



## Teacher Opinions on the Contribution of Intelligence Games to Student Development

Bahar Savaş Yağcı, Ministry of Education, bahar.savas@ogr.sakarya.edu.tr, 0000-0002-5580-1740

Assoc. Prof. Dr., Zeynep Demirtaş, Sakarya University, zeynept@sakarya.edu.tr, 0000-0002-0403-7199

### Keywords

Intelligence  
Game  
Intelligence games  
Mind games  
Development

### Article Info:

Received : 11-11-2024  
Accepted : 18-11-2024  
Published : 30-12-2024

DOI: 10.5281/zenodo.14182969

### Abstract

The study examined the opinions of teachers who provide intelligence games education on the contribution of intelligence games to student development. The research study group, conducted using a qualitative research method, included 63 teachers working throughout Turkey. The researchers prepared A semi-structured interview form to collect the data. In the interview form, questions were asked about the effects of intelligence games on students' physical (psycho-motor), cognitive, social, personality, and language development. The descriptive analysis method was used to analyze the data. As a result of the research, it was concluded that intelligence games support each developmental area separately according to the developmental areas of students. In addition, teachers' opinions determined that supporting hand-eye coordination, gaining self-confidence, and expressing oneself correctly and effectively came to the forefront in the effect of intelligence games on students' developmental areas.

## INTRODUCTION

The game, which is thought to be as old as the history of humanity, is defined by Huizinga (2020) as a preoccupation that has sanctions that are valid for everyone in time and space but is still played will arouse various emotions in those who play, even if it has a specific goal, and goes beyond the daily routine. Baykoç Dönmez (2000) supports this idea and states that play is one of the important elements constantly present in human behavior and supports the development of the child's mind. While Erikson (1950) considers play as an ego function (Erden, 2016), Montaigne (1533-1592) states that play is perceived as a serious endeavor for children, not just a game (MEB, 2009). While there are many different definitions of play in the literature, there are also many classifications. While Elkind (2011) categorizes games as mastery games, creative games, intimacy games, and therapeutic games by emphasizing the functionality of the game, Baratov (2013) makes a classification according to the interests of materials and age groups and classifies games as games for children only, games of chance, games of skill and power, intelligence games and participatory games.

Although play is subject to different definitions and classifications, children need to make sense of life. Children see play as a universal language for themselves and learn to discover themselves and the outside world through play. Games provide children with vital experiences and are a learning tool. Türkoğlu and Uslu (2016) state that enriching learning environments with educational games to develop individuals' mental abilities and problem-solving skills is necessary to ensure permanence in learning. To prepare children for the developing and changing world, the first step was taken in Turkey in 2013 to include games in the teaching process, and the Secondary School and Imam Hatip Secondary School Intelligence Games Course (5th, 6th, 7th, and 8th grades) Curriculum was prepared. In this curriculum, within the framework of the general objectives specified in the Basic Law of National Education, it is emphasized that the individual recognizes and develops his/her intelligence potential, makes fast and correct decisions by developing original and different strategies in the problems he/she encounters, and has a systematic thinking structure. In addition, it was aimed at students developing skills to work individually or as a team in competitive environments and having a positive attitude towards problem-solving (MEB, 2013). With the positive developments experienced with the implementation of this program, the Ministry of National Education General Directorate of Lifelong Learning supported the dissemination of intelligence games by creating the Intelligence Games Course Program (MEB, 2018) in 2018.

Play is thought to support development for all age groups. Development is defined as the change/transformation that starts with the fertilization process of the organism, which is always in the process of progress in physical, cognitive, language, emotional, and social aspects and is undergone until the final stage (Senemoğlu, 2018). In addition to this classical approach, development is a lifelong process. According to this perspective, development is structured by functioning together with biological, sociocultural, and individual factors, including growth, maintenance, and regulation, which continues throughout the life of the human being, takes place in many dimensions and directions, is quite flexible yet disciplined, and involves growth, maintenance and regulation (Santrock, 2019). The most prominent feature among the basic characteristics of development is that development is a whole and takes place in different areas such as physical, cognitive, language, personality, social, and emotional. In the 2023 Vision Document of the Ministry of National Education, the main subject is determined as human (child), and his/her development in every aspect is based on universal values in connection with his/her national culture and at a level that can easily keep up with the changing and developing world conditions (MEB, 2023). When the literature was examined, it was seen that the majority of the studies conducted with teachers in the field of mind and intelligence games were in the form of determining teachers' opinions on the Elective Intelligence Games course (Adalar & Yüksel, 2017; Alkaş Ulusoy, Saygı, & Umay, 2017; Devocioğlu & Karadağ, 2016; Sargin & Taşdemir, 2020; Yılmaz & İkikardeş, 2020). No study was found in which teachers' views on the contribution of intelligence games to the developmental characteristics of students were determined. For this reason, this study is thought to be important in determining the contributions of intelligence games to students'

developmental areas. The results of this study can help educators make decisions to use more intelligence games in practice to support student development holistically. In this context, it may allow new approaches in education to be shaped and the potential of intelligence games to be utilized more widely. In addition, it can be said that this study will provide important findings for future studies on this subject. For this reason, this study was conducted to determine teachers' views on the contribution of intelligence games to the development of students.

## METHOD

A qualitative research method was used in the study. Yıldırım and Şimşek (2008) define qualitative research as “research in which qualitative data collection techniques such as observation, interview, and document analysis are used and a qualitative process is followed to reveal perceptions and events realistically and holistically in a natural environment.” In this study, a holistic approach was adopted. In accordance with the purpose of the research, the development of students was examined in five different areas, and teachers' opinions were taken on the contributions of intelligence games to these areas of development.

## STUDY GROUP

The study group was formed using convenience sampling, one of the purposeful sampling methods. With the convenience sampling method, a situation that is close and easy to access for researchers is selected (Yıldırım & Şimşek, 2008). The study group of the research consisted of 63 volunteer teachers among the teachers of the students who participated in the 2nd National Mind Games Competition organized by the All Mind and Brain Games Federation. Demographic information of the teachers in the study group is shown in Table 1.

**Table 1. Demographic Characteristics of the Participants**

<i>Variable</i>	<i>n</i>	<i>%</i>
<i>Gender</i>		
Female	27	42.9
Male	36	57.1
<i>Professional Seniority Years</i>		
1-5 years	13	20.6
6-10 years	15	23.8
11-15 years	10	15.9
16- 20 years	11	17.5
21 years and above	14	22.2
<i>Branch</i>		
Physical Education	2	3.1
Geography	1	1.5
Philosophy	1	1.5
Science	2	3.1
Visual Arts	1	1.5
English	3	4.8
Mathematics	6	9.5
Preschool	3	4.8
Psychological Counseling and Guidance	6	9.5
Basic Education	30	47.6
Social Science	4	6.3
Technology Design	4	6.3
TOTAL	63	100

## **DATA COLLECTION TOOLS**

The semi-structured interview technique, one of the qualitative research techniques, was used in the study. Through interviews, the experiences, attitudes, thoughts, intentions, interpretations, mental perceptions, and reactions of individuals towards a situation/event/phenomenon are tried to be determined (Yıldırım & Şimşek, 2008). In this process, the demographic information form prepared by the researcher and the interview form with open-ended questions prepared to determine teachers' opinions about the effect of intelligence games on student development were used. While preparing the interview form, the relevant literature was examined first, and open-ended questions that were appropriate for the purpose of the research were listed. The draft interview form was submitted to expert opinion (n=3), and the questions were finalized per the experts' suggestions. The interview form included five open-ended questions.

## **DATA COLLECTION AND ANALYSIS**

Interviews were conducted face-to-face with volunteer teachers during the Turkey Mind and Brain Games Tournament organized by the All Mind and Brain Games Federation. The interviews were conducted in the tournament, which was held in 2022 and lasted for three days, during the time periods when the teachers participating in the research were available at the tournament. The answers given by the teachers during the interview process, which lasted approximately 15-20 minutes, were recorded by the researcher using a smartphone. Permission was obtained from the participants for the audio recording.

During the data analysis process, the recorded data were transcribed. The data obtained from the interviews were analyzed using a descriptive analysis method. Descriptive analysis includes the stages of creating a thematic framework for analysis, processing the data according to the thematic framework, defining the findings, and interpreting the findings (Yıldırım & Şimşek, 2008). In the data analysis process, a thematic framework was determined according to the development areas in the interview questions. The data were coded separately by the researchers for each interviewee. The percentage of agreement between the codes determined by the researchers was determined. According to Miles and Huberman (1994), to evaluate how consistent the researchers are in coding and thematic analysis in qualitative data analysis, "intercoder agreement" requires several independent coders to obtain similar results in analyzing the same data. The percentage of agreement is calculated as  $(\text{Agreed codes}/\text{total coded items}) \times 100$ . The researcher or coders code the data according to certain categories or themes. Coders place each unit of data into a specific category. We calculate how similar the coders are on each data unit to determine the agreement between different coders. The number of concordances (concordant codes) is proportioned to total data units and expressed as a percentage (Miles & Huberman, 1994). In this study, the agreement percentage of the coding made by the researchers was calculated as 91.8%. The four statements coded differently by the researchers were compared and merged into common codes by consensus. The findings obtained in this context were organized in tables. The interviewed teachers were coded from T1 to T63 and shown in the table as coded. In addition, one-to-one quotations from the participant teachers' opinions were written under the relevant tables. When the interview method is used in qualitative research, giving the participants' views with direct quotations is an important technique to increase the validity of the research (Creswell, 2013). This practice was used to ensure the accuracy of the data and the reflection of the participants' perspectives.

## FINDINGS

The opinions of 63 teachers who trained students in the field of intelligence games, which constituted the study group of the research, on the contributions of intelligence games to the physical, social, cognitive, personality, and language development of students were analyzed separately, and the results of the analysis were tabulated and described.

**Table 2.** *Opinions of Teachers who Provide Brain Teasers on the Contributions of Brain Teasers to Students' Physical (Psychomotor) Development*

<i>Theme (Category)</i>	<i>Codes</i>	<i>n</i>	<i>%</i>
Contribution of intelligence games to physical (psychomotor) development	Contribution of intelligence games to physical (psychomotor) development (T3, T4, T5, T6, T7, T9, T11, T13, T14, T17, T18, T19, T20, T21, T23, T28, T31, T32, T36, T37, T38, T39, T41, T44, T46, T51, T52, T53, T54, T56, T57, T58, T59, T60, T61, T63)	36	57
	Supporting fine muscle motor development (T7, T10, T16, T24, T25, T26, T27, T28, T30, T32, T38, T40, T42, T46, T48, T55, T60, T61)	18	29
	Supporting physical development (T1, T15, T22, T33, T34, T47, T49)	7	11
	Strengthening reflexes (T12, T35, T43, T50, T62, T63)	6	10
	Increasing dexterity and speed (T23, T29, T37, T45, T57)	5	8
	Supporting all-round development (T2, T8)	2	3

When Table 2 is examined, and the opinions of the teachers who provide intelligence games training about the contributions of intelligence games to students' physical (psychomotor) development are analyzed, the highest rate is determined as supporting hand-eye coordination, with 57%. In second place was the statement supporting fine-muscle motor development with 29%. Other ratios were 11% supporting physical development, 10% strengthening reflexes, 8% increasing hand skills and speed, and 3% supporting all-round development.

*“These games especially help develop hand-eye coordination. Games often require the simultaneous use of visual attention and motor skills. Students use their finger muscles by interacting with small objects in such games, which helps the development of fine motor skills.” (T28)*

*“In games, students have to perceive something visually quickly and react to it with appropriate motor skills. For example, in their games, students must direct their hands correctly when reacting to rapidly moving objects. This allows them to act based on audiovisual information, thus improving their hand-eye coordination. Many brain teasers require students to react quickly. This improves students' instant decision-making skills and helps to speed up their reflexes.” (T62)*

**Table 3.** *Opinions of Teachers who Provide Brain Teaser Training on the Contributions of Brain Teasers to Students' Social Development*

<i>Theme (Category)</i>	<i>Codes</i>	<i>n</i>	<i>%</i>
Contribution of intelligence games to social development	Socializing (T1, T2, T5, T8, T14, T17, T19, T21, T22, T23, T25, T26, T32, T35, T39, T42, T54, T56, T59, T62)	20	32
	Improving communication skills (T3, T6, T7, T10, T12, T13, T14, T16, T20, T23, T24, T28, T34, T35, T36, T42, T47, T53, T63)	19	30
	Ease of making friends (T4, T5, T11, T30, T31, T33, T37, T38, T40, T49, T60)	11	17
	Development of strong friendship bonds (T9, T10, T18, T27, T29, T32, T44, T50, T59, T61)	10	16
	Interaction with different cultures (T11, T31, T37, T43, T45, T51, T52)	7	11
	Aptitude for teamwork (T8, T25, T41, T55, T57, T62)	6	10

When Table 3 is examined, it is seen that the teachers' opinions about the contributions of intelligence games to the social development of students were socialization, with 32% in the first place, and increasing communication skills, with 30% in the second place. The other percentages were 17% ease in making friends, 16% development of strong friendship bonds, 11% interaction with different cultures, and 10% predisposition to teamwork. The views of teacher T10 and teacher T32 on this theme are presented below.

*“While playing together, students learn to convey their thoughts to others, listen to others' ideas and resolve conflicts. This process helps students develop their verbal and non-verbal communication skills. Games provide a great opportunity for having fun, developing friendships, and building stronger bonds.” (T10)*

*“Brain teasers provide a social platform that strengthens students' skills and their interaction and cooperation skills within the group. These games contribute greatly to students' socialization because they are played together in groups, and students interact. Such games strengthen students' teamwork skills and increase their ability to produce solutions and collaborate. This allows students to develop their ability to work effectively individually and in groups.” (T62)*

**Table 4.** *Opinions of Teachers who Provide Brain Teaser Training on the Contributions of Brain Teasers to Students' Cognitive Development*

<i>Theme (Category)</i>	<i>Codes</i>	<i>n</i>	<i>%</i>
Contribution of intelligence games to cognitive development	Multi-dimensional thinking (T3, T10, T17, T18, T31, T32, T34, T39, T41, T44, T49, T50, T51, T52, T53, T59, T63)	17	27
	Strategy development (T3, T20, T21, T25, T28, T29, T33, T34, T37, T51, T56, T62)	12	19
	Problem solving (T1, T8, T12, T22, T25, T28, T29, T32, T40, T42, T59)	11	17
	Quick thinking skills (T11, T13, T16, T17, T19, T22, T23, T54, T56, T57)	10	16
	Analytical thinking and analysis (T4, T5, T14, T22, T25, T33, T37, T40, T60)	9	14
	Making logical and accurate decisions (ÖT, T8, T19, T20, T24, T29, T45, T48, T55)	9	14
	Supporting academic success (T8, T9, T15, T30, T49, T55)	6	10
	Concentration and attention skills (T10, T13, T16, T26, T46)	5	8
	Higher-order thinking skills (T40, T44, T52, T53, T63)	5	8
	Learning skills (T1, T2, T14, T41 )	4	6
	Supporting mental processes (T36, T38, T47)	3	5
	Foresight ability (T3, T11)	2	3
	Supporting cognitive development (T6, T57)	2	3
	Active intelligence (T11, T35)	2	3
	Activating intelligence areas (T27, T58)	2	3
Accelerate intelligence development (T35, T61)	2	3	
Quick comprehension (T7)	1	2	

When Table 4 is analyzed when the opinions of the teachers about the contributions of intelligence games to the cognitive development of students are examined, the first place was versatile thinking with 27%, the second place was strategy development with 19%, and the third place was problem-solving with 17%. In other ratios, 16% fast thinking, 14% analytical thinking and analyzing and making logical and accurate decisions, 10% supporting academic success, 8% concentration and attention skills and high-level thinking skills, 6% learning skills, 5% supporting mental processes, 3% foresight ability, supporting cognitive development, active intelligence, activating intelligence areas,

accelerating intelligence development and 2% rapid comprehension. I have shared the opinions of teacher T3 and teacher T44 below.

*“Brain teasers play a vital role in students' cognitive development because these games help them versatily develop their thinking skills. Games often require considering multiple possibilities and solutions. This enables students to think about different alternatives, not just one solution. At the same time, games teach students how to make plans, set goals, and create step-by-step strategies to reach these goals.” (T3)*

*“Brain teasers strengthen students' high-level cognitive skills by improving their thinking abilities; they also teach them to consider different perspectives and thus develop students' multidimensional thinking abilities.” (T44)*

The opinions of the teachers who provided intelligence games training on the contribution of intelligence games to the personality development of students are presented in Table 5.

**Table 5.** Opinions of Teachers who Provide Brain Teaser Training on the Contributions of Brain Teasers to Students' Personality Development

Theme (Category)	Codes	n	%
Contribution of intelligence games to personality development	Gaining self-confidence (T1, T2, T4, T5, T6, T9, T10, T13, T18, T20, T21, T23, T25, T29, T31, T32, T34, T36, T41, T42, T44, T47, T48, T50, T52, T53, T62)	27	43
	Respect for differences and sportsmanship (T3, T7, T15, T17, T19, T20, T22, T24, T32, T58)	10	16
	Appreciate achievement and success (T8, T12, T14, T16, T26, T28, T38, T54, T60)	9	14
	Controlling emotions (T19, T22, T32, T38, T40, T42, T46, T51)	8	13
	Patience (T8, T13, T21, T27, T40, T49)	6	10
	Taking responsibility for decisions (T5, T7, T11, T56, T59, T63)	6	10
	Accepting failure (T13, T18, T36, T58, T61)	5	8
	Struggling with difficulties and determination (T34, T35, T37, T55, T61)	5	8
	Following the rules (T11, T17, T20, T46, T59)	5	8
	Developing self-esteem (T6, T46, T47, T61)	4	6
	Acquisition of personality and identity (T21, T35, T39, T43)	4	6
	Self-esteem (T47, T48, T57)	3	5
	Empathy (T29, T32, T55)	3	5
	Pleasure of success (T1, T13, T59)	3	5
Mission awareness (T30, T63)	2	3	
Supporting personality development (T45, T62)	2	3	

When Table 5 is analyzed, and the teachers' opinions on the contributions of intelligence games to the personality development of students are examined, gaining self-confidence has the highest value at 43%. Respect for differences and gentlemanliness ranked second with 16%, and appreciation of achievement and success ranked third with 14%. Other views were expressed as controlling emotions with 13%, patience and taking responsibility for decisions with 10%, acceptance of failure, struggling with difficulties and following the rules with perseverance with 8%, developing self-esteem, personality and identity acquisition with 6%, self-identity, empathy and satisfaction of success with 5%, sense of duty and supporting personality development with 3%. The opinions of teacher T5 and teacher T32 are given below.

*“Brain teasers help students gain self-confidence as they allow them to experience both success and failure. At the same time, seeing the consequences of every action and choice helps them learn to*

take responsibility. This strengthens their sense of responsibility and contributes positively to their personal development.” (T5)

“Because these games create interaction between students with different ways of thinking, students learn to respect each other's ideas and play styles. This develops the concept of 'respect for differences.' Students learn to accept winning or losing maturely, strengthening their personal responsibility and gentlemanly behavior. Brain teasers are also useful in helping students to control their emotions. Games can sometimes be tense; a student may react emotionally when losing. However, students learn to manage these emotions. When a player loses, other students recognize that person's emotional state and consider how to support them. This helps students develop empathy skills and makes them more understanding and sensitive individuals.” (T32)

The opinions of the teachers who provided training on intelligence games about the contribution of intelligence games to students' language development are presented in Table 6.

**Table 6.** *Opinions of Teachers who Provide Intelligence Games Training on the Contributions of Intelligence Games to Students' Language Development*

<i>Theme (Category)</i>	<i>Codes</i>	<i>n</i>	<i>%</i>
Contribution of intelligence games to language development	Expressing oneself accurately and effectively (T3, T4, T5, T6, T7, T8, T9, T10, T12, T13, T14, T16, T19, T20, T22, T24, T25, T26, T28, T32, T34, T35, T37, T38, T39, T40, T42, T47, T50, T54, T57, T59, T61, T62, T63)	35	56
	Supporting language development (T1, T2, T18, T21, T30, T31, T36, T41, T43, T49, T52, T53, T56, T60)	14	22
	Enriching vocabulary (T7, T11, T15, T17, T19, T27, T29, T30, T44, T55, T58)	11	17
	Fluent speech (T8, T14, T23, T29, T45, T46, T48, T51)	8	13

When Table 6 is analyzed, in the opinions of the teachers about the contributions of intelligence games to the language development of the students, the expressions of expressing oneself correctly and effectively with 56% in the first place, supporting language development with 22% in the second place, improving vocabulary with 17% in the third place and fluent speaking with 13% in the fourth place were included. The views of Teacher T8 and Teacher T19 on this theme are given below.

“Brain teasers make a great contribution to improving students' language skills. Such games help students to express themselves correctly because they need to express their thoughts clearly and concisely during the games. Also, students practice thinking and speaking quickly and fluently during the game process. Thus, their linguistic expressions become more effective and fluent.” (T8)

These types of brain teasers enrich students' vocabulary. The new terms, concepts, and expressions they encounter in games give students a wider vocabulary. While the language skills of students who play games develop, they especially begin to express themselves correctly and effectively.” (Ö19)

## **DISCUSSION, CONCLUSION AND IMPLICATIONS**

The results obtained in the research conducted to determine the contributions of brain teasers to students' developmental areas according to teachers' opinions were determined in five themes as developmental areas. In this context, the teachers emphasized that brain teas support hand-eye coordination, fine-muscle motor development, and physical development in students' physical (psychomotor) development. Similarly, Maneval (1999) states that hand-eye coordination includes many other skills used in daily life, such as walking, running, and writing, and that the development of hand-eye coordination is an indicator that individuals will be successful in both education and social life in terms of being able to do all their work. In addition, Durualp and Aral (2018), in their research



with kindergarten students, revealed a significant difference in the motor skills development of students participating in play activities compared to other students. Hodges and Williams (2010) stated that physical activities play a critical role in developing children's motor skills (such as hand-eye coordination and fine muscle motor skills). Games and physical activities strengthen these skills. Ginsburg (2007) stated that games are essential in physical development and positively affect hand-eye coordination, fine muscle motor skills, and general psychomotor development. Games are full of activities that develop children's motor skills. These results can be interpreted as the fact that such games can increase students' hand-eye coordination and fine muscle motor development and enable them to become more independent and successful individuals in education and social life.

According to the teachers' opinions in the study, it was concluded that intelligence games facilitate students' social development, especially in socialization, developing communication skills, and making friends. In the survey conducted by Keskin (2009), it was concluded that games enable children to socialize and support their development positively. Ginsburg (2007) stated that games positively affect children's social and communication skills. Through games, children learn how to interact with others and how to improve their ability to make friends. A study by Stanley and Konstantareas (2007) found that games develop the ability to act together in a group and individually. Singer and Singer (2005) stated that children develop social skills through games and that games help children make friends. Games allow children to interact positively with others and improve their communication skills. In addition, Tuncor (2000) stated that games are a preliminary preparation for children to be aware of their society, know its concepts, and socialize. In the study conducted by Alkan and Mertol (2017) for the parents of gifted students, it was stated by the parents that intelligence games positively affect the development of different competencies of their children in social areas. According to the findings of Kula's (2020) research on intelligence games applied to second-grade primary school students, the classroom teacher stated that intelligence games had a positive effect on students' self-confidence, communication, empathy, thinking skills, and cooperation skills and that students participated more actively in the lesson and their motivation increased. In this context, while these games provide students with social interaction skills, they also increase their self-confidence, sense of empathy, and ability to cooperate. Therefore, using brain teasers in school and out-of-school settings can offer an excellent opportunity to support student development.

According to the research results, most teachers believed that intelligence games support multi-dimensional thinking, strategy development, and problem-solving skills in terms of their contribution to students' cognitive development. Östergren and Soderqvist (2013) found that educational games have a significant effect on cognitive development and that these games develop skills such as strategy development, problem-solving, and multi-dimensional thinking. This study emphasizes how games support the development of children's cognitive skills. Similarly, Lillard (2017), while discussing the effect of games on cognitive development, stated that children's problem-solving and strategy development skills can be developed through games. Role-playing games, in particular, allow children to develop multi-dimensional thinking skills. Açıkgöz (2003) suggested that games have an important role in active learning and that using games would be beneficial, especially in lessons that include the essence of scientific studies. In the study conducted by Özer, Gürkan, and Ramazanoğlu (2006), it was concluded that children gain problem-solving skills through experiences gained in games. In his study, Tural (2005) concluded that children develop more than one cognitive ability while playing games. These skills are decision-making, keeping in mind, performing mental operations with numbers, developing strategies according to current situations, developing solutions to problems encountered and presenting the most appropriate solution, and using creative thinking from higher-order thinking processes. In addition, Baş, Kuzu, and Gök (2020) concluded that analytical thinking, critical thinking, and decision-making skills developed because of various mind games played by gifted students as a result of their study at the primary school age and obtained a similar result to the results of this study. In the study conducted by Kel and Kul (2021), according to the opinions of mind and intelligence game instructors, it was found that mind and intelligence games positively affected students' attitudes

towards mathematics lessons, higher-order thinking skills, academic success, and mathematical skills. Türkoğlu and Uslu (2016) stated in their research that games are important in providing permanent learning in children in early childhood and developing both the individual's cognitive abilities and especially problem-solving skills. Demirel (2015) stated in his study that intelligence games are important in educational games. He concluded that these games support children's thinking abilities and help develop logical thinking and problem-solving skills. Derecioğlu and Karadağ (2016) concluded in their study that intelligence games make positive contributions in helping children realize their potential, make quick and effective decisions, and master problem-solving stages. Kurbal (2015) also stated in his study that intelligence games contribute to the development of reasoning skills in children and the development of effective problem-solving strategies by children. Previous studies' results are similar to those obtained in this study. In the context of these results, it can be said that intelligence games are an essential tool for students' cognitive development. These games can provide the development of high-level cognitive skills such as problem-solving, strategy development, and creative and analytical thinking. In addition, these games can be used in the learning-teaching process to accelerate students' cognitive development and provide more complex thinking skills.

In the study, intelligence games' contributions to students' personality development, gaining self-confidence, respecting differences, and appreciating success and achievement came to the forefront. Pellegrini (2009) suggested that games are fun activities for children and help them gain self-confidence, develop social skills, and respect social rules. Particularly, competitive games provide children with skills such as appreciating success and being an athlete. In his study, Tören (2011) determined that children gain the ability to control their emotions during games and that games have an important effect on developing children's self-confidence. However, in the study of Açıkgöz (2003), it was stated that losing in competitions causes disappointment in students, and, therefore, negative emotions may develop in children. In addition, the study by Kula (2020) determined that students feel a sense of failure when they lose in the game and try to cope with this feeling. These results show that intelligence games help children not only play games but also gain emotional regulation, social skills, and personal awareness. Self-confidence is an important feature that increases success in individuals' academic and social lives. In this context, games can help children develop their social skills while also helping them create a positive perception of their own potential. In the research, the views of expressing oneself correctly and effectively, supporting language development, and developing vocabulary came to the fore regarding the contributions of intelligence games to students' language development. In their research, Burgaz Uskan and Bozkuş (2019) concluded that games are a process in which children interact; communication is intense and contributes to their language development. Like this result, Bergen and Mauer (2000) stated that children express themselves in games, and thus, games support language development. Miller (2007) determined that children develop different linguistic skills during games and that their grammar, vocabulary, and effective communication skills are strengthened in this process. Games support children's language development and enable them to communicate more effectively. As a result of the study conducted by Genişyürek (2021) with preschool students, it was concluded that intelligence games have a noticeable positive effect on language development. In this context, games can provide an environment where children actively participate, interact socially, and directly experience learning opportunities. This can be a very productive method for developing language skills. Teachers can support students' linguistic development more effectively by incorporating intelligence games into the educational process.

## **RECOMMENDATIONS**

According to the results of this research, it can be suggested that intelligence games should be integrated into the curriculum, considering their contributions to the development areas of students. Intelligence games can be used as part of teaching strategies, and teachers can use games more effectively in lessons to support students' physical, social, cognitive, and linguistic development. It can be suggested that intelligence games played in school groups should be made more common. Students

can learn to cooperate, empathize, and develop their social skills through such games. In addition, games that encourage strategy development can be used more. Games such as word games, storytelling games, and word cards aimed at developing language skills can be frequently included in the classroom.

This research is limited to the opinions of 63 teachers teaching in different branches. It can be suggested that the number of such studies on the contributions of intelligence games to the development areas of students is increased and that applied research be conducted in more schools. Studies conducted on different school types, cultural contexts, and age groups allow the potential of intelligence games in education to be examined from a broader perspective.

## REFERENCES

- Açıkgöz, K. Ü. (2003). *Etkili öğrenme ve öğretme (Effective learning and teaching, 6<sup>th</sup> ed.)*. Eğitim Dünyası Publications.
- Adalar, H., & Yüksel, İ. (2017). Sosyal bilgiler, fen bilimleri ve diğer branş öğretmenlerinin görüşleri açısından zekâ oyunları öğretim programı. *International Periodical for the Languages, Literature and History of Turkish or Turkic*, 12(28), 1-24. <http://dx.doi.org/10.7827/TurkishStudies.12428>
- Alkan, A., & Mertol, H. (2017). Üstün yetenekli öğrenci velilerinin akıl-zeka oyunları ile ilgili düşünceleri. *Kırşehir Ahi Evran Üniversitesi Sağlık Bilimleri Dergisi*, 1(1), 57-63.
- Alkaş Ulusoy, Ç., Saygı, E., & Umay, A. (2017). İlköğretim matematik öğretmenlerinin zeka oyunları dersi ile ilgili görüşleri. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*, 32(2), 280-294. <https://doi.org/10.16986/HUJE.2016018494>
- Baratov, P. N. (2013). *100 Soruda Türk Folklorü (100 Questions on Turkish Folklore)*. BilgeSu Publications.
- Bas, O., Kuzu, O., & Gök, B. (2020). The effects of mind games on higher level thinking skills in gifted students. *Journal of Education and Future*, 17, 1-13.
- Baykoç Dönmez, N. (2020). *Üniversite çocuk gelişimi ve eğitimi bölümü ve kız meslek lisesi öğrencileri için oyun kitabı (Playbook for university child development and education department and vocational high school students)*. Esin Publications.
- Bergen, D., & Mauer, D. (2000). Symbolic play, phonological awareness, and literacy skills at three age levels. In K. A. Roskos & J. F. Christie (Eds.), *Play and literacy in early childhood: Research from multiple perspectives* (pp. 45–62). Erlbaum.
- Burgaz Uskan, S., & Bozkuş, T. (2019) Eğitimde oyunun yeri. *Uluslararası Güncel Eğitim Araştırmaları Dergisi (UGEAD)*, 5(2). 123-131.
- Creswell, J. W. (2013). *Qualitative inquiry and research design: Choosing among five approaches* (3rd ed.). Sage Publications.
- Demirel, T., (2015). Zekâ oyunlarının Türkçe ve matematik derslerinde kullanılmasının ortaokul öğrencileri üzerindeki bilişsel ve duyuşsal etkilerinin değerlendirilmesi. (Publication No. 418220) [Doctoral dissertation, Atatürk University]. Council of Higher Education Thesis Center, Turkey.
- Devocioğlu, Y., & Karadağ, Z. (2016). Amaç, beklenti ve öneriler bağlamında zeka oyunları dersinin değerlendirilmesi. *Bayburt Eğitim Fakültesi Dergisi*, 9(1), 41-61.
- Durualp, E., & Aral, N. (2018) Çocukların ince ve kaba motor gelişimlerine oyun etkinliklerinin etkisinin incelenmesi. *Afyon Kocatepe Üniversitesi Sosyal Bilimler Dergisi*, 20(1), 243-258.
- Erden, F. (2016). Oyun kuramları. In M. Ören (Ed.), *Çocuk ve oyun* (pp. 24-45). Anadolu University Press.
- Elkind, D. (2011). *Oyunun gücü (Power of the game)*. İmge Publications.
- Genişyürek, C. (2021). Zeka oyunlarının 5\_6 yaş çocuklarının dil gelişimine etkisinin incelenmesi. (Publication No. 662578) [Master dissertation, Uludağ University]. Council of Higher Education Thesis Center, Turkey.
- Ginsburg, K. R. (2007). The Importance of play in promoting healthy child development and maintaining strong parent-child bonds. *Pediatrics*, 119(1), 182-191. <http://dx.doi.org/10.1542/peds.2006-2697>
- Hodges, S. J., & Williams, J. M. (2010). The Role of physical activity in the development of children: A Review of the literature. *Journal of Health Psychology*, 15(1), 123-130.
- Huizinga, J. (2020). Homo Ludens oyunun kültür içindeki yeri üzerine bir inceleme. (O. Düz, Trans.). Alfa Printing and Publishing Distribution. (Original work published 1950)
- Kel, S., & Kul, B. (2021). Akıl ve zeka oyunlarının öğrencilere katkıları: Öğretmenlerin görüşleri. *Uluslararası Bilim ve Eğitim Dergisi*, 4(3), 207-225. <https://doi.org/10.47477/ubed.840868>
- Keskin, A. (2009). Oyunların çocukların çoklu zeka alanlarının gelişimine etkisi. (Publication No. 249699) [Master dissertation, Selçuk University]. Council of Higher Education Thesis Center, Turkey.
- Kula, S. S. (2020). Zekâ oyunlarının ilköğretim 2. sınıf öğrencilerine yansımaları: Bir eylem araştırması. *Milli Eğitim Dergisi*, 49(225), 253-282.
- Kurbal, M. S. (2015). An investigation of sixth grade students' problem solving strategies and underlying reasoning in the context of a course on general puzzles and games. (Publication No. 399985) [Master dissertation, Middle East Technical University]. Council of Higher Education Thesis Center, Turkey.
- Lillard, A. S. (2017). The Impact of pretend play on children's development: A Review of the evidence. *Psychological Science*, 28(8), 1041-1052.
- Maneval, K. L. (1999). *Visual-motor integration training and its effects on self-help skills in preschool students with disabilities*, [Unpublished master dissertation]. Rowan University.
- MEB (2013). Ortaokul ve İmam Hatip Ortaokulu Zekâ Oyunları Dersi Öğretim Programı. Retrieved January, 20, 2022, from [http://mufredat.meb.gov.tr/Dosyalar/202152512057724-zeka\\_oyunlari.pdf](http://mufredat.meb.gov.tr/Dosyalar/202152512057724-zeka_oyunlari.pdf)

- MEB (2009). MEGEP Çocuk Gelişimi ve Eğitimi Oyun Etkinliği-I. Retrieved January, 22, 2022, from <https://docplayer.biz.tr/5561587-T-c-milli-egitim-bakanligi-megep-mesleki-egitim-ve-ogretim-sisteminin-guclendirilmesi-projesi-cocuk-gelisimi-ve-egitimi-oyun-etkinligi-i.html>
- MEB (2018). Mutlu Çocuklar Güçlü Türkiye 2023 Eğitim Vizyonu. Retrieved January, 25, 2022, from <http://2023vizyonu.meb.gov.tr/>
- MEB (2018). Kurs Programı Onayları. Hayat Boyu Öğrenme Genel Müdürlüğü, Retrieved January, 27, 2022, from <https://hbogm.meb.gov.tr/www/kurs-programi-onaylari-23012018/icerik/751>
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook* (2nd ed.). Sage Publications.
- Miller, E. (2007). Play and language development. *Early Childhood Education Journal*, 34(5), 45-52.
- Neuman, W. L. (2012). *Toplumsal araştırma yöntemleri: Nicel ve nitel yaklaşımlar I-II. (Social research methods: Quantitative and qualitative approaches, 5<sup>th</sup> ed.)*. (S. Özge, Trans). Chamber of Publications. (Original work published 1991)
- Östergren, M., & Soderqvist, S. (2013). Cognitive benefits of educational games for children: a Meta-analysis. *Journal of Educational Psychology*, 105(4), 935-944.
- Özer, A., Gürkan, A. C., & Ramazanoğlu, O. (2006). Oyunun çocuk gelişimi üzerine etkileri. *Fırat Üniversitesi Doğu Araştırmaları Dergisi*, 4(3), 54-57.
- Pellegrini, A. D. (2009). School recess and playground behavior: Educational and developmental roles. *Developmental Review*, 29(2), 151-180.
- Santrock, J. W. (2019). Yaşam boyu gelişim & gelişim psikolojisi. (G. Yüksel, Trans). Nobel Publications.
- Sargın, M., & Taşdemir, M. (2020). Seçmeli zekâ oyunları dersi öğretim programının öğretmenler tarafından değerlendirilmesi (Bir durum çalışması). *Elektronik Sosyal Bilimler Dergisi*, 19(75), 1444-1460. <https://doi.org/10.17755/esosder.653817>
- Senemoğlu, N. (2018). *Gelişim öğrenme ve öğretim kuramdan uygulamaya (Development learning and teaching theory to practice)*. Anı Publications.
- Singer, J. L., & Singer, D. G. (2005). *The House of make-believe: children's play and the developing imagination*. Harvard University Press.
- Stanley, G. C., & Konstantareas, M. M. (2007). Symbolic play in children with autism spectrum disorder. *Journal Autism Development Disorder*, 37, 1215-1223.
- Tören, A. (2011). Erzincan'dan derlenen çocuk oyunlarının çocuk eğitimindeki yeri. (Publication No. 294119) [Master dissertation, Erzincan University]. Council of Higher Education Thesis Center, Turkey.
- Tuncor, F. R. (2000). *Eğitici çocuk oyunları (Educational children's games)*. Esin Publications.
- Tural, H. (2005). İlköğretim matematik öğretiminde oyun ve etkinliklerle öğretimin erişi ve tutuma etkisi. (Publication No. 186560) [Master dissertation, Dokuz Eylül University]. Council of Higher Education Thesis Center, Turkey.
- Türkoğlu, B., & Uslu, M. (2016). Oyun temelli bilişsel gelişim programının 60-72 aylık çocukların bilişsel gelişimine etkisi. *Uluslararası Eğitim Bilimleri Dergisi*, 6, 50-68.
- Yıldırım, A. & Şimşek, H. (2008). *Sosyal bilimlerde nitel araştırma yöntemleri (Qualitative esearch methods in social sciences, 6th ed.)*. Seçkin Publications.
- Yılmaz, Ş., & Yıldız İkikardeş, N. (2020). Ortaokul öğretmenlerinin zeka oyunları dersine dair görüşleri. *Necatibey Eğitim Fakültesi Elektronik Fen ve Matematik Eğitimi Dergisi*, 14(1), 528-576. <https://doi.org/10.17522/balikesirnef.671642>

#### **AUTHOR CONTRIBUTION (Compulsory)**

- First author have made substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data.
- The second author have been involved in drafting the manuscript or revising it critically for important intellectual content.