

## The importance of game technology in primary education

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### Abstract

The importance of gamification in education is supported by the studies conducted. It is very important to teach our students to use technology effectively during the trainings. Technology is just as important in teaching one to use it in the right direction. This study aimed to determine the current situation in the research process and the opinions of teachers and students in its implementation. The main purpose of the research is to determine the importance of game technology in primary schools affiliated to the state institution. In order to achieve the purpose of this study, interviews were conducted with 32 students and 4 teachers. The universe was selected on a voluntary basis. Research questions were created by taking the expert opinions from the researcher. The findings obtained from the research were explained using the content analysis method by thematisation. It has been concluded that students and teachers have positive opinions about game technology. It has been concluded that they want to use game technology in all courses. They noted that students and teachers sometimes have problems caused by a lack of information in a negative way. In this case, it can be corrected with in-service trainings being given.

Keywords: Technology, learning, elementary school, student, teacher, game technology;

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## 1. Introduction

Towards the end of the 19th century, researchers asked, 'How do we learn?' They brought the answer to the question. This question has given us the opportunity of new approaches and new ideas in teaching. Providing learning and realising learning are very important concepts. 'The concepts of learning and teaching are different processes. Students today learn in different ways than in the past. The most important criteria for them are that they find the applied learning method meaningful and worth allocating time, and their use of technology' (Bakar, 2020; Prensky, 2010).

Gaining and perpetuating the teaching and learning process is effective with technology. In recent years, the Internet and technological concepts have been effective in the field of education as in every field. We are in a digitalising age and the impact of digital tools on the speed of learning and teaching in education is increasing day by day (Tonbuloğlu & Tonbuloğlu, 2021).

Şahin (2009), in his study, explained the concept of 'new generation students of the millennium' and explored the characteristics of today's students. Students who use new millennium digital tools are those who need to learn by experimenting, by discovering their varieties, who keep their attention span short, who are impatient in communication, relationships and waiting for immediate feedback, who are game-learner-centred and have developed imagination worlds by digitally developed social environments. Students who prefer digital tools instead of paper-based tools have high expectations from education (Pedro, 2006, as cited in Şahin, 2009).

When looking at the results of studies conducted in recent years, it has been revealed that studies conducted in these areas have information deficiencies with the rapid introduction of a computer into our daily lives. It is very important that the purposes of using the computer in education be made appropriate. Therefore, educators have decided that computer and information technology education should start at an early age, and the way to access technology will be further shortened. Internet technology has made significant improvements in the information transfer and social entertainment environment since its inception. Undoubtedly, computer games, which are the most popular of these developments and are used to make leisure enjoyable, have an important place in the lives of their users. The development of games, along with the competitive environment, has allowed visual designs to become more professional and the number of expressive materials to increase. Games are designed in three-dimension and close to reality, along with motivators such as levelling systems, scripting, badges and star systems, making individuals want to play more. This situation is negatively evaluated by educational institutions and educators. In such a way, individuals' fondness for computer games is considered to be a direct addiction by ignoring the criteria for addiction. Based on this, instead of examining addictions by considering computer games to be harmful, it becomes important to be able to use games loved by individuals of all age groups for useful purposes (Gökalp & Deniz, 2014).

There are a lot of games in the development and education of children. Adiguzel (2010) argued that the game is used as a means of entertainment not only for children, but also for their learning. Games are internal behaviours that help children develop creative skills. Sometimes the size and the result are important in games, but the most important feature is the fun fact. According to Vygotsky, the game contributes to both emotional and cognitive developments of the child; it develops self-confidence and a sense of skill. According to Dewey, games provide a learning environment by doing and living instead of memorising information (Kaya, & Elgün, 2015; Koçyiğit, Tuğluk, & Kök, 2007).

Games that are of great importance in the period from childhood to adulthood have been defined in different ways by conducting various studies. Lazorov defined it as 'an activity that does not have a spontaneous goal and brings happiness', while Freud defined it as 'loving and playing' and argued that it is beneficial for children's mental health. Piaget also said that the game is a fun activity for children, while Ericson argued that the child more easily copes with the events in which he experiences anxiety by playing the game (Tarhan & Nurmedov, 2017; Topşar, 2015). Parents have a great responsibility in

making games useful for child development. Children should be monitored while playing games and learning should be provided with age-appropriate games. But in doing so, parents also need to respect children's games and toys.

With the advancement in technology, the emerging concept of the gaming industry in 1971, the first commercial game, started with the release of Computer Space, in conjunction with more than a billion users around the world and is a billion dollar industry; the 24.75 billion is a part of the media (Entertainment Software Association, n.d.). By industrialising game technology, games have become independent by increasing and diversifying more and more. It has affected individuals of all ages. These effects are divided into positive and negative (Gökalp, 2021). For this reason, supporting classroom applications used in educational processes in primary education together with educational games will help the persistence of learning (Altunay, 2004). Educational games help to increase interest in the subject and better understand the concepts, especially when they are associated with real life (Pratama & Setyaningrum, 2018).

In recent years, a number of new technologies for educational purposes have appeared. An example is mobile learning, where learning can be carried out anytime and anywhere, thanks to the support of smartphones, netbooks and other mobile technologies (Rideout, Foehr, & Roberts, 2010). In addition, there is a learning process that uses game applications called game-based learning (Balakrishnan, 2017). Game-content integration is a fun learning environment without neglecting the subject that students need to learn. Given that fun learning approaches have a positive impact on learning (Dabbagh et al., 2016), it seems logical to use a game application as a learning facility. In October, children aged 11–14 began to spend time playing games on mobile devices (Rideout et al., 2010).

### **1.1. Purpose of the study**

The purpose of this research is to examine the views of primary school students and teachers on game technology. In order to achieve this general purpose, answers to the following questions were sought. Separate interviews were conducted with the students and separate interviews were conducted with the teachers:

1. What are the positive and negative aspects of using technological tools in your classroom?
2. What advantages does game technology have in the educational process?
3. Are there any difficulties when using game technology in classes? What are they, if any?

### **1.2. Importance of the research**

Along with the fact that technological tools affect every aspect of life day by day, the variety of technological tools used in educational processes has increased. The concept of the game ensures the realisation of effective skills from an early age. Along with the digitalising age, technological tools used in education have been added to game technology. It is very important to determine the opinions of primary school students about game technology. Determining the views of teachers on game technology that ensure the realisation of education is very important for determining the necessary regulations and needs in educational processes.

## **2. Methods**

In order to achieve the purpose of this study, a qualitative research method was applied. The qualitative research method has been used – case study research method. The reason why phenomenology is preferred is because research of facts, events, experiences or attitudes are examined in depth by collecting accurate and detailed information from the participants (Creswell, 2014). In case studies, data are usually obtained through face-to-face interviews (Creswell & Poth, 2018).

### **2.1. Universe and sampling**

The universe of this research is composed of classroom teachers and students working in primary education. The sample of the study was selected from the purposeful sampling method chosen by the researcher in order to provide data about an event or phenomenon (Ary, Jacobs, Irvine, & Walker, 2014; Babbie, 2017). The criteria were determined by the sampling method. Criteria can be prepared by the researcher or a previously prepared list of criteria can be used (Yıldırım & Şimşek, 2016). The criterion determined for sampling in this study is that the teachers participating in the study should use game technology in their classrooms. In this context, 32 teachers and 32 students working in primary education constituted the sample of the study. The demographic information about the sample is shown in Table 1.

**Table 1. Demographic characteristics of the study group**

Variable	Properties	N
<b>Student</b>		<b>32</b>
Gender		
	Woman	21
	Man	11
Class		
	1. Class	8
	2. Class	8
	3. Class	8
	4. Class	8
<b>Teacher</b>		<b>4</b>
Gender		
	Female	3
	Male	1

## 2.2. Collection and analysis of data

Semi-structured interviews were conducted with the students and teachers in the study group. In the interview forms, two questions were asked to the students and one question to the teacher regarding the demographic information of the participants. After the demographic information, three open-ended questions were asked. For the validity and reliability of the open-ended questions in the interview forms, the opinions of three academicians from the field of measurement and evaluation and computer science were taken, and the clarity of the questions was reviewed by making a preliminary application with two students. As a result of the experts' opinions and preliminary practice, necessary arrangements were made on the questions and the interview forms were made ready for application. The questions in the interview form are as follows:

1. What are the positive and negative aspects of using technological tools in your classroom?
2. What advantages does game technology have in the educational process?
3. Do you have any difficulties when using game technology in lessons? If so, what are they?

The open-ended questions asked in the context of the research questions were analysed with the content analysis method, one of the qualitative data analysis methods. Audio recordings of face-to-face interviews with teachers and students were transcribed. After the transfer to the paper, the consent of the students and teachers was obtained. In terms of the credibility of the research, participants' confirmation was applied (Yıldırım & Şimşek, 2016, p. 277). Then, the data related to each other was determined and coding was performed. The data were also analysed by an independent field expert and the reliability calculation was made on the codes obtained by using the formula suggested by Miles and Huberman (1994, p. 64).

## 3. Result

### 3.1. Positive and negative aspects of using technological tools in your classroom

**Table 2. Positive and negative aspects of using technological tools in the classroom**

<b>Student</b>	<b>N</b>		<b>f</b>
Positive	32	Kişiselleştirilmiş öğrenme imkanı	10
		Eğlenceli içerik	10
		Çoklu öğretim yöntemi	8
		Etkileşim	4
Negative	2	Elektronik olması	3
<b>Teacher</b>			
Positive	4	Öğrencileri ölçme imkanı	4
		Öğretimi sağlama	3

Of the findings on the relationship between classroom teachers and their students regarding the positive and negative aspects of technology use in educational processes, most teachers and many of the students stated that it was advantageous. It has been found that 10 students presented a personalised learning environment as a positive aspect of using technology in their courses and that it provides individual learning. Also, the opinions of students (8) and their interactions (4) on providing learning by multiple methods with multiple teaching methods as a positive aspect of the use of technology in education emerged. There were three students who stated that the negative aspect of the findings obtained from the students was due to the fact that they were electrotechnical. In the findings obtained from four teachers, it was stated that all teachers provide the opportunity to measure students from the positive aspects of technology. Three teachers indicated that it was easy to provide education. As a negative aspect, no teacher expressed an opinion.

Examples of the opinions of the student candidates are as follows:

‘It is very enjoyable to use technological tools in classes. We learn while having fun’.

‘Sometimes our teacher can't tell us exactly how to apply the technological tool. We are lacking in us, we find it difficult to understand’.

‘We all processed our lessons together from computers in a fun way. It is very fun to do activities with my friends’.

Examples of the opinions of the teacher candidates are as follows:

‘Students’ interest in courses increases with technology-based applications and their learning becomes permanent’.

### 3.2. Advantages of game technology in the educational process

**Table 3. Advantages of game technology in the educational process**

Theme	Student (f)	Teacher (f)
Interest and relevance to the lesson	28	4
Permanent learning	12	3
Instant feedback	11	3

The findings of the teachers and their students on the advantages of using game technology in education are common themes. There were 28 students who stated that game technology increased their interest and motivation in the lesson. While all 4 teachers gave the same answer, 12 students and 3 teachers stated that their learning was permanent. There were 11 students who indicated the parts where there was a lack of learning with the instant feedback system, while 3 teachers gave the same answer.

Examples of the opinions of the student candidates are as follows:

‘My friends and I do competitions. Prizes are awarded to the winner of the game. We both learn and have fun’.

‘We are not bored at lessons. Our interest in the lesson is growing. It would be very nice to use game technology in this way in every lesson’.

Examples of the opinions of the teacher candidates are as follows:

‘The game has always been attractive for children anyway. Enabling students to learn using the game method in lessons creates positive results for students’.

### 3.3. Disadvantages of game technology in the educational process

**Table 4. Disadvantages of game technology in the educational process**

Theme	Student (f)	Teacher (f)
Difficulty applying in crowded classrooms	-	4
Lack of knowledge in the use of game technology	12	3
Error in application	10	3

The opinions of students and teachers regarding the problems experienced in the process of using the game technology method were taken. Only teachers expressed their opinion as a disadvantage of the students’ game technology method. They noted that they had problems practicing in the presence of a crowded classroom; they could not maintain control. Students and teachers stated that they had problems due to lack of information during use and application as a common response to the disadvantage, and that they had difficulty finding solutions when they did wrong in practice. 10 students did not indicate any problems as a disadvantage.

Examples of the opinions of the student candidates are as follows:

‘When we had problems with the system while using the gamification application, our students had difficulty figuring out what to do’.

‘The biggest problem we had during the application was that we had difficulty learning how to use the application. The classroom was crowded and we had difficulty controlling all the students’.

## 4. Discussion and conclusion

The importance of gamification in education is supported by the studies conducted. It is very important to teach our students to use technology effectively during the trainings. Technology is just as important in teaching one to use it in the right direction. It is aimed to determine the current situation in the research process and the opinions of teachers and students in its implementation. In general, it has been concluded that teachers and students who ensure the use of technology in education exhibit positive attitudes towards game technologies.

When we look at the results of the relationships of classroom teachers and students regarding the positive and negative aspects of technology use in educational processes, it is seen that the positive opinions are majority. It has been concluded that students present a personified learning environment as a positive aspect of using technology in their lessons, and that it is effective because it enables learning on an individual basis. It has been concluded that the positive aspect of using technology in education is that it enables students to learn by multi-teaching method because the lessons are not explained by a single method. There are three students who stated that the negative aspect of the findings obtained from the students was due to the fact that they were electrotechnical. In the findings obtained from four teachers, it was stated that all teachers provide the opportunity to measure students from the positive aspects of technology. Three teachers indicated that it was easy to provide education. As a negative aspect, no teacher expressed an opinion. This situation is quite pleasing. It can be interpreted that they will use this technology in educational processes.

The findings of the teachers and their students on the advantages of using game technology in education are common themes. There were 28 students who stated that game technology increased their interest and motivation in the lesson. While all 4 teachers gave the same answer, 12 students and 3 teachers stated that their learning was permanent. There were 11 students who indicated the parts where there was a lack of learning with the instant feedback system, while 3 teachers gave the same answer. This result is quite pleasing. It is supported by other research conducted that there are advantages of gaming technology over technological tools.

When considering the results of the opinions of students and teachers on the problems experienced in the process of using the game technology method. Only teachers expressed their opinion as a disadvantage of the students' game technology method. They noted that they had problems practicing in the presence of a crowded classroom; they could not maintain control. Students and teachers stated that they had problems due to lack of information during use and application as a common response to the disadvantage, and that they had difficulty finding solutions when they did wrong in practice. 10 students did not indicate any problems as a disadvantage. As an advantage, many students and teachers expressed their opinions, while 10 students stated that they have no problems, it can be concluded that students like this technique. Hebebcı and Usta (2018) mentioned that gamification can cause some negative effects. Yapıcı and Karakoyun (2017) found in their research that some pre-service teachers who gave wrong answers after the gamification application were demoralising. As a matter of fact, the emerging competition can cause communication problems among students. Technical problems and situations that the classroom control does not provide from time to time can be specified as disadvantages.

## References

- Altunay, D. (2004). *Oyunla desteklenmiş matematik öğretiminin öğrenci erişimine ve kalıcılığa etkisi* (Yayınlanmamış Yüksek Lisans Tezi). Gazi Üniversitesi, Ankara, Turkey.
- Bakar, M. H. D. (2020). *Sosyal bilgiler öğretmen adaylarının 21. yüzyıl becerilerinin demokratik eğilimlerine etkisi (Nevşehir ili örneği)* (Master's thesis). Sosyal Bilimler Enstitüsü, Nevşehir Hacı Bektaş Veli Üniversitesi, Nevşehir, Turkey.

- Elmira, U., Abay, D., Shaimahanovna, D. A., Erzhenbaikyzy, M. A., Aigul, A. & Rabikha, K. (2022). The importance of game technology in primary education. *World Journal on Educational Technology: Current Issues*, 14(4), 996-1004. <https://doi.org/10.18844/wjet.v14i4.7652>
- Balakrishnan, V. (2017). Key determinants for intention to use social media for learning in higher education institutions. *Universal Access in the Information Society*, 16(2), 289–301.
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches*. Thousand Oaks, CA: Sage Publications.
- Creswell, J. W. & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches*. Thousand Oaks, CA: Sage Publications.
- Dabbagh, N., Benson, A. D., Denham, A., Joseph, R., Al-Freih, M., Zgheib, G., ... Guo, Z. (2016). Social media. In *Learning Technologies and Globalization* (pp. 21–26). Cham, Switzerland: Springer.
- Entertainment Software Association. (n.d.). Retrieved from [https://en.wikipedia.org/wiki/Entertainment\\_Software\\_Association](https://en.wikipedia.org/wiki/Entertainment_Software_Association)
- Gökalp, B. (2021). *İlköğretim öğrencilerinin bilgisayar oyun bağımlılığı belirleyen etkenler* (Master's thesis). İstanbul Medipol Üniversitesi Sağlık Bilimleri Enstitüsü, İstanbul, Turkey.
- Gökkaya, Z. & Deniz, L. (2014). Üniversite öğrencilerinin bilgisayar oyunu oynama alışkanlıkları ve oyun tercihleri: Marmara üniversitesi örneği. *The Journal of Academic Social Sciences*, 2(6), 58–73.
- Hebebe, M. T. & Usta, E. (2018). Eğitim ortamlarında dijital rozet kullanımına ilişkin öğretmen görüşleri. *Türk Bilgisayar ve Matematik Eğitimi Dergisi*, 9(2), 192–210.
- Jin, G., Tu, M., Kim, T. H., Heffron, J., & White, J. (2018). Evaluation of game-based learning in cybersecurity education for high school students. *Journal of Education and Learning (EduLearn)*, 12(1), 150–158.
- Kaya, A. (2013). *Çevrimiçi Oyun Bağımlılığı Ölçeğinin Geliştirilmesi: Geçerlik ve Güvenirlik Çalışması* (Yüksek Lisans Tezi). Eğitim Bilimleri Ana Bilim Dalı Ölçme ve Değerlendirme Bilim Dalı, Gaziosmanpaşa Üniversitesi, Tokat, Turkey.
- Kaya, S. & Elgün, A. (2015). Eğitsel oyunlar ile desteklenmiş fen öğretiminin ilköğrencilerinin akademik başarısına etkisi. *Kastamonu Üniversitesi Kastamonu Eğitim Dergisi*, 23(1), 329–342.
- Koçyiğit, S., Tuğluk, M. N., & Kök, M. (2007). Çocuğun Gelişim Sürecinde Eğitsel Bir Etkinlik Olarak Oyun. *Atatürk Üniversitesi Kazım Karabekir Eğitim Fakültesi Dergisi*, 16, 324–342.
- Kozikoglu, I. & Onur, Z. (2019). Predictors of lifelong learning: Information literacy and academic self-efficacy. *Cypriot Journal of Educational Sciences*, 14(4), 492–506. <https://doi.org/10.18844/cjes.v14i4.3460>
- Markoska, R. (2019). Managing ICT solutions for training and evaluation of C++ programming skills in e-learning ecosystem. *New Trends and Issues Proceedings on Humanities and Social Sciences*, 6(7), 33–41.
- Moskal, P., Dziuban, C., & Hartman, J. (2013). Blended learning: A dangerous idea? *The Internet and Higher Education*, 18, 15–23. <https://doi.org/10.1016/j.iheduc.2012.12.001>
- Ocak, M. A., Üstün, A. B., & Apaydın, S. M. F. (2010). Harmanlanmış Öğrenme Ortamlarında Etkilesimsel İlişkinin Akademik Başarıya Etkisi: Alanyazın İncelemesi. *4th International Computer and Instructional Technologies Symposium*. Konya, Turkey: Selçuk Üniversitesi.
- Plotnikova, N. & Strukov, E. N. (2019). Integration of teamwork and critical thinking skills in the process of teaching students. *Cypriot Journal of Educational Sciences*, 14(1), 1–10. <https://doi.org/10.18844/cjes.v14i1.4031>
- Prahmana, R. C. I., Zulkardi, Z., & Hartono, Y. (2012). Learning multiplication using Indonesian traditional game in third grade. *Journal on Mathematics Education*, 3(2), 115–132.
- Pratama, L. D. & Setyaningrum, W. (2018, September). Game-based learning: The effects on student cognitive and affective aspects. *Journal of Physics: Conference Series*, 1097(1), 012123.
- Prensky, M. (2010). *Teaching digital natives: Partnering for real learning*. Thousand Oaks, CA: Corwin Press.
- Rideout, V. J., Foehr, U. G., & Roberts, D. F. (2010). *Generation m 2: Media in the lives of 8-to 18-year-olds*. Menlo Park, CA: Henry J. Kaiser Family Foundation.
- Şahin, M. C. (2009). Yeni Binyılın Öğrencileri'nin özellikleri. *Anadolu Üniversitesi Sosyal Bilimler Dergisi*, 9(2), 155–172.



- Elmira, U., Abay, D., Shaimahanovna, D. A., Erzhenbaikyzy, M. A., Aigul, A. & Rabikha, K. (2022). The importance of game technology in primary education. *World Journal on Educational Technology: Current Issues*, 14(4), 996-1004. <https://doi.org/10.18844/wjet.v14i4.7652>
- Tarhan, N. & Nurmedov, S. (2017). *Bağımlılık Sanal veya Gerçek* (5. Basım). İstanbul, Turkey: Timaş Yayıncılık.
- Theodorou, P. & Meliones, A. (2019). Developing apps for people with sensory disabilities, and implications for technology acceptance models. *Global Journal of Information Technology: Emerging Technologies*, 9(2), 33–40. <https://doi.org/10.18844/gjit.v9i2.4431>
- Tonbuloğlu, İ. & Tonbuloğlu, B. (2021). *Eğitimde Dijital Dönüşüm Harmanlanmış Öğrenme*. İstanbul, Turkey: ILKE İlim Kultur Eğitim Vakfı.
- Topşar, A. (2015). *Ortaokul 7. Sınıf Öğrencilerinde Duygusal Zekâ ile Bilgisayar Oyun Bağımlılığı Arasındaki İlişkinin İncelenmesi* (Yüksek Lisans Tezi). Sosyal Bilimler Enstitüsü Rehberlik ve Psikolojik Danışmanlık Ana Bilim Dalı, Fatih Üniversitesi, İstanbul, Turkey.
- Vanichvatana, S. (2020). Who uses home as informal learning spaces: A Bangkok private university case study. *World Journal on Educational Technology: Current Issues*, 12(1), 37–47. <https://doi.org/10.18844/wjet.v12i1.4416>
- Yapıcı, İ. Ü. & Karakoyun, F. (2017). Biyoloji öğretiminde oyunlaştırma: Kahoot uygulaması örneği. *Turkish Online Journal of Qualitative Inquiry*, 8(4), 396–414.
- Zhumabayeva, Z., Uaisova, G., Zhumabayeva, A., Uaidullakzy, E., Karimova, R., & Hamza, G. (2019). Issues of Kazakh language teaching in elementary classes in terms of the meta-subject approach. *Cypriot Journal of Educational Sciences*, 14(1), 158–170. <https://doi.org/10.18844/cjes.v14i1.4123>