and 2022-2023 academic years.

## 2.1 Design

**Pre-test:** Before the intervention, a pre-test was conducted to measure participants' critical thinking standards. A standardized scale assessing critical thinking skills was administered as a pretest.

**Creative Drama courses:** Participants attended creative drama courses for a designated period. The courses incorporated various drama techniques to enhance participants' critical thinking skills. The courses were structured and conducted in an interactive environment that encouraged students' engagement.

The 14-week course planning was carried out in accordance with the following headings.

*Week 1:* Introduction and characteristics of a critical thinking individual

*Week 2:* Logical thinking exercises and role playing

*Week 3:* Improvisation activity supporting and refuting arguments

*Week 4:* Improvisation and role play to evaluate the accuracy and effectiveness of arguments

*Week 5:* Social media influence and dealing with fake news and misinformation

*Week 6:* Problem Solving and Creative Thinking and different approaches to events

*Week 7:* Ethical rules and society

*Week 8:* Midterm Week (Writing a play based on critical thinking)

*Week 9:* Cultural Awareness and Perspective

*Week 10:* Critical Thinking and creating a creative drama plan

*Week 11:* Critical Thinking and creating a creative drama plan

*Week 12:* Workshop presentations to develop critical thinking

*Week 13:* Workshop presentations to develop critical thinking

*Week 14:* Final Week (Creating a creative drama plan to develop critical thinking)

**Post-test:** Following the completion of the creative drama courses, a post-test was administered to measure participants' critical thinking standards. The same standardized scale used in the pretest was used in the posttest.

## 2.2 Participants and procedure

**Table 1** Demographic characteristics of the participating students

Variable	Category	f
Grade level	1 <sup>st</sup> class	38
	2 <sup>nd</sup> class	31
	3 <sup>rd</sup> grade	48
Sex	Female	91
	Male	26
Department of education	Department of Basic Education	2
	Department of Mathematics and Science	31
	Department of Turkish and Social Sciences	18
	Department of Fine Arts Education	20
	Department of Educational Sciences	18

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Department of Foreign Language Education	17
Department of Computer Education and Instructional Technology	7
Department of Special Education	4

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In terms of grade level, the distribution of the sample was as follows: 1st grade comprised 38%; 2nd grade comprised 31%, 3rd grade comprised 46%; and grade 5 and above, 2%. This distribution indicated that the study included students of various grades. Regarding sex, the distribution is as follows: 91% of the students are female, while 26% are male. This distribution showed that most of the sample consisted of female students. The distribution of students from different departments was as follows: Department of Education, 2%; Department of Mathematics and Science, 31%; Department of Turkish and Social Sciences, 18%; Department of Fine Arts Education, 20%; Department of Educational Sciences, 18%; Department of Foreign Language Education, 17%; Department of Computer Education and Instructional Technology, 7%; and Department of Special Education, 4%.

**Demographic Information Form:** The demographic information form consisted of questions related to sex, academic department, and grade level, tailored to align with the purpose of the study, rather than collecting personal information about the students.

**Critical Thinking Standards Scale:** The Critical Thinking Standards Scale (CTSS) developed by Aybek, Aslan, Dinçer & Coşkun-Arsoy (2015) was utilized in the research. During the scale's development, the researchers conducted exploratory factor analysis. Exploratory factor analysis revealed that the scale consists of three factors and 42 items. The sub-dimension of depth-breadth-competence consisted of 18 items, the sub-dimension of accuracy-truth consisted of 12 items, and the sub-dimension of importance-relevance-clarity consisted of 12 items. The factor loadings of the scale items range between .35 and .78. The item correlations vary between .07 and .71. These three dimensions explained 35.96% of the total variance. The Cronbach's Alpha coefficient for the depth-breadth-competence sub-dimension is .89, for the accuracy-truth sub-dimension is .78, for the importance-relevance-clarity sub-dimension is .63, and the overall Cronbach's Alpha coefficient is .75 (Aybek, Aslan, Dinçer & Coşkun-Arsoy, 2015). The minimum score obtained on the scale was 42, whereas the maximum score was 210. The scale contained 12 negatively worded statements that were reverse-coded during the calculation. The scale was organized using a 5-point Likert format. Confirmatory factor analysis was conducted to validate the three dimensions of the scale. Cronbach's alpha for this study was 0.85.

## 2.4 Data analysis

In this section, the findings obtained from the data were evaluated in terms of validity and reliability, and impact analyses were conducted on the results, followed by discussion based on these analyses. The effect size is a statistical measure that indicates the extent to which the results of the sample deviate from the expectations stated in the null hypothesis (Cohen, 1994). The collected data were subjected to statistical analysis. The differences between the pre- and post-test scores were examined, and the significance of these differences was evaluated using appropriate statistical methods. Statistical tests were performed, and p-values were calculated to analyze the data.

The most commonly used calculation for effect size was developed by Cohen (d); however, other calculations, such as Hedge's d and Glass's  $\Delta$ , can also be found in literature (Yıldırım & Yıldırım,

2011). As a general recommendation, Cohen suggests that an effect size ( $d$ ) less than 0.2 can be considered weak, 0.5 can be considered moderate, and greater than 0.8 can be considered strong. However, it should be noted that even a  $d$  value of 0.2 can be considered a strong effect in certain special cases (Cohen, 1988; cited in Kılıç, 2014). The data obtained during the study were analyzed using a statistical program in a computer environment. A significance level of .05 was used for all analyses. In this study, a normality test was conducted on the critical thinking standard scale attainment scores of the participants. The following results were obtained from the analyses.

**Table 2** Normality test results for critical thinking standards scale attainment scores of the study group.

Variable		Kolmogorov-Smirnov	Shapiro-Wilk
Sex	Male	,200	,223
	Female	,200	,815
Department of education	Mathematics and science education	,155	,061
	Turkish and social sciences education	,200	,915
	Fine arts education	,200	,591
	Educational sciences	,114	,137
	Foreign language education	,200	,622
	Special education	,195	,311
	Computer and instructional technologies education	,000	,874
Grade level	2 <sup>nd</sup> grade	,200	,806
	3 <sup>rd</sup> grade	,105	,096
	4 <sup>th</sup> grade	,200	,761

When examining the data in Table 2, the attainment scores of the students in the study group for critical thinking standards did not follow a normal distribution. Parametric tests were used when the  $p$ -value was  $< 0.05$ . Parametric tests are suitable for situations in which the data follow a specific distribution, and certain assumptions are met. If the  $p$ -value is greater than 0.05, or if specific assumptions are not met, non-parametric tests may be more appropriate. Nonparametric tests were used when the data did not follow a specific distribution or when the assumptions were not met. Additionally, the critical thinking attainment scores of students in the study group were not normally distributed for all variables. To determine whether there was a significant difference between the pre- and post-test scores of the study group in terms of critical thinking standards, a Wilcoxon Signed-Rank test based on the normality test was conducted. The Mann-Whitney U test was performed to investigate whether there were significant differences in the attainment scores for critical thinking skills based on sex. The Kruskal-Wallis test was conducted to determine whether there were significant differences in students' attainment scores based on department- and grade-level variables.

## 2.5 Validity, reliability, and ethical considerations

This study employed a research design with a pre-test and post-test single group, using a descriptive research method. To ensure the accuracy and reliability of the data obtained in this study, several steps were taken to ensure validity. First, valid and reliable measurement tools were selected to measure the variables accurately and appropriately. A critical thinking scale with established validity and reliability measures was used to assess the critical thinking standards. Additionally, standardized guidelines were followed during the data collection process, and clear and comprehensible questions were used to prevent participant misunderstandings. These measures increased the validity of the data and ensured accurate results. Reliability measures were implemented to ensure data reliability. Internal consistency measurements were conducted

using data-collection tools. This method evaluates consistency between different items using the same measurement tool. Through internal consistency analyses, high coefficients were obtained for the critical thinking scale, enhancing the scale's reliability and ensuring the reliability of the results. Ethical considerations are of utmost importance in this study. Measures were taken to respect individual rights and well-being throughout the research. Participation in the study was voluntary, and informed consent was obtained from participating teacher candidates. Participant confidentiality and privacy were protected, and data were stored securely and accessible only to the researchers. Furthermore, potential harm or discomfort to participants was prevented. Adherence to ethical guidelines enhanced the reliability and value of this study.

### 3 Findings

The first aim of this study was to investigate whether there was a significant difference between the pre- and post-test scores of students in the study group in terms of the impact of creative drama courses on critical thinking standards. The results of the Wilcoxon Signed-Rank test conducted for this purpose are presented in Table 3.

**Table 3** Results of the Wilcoxon Signed-Rank test for the pre-test and post-test scores of the study group on the critical thinking standards scale.

Pre-test - Post-test	N	Mean Rank	Sum of Ranks	Z	p
Negative Ranks	50	55,86	2793,0	-1,513	0,130
Positive Ranks	65	59,65	3877,0		
Tied Ranks	2				

$p < .05$

When examining the data in Table 3, it is evident that there was no significant difference in the scores obtained by students on the critical thinking skills scale before and after the implementation of the online creative drama method ( $p < .05$ ). Considering the mean ranks and sum of the ranks of the difference scores, it can be observed that this difference favors positive ranks, which correspond to the post-test scores. Therefore, the instruction of the courses using the creative drama method led to a significant difference in students' critical thinking skills in the study group.

Furthermore, the research also investigated whether the critical thinking proficiency scores of the students in the study group obtained during the course instruction process using the creative drama method differed significantly based on certain variables. To determine whether there was a significant difference in critical thinking skills based on sex, the Mann-Whitney U test was conducted. Table 4 presents the results of this analysis.

**Table 4** Mann Whitney-U test results for critical thinking skills by sex

Group	N	Mean Rank	Sum of Ranks	t/U	p
Female	91	59,92	5452,50	1099,5	0,584
Male	26	55,79	1450,50		

Upon examining the data in Table 4, it was determined that there were no significant differences in critical thinking skills by gender. Although the mean ranks indicated that female students showed greater improvement in critical thinking skills than did male students, this difference was not statistically significant. To determine whether critical thinking skills differed significantly across departments, a Kruskal-Wallis test was conducted. Table 5 presents the results of the analysis.

**Table 5** Kruskal-Wallis test results for critical thinking skills by department

Group	N	Mean Rank	SD	Chi-square	p
Basic education	2	79,75	7	7,465	0,382
Mathematics and science	31	56,47			
Turkish and social sciences	18	67,08			
Fine arts	20	61,83			
Educational sciences	18	47,94			
Foreign languages	17	69,29			
Special education	7	41,79			
Computer and instructional technologies	4	53,88			

Upon examining the data in Table 4, it was determined that critical thinking skills did not differ significantly based on the department variables ( $p > 0.05$ ). Looking at the mean ranks, it can be observed that students in the Basic Education department demonstrated higher levels of critical thinking skills compared to students in the Special Education department. To determine whether critical thinking skills varied significantly based on grade level, a “Kruskal-Wallis” test was conducted. Table 6 presents the results of the analysis.

**Table 6** Results of Kruskal-Wallis test for critical thinking skills by grade level

Group	N	Mean Rank	SD	Chi-square	p
2 <sup>nd</sup> grade	38	62,78	3	1,867	0,601
3 <sup>rd</sup> grade	31	52,15			
4 <sup>th</sup> grade	46	60,64			

According to the data in Table 6, it can be observed that critical thinking skills did not significantly differ based on the grade level variable ( $p > 0.05$ ). Looking at the mean ranks, the greatest improvement in critical thinking skills was observed among students in the 2nd grade who received instruction through the creative drama method.

## 4 Discussion

This study aimed to determine changes in pre-service teachers’ critical thinking standards after a creative drama course. The experiment was conducted over a period of 14 weeks. The study’s main finding was that the creative drama method positively affected pre-service teachers’ critical thinking skills. According to the data presented in Table 2, a significant difference was found between the scores of students who used the online creative drama method before and after instruction in terms of critical thinking standards. This indicates that the creative drama method is an effective strategy to develop students’ critical thinking skills. At the end of the study, students from different departments showed a significant difference in the scores obtained from the pre- and post-instruction measurements of critical thinking standards using the online creative drama method. The department of elementary education had the highest score, followed by foreign languages, Turkish, and the social sciences. When the literature was examined, it was found that pre-service teachers’ tendencies towards critical thinking were low (Alkın-Şahin, Tunca, & Ulubey, 2014; Çiçek-Sağlam & Büyükuysal, 2013; Erdoğan, 2012; Güneş, 2012; Güven & Kürüm, 2007; Güven & Kürüm, 2008; Şen, 2009; Alper, 2010) and moderate (Dutoğlu & Tuncel, 2008; Türnüklü & Yeşildere, 2005), meaning that they were not at the desired level.

Additionally, in some studies, it was found to be both moderate and low depending on the department (Beşoluk & Önder, 2010; Yakar et al., 2010). This implies that the education provided is insufficient. Arcidiacono et al. (2010) stated that higher education is not just a place for obtaining a diploma, but also a place where students contribute to their knowledge, skills, and critical



thinking ability. Critical thinking skills are crucial because they lead to academic success, career advancement, and development of individuals who contribute to society (Aikin & Talisse, 2014; Dwyer, 2017). This raises the question of whether the education provided in higher education institutions currently develops critical thinking skills. Huber and Kuncel (2016) emphasized the need for activities that enhance students' critical thinking skills in higher education institutions. Tsui (2002) also noted that given the strong relationship between critical thinking and instructional factors, there is great responsibility at the higher education level. Having a low or moderate level of critical thinking skills in higher education presents a problem that needs to be addressed in the future society. It has been determined that pre-service teachers in universities in the Eastern Anatolia region of Turkey have a moderate level of critical thinking tendency (Semerci, 2010), and the situation is similar in the Black Sea region, where students have a moderate level of critical thinking skills. It was observed that applied drama education contributed to students' critical thinking levels by showing significant differences in their levels.

This study examined whether there was a significant difference in critical thinking skills based on gender, and it was determined that there was no significant difference. When examining the mean scores, it was observed that female students showed greater improvement in their critical thinking skills than male students, but this difference was not statistically significant. Similar findings have been observed in studies conducted on both male and female students (Yeh, 1997; Gelen, 2002; Yaman & Yakın, 2004; Özdemir, 2005; Şen, 2009; Korkmaz, 2009; Semerci, 2010; Özdelikara, Bingöl, & Görden, 2012; Kanbay et al., 2012). This situation may be attributed to male and female students receiving education in education faculties without any discrimination or bias.

The study found no significant difference in critical thinking skills based on departmental variables. There were no significant differences in critical thinking standards among students from different departments. When looked at the mean scores, the departments were ranked as follows: Elementary Education, Foreign Languages, Turkish and Social Sciences, Fine Arts, Mathematics and Science, Computer and Instructional Technologies, Educational Sciences, and Special Education. The critical thinking skills of classroom teachers were higher than those of teachers in other departments, while other departments had moderate levels. In Semerci's (2010) study, Turkish Language Teaching, Science Teaching, Social Studies Teaching, and Classroom Teaching departments were ranked from highest to lowest. Similarly, Korkmaz (2009) found that classroom teachers' scores were low. An interesting finding relates to the Classroom Teaching department. In one study, it had the lowest level, whereas in another, it had the highest level. This could be due to the inclusion of critical thinking skills in the Ministry of Education's curriculum (2013, 2018), which led higher education institutions to update their programs and provide education that focuses on these skills. Classrooms teaching students may have taken courses that enhanced their critical thinking skills, leading to this result. Alkın-Şahin et al. (2014) stated that the lack of differences among departments could be attributed to the "content" dimension of the educational programs of departments consisting entirely of the social sciences, which serve critical thinking. Similarly, it has been mentioned that teacher candidates' critical thinking abilities are related to department content (Kürüm, 2002) and readiness (Güven & Kürüm, 2007; Zayıf, 2008; Tural & Seçgin, 2012). Alkın also mentioned that the assessment tools used in the evaluation processes of disciplines have an impact on the process; therefore, there are differences between departments. Some studies indicate no differentiation in critical thinking among departments (Hayran 2000; Gülveren 2007; Ekinçi 2009). It was observed that there was no significant difference in critical thinking skills based on the grade level. However, it has been observed that students at the 2nd-

grade level show improvement in critical thinking skills through the use of creative drama courses, although this difference was not statistically significant. This study demonstrates the positive impact of using creative dramas in the teaching process on critical thinking skills. Creative drama promotes active student participation, encourages original thinking, and enhances problem-solving skills. Therefore, this study's findings suggest that the use of creative dramas contributes to the development of critical thinking skills. The higher scores of students in their critical thinking levels in this study compared to many other studies in the literature may be attributed to the effective planning of the teaching process, which plays a significant role in enhancing their critical thinking skills. This is because the course plans were designed to create various situations in which students could use their critical-thinking skills. Therefore, the teaching methods and process used in the study are considered as important factors to be taken into account in explaining the results.

#### **4.1 Limitations, and future directions**

The small sample size used in this study may have restricted the generalizability of the results. Future studies could benefit from larger and more diverse sample groups to replicate this study. Additionally, evaluation of students from different regions using a similar process is recommended. Future research could compare the impact of the creative drama method on critical thinking skills with that of other educational or instructional methods. This may help determine the effectiveness and preference order of different methods. Follow-up studies should be conducted to assess the sustainability and long-term effects of improvements in students' critical thinking skills.

Improvisation activities and role-playing within creative dramas contribute to critical thinking. Creative drama involves evaluating events and situations from different perspectives and requires quick decision making during the process. When looking at the aspects of questioning and curiosity, creative dramas can also contribute to the emergence of possible situations. This raises a question regarding the relationship between academic achievement and critical thinking. This finding contradicts some studies that suggest an increase in critical thinking skills and academic achievement (Özdelikara, Bingöl, & Görden, 2012; Ricketts & Rudd, 2005; McDonough, 1997) and aligns with other studies that do not find a connection between academic achievement and critical thinking (Giancarlo & Facione, 2001; Stupnisky et al., 2008). Therefore, it is recommended that the impact of creative drama on the critical thinking and academic achievement of students taking creative drama courses be investigated.

#### **4.2 Conclusion**

This study aims to determine the impact of a creative drama course on pre-service teachers' critical thinking skills. The experimental process followed, and the students were engaged in the course for 14 weeks. The main finding of this study was that the creative drama method had a positive effect on pre-service teachers' critical thinking skills. According to the data shown in Table 2, a significant difference was found between the pre-and post-instructional critical thinking skills of the students who took an online creative drama course. This indicates that the creative drama method is an effective strategy for developing students' critical thinking skills.

This study found significant differences in the critical thinking skills of students from different departments, before and after online creative drama instruction. When the departments of elementary education, foreign languages, Turkish and social sciences, fine arts, mathematics and science, computer and instructional technologies, educational sciences, and special education

were examined, it was observed that the highest scores belonged to the elementary education department, followed by the other departments. These results indicate that different departments may affect critical thinking skills in various ways.

According to previous studies, pre-service teachers generally have low to moderate critical thinking tendencies. This suggests that the education provided may not have been sufficient. Efforts to enhance critical thinking skills in higher education institutions are therefore crucial. No significant differences were found in critical thinking skills based on variables such as gender and department. Although female students showed greater improvements in their critical thinking skills, no statistically significant difference was detected. Similarly, no significant differences were found among students from different departments.

In conclusion, this study demonstrates that the creative drama method has a positive impact on pre-service teachers' critical thinking skills. The creative drama method can be an effective strategy for developing critical thinking skills among pre-service teachers. However, more comprehensive studies with larger sample groups and examinations of different variables are needed. Additionally, it is important to provide pre-service teachers with more education and support to enhance their critical thinking skills.

## 5 Statement of Researchers

In this section, you are expected to declare the following information regarding the titles:

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### 5.1 Researchers contribution rate statement

The authors contributed to the study.

### 5.2 Conflict statement

The authors declare no potential conflicts of interest.

### 5.3 Support and thanks

We thank the students who willingly participated in and provided support for this study. Without your contribution, this research would not have been possible in the way it was conducted.

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