



## Investigating Teachers' Views on Digital Games

### ABSTRACT

There is a big debate about the potential effects of digital games in the literature. This research covers the teachers' experiences and views of digital games. More specifically, the purpose of this research was to examine the views of ICT teachers who are members of a non-governmental organization which operates voluntary research and educational activities in the field of educational technology and to determine their support for the use of digital games in educational settings. Research data were analyzed and reported according to whether the participants play digital games or not. The results indicated that although the majority of the ICT teachers are highly aware of the educational digital games and in an effort to integrate the educational digital games into instruction, they do not have enough knowledge about which digital games their students play. The study also confirms that those who are comfortable with digital games will be willing to use them in and out of the classroom. The results showed that ICT teachers see digital games as an effective educational tool. Although they are also interested in teaching digital games, research findings revealed that significant structural improvements and steps are needed to integrate digital games into educational processes. The improvements and steps to be taken are as follows: (1) improving school infrastructure, (2) management support (i.e., motivators, incentives), (3) raising family and child awareness, (4) in-service training of teachers and (5) developing quality educational games.

**Keywords:** Digital Games, Teachers, Educational Digital Games, Educational Settings

Turgay Alakurt<sup>1</sup> 

### How to Cite This Article

Alakurt, T. (2023). "Investigating Teachers' Views on Digital Games", International Social Mentality and Researcher Thinkers Journal, (Issn:2630-631X) 9(72): 3626-3633. DOI: <http://dx.doi.org/10.29228/smryj.70403>

Arrival: 01 April 2023  
Published: 30 June 2023

Social Mentality And Researcher Thinkers is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License.

## INTRODUCTION

The game culture has undergone a radical transformation in the past three decades. Classical games, which used to be more of a physical activity to have fun with friends on the street, are now replaced by digital games played through information and communication tools. Digital game is a game in which the result of the player's interaction with an electronic system or computer is displayed on a screen or similar display system. All games that can be played through PCs, tablets, phones, or boxed systems are called digital games. In this new gaming culture, smartphones, laptop/personal computers, and game consoles are the most preferred devices for playing digital games (Statista & Clement, 2023). With an estimated 3.6 billion players worldwide by 2025, the digital gaming industry is a growing ecosystem of the new global economy. Global gaming revenue is projected to exceed 211 billion in 2025, up from 184 billion in 2022 (Newzoo, 2022).

According to the 2019 Deloitte Global Mobile User Survey report conducted in 28 countries on 6 continents, users in Türkiye prefer phones as the most preferred gaming device. Türkiye also stands out compared to other countries in terms of game playing frequency. 55% of users prefer cell phones for playing games. With this rate, users in Türkiye rank first among the 28 countries surveyed. When the age groups of those who prefer mobile phones to play games were analyzed, it was seen that the highest rate is in the 35-44 age group with 61%. When the frequency of gaming was analyzed, 1 out of every 2 smartphone owners plays games on their phones every day. Türkiye ranks first among the countries surveyed with this game playing frequency rate. The 25-34 age group ranks first with 53% of those who play games on their phones at least once a day (Deloitte, 2019). The increasing market size of the digital gaming industry in proportion to the number of users inevitably makes the psychological, physical, and social effects of these games on children, youth, and adults more controversial in Türkiye, as it is all over the world. Gaming addiction is at the forefront of these debates.

Addiction to gaming has been included in the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders (DSM-5) as "Internet Gaming Disorder" (IGD) (Sherer, 2023). The World Health Organization also defined the "Gaming Disorder" (GD) in the 11th Revision of the International Classification

<sup>1</sup> Assoc. Prof. Dr., Kütahya Dumlupınar University, Faculty of Education, Department of Educational Sciences, Kütahya, Turkey



of Diseases (ICD-11) (2023a). The symptoms proposed by these two organizations for gaming addiction were characterized by the following behaviors.

**Table 1.** DSM-5 and ICD-11 Symptoms

American Psychiatric Association (DSM-5) (Internet Gaming Disorder – IGD)	<ol style="list-style-type: none"> <li>1. Preoccupation with Internet games.</li> <li>2. Withdrawal symptoms when Internet gaming is taken away.</li> <li>3. Tolerance, the need to spend increasing amounts of time engaged in Internet games.</li> <li>4. Unsuccessful attempts to control the participation in Internet games.</li> <li>5. Loss of interests in previous hobbies and entertainment as a result of, and with the exception of, Internet games.</li> <li>6. Continued excessive use of Internet games despite knowledge of psychosocial problems.</li> <li>7. Has deceived family members, therapists, or others regarding the amount of Internet Gaming</li> <li>8. Use of Internet games to escape or relieve a negative mood.</li> <li>9. Has jeopardized or lost a significant relationship, job, or educational or career opportunity because of participation in Internet games.</li> </ol>
World Health Organization (ICD-11) (Gaming Disorder – GD)	<ol style="list-style-type: none"> <li>1. Impaired control over gaming behavior.</li> <li>2. Increasing priority given to gaming behavior to the extent that gaming takes precedence over other life interests and daily activities.</li> <li>3. Continuation or escalation of gaming behavior despite negative consequences.</li> </ol>

The ICD-11 points out that in order to be diagnosed with gaming addiction, gaming behavior and other characteristics should normally be evident for a period of at least 12 months. DSM-5 states that the observation of at least five of the nine criteria mentioned above for 12 months indicates that there is a clinically concerning situation.

Research evidence on what factors associate with gaming addiction is a matter of debate. There are some prior studies that have focused on the impact of a wide range of variables on game disorder such as sex (Dündar et al., 2012; Horzum, 2011), parental education level (Çakır, 2021, Gökçearslan & Durakoğlu, 2014), computer usage time (Gökçearslan & Durakoğlu, 2014), specific game-genre (Na et al., 2017), parenting style (Chen et al., 2020). In addition, there are studies to explain the relationship between online gaming addiction and neurobiological mechanisms (Ko et al., 2009). Shi et al. (2007) point out that factors that influence addictive behavior fall into two main categories: internal psychological and external socio-environmental factors. Internal factors consider a person's mental and motivational conditions, while external factors are more related to environmental, historical, and socio-cultural influences. As can be seen, the predictive factors of gaming addiction are not yet clear in the literature and more studies are needed. Despite the emergent importance to the gaming disorder, studies and research findings suggest that gaming disorder is not very common throughout the world. It was indicated that only 0.3 to 1.0 percent of the general population may be eligible for a potential diagnosis of internet gaming disorder (Sherer, 2023). According to the World Health Organization (2023b), gaming disorder affects only a small proportion of people who engage in digital or video gaming activities.

Although focusing on game disorder and negative effects of digital game playing is important, the benefits of digital games for the students should not be ignored for teaching activities. Digital games, especially educational games, offer a great potential for learning and teaching. There is a great number of studies concerning the positive impact of digital games for student learning (Fadda et al, 2022). For example, Connolly et al. 's (2012) systematic review study indicated the positive impact of digital game playing on knowledge acquisition, understanding, affective and motivational outcomes. To this aim, in a recent meta-analysis study similar to Connolly et al.'s review, Boyle et al. (2016) found that knowledge acquisition is the most occurring outcome reported for digital game playing. Wouters et al. (2013) evaluated the cognitive and motivational effects of serious digital games. They found that serious games are effective in terms of learning and motivation. In another meta-analysis study carried out by Byun and Joung (2018), it was reported that digital games had positive effects on students' mathematics learning. In line with the recent studies, Felicia (2009) reported that digital games had many educational benefits such as improving ICT skills and developing cognitive, spatial, and motor skills. The researcher also highlighted that digital games could be used to teach facts, principles and complex problem solving.

As can be seen, just like cell phones, digital games are now an indispensable part of our lives. The literature points to the need for more studies to build a consensus on game addiction. Considering the contribution and benefits that digital games can provide to teaching and learning, teachers' views and experiences with digital games are more important today than ever (Beavis et al., 2014). Should digital games be integrated into instruction? Are digital games bad for students' health? The benefits and harms associated with the digital game playing both in and out of the classroom have resulted in confusion. This study contributes to closing the gap in the literature by investigating digital games from the teachers' point of view. The purpose of this study

is to put forth the teachers' experiences and views on digital games. More specifically, the primary issues of this research were explored through the following questions:

1. What are the teachers' reasons for playing or not playing digital games?
2. What is the teachers' awareness of educational digital games?
3. What are the teachers' views on the potential impact of digital games on students in and out of the classroom?
4. What are the views of teachers on the steps to be taken in order to spread the use of digital games for educational purposes?

## METHOD

In the present study, a quantitative research design was employed to reveal the ICT teachers' approach to digital game playing. This research followed the recommendations of Creswell (2013) to address the research questions. The survey model was preferred to investigate and describe the views of participants. It helped us to identify key points regarding the use of digital games in educational settings.

### Study Group

This descriptive study involved 142 ICT teachers who are members of a non-governmental organization which operates voluntary research and educational activities in the field of information technologies in Türkiye. Kelly (2004) indicates that teachers who are members of educational organizations are more likely to teach higher ability students in the academic field. Therefore, the views of these participants helped us to provide a broad perspective. The demographic information of participants, such as, age, gender, professional seniority was examined under two groups according to whether they play digital games or not (Table 2).

**Table 2.** Demographics of Participants

<i>Do you play digital games?</i>	<b>Yes, I play...</b>		<b>No, I do not play...</b>		<b>Total</b>	
	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	<b>N</b>	<b>%</b>
<b>Gender</b>						
Female	30	36,1	34	57,6	64	45,1
Male	53	63,9	25	42,4	78	54,9
<b>Professional seniority</b>						
Between 1-10 years	43	51,8	29	49,2	72	50,7
11 years and above	40	48,2	30	50,8	70	49,3
<b>Education level</b>						
Undergraduate	73	88	48	81,4	121	85,2
Graduate	10	12	11	18,6	21	14,8
<b>School type</b>						
Public school	77	92,8	57	96,6	134	94,4
Private school	6	7,2	2	3,4	8	5,6

The average age of the participants who stated that they played digital games was 32 years ( $M=32.6$ ,  $SD=4.8$ ,  $n=83$ ). Similarly, the average age of the participants who stated that they did not play digital games was 33 years ( $M=33.5$ ,  $SD=4.1$ ,  $n=59$ ).

### Data Collection Tools

Research data were collected with an instrument specifically designed for this study. Data collection tool was developed by the researcher. The conventional procedure of questionnaire development was followed (Büyüköztürk, 2005). The questionnaire item pool was based on the current and up-to-date literature review associated with digital game playing. Content and face validity for the questionnaire was reviewed by using experts ( $n=2$ ) in the field of educational technology. A pilot study was conducted with three ICT teachers who have at least 10 years of work experience. They marked information whether it is suitable or not. The questionnaire consists of three parts. In the first part, ICT teachers were asked to specify the reasons for playing or not playing digital games. The second part includes questions to determine whether teachers are aware of "educational digital games". In the first two sections, there is an effort to determine the digital game behaviors of the ICT teachers. Furthermore, ICT teachers were asked concerning certain views on using digital games for educational purposes and steps to be taken in order to spread the use of digital games for educational purposes in the third section.

### Data Collection and Analysis

The data of the study were collected via a web-based survey. Primary invitation and follow-up reminder invitation messages were sent to the members through social media accounts and instant messaging apps (e.g., WhatsApp or Telegram groups) of the non-governmental organization. Participants following the invitation

link were taken to a cover letter that describes the study's purpose and confidentiality. Those who agreed to participate then completed the online survey, which took approximately 15 minutes. The chi-square tests for age, gender, professional seniority variables and descriptive statistics which show the frequency and percentage were carried out. Chi-square test analyses were not conducted for school type variable due to insufficient numbers. The data was analyzed using the Jamovi statistical package program.

## RESULTS

Teachers filled in a survey with questions according to whether they play digital games or not.

### Findings Related to Reasons for Playing or Not Playing Digital Games

Teachers who play digital games were asked whether they play games for five different reasons. The options to answer each question was either "yes" or "no" (see all items in Table 3).

**Table 3.** Reasons for Playing Digital Games

	Yes		No	
	n	%	n	%
Enjoyment	71	85,5	12	14,5
Spending time	55	66,3	28	33,7
Competition	24	28,9	59	71,1
Experiences that one cannot have in real life	20	24,1	63	75,9
Socialize	16	19,3	67	80,7

Table 3 shows the descriptive statistics for items on reasons to play digital games. Findings showed that teachers who play digital games mostly prefer to play digital games for enjoyment and spending time. To investigate whether the reasons for playing digital games differ according to the demographic variables (gender, professional seniority, education level),  $\chi^2$  tests were calculated for each item. None of the tests was significant (all  $\chi^2 < 2.99$ , all p-values were above 0.084).

Teachers who do not play digital games were asked whether they do not play games for five specific instances and reasons. The options to answer each question was a 5-point Likert scale. "Agree" and "Strongly Agree" choices were collapsed into 'Agree'. Similarly, "Disagree" and "Strongly Disagree" have been collapsed into 'Disagree'. 'Unsure' responses are not included in the table (see all items in Table 4).

**Table 4.** Reasons for Not Playing Digital Games

	Agree		Disagree	
	n	%	n	%
I have no interest in digital games.	46	86,9	7	13,2
I never had time to play digital games.	33	58,9	23	41,1
I believe it will cause problems with socialization.	37	75,5	12	24,5
I believe there will be potential physical harms.	31	67,4	15	32,6
I believe there will be potential psychological hazards.	26	59,1	18	40,9

Table 4 shows the descriptive statistics for items on reasons not to play digital games. The first two items concerned personal interest and lack of time. It is seen that lack of interest is the leading reason not to play digital games. The last three items were concerned with the potential problems of digital games. Findings showed that participants have different opinions and concerns about digital games. Teachers indicated that possible problems with socialization (n=37), potential physical harms (n=31) and psychological hazards (n=26) are the major reasons for not playing digital games. To investigate whether the reasons for not playing digital games differ according to the demographic variables (gender, professional seniority, education level),  $\chi^2$  tests were calculated for each item. Tests of the items concerning "interest", "socialization", "physical harm" and "psychological hazards" revealed no significant differences (all  $\chi^2 < 1.88$ , all p-values were above 0.171). The results addressing the "time" revealed a significant difference for gender ( $\chi^2=5.17$ , p=0.023) and education level ( $\chi^2=5.78$ , p=0.016) variables.

### Findings Related to Awareness of Educational Digital Games

Table 5 presents results addressing the second research question on teachers' awareness of educational digital games. Findings indicated that ICT teachers who play digital games or not are highly aware of the educational digital games, whereas only %43.4 of those who play digital games and %32.2 of those non-player teachers know quite well what it is.

**Table 5.** Educational Digital Games

	Playing		Not playing		Total	
	n	%	n	%	N	%
<b>Have you ever heard of “educational digital games”?</b>						
No, I've never heard of	2	2,4	2	3,4	4	2,8
Yes, but I don't know exactly what it is	15	18,1	13	22,0	28	19,7
Yes, and I know approximately what it is	30	36,1	25	42,4	55	38,7
Yes, and I know quite well what it is	36	43,4	19	32,2	55	38,7
<b>Have you ever used “educational digital games” in your class or extracurricular activities? *</b>						
No, I have never used	6	9,1	8	18,2	14	12,7
Yes, but so little	11	16,7	10	22,7	21	19,1
Yes, I use it from time to time	36	54,5	19	43,2	55	50,0
I use it very often	13	19,7	7	15,9	20	18,2
<b>Do you know which digital games your students play?</b>						
I have no idea	4	4,8	3	5,1	7	4,9
I have very limited knowledge	20	24,1	19	32,2	39	27,5
I have partial knowledge	40	48,2	29	49,2	69	48,6
I know enough	19	22,9	8	13,6	27	19,0

\* Those who know “educational digital games” approximately and quite well were included.

ICT teachers, those who know approximately or quite well what educational digital games are, were also asked whether it was used in the class or extracurricular activities or not. As the results in Table 5 demonstrate, the rate of those who use it from time to time is %54.5 among player teachers. The rate is %43.2 among non-player teachers. Furthermore, the results showed that only %19 of the ICT teachers (both player and non-player teachers) had enough knowledge about what kind of digital games their students play.

### Findings Related to the Potential Impact of Digital Games on Students In and Out of the Classroom

Understanding the potential impact of digital games is becoming more and more important than ever (Barr, 2015). ICT teachers were asked how strongly they agreed or disagreed with the statements on potential impacts of digital games on students. Results are presented in Table 6.

**Table 6.** Views on the Potential Impact of Digital Games on Students

Items from the questionnaire	Groups <sup>a</sup>	Agree % (n) <sup>b</sup>	Disagree % (n)
Develop higher order thinking skills	G1/G2	87,9 (58) / 77,3 (34)	6,1 (4) / 11,4 (5)
Make the lesson more fun	G1/G2	98,5 (65) / 90,9 (40)	1,5 (1) / 2,3 (1)
Increase positive attitude towards lesson	G1/G2	97 (64) / 86,4 (36)	0 (0) / 4,5 (2)
Lead to negative psychological effects (e.g., anxiety, anger)	G1/G2	7,6 (5) / 25,0 (11)	71,2 (47) / 47,7 (21)
Lead to physical problems (e.g., sleep problems)	G1/G2	9,1 (6) / 31,8 (14)	72,7 (48) / 47,7 (21)
Lead to self-confidence problems	G1/G2	6 (4) / 11,3 (5)	78,8 (52) / 68,2 (30)
Lead to socialization problems	G1/G2	27,2 (18) / 34,1 (15)	53,0 (35) / 34,1 (15)

<sup>a</sup>G1= Yes, I play digital games (n=66); G2= No, I do not play digital games (n=44)

<sup>b</sup>'Agree' and 'Strongly Agree' choices are collapsed into 'Agree'. Similarly, 'Disagree' and 'Strongly Disagree' have been collapsed into 'Disagree'. 'Unsure' responses are not included in the table.

They stated that the digital games are useful in developing students' higher order thinking skills, making the lesson more fun and increasing students' positive attitude towards the lesson. The findings also revealed that the majority of respondents agreed that digital games might not lead to negative psychological effects, physical problems, and self-confidence problems on students. The percentage of player teachers who disagree with the statements is higher than those who do not play digital games. However, the results showed that the views of ICT teachers differed most in terms of socialization. As the results in Table 6 show, 53% of those who play digital games disagree with the statement “lead to socialization problems”. The rate is lower (%34.1) among non-player teachers.

### Findings Related to Steps to be Taken in Order to Spread the Use of Digital Games for Educational Purposes

New ways of learning can be created in classrooms using digital games (Videnovik et al., 2020). Table 7 presents results addressing the steps to be taken to spread the use of digital games for educational purposes.

**Table 7.** Steps to Spread the Use of Digital Games

Items from the questionnaire	Groups <sup>a</sup>	Agree % (n) <sup>b</sup>	Disagree % (n)
Better quality digital games should be produced.	G1/G2	98,5 (65) / 88,6 (39)	0,0 (0) / 0,0 (0)
Parents should be aware of digital games.	G1/G2	98,5 (65) / 97,7 (43)	0,0 (0) / 0,0 (0)
Students should be aware of playing games.	G1/G2	100,0 (66) / 100,0 (44)	0,0 (0) / 0,0 (0)
Technical infrastructure in the classroom should be improved.	G1/G2	98,5 (65) / 95,5 (42)	1,5 (1) / 0,0 (0)
Administrators should provide motivators (e.g., training, and professional support).	G1/G2	97,0 (64) / 93,2 (41)	3,0 (2) / 2,3 (1)
Teachers should produce their own games.	G1/G2	85,8 (50) / 72,8 (32)	13,6 (9) / 11,4 (5)
Teachers should be offered incentives.	G1/G2	97,0 (64) / 95,4 (42)	1,5 (1) / 0,0 (0)
Teachers should be aware of the use of digital games for classroom practices.	G1/G2	100,0 (66) / 100,0 (44)	0,0 (0) / 0,0 (0)

<sup>a</sup>G1= Yes, I play digital games (n=66); G2= No, I do not play digital games (n=44)

<sup>b</sup>'Agree' and 'Strongly Agree' choices are collapsed into 'Agree'. Similarly, 'Disagree' and 'Strongly Disagree' have been collapsed into 'Disagree'. 'Unsure' responses are not included in the table.

As the results in Table 7 show, the vast majority of the teachers agreed with the items regarding the spread of digital games for the use of educational purposes. Only a small percentage of the participants stated that teachers were not required to develop their own games.

## DISCUSSION AND CONCLUSION

In this study, the views of ICT teachers who are members of a non-governmental organization operating in the field of educational technology on digital games were examined. While 58% of the teachers participating in the study stated that they play digital games, 42% stated that they do not play digital games. Research data were analyzed and reported according to whether they play digital games or not. The first finding of the study is that significant differences do not exist between gender, age, education level variables and digital game playing reasons. However, the results addressing the reasons for not playing digital games showed that there is a significant difference for gender and education level with respect to "lack of time". Compared to men, it might be more time-consuming for a woman to be a mother and an employee. Similarly, the nature of postgraduate study requires a lot of hard work and effort. Another finding of the study is that ICT teachers are well informed about educational digital games. A total of 79.5% of the player-teachers know approximately or quite well what it is. This rate is similar to rates among non-player teachers (74.6%). An interesting and important part of the study is that only a total of %19 of the ICT teachers (both player and non-player teachers) knows exactly which digital games their students play. With digital games being so popular, teachers' lack of information on this topic is surprising. Results also indicated that both player and non-player teachers are in an effort to integrate the educational digital games into instruction.

Türkiye is a developing country with a young population. The Turkish education system has recently undergone significant changes. Compulsory education in Türkiye has been increased to 12 years since the 2012-2013 academic year and divided into three levels. The first level is organized as 4-year primary school (1st-4th grades), the second level as 4-year middle school (5th-8th grades) and the third level as 4-year high school (9th-12th grades) (Ministry of National Education [MoNE], 2017). Although the ICT curriculum is available at the primary school level, there is no ICT course at that level. Information Technologies and Software (ITS) course is compulsory for all students at 5th and 6th grades and elective for 7th and 8th grades. ITS courses are two hours a week. At the high school level, 12 different curricula are implemented according to the type of high school. The Computer Science course is elective in most of the curricula. Although the potential of new technologies to improve higher order thinking skills has been emphasized, the place of digital games in education has not been fully defined in the Turkish curriculum. Similarly, there is no clear framework on game-based learning within the national curriculums in England and Italian (Allsop & Jessel, 2015). Regarding the digital natives' characteristics and current shift in teaching practices, digital games can play an important role in education and learning. On the other hand, some educators may find it difficult to include digital games in their learning activities. In this study, results showed that ICT teachers who play digital games have a more positive view than those who do not play. This increased support reflects the personal use of digital games. These findings suggest that those who are comfortable with digital games will be willing to use them in and out of the classroom.

Teachers or parents who grew up with traditional games often find it worrying when their students/children play games on cell phones, PCs, or tablets. Perhaps the only difference between digital games and traditional games is the relative lack of physical activity. Spending more time in front of mobile devices can turn into an unfamiliar and worrying situation for parents and teachers. However, as above-mentioned, only a small proportion of the world's population has symptoms of gaming addiction. Despite all these potential negative

impacts of digital games, educators should also consider the potential contribution and benefit of digital games in educational settings. The results obtained from this study revealed that almost all ICT teachers have the same concerns about the integration of digital games into teaching processes. Despite the increased acceptance and awareness level of digital games among teachers, it is seen that many structural steps need to be taken in Türkiye. The main steps are as follows: (1) improving school infrastructure, (2) management support (i.e., motivators, incentives), (3) raising family and child awareness, (4) in-service training of teachers and (5) developing quality educational games.

In this study, research data were collected from ICT teachers. In Türkiye, ICT teachers are involved in much of school related works for the development of technology culture in schools. Examples of these works include improving students' computer literacy, ensuring the integration of ICT into teaching, and working in close cooperation with other branches to use technology effectively and efficiently in learning environments. ICT teachers are natural technology leaders from their knowledge and abilities in schools. Therefore, the major findings discussed above are important because these findings indicate three key features of the current status of digital games from the perspective of ICT teachers. First, those who have negative opinions about digital games have less knowledge about digital games. In a way this finding supports Prensky's (2005) idea that teachers will automatically see games as 'trivial'. The main conclusion to be drawn is that the more you know about digital games, the more likely you are to have positive views that digital games will positively influence educational environments. Secondly, most of the teachers have no knowledge about what their students play. In other words, it is seen that the participants, who are also parents, do not have enough information about the digital games their children play. Thirdly, there is a need for significant structural improvements in order to integrate digital games into educational processes in Türkiye.

Even though this study is descriptive based on a specific study group and adds to our understanding of digital games in the classroom, it has several limitations. First, the population of the study involved ICT teachers. It is quite possible that views of a larger population from other branches and administrative staff would differ. The number and ages of the game-playing/non-game-playing teachers participating in this study show a balanced distribution. This study is limited in its ability to confirm relationships among variables. It is also possible to use mixed methods and cross-sectional studies based on the demographic variables of the participants. Future studies should also focus on the structural improvements and steps put forth in this study.

## REFERENCES

- Allsop, Y., & Jessel, J. (2015). Teachers' experience and reflections on game-based learning in the primary classroom: Views from England and Italy. *International Journal of Game-Based Learning (IJGBL)*, 5(1), 1-17.
- Barr, M. (2015). Games for Communication Final Report. *Working Papers of the Communities & Culture Network+*, 6.
- Beavis, C., Rowan, L., Dezuanni, M., McGillivray, C., O'Mara, J., Prestridge, S., ... & Zagami, J. (2014). Teachers' beliefs about the possibilities and limitations of digital games in classrooms. *E-learning and Digital Media*, 11(6), 569-581.
- Boyle, E. A., Hainey, T., Connolly, T. M., Gray, G., Earp, J., Ott, M., ... Pereira, J. (2016). An update to the systematic literature review of empirical evidence of the impacts and outcomes of computer games and serious games. *Computers & Education*, 94, 178-192.
- Büyüköztürk, Ş. (2005). Anket geliştirme [Questionnaire development]. *Türkiye Eğitim Bilimleri Dergisi*, 3(2), 133-151.
- Byun, J., & Joung, E. (2018). Digital game-based learning for K-12 mathematics education: A meta-analysis. *School Science and Mathematics*, 118, 113-126.
- Chen, I. H., Lee, Z. H., Dong, X. Y., Gamble, J. H., & Feng, H. W. (2020). The influence of parenting style and time management tendency on internet gaming disorder among adolescents. *International journal of environmental research and public health*, 17(23), 9120.
- Connolly, T. M., Boyle, E. A., MacArthur, E., Hainey, T., & Boyle, J. M. (2012). A systematic literature review of empirical evidence on computer games and serious games. *Computers & Education*, 59, 661-686.
- Creswell, J. W. (2013). *Research design: Qualitative, quantitative, and mixed methods approaches*. Thousand Oaks, CA: Sage Publications, Incorporated.
- Çakır, V. D. (2021). *Analysis of the digital game addiction of high school students in terms of the relationship between loneliness and internet parenting styles, and investigation of digital game addiction according to various*

- demographic*. (Publication No. 701779) [Doctoral dissertation, Bahçeşehir University]. Council of Higher Education Thesis Center, Turkey.
- Deloitte (2019). Hayatımızın Merkezindeki Mobil Teknolojiler Deloitte Global Mobil Kullanıcı Anketi 2019: Türkiye Yönetici Özeti <https://www2.deloitte.com/tr/tr/pages/technology-media-and-telecommunications/articles/TR-GMCS-2019.html>
- Dündar, A., Güllü, M., Arslan, C. & Murathan, F. (2012). İlköğretim Öğrencilerinin Bilgisayar Oyun Bağımlılıklarının İncelenmesi. *Adıyaman Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, (9), 89-100. DOI: 10.14520/adyusbd.301
- Fadda, D., Pellegrini, M., Vivonet, G., & Zandonella Callegher, C. (2022). Effects of digital games on student motivation in mathematics: A meta-analysis in K-12. *Journal of Computer Assisted Learning*, 38(1), 304-325.
- Felicia, P. (2009). Digital games in schools: A handbook for teachers. European Schoolnet EUN Partnership AISBL, Brussels.
- Gökçearsan, S., & Durakoğlu, A. (2014). Ortaokul öğrencilerinin bilgisayar oyun bağımlılık düzeylerinin çeşitli değişkenlere göre incelenmesi [Review of the computer game addiction levels of middle school students according to various variables]. *DU Ziya Gökalp Eğitim Fakültesi Dergisi*, 23, 419–435.
- Horzum, M. B. (2011). İlköğretim öğrencilerinin bilgisayar oyunu bağımlılığı düzeylerinin çeşitli değişkenlere göre incelenmesi. *Eğitim ve Bilim*, 36(159), 56-68.
- Kelly, S. (2004). Are teachers tracked? On what basis and with what consequences. *Social Psychology of Education*, 7(1), 55-72.
- Ko, C. H., Liu, G. C., Hsiao, S., Yen, J. -Y., Yang, M. -J., Lin, W. -C., Yen, C. -F., & Chen, C. S. (2009). Brain activities associated with gaming urge of online gaming addiction. *Journal of Psychiatric Research*, 43(7), 739-747. <https://doi.org/10.1016/j.jpsychires.2008.09.012>
- Ministry of National Education [MoNE], (2017). Türk eğitim sistemi - 2017 - Strateji Geliştirme Başkanlığı [sgb.meb.gov.tr/eurydice/kitaplar/Turk\\_Egitim\\_Sistemi\\_2017/TES\\_2017.pdf](http://sgb.meb.gov.tr/eurydice/kitaplar/Turk_Egitim_Sistemi_2017/TES_2017.pdf)
- Na, E., Choi, I., Lee, T. H., Lee, H., Rho, M. J., Cho, H., ... & Kim, D. J. (2017). The influence of game genre on Internet gaming disorder. *Journal of behavioral addictions*, 6(2), 248-255.
- Newzoo. (2022, July 26). Newzoo Global Games Market Report 2022 | Free Version. <https://newzoo.com/insights/trend-reports/newzoo-global-games-market-report-2022-free-version>
- Prensky, M. (2005). In Educational Games Complexity Matters. Mini-games are Trivial – but ‘complex’ games are not. An Important Way for Teachers, Parents and Others to Look at Educational Computer and Video Games. [http://www.marcprensky.com/writing/Prensky-Complexity\\_Matters.pdf](http://www.marcprensky.com/writing/Prensky-Complexity_Matters.pdf)
- Sherer, J. (2023, January). Internet Gaming. *APA Blogs*. <https://www.psychiatry.org/patients-families/internet-gaming>
- Shi, Q., Xu, X., Liu, N., Li, J., Sun, X., & Zhang, K. (2007). Why some people are addicted to Xiao Hu and Hongzhi Zhang 2417 computer games: An analysis of psychological aspects of game players and games. In HCI International 2007: 12th International Conference, HCI International 2007, with 8 Further Associated Conferences, Beijing, China, July 22-27, 2007, Proceedings (pp. 1279–1283). Lecture Notes in Computer Science.
- Statista, & Clement, J. (2023, January 31). *Leading devices used to play games worldwide 2022*. Statista. Retrieved January 31, 2023, from <https://www.statista.com/statistics/533047/leading-devices-play-games/>
- Videnovik, M., Trajkovik, V., Kiönig, L. V., & Vold, T. (2020). Increasing quality of learning experience using augmented reality educational games. *Multimedia tools and applications*, 79(33-34), 23861-23885. <https://doi.org/10.1007/s11042-020-09046-7>
- WHO, (2023a). *Gaming disorder*. <https://icd.who.int/browse11/l-m/en#/http%3A%2F%2Fid.who.int%2Ficd%2Fentity%2F1448597234>
- WHO, (2023b). *Gaming disorder*. <https://www.who.int/standards/classifications/frequently-asked-questions/gaming-disorder>
- Wouters, P., Van Nimwegen, C., Van Oostendorp, H., & Van Der Spek, E. D. (2013). A meta-analysis of the cognitive and motivational effects of serious games. *Journal of Educational Psychology*, 105, 249–265.