International Technology and Education Journal
Vol. 9 No. 1; June 2025
ISSN: 2602-2885
URL: http://itejournal.com/

Dal Calisici, I., & Yildiz Duban, N. (2025). The effect of mind and intelligence games on critical thinking tendencies and decision-making skills of primary school 3rd graders. International Technology and Education Journal, 9(1), 47–57. https://doi.org/10.71410/ESApub.ITEJ.2025.5

The Effect of Mind and Intelligence Games on Critical Thinking Tendencies and Decision-Making Skills of Primary School 3rd Graders

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SUMMARY

The aim of this study is to investigate the effect of mind and intelligence games on critical thinking tendencies and decision-making skills of third grade primary school students. In this study, pretest-posttest control group model, one of the quasi-experimental designs within the scope of quantitative research methods, was used. The research was conducted with the participation of 48 third grade primary school students. "The Critical Thinking Dispositions Scale for Elementary School Students" and "Marmara Decision Making Skills Perception Scale for Primary School Students" were used as data collection tools. The data obtained were analyzed using a statistical package program. According to the analysis results, while there was no statistically significant difference between the pre-test and post-test scores of the control group, it was determined that there was a statistically significant difference between the pre-test and post-test scores of the experimental group in which mind and intelligence games training was given. In addition, when the posttest scores of the experimental group and the control group were compared, it was seen that there was a statistically significant difference in favor of the experimental group.

Keywords: Critical Thinking, Decision Making, Game, Mind and Intelligence Games, Primary School

INTRODUCTION

The world is developing and changing day by day in psychological, economic, technological and many other areas. As a result of this development and change, individuals are also asked to gain various characteristics and it is observed that there is a tendency towards 21st century skills, which we also call life skills, in the education system of most countries in the world (Care, Kim, Anderson & Gustafsson-Wright, 2017). The focus of 21st century skills is on students' capacity to cope with the problems they encounter in their real lives and their ability to transfer what they have learned to daily life (Deveci, Konuş & Aydız, 2018). 21st century skills include decision making, critical thinking, problem solving, analytical thinking, creative thinking, collaboration, reflective thinking, communication and entrepreneurship (Voogt & Roblin, 2012). There is now a shift from individuals who learn information to individuals who use information, from individuals who use information to individuals who question and research information, from individuals who research information to individuals who have the skills to obtain the right information. Thinking ability in individuals with these characteristics is seen not only as a means of increasing potential in personal situations, but also as a general mastery in terms of classroom learning and transferring what is learned in different directions (McKendree et al., 2002). In this context, it is understood that correct thinking is very important in education and the importance of critical thinking, one of the 21st century skills, emerges (Ecevit & Kaptan, 2019).

Critical thinking, in general, is the way of questioning an individual's thoughts while doing a job and the skills and knowledge that enable him/her to think well about his/her work in terms of his/her own values, and the state of thinking about mental activities, acting, writing and speaking (Hunter, 2014; Judge et al., 2009; Moon, 2008). Critical thinking is not optional or alternative. On the contrary, the ideal of education is a structure that takes knowledge and creativity as the basis for making sense of information and a process that always requires progress (Craft, 2005; Gülveren, 2020; Sesow, 1991). Nosich (2018) describes the characteristics of critical thinking as being realistic, logical thinking, having certain criteria and being reflective.

In our age, the importance of decision making as well as critical thinking is increasing day by day. Decision making is a complex set of stages in which one chooses one of the alternatives among more than one way to reach a solution by calculating the probabilities of what can and cannot be done in order to achieve the goal and meet the needs and chooses one of these alternatives to implement (Baron, 2004; Budak, 2000; Deniz, 2002; Kuzgun, 1992; Philips et al., 1984). In other words, decision making is a learnable skill and consists of processes such as determining which actions to take, making a choice among the relevant options, implementing, evaluating the results and receiving feedback (Adair, 2017; Marco et al., 2003).

In today's education system, various teaching techniques are used in schools to develop high-level thinking skills such as critical thinking and decision-making in individuals. One of these teaching methods is games. Games are one of the effective tools that enable children to express themselves, reach their goals, prepare them for life (Kaytez & Durualp, 2014), and facilitate children's learning with their active participation in the teaching process (Chen, Liao, Cheng, Yeh & Chan, 2012). In this process Mind and intelligence games have active role. Because they are seen as an effective tool for students to increase their mental capacity in schools, develop critical thinking skills, and quickly decide on the most appropriate solution to the problems they face (Adalar & Yüksel, 2017).

Mind and intelligence games are games that develop individuals' cognitive skills (Çağır & Oruç, 2020), require in-depth thinking and the use of reasoning skills (Bottino et al., 2010), present real-life problems by gamifying them (Ministry of National Education [MoNE], 2013), and are attention-grabbing, entertaining and instructive. Mind and intelligence games are games developed for individuals to develop their intelligence and acquire new skills while having fun, where the chance factor is minimal and memory and attention are important (Erdoğan, Eryılmaz Çevirgen & Atasay 2017; Yöndemli & Taş, 2018). Mind and intelligence games enable individuals to make quick and correct decisions and produce original solutions to problems (Devecioğlu & Karadağ, 2014); increase their self-confidence and increase their academic success by allowing them to have fun and prevent them from developing bad habits (Demirel, 2015; Güneş & Yünkül, 2021).

Many studies have been conducted and continue to be conducted in the field of mind and intelligence games. The literature review revealed that mind and intelligence games can improve individuals' problem solving and reasoning skills (Bayramin, 2020; Bottino et al., 2013; Dauvergne, 2000; Demirel et al., 2019; Kurbal, 2015; Lee et al., 2008; Lin et al., 2011; Reiter et al, 2014; Şahin, 2019; Şeb & Bulut Serin, 2017), analytical thinking, decision-making and critical thinking skills (Bas et al., 2020), attention and visual perception levels (Altun, 2017; Yağlı, 2019), literacy skills (Şen, 2020), mental skill levels (Chien-Heng & Chien-Min, 2016; Marangoz, 2018), creative thinking skills (Ayar, 2022; Bartolucci et al, 2019; Ott & Pozzi, 2012; Terzi, 2019), academic achievement and attitude (Orak et al., 2016), spatial thinking skills (Bakker, 2008; Demirkaya & Masal, 2017; Newman et al., 2016), leadership skills (Zengin, 2018), geometric thinking skills (Lin, et al, 2011; Shofan, 2014; Siew & Abdullah, 2012), metacognitive skills (Kazemi et al., 2012), and mathematical skills (Dvoryatkina & Simonovskaya, 2021; Norte & Lobo, 2008).

In addition, in some studies, teachers' opinions about mind and intelligence games were included and it was concluded that mind and intelligence games improve individuals' minds by enabling them to think quickly, reveal original thoughts and positively affect their skill development (Adalar & Yüksel, 2017; Devecioğlu & Karadağ, 2014; Güneş & Yünkül, 2021; Sadıkoğlu, 2017). In some studies, the opinions of pre-service teachers were included and it was stated that mind and intelligence games improve critical thinking tendencies, support logical thinking, and increase creativity (Abdullah & Siew, 2012; Can, 2020; Çetin & Özbuğutu, 2020; Ekici et al., 2017; Savaş, 2019; Saygı & Alkaş Ulusoy, 2019). It is seen that the studies on mind and intelligence games were conducted for different purposes, mostly with middle school students and no studies were conducted at the primary school level. With this research, it is thought that the gap in the field will be eliminated by investigating the effect of mind and intelligence games on critical thinking tendency and decision-making skills, and the results to be obtained from the research will guide mind and intelligence games activities in primary school. The purpose of this study is to determine the effect of mind and intelligence games on critical thinking tendencies and decision-making skills of third-grade primary school students. In line with this purpose, the hypotheses of this research are as follows:

1. There is a statistically significant difference between the critical thinking tendencies of third grade primary school students who received mind and intelligence games education and the critical thinking tendencies of students who did not receive this education.

2. There is a statistically significant difference between the decision-making skills of third grade primary school students who received mind and intelligence games training and the decision-making skills of students who did not receive this training.

METHOD

Research Model

In this research, pretest-posttest control group model, one of the quantitative research methods, was used. An experimental model is the research in which researchers apply procedures and examine the effects of these procedures and reach the most precise results with the findings obtained. Core objective of an experimental design is to test the cause-and-effect relationship between dependent and independent variables (Büyüköztürk et al., 2020). In some cases, it may be difficult to randomly assign individuals to experimental and control groups. The

design used in such cases is the quasi-experimental design (Çepni, 2014). In the quasi-experimental design, unbiased assignment is not used (Büyüköztürk et al., 2020). In the research, which was designed as a quasi-experimental design with a pre-test-post-test control group, previously formed groups at school were randomly assigned as experimental and control groups. A pre-test was applied to the experimental and control groups before the implementation.

Study Group

The study group of the research consisted of third grade primary school students studying in a public school in Suruç-Şanlıurfa. In this study, simple random sampling method was used to determine the students participating in the study. Simple random sampling is a method in which each sampling unit is given an equal probability of being selected and the selected units are taken into the sample (Büyüköztürk et al., 2020). The participants of the current research consisted of 48 primary school students, 24 in each of the experimental and control groups. The research was conducted in the spring semester of 2021-2022. The researcher provided Mind and Intelligence Games training only to the students in the experimental group.

Data Collection Tools

The data collection tools of the current research were "Critical Thinking Disposition Scale for Primary School Students" developed by Akar and Uluçınar (2021) and "Marmara Decision-Making Skill Perception Scale for Primary School Students" developed by Ada, Baysal, and Demirbaş Nemli (2017). "Critical Thinking Disposition Scale for Primary School Students" consists of 18 items and 4 factors. Cronbach Alpha reliability coefficient was calculated as 0.74. "Marmara Decision-Making Skill Perception Scale for Primary School Students" consists of 5-factor, 17-item, 4-point Likert-type scale. It was stated that both scales were suitable for primary school students. Cronbach Alpha reliability coefficient was calculated and this value was 0.781.

Implementation process

The training of mind and intelligence games was implemented five days a week, two hours a day, for a total of 36 hours. The trainings on mind and intelligence games were given to the students in the classroom organized by the researcher after the school lessons were over. The training program was applied to the students in accordance with the determined plan and time. Each day, a game was explained to the students with its rules and the way it was played, and the games were played for two lessons. Thus, the implementation lasted four weeks.

The games were distributed to the weeks in a balanced manner according to the categories determined in the Ministry of National Education Intelligence Games Program (2013). In the category of reasoning and processing games, Sudoku, Sink the Admiral, Fence, Towers of Hanoi; in the category of verbal games, Anagram and Tic Tac Boom; in the category of geometric-mechanical games, Tangram, Soma Cube, Jenga; in the category of strategy games, Nine Stones, Helm, Surakarta, Mangala, Reversi, Abalone, Color Cubes and Tic Tac Toe; and in the category of memory games, Look Look games.

In the trainings given to the experimental group, the students were first given detailed information about the basic rules and playing methods of the game. After learning the rules of the game, games were distributed to the students and they were allowed to play among themselves. In addition, pairs and groups were changed in order for students to see different levels of difficulty. Competitions were also organized among the students to make the trainings more efficient. After all of the selected games were played with the experimental group students, the post-test was applied to the experimental group and control group on the same day by the researcher.

Data Analysis

The data obtained from the students were analyzed using a statistical package program in computer environment. Firstly, it was determined whether the data obtained from both scales showed normal distribution. For this purpose, the Shapiro-Wilk Test was applied to see the skewness and kurtosis values. The results showed that the skewness and kurtosis values were between -2 and +2 (George & Mallery, 2010) and it was concluded that all data were normally distributed. In the data analysis phase, the Independent Samples t test was used to examine the significant difference between the pre-test and post-test mean scores measuring the critical thinking disposition and decision-making skill perception levels of the experimental and control groups. In addition, it was examined whether there was a significant difference between the experimental group pre-test and post-test mean scores and between the control group pre-test and post-test mean scores. For this analysis, the dependent sample t test (Paired Samples t Test) was used.

Ethical Permissions for the Research

In current research, all the rules stated in the "Higher Education Institutions Scientific Research and Publication Ethics Directive" were followed. In this context ".. Committee's assessment decision" date was 14.01.2022. The ethics assessment certificate number was 18.01.2022-73311

FINDINGS

Findings Related to Critical Thinking Tendencies

Independent Samples t-test was used to determine whether there was a significant difference between the critical thinking tendencies of the experimental and control groups according to the total pre-test scores. Data regarding the results obtained are presented in Table 1.

Table 1. Results for The Pre-Test Scores of The Experimental and Control Group Students' Critical Thinking Tendencies

Groups	N	Sd	x̄	SS	t	P
Experimental	24	46	42,75	6,01	,422	,675
Control	24		42,04	5,61		

When the data in Table 1 are examined, it is seen that the mean pretest total score of the experimental group's critical thinking tendencies was 42.75, while the mean pretest total score of the control group was 42.04. When the critical thinking tendencies pre-test data were examined, It was revealed that there was not any statistically significant difference between the experimental group and the control group. ($p= 0.675$, $p> 0.05$). In light of these findings, it can be said that the experimental and control groups are not different from each other in terms of critical thinking tendencies and are two equivalent groups.

Independent Samples t-test was used to determine whether there was a significant difference between the critical thinking tendencies of the experimental and control groups according to the total post-test scores. Data regarding the results obtained are presented in Table 2.

Table 2. Results of the Posttest Scores of the Experimental and Control Group Students' Critical Thinking Tendencies

Groups	N	Sd	x̄	SS	t	P
Experimental	24	46	48,12	8,02	2,82	,007
Control	24		42,54	5,45		

When the data in Table 2 are examined, it is seen that the mean posttest total score of the experimental group's critical thinking tendencies was 48.12, while the mean posttest total score of the control group was 42.54. According to the findings obtained from the post-test data on critical thinking tendencies, there was a significant difference in favor of the experimental group ($p= 0.007$, $p<0.05$). The findings obtained show that there is a statistically significant difference in favor of the experimental group in terms of the critical thinking tendencies of the experimental group students compared to the control group. This difference shows that mind and intelligence games education improve students' critical thinking tendencies.

Paired Samples t-test (dependent samples t-test) was used to determine whether there was a significant difference between the pre-test and post-test total scores of the experimental group according to the critical thinking tendencies. Data regarding the results obtained are presented in Table 3.

Table 3. Results of Experimental Group Students' Critical Thinking Tendencies Pre-Test and Post-Test Scores

Tests	N	Sd	x̄	SS	t	P
Critical Thinking Tendencies pre-test	24	46	42,75	6,01	-3,32	,003

Critical Thinking Tendencies post-test	24		48,12	8,02		

When the data in Table 3 are examined, it is seen that the mean pre-test total score of the experimental group's critical thinking tendencies was 42.75 and the mean post-test total score was 48.12. As a result of the analysis, it is seen that there is an increase in the post-test total scores of the experimental group students after the training. In addition, according to the results of the experimental group pre-test and post-test data, it was determined that there was a statistically significant difference between the pre-test and post-test in favor of the post-test ($p= 0.003$, $p<0.05$). In the light of these data, mind and intelligence games training had a positive effect on the critical thinking tendencies of the experimental group students and improved their critical thinking tendencies.

Paired Samples t-test (dependent samples t-test) was used to determine whether there was a significant difference between the pre-test and post-test total scores of the control group according to the critical thinking tendencies. Data regarding the results obtained are presented in Table 4.

Table 4. Results of the Pre-Test and Post-Test Scores of the Control Group Students' Critical Thinking Tendencies

Tests	N	Sd	x̄	SS	t	P
Critical Thinking Tendencies pre-test	24	46	42,04	5,61	-,432	,670
Critical Thinking Tendencies post-test	24		42,54	5,45		

When the data in Table 4 are examined, it is seen that the mean pre-test total score of the control group was 42.04 and the mean post-test total score was 42.54. The findings revealed that there was a very small increase in the post-test total scores of the control group students who did not receive any training. However, the findings show that there is not a statistically significant difference between the pre-test and post-test scores ($p= 0.670$, $p>0.05$). In other words, no improvement was observed in the control group students' critical thinking tendencies.

Findings Regarding Decision Making Skills

Independent Samples t-test was used to determine whether there was a significant difference between the decision-making skills of the experimental and control groups according to the total pre-test scores. Data regarding the results obtained are presented in Table 5.

Table 5. Results of Decision-Making Skills Pre-Test Scores of Experimental and Control Group Students

Groups	N	Sd	x̄	SS	t	P
Experimental	24	46	48,91	6,02	,937	,353
Control	24		47,45	4,66		

When the data in Table 5 are examined, it is seen that the mean pretest total score of the experimental group's decision-making skills was 48.91, while the mean pretest total score of the control group was 47.75. When the critical thinking tendencies pre-test data were examined, it was determined that there was no statistically significant difference between the experimental and control groups ($p= 0.353$, $p> 0.05$). In light of these findings, it can be said that the experimental and control groups are not different from each other in terms of decision-making skills and are two equivalent groups.

Independent Samples t-test was used to determine whether there was a significant difference between the decision-making skills of the experimental and control groups according to the total post-test scores. Data regarding the results obtained are presented in Table 6.

Table 6. Results of Decision-Making Skills Posttest Scores of Experimental and Control Group Students

Groups	N	Sd	x̄	SS	t	P

Experimental	24	46	54,54	8,37	3,44	,001
Control	24		47,87	4,44		

When the data in Table 6 are examined, it is seen that the mean posttest total score of the experimental group's decision-making skills was 54.54, while the mean posttest total score of the control group was 47.87. According to the statistical findings obtained from the post-test data on decision-making skills, there was a significant difference in favor of the experimental group ($p= 0.001$, $p<0.05$). The findings obtained show that there is a statistically significant difference in the decision-making skills of the experimental group students in favor of the experimental group compared to the control group. This difference shows that mind and intelligence games education improved students' decision-making skills.

Paired Samples t-test (dependent samples t-test) was used to determine whether there was a significant difference between the pre-test and post-test total scores of the experimental group according to the decision-making skills. Data regarding the results obtained are presented in Table 7.

Table 7 . Results of the Experimental Group Students' Decision-Making Skills Pre-Test and Post-Test Scores

Tests	N	Sd	x̄	SS	t	P
Decision-Making Skills Pre-Test	24	46	48,91	6,02	-2,55	,018
Decision-Making Skills Post-Test	24		54,54	8,37		

When the findings of Table 7 were analyzed, it was concluded that the average pre-test total score of the experimental group in decision-making skills was 48.91 and the average post-test total score was 54.54. In addition, according to the results of the experimental group pre-test and post-test data, it was determined that there was a statistically significant difference between the pre-test and post-test in favor of the post-test ($p= 0.018$, $p<0.05$). In the light of these data, it was revealed that the mind and intelligence games training had a positive effect on the decision-making skills of the experimental group students and improved their decision-making skills.

Paired Samples t-test (dependent samples t-test) was used to determine whether there was a significant difference between the pre-test and post-test total scores of the control group according to the critical decision-making skills. Data regarding the results obtained are presented in Table 8.

Table 8. Results of Control Group Students' Decision-Making Skills Pre-Test and Post-Test Scores

Tests	N	Sd	x̄	SS	t	P
Decision-Making Skills Pre-Test	24	46	47,54	4,66	-,412	,684
Decision-Making Skills Post-Test	24		47,87	4,44		

When the data in Table 8 are examined, it is seen that the mean pre-test total score of the control group was 47.54 and the post-test total mean score was 47.87. The findings revealed that there was a very small increase in the post-test total scores of the control group students who did not receive any training. However, the findings show that there is not a statistically significant difference between the pre-test and post-test scores ($p= 0.684$, $p>0.05$). In other words, no improvement was observed in the control group students' decision-making skills.

DISCUSSION, CONCLUSION AND SUGGESTIONS

In order to achieve their goals in their daily lives, individuals need to evaluate the available options, make decisions quickly and then make the right move. This is possible with an adequate level of critical thinking and decision-making skills. For this reason, the study aimed to examine the effect of mind and intelligence games on the critical thinking tendency and decision-making skills of third grade primary school students. In the research conducted for this purpose, 18 types of mind and intelligence games, which are considered to have a high impact on developing

individuals' mental skills, were used and their effect on the development of students' critical thinking and decision-making skills was examined.

According to the results obtained from the post-test data on critical thinking tendencies, there was a significant difference in favor of the experimental group ($p= 0.007$, $p<0.05$). The findings obtained show that there is a statistically significant difference in favor of the experimental group in terms of the critical thinking tendencies of the experimental group students compared to the control group ($t= 2.82$ and $p< 0.05$). This result shows that mind and intelligence games are effective in improving the critical thinking tendencies of third grade primary school students. Similarly, Savaş (2019) and Baş et al. (2020) concluded in their research that intelligence games improve critical thinking tendencies in pre-service teachers and students. Yılmaz (2019), on the other hand, concluded in his study with seventh grade students that mind and intelligence games provided a change in students' perspectives and that they approached questions from different perspectives. Adalar and Yüksel (2017) stated in their research that the majority of teachers stated that mind and intelligence games positively affect skill development in students. Çetin and Özbuğutu (2020) reported that the answers given by pre-service science teachers were that mind and intelligence games would increase logical thinking and contribute to gaining multidimensional and different perspectives. Lee et al. (2008) reported on how individuals solve the Sudoku game, which is popular worldwide. The researchers reported that the Sudoku game improves reasoning skills and provides the ability to make inferences. On the other hand, the results of the studies conducted in the relevant literature that mind and intelligence games positively improve individuals' thinking skills (Demirel & Karakuş Yılmaz, 2019; Kula, 2019; Bartolucci et al., 2019; Marangoz, 2018) support the findings of this study. In other studies, the effects of mind and intelligence games on spatial thinking and mathematics skills were investigated (Bakker, 2008; Newman et al., 2016; Norte & Lobo, 2008). The results of the studies show that mind and intelligence games improve students' spatial thinking and mathematical skills, provide individuals with different perspectives and enable them to think multidimensionally.

In this study, at the end of the experimental process, the "Marmara Decision-Making Skill Perception Scale for Primary School Students" was reapplied to both groups (experimental and control groups) and it was determined whether there was a significant difference between the groups. According to the results of the analysis, it was determined that there was a statistically significant difference between the post-test total scores of the experimental and control group students in favor of the experimental group ($t= 3.44$ and $p< 0.05$). In other words, it was concluded that the decision-making skills of the experimental group students who received mind and intelligence games training improved. This result shows that mind and intelligence games are effective in improving the decision-making skills of primary school third graders.

Similarly, Esen (2019) reported in his study that intelligence games contribute positively to students' decision-making skills. Bayramin (2020) concluded that mind and intelligence games improved the reasoning strategy used by 6th grade students to solve problems and presented findings explaining how students decide on the appropriate move while playing games. On the other hand, Baş et al. (2020), in their research with gifted students at primary school age, concluded that mind and intelligence games also improved students' decision-making skills, one of the high-level thinking skills. Devecioğlu and Karadağ (2014) concluded in their study that middle school students think and decide quickly thanks to mind and intelligence games. According to the results of some studies, it was stated that mind and intelligence games increase metacognitive skills, logical thinking and cognitive development, including decision-making skills (Chien-Heng & Chien-Min, 2016; Çetin & Özbuğutu, 2020; Kazemi et al., 2012). These results support the findings of the study.

Reasoning is explained as the process of obtaining and defining information, then analyzing and making decisions about this information. Therefore, since decision making is also a high-level thinking skill, the findings of research on reasoning skills also support the results of the research. The results of Bottino et al. (2013), one of the aforementioned studies, with fourth and fifth grade students at primary school level show that mind and intelligence games are effective on students' thinking skills and improve their reasoning skills. Similarly, Kurbal (2015) found in his study that intelligence games improve students' reasoning skills. Yöndemli and Taş (2018) stated in their research results that intelligence games enrich the learning environment and improve many skills such as problem solving, reasoning, attention gathering, etc.

In his study, Dauvergne (2000) examined research on chess education in the fields of education and psychology. As a result of the study, he stated that chess, a game of intelligence, improves students' intelligence levels and problem solving skills. He also emphasized that chess is a powerful educational tool in developing decision-making skills to help students cope with the increasing complexity and demands of the globalizing world. Reiter et al. (2014) stated that Kendoku, which requires logical reasoning like Sudoku, improves reasoning skills, problem solving skills, and increases patience and endurance. Mackey et al. (2011) used digital and non-digital games for the reasoning and speed of children aged 7-9 in their study. As a result of the study, it was seen that the skills of

children who played reasoning games increased. The results of the current research show that mind and intelligence games improve the decision-making skills of primary school third graders is consistent with the relevant literature.

Mind and intelligence games education is an application that can make a significant contribution to the development of high-level mental skills such as reasoning, creativity, problem solving, reflective thinking and communication as well as critical thinking and decision-making skills. These skills are skills that can be acquired by individuals through early education. The results obtained from this study, which was conducted to determine the effects of mind and intelligence games on critical thinking disposition and decision-making skills of primary school students, revealed that mind and intelligence games were effective on students' critical thinking disposition and decision-making skills.

In the light of these results, some suggestions for practitioners and researchers for future research are as follows:

- In this study, the effects of mind and intelligence games on critical thinking tendencies and decision-making skills were investigated. In future studies on this topic, the effects on other skills can be examined.
- The study was conducted with third grade primary school students. Different grade levels can be determined for the sample. The study can be conducted with a new sample of gifted and special education students.
- This study was conducted as a pretest-posttest control grouped model. In similar studies, the study can be carried out with a mixed method research.
- The study was conducted only with students. Planning the participation of teachers and parents in the research can increase the effectiveness of the research. In this context, teachers or family participation can be added to the study.

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