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Zeynep Tatlı¹, Ahmet Gülay², Arzu Mert³

¹Trabzon University,  0000-0001-9503-3048

²Trabzon University,  0000-0002-7700-0768

³Ministry of National Education,  0009-0001-6597-3503

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Impact of Gamification Applications on Students' Attitudes towards Lesson and Procrastination Behaviors

Zeynep Tatlı¹, Ahmet Gülay^{1*}, Arzu Mert²

¹Trabzon University

²Ministry of National Education

Abstract

The aim of this study is to evaluate the effectiveness of foreign language teaching with gamification applications in primary school. In this research, embedded design, which is one of the mixed methods in which quantitative and qualitative methods are used together, has been adopted. The study group for this research is comprised of 33 students in 4th grade at a primary school. Research data were collected through an attitude scale for English lessons in primary school, homework, a follow-up chart, and a semi-structured interview. The data of the scale were subjected to inferential statistics; the data of the chart were subjected to descriptive statistics; and the data of the interview were subjected to content analysis. According to the findings of the study, the gamification applications significantly increase the attitude of primary school students and have a positive effect on procrastination behaviors. In addition, primary school students have positive evaluations of these applications as making the learning process fun, increasing their curiosity to learn, increasing their participation in the lesson, and increasing their desire to be successful. In line with these results of the research, it is recommended to use gamification applications in education for effective teaching.

Keywords: Gamification, Primary school students, Attitude, Procrastination behaviors, Motivation

Introduction

Childhood is an important period in which physical and mental development continue rapidly. One of the most basic requirements of this period is the game, which has a deep history (Koçyiğit et al., 2007). The game is defined as an ability and intelligence developer with certain rules and a tool for having a good time (Turkish Language Society, 2023). Järvinen (2008) explains the game as a system in which the player strives and concludes within the framework of certain rules. In this system, children have the opportunity to use all their senses and to repeat, reinforce, and develop the knowledge and skills they have learned from their environment. With these opportunities, games support the cognitive, emotional, physical, and social development of children (Lee & Hammer, 2011) and prepare them for life with real-life experiences (Ulu, 2019). Games, which are preferred due to the benefits stated in the education process, make learning more enjoyable and permanent by providing interesting and motivating environments for students from the beginning of their education life and increase academic success (Hanus & Fox, 2015; Işık & Semerci, 2016; Su & Cheng, 2015) by supporting the attitude and motivation towards the lesson positively (Uyar, 2019; Yıldırım, 2016). In addition, due to the nature of the game, the self-confidence of the students involved in the process and their active participation in the lesson are also supported (Bağcı, 2011).

Despite the fact that the foreign language teaching process is supported by different methods and techniques in Turkey, as in every country, education programs are updated (Ağaoğlu, 2020), and language teaching is started in the second grade, the desired achievements in foreign language teaching have not been achieved (Eyüboğlu, 2022; Seferoğlu et al., 2008). This situation experienced in the language teaching process stems from many reasons, such as the easy distraction of students, their boredom (Kırkkılıç et al., 2005), and the lack of appropriate approaches, methods, and techniques (Akdoğan, 2010; Kubanç & Selvi, 2022).

Students need to exhibit and reinforce these behaviors outside the classroom in order to transform the achievements they have acquired in the learning environment into behavior. Out-of-school tasks such as homework and project assignments are among the most frequently used activities that put the student at the center of learning and ensure their active participation in the process. While students perform tasks that are

* Corresponding Author: *Ahmet Gülay, ahmetgulay@trabzon.edu.tr*

enjoyable to them, they tend to postpone tasks that cause anxiety and require more effort. Procrastination is defined as postponing duties such as homework or projects or delaying responsibilities to do them at different times (Lay, 1986). The student's procrastination behavior may cause negative attitudes towards the lesson and decrease academic success (Akpur, 2017). The underlying causes of procrastination are often fear and anxiety, indecision, an unwillingness to perform the task, and a lack of motivation. At this point, it is important to give students out-of-school tasks that they will be interested in and enjoy. While students tend to do projects and activity-based tasks on time, especially in homework given at the primary school level, they do not like time-consuming classical types of homework such as reading and writing (Duru & Çöğmen, 2017). On the other hand, most teachers give homework once or twice a week (Can, 2019), but students tend to avoid doing homework that is given frequently (Soy, 2022). The homework given at the primary school level, where most of the students are introduced to a foreign language for the first time, should be structured, taking into account the expectations and needs of the students. As a matter of fact, effective foreign language teaching is provided with the help of students' high interest, attitude, attention, and motivation (Lee & Hammer, 2011).

Attitudes are beliefs or predispositions that a person develops based on her or his own knowledge and motives about herself or himself or another object in his or her environment (Güngörmüş, 2007). For effective foreign language teaching, greater efforts should be made to ensure that students have a positive attitude towards foreign languages. It is also known that gamification in the educational process has a direct positive effect on students' attitudes towards the lesson (Kunduracıoğlu, 2018; Yıldırım, 2017). Considering the developmental characteristics of the students, the inclusion of games in the teaching process at the primary school level creates a fun learning environment where students can express themselves comfortably (Ertan, 2020; Hanus & Fox, 2015; Özkan & Samur, 2017; Su & Cheng, 2015). Gamification is one of the applications that will enable students to learn a foreign language with different uses (Kırkkılıç et al., 2005), increase self-efficacy in language learning (Temel, 2022), and use the game as a tool in education (Akbaba, 2006; Koç-Avşar & İsabetli, 2017; Sarı & Altun, 2016). Gamification, which started to be used as a term in the 2000s but dates back to the 1980s (Özkan & Samur, 2017), has also been used in learning environments in recent years (Çağlar & Arkün-Kocadere, 2015; Park & Bae, 2014). Gamification in education is the use of game elements in the design of non-game content. Thus, the components of the game (score, leaderboard, rule, announcement notification, avatar, etc.) are intended to attract students' attention, increase their motivation, and encourage their learning and problem solving during the process (Deterding et al., 2011; Fiş-Erümit & Karakuş, 2015; Kapp, 2012; Lee & Hammer, 2011; Prensky, 2001; Zicherman & Cunningham, 2011). It can be used individually or as a team (Yılmaz, 2020) in both face-to-face and online learning environments (Arkün-Kocadere & Çağlar, 2015). Gamification aims to make the learning process more fun and interesting for students (Atabay & Albayrak, 2020; China, 2022; Koç-Avşar & İsabetli, 2017), to enable them to participate more in this process and to cope with some difficulties (Codish & Ravid, 2014), to interact (Kaya & Balta, 2016) and to work collaboratively (Cózar-Gutierrez & Sáez-López, 2016; Koç-Avşar & İsabetli, 2017; Pesare et al., 2016), to gain rich experiences about daily life (Kim & Lee, 2013), and to learn intuitively (Yılmaz, 2020). It is thought that with the inclusion of gamification in the foreign language teaching process, students will feel more comfortable, and procrastination behavior can be reduced by supporting participation in the process with activities that arouse curiosity and reduce anxiety. While games enable students to learn new words easily and feel more comfortable in writing or speaking in a fun environment, they also provide feedback to students and teachers about the development of the process (Kim et al., 2018). Gamification, which has a wide application area, also offers teachers the opportunity to update their teaching skills (Bahçeci & Uşengül, 2018).

Considering the predisposition of students to digital games in the recent period (Gürcan et al., 2008), it is indisputable that digital games will support the assignment process by gaining real-life experience such as learning new words, supporting interaction, and expressing themselves in a foreign language (Candan, 2022; Darfilal, 2015; Gömleksiz, 2005; Karataş, 2014). Despite the above-mentioned benefits of gamification, it is also criticized that it increases competition between the students, encourages a form of addiction (Hamari, 2014; Yıldırım & Demir, 2014), and sometimes reduces students' motivation to learn due to the reward system that it contains (Buckley & Doyle, 2016; Hanus & Fox, 2015). In this context, there is a need for research to be carried out regarding gamification in foreign language education, especially at the primary school level (Karataş, 2014; Özkan & Samur, 2017), taking into consideration the teaching objectives and the characteristics of the students (Çayır, 2021; Hanus & Fox, 2015; Kim, 2015), effective teacher guidance, and regular feedback (Özkan & Samur, 2017). In this study, it was aimed to evaluate the effectiveness of foreign language teaching carried out with gamification practices at the primary school level. In line with the overall aim of the study, this research seeks to answer the following research questions:

1. How does gamification in foreign language teaching affect the attitudes of the primary school students towards the lesson?
2. How is gamification in foreign language teaching evaluated by students?
3. How does gamification in foreign language teaching affect students' procrastination behavior?

Method

Research Design

This research utilized an embedded design mixed method approach to examine the effects of gamification practices on primary school students' attitudes, motivation, and procrastination behaviors. In this approach, both quantitative and qualitative data are collected, and the scope of the research is expanded (Çepni, 2010) so that more sources of findings and results can be presented (Christensen et al., 2015). The effect of gamification practices on students' attitudes and procrastination behaviors was tested in a quasi-experimental study, and the motivation of the students in this process was determined by semi-structured interviews. The research questions were simultaneously explained with the quantitative data and the qualitative data obtained from the interview, and the students' perspectives were also included in the process (Creswell, 2016).

Study Group

Since it was a rich situation in terms of information and in-depth research and descriptions were made, the study group of the research was determined by the purposive sampling method (Büyüköztürk et al., 2016; Ekiz, 2015). In line with the research purposes, the lesson, and the level of practice, the participation of fourth grade students was deemed more appropriate. A volunteer English teacher and primary school students were included in the study with gamification applications. Convenient case sampling was employed in order to reach this type of student easily (Christensen et al., 2015; Ekiz, 2015). The study group for the research was composed of 33 (20 boys and 13 girls) students who were in the fourth grade at a primary state school in Trabzon. Due to the ethical principles of the research, the English teacher, students, and parents were informed about the application, and their consent was obtained. In addition, in order to respect the private rights of individuals and to ensure confidentiality and ethical principles, the names of the institution and the teacher were not mentioned in the research report, and the students' names were coded as S1, S2, S3,..., S33 (Çepni, 2010; Ekiz, 2015).

Data Collection Tools

Research data were collected through "Attitude scale towards English lessons in primary school. (Baş, 2012), a homework follow-up chart, and a semi-structured interview. The attitude scale consists of 27 items, 12 of which are reversed. Validity studies such as presenting the substance pool to the expert opinion, taking the returns, making the corrections, making the preliminary application, and explanatory factor analysis were carried out (Baş, 2012). Within the scope of reliability studies, the Cronbach Alpha reliability coefficient value (0.92) was found to be sufficient since it was above 0.70 (Cronbach, 1990; Pallant, 2010). In addition, the Spearman-Brown two-half test correlation value of the scale (0.83) was found to be exceptional since it was over 0.80 (Büyüköztürk, 2015).

The homework follow-up chart was created by the researchers to determine the time for students to complete their homework and procrastination behaviors during the usage of gamification applications. The opinions of a computer and teaching technologies teacher, a classroom teacher, and an English teacher were consulted for content validity. With these expert opinions, the chart was designed to record and track each student's progress in doing homework before and during the application and how long it took to do it (Büyüköztürk et al., 2016).

The semi-structured interview form, consisting of seven open-ended items, was designed by the researchers for primary school students to evaluate the teaching process based on gamification applications. It was developed so that the students could feel comfortable, the questions could be rearranged according to the progress of the interview, and in-depth information could be obtained. Firstly, draft questions were prepared with the purpose of the interview and the literature in mind. They were submitted to the opinion of three experts, one computer and instructional technologies expert, one classroom teacher, and one English language teacher for content validity (Büyüköztürk et al., 2016; Ekiz, 2015). Following their suggestions, questions about the negative aspects of gamification applications were added to the form.

Data Collection and Analysis

In this research, fourth grade students were provided with the opportunity to use gamification applications in English lessons. First of all, the course was taught in line with the curriculum for four weeks (eight course hours in total), and the students were given homework from the course resources used. The time for students to perform these assignments was included in the follow-up chart. The attitude scale was applied as a pre-test to the students before the teaching was carried out with gamification. Then, the students were informed about the application, the game components, how to access the task maps, how to complete the tasks, get points and achievements, and become members of the platform. It was explained to the students that they could create their

own avatars and play games with the virtual character, perform the tasks or homework set by the teacher individually or cooperatively, win awards, or be punished. Students completed the tasks and homework given for 4 weeks on this application (Figure 1). This period was kept for as long as possible to ensure the reliability of the research (Creswell, 2016; Ekiz, 2015).

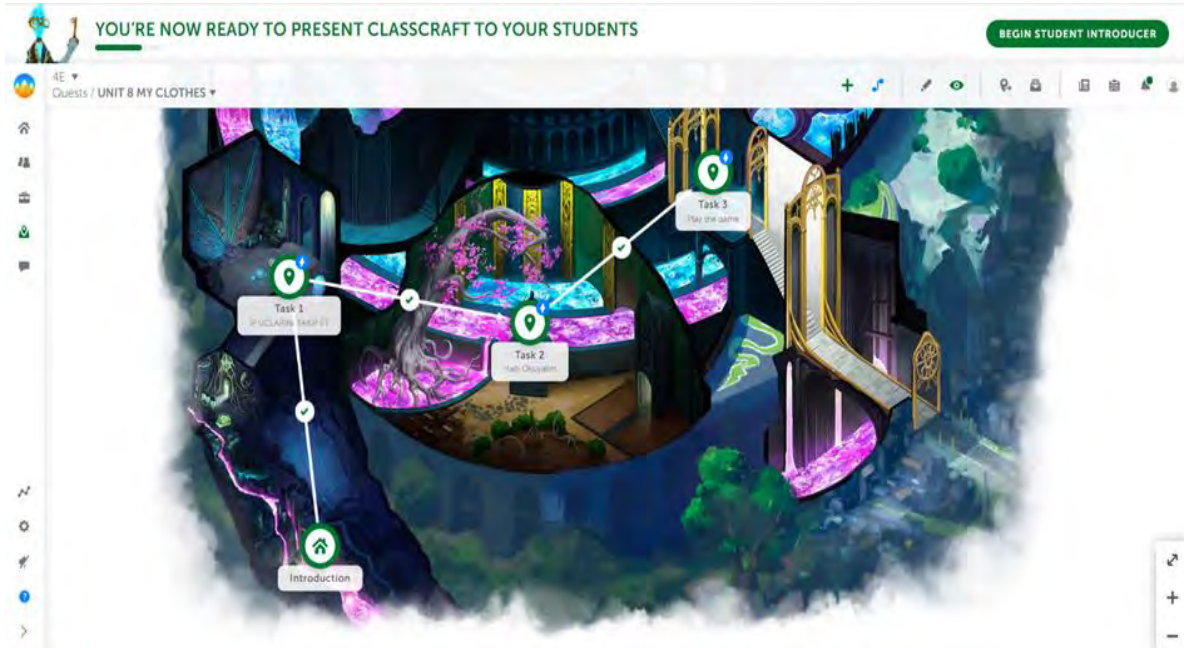


Figure 1. A sample of the task map

Activities based on the achievements in the teaching program were assigned to the task maps of the students (Figure 2). The duration for students to complete these tasks was taken from the system records and inserted in the follow-up chart. After gamification applications, an attitude scale was applied as the post-test. Finally, semi-structured interviews were conducted, recorded, and transcribed with the students to determine their evaluations of foreign language teaching with this application (Ekiz, 2015).

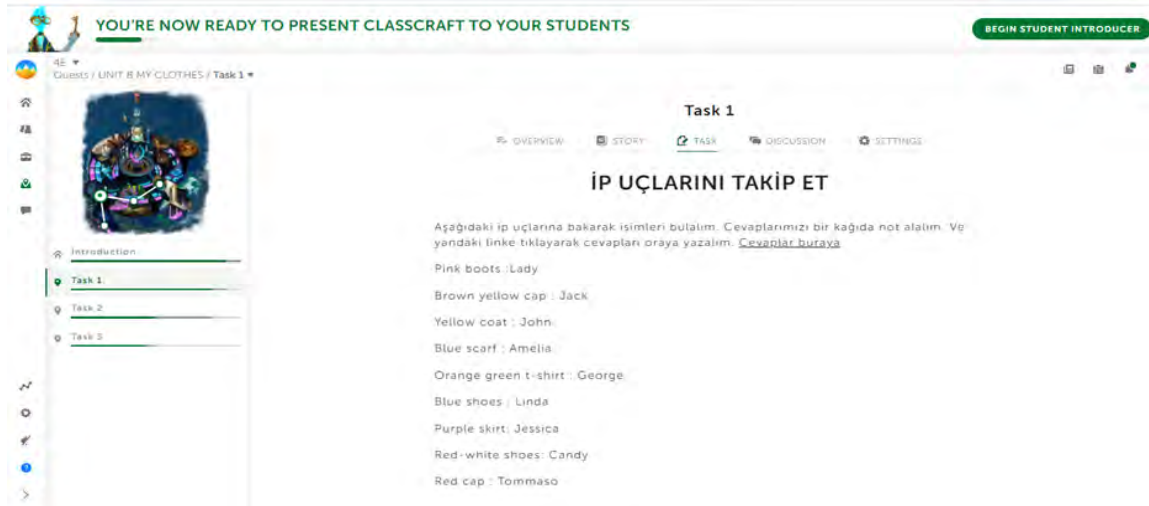


Figure 2. A sample of completed tasks

The data of the Attitude Scale were subjected to inferential statistics in order to statistically compare the mean scores of the students in the pre-test and post-test (Ak, 2014) and to make inferences about them (Christensen et al., 2015). First of all, the reversed items in the scale were reversed. Afterwards, the scale data were examined in terms of showing a normal distribution. When it was determined that the data were normally distributed, the dependent t-test, one of the parametric hypothesis tests, was employed (Karaatlı, 2014). The data in the homework follow-up chart were subjected to descriptive statistics to summarize with values such as frequency and mean (Christensen et al., 2015; Creswell, 2016). The average time for students to complete their homework

before and during the gamification application and the frequency of not doing it are presented in the table. The data from the semi-structured interviews with the students was subjected to content analysis. The data of the interview were analyzed deeply, and codes and themes were created according to the similarities of the meanings (Ekiz, 2015; Yıldırım & Şimşek, 2011). For the reliability of this research, the process was carried out by three researchers individually, and then a consensus was reached by discussing the findings (Creswell, 2016; Ekiz, 2015). These findings were presented in a more comprehensible and holistic way with charts. In addition, for the reliability of the research, the findings were supported by direct quotations from the students' opinions. The research process is summarized in Figure 3.

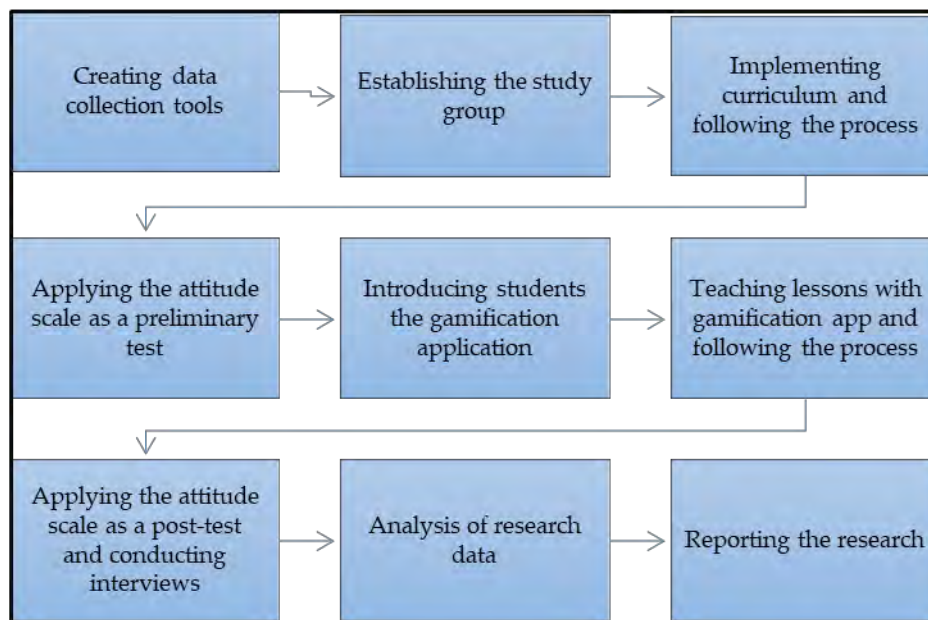


Figure 3. Process of the research

Findings

Findings on the Effect of Foreign Language Teaching Through Gamification Applications on Students' Attitudes towards the Lesson at the Primary School Level

The results of the dependent t-test performed to determine the effect of gamification on the attitude of primary school students are presented in Table 1.

Table 1. The impact of gamification apps on students' attitudes towards the lesson

Test	N	\bar{X}	Ss	Sd	t	p
Pre-test	33	93.24	20.31	32	-7.766	0.000
Post-test	33	107.82	16.26			

Table 1 reveals that gamification practices significantly increase the attitude of primary school students ($p < 0.05$).

Findings on the Evaluation of Foreign Language Teaching with Gamification Applications by Primary School Students

The results of semi-structured interviews conducted to determine how students evaluate gamification apps in the teaching process are presented in this section.

The views of primary school students about the benefits of gamification applications are given in Table 2.

Table 2. Students' views on gamification apps

Advantages		Frequency
Cognitive	Facilitating learning	17
	Reinforcing learning	15
	Ensure permanent learning	12
Affective	Making the process fun	27
	Developing a positive attitude towards the process	26
	Increasing the willingness to participate in the lesson	11
	Increasing the desire to be successful	9
	Increasing learning curiosity	5
Behavioral	Ensuring task accomplishment	27
	Increasing the ability to use technology	8

According to Table 2, primary school students think that gamification practices have cognitive benefits such as facilitating learning, reinforcing what has been learned, and providing permanent learning. S9 states, "Gamification allows us to learn faster. We understand the subjects better, and we do not forget them for a long time. We can play reinforcing games on the topics." S18 states "With this application, we can play games that summarize and consolidate the subject. "Students think that gamification apps have affective benefits such as ensuring the realization of tasks, making the process fun, developing a positive attitude towards the process, increasing the desire to participate in the lesson and be successful, and increasing the curiosity to learn. S8 states, "I started to think that studying was more fun, and I liked English lessons more. I am interested in it now." S10 also states, "I think the characters and missions are very entertaining in this virtual world. I like English more now because the lessons are more enjoyable." Students also believe that gamification has behavioral benefits, such as enabling tasks to be performed and increasing the ability to use technology. S3 states, "I liked the homework and tasks given in this application as we completed the tasks either by watching videos or by doing some kind of activity." S5 states "I started to learn by using technology and playing games. I didn't want to do my homework before; now I'm doing it more enthusiastically." The views of primary school students about the negative aspects of gamification applications are given in Table 3.

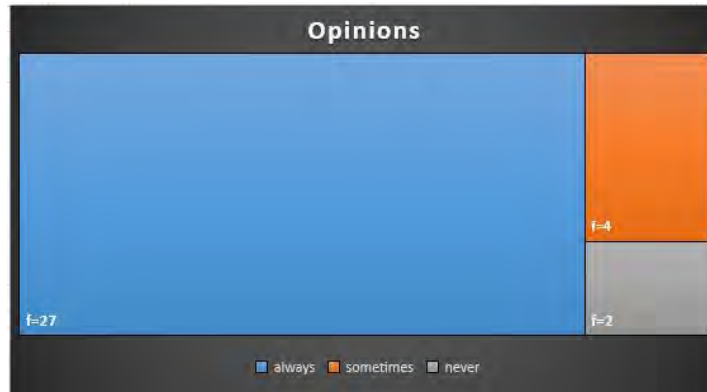
Table 3. The negative aspects of gamification applications

Disadvantages		Frequency
System problems	Connection problem	7
	Not receiving feedback about the completion of the task	4
Task related problems	Not getting the items	6
	Simple tasks	5
	Being unhappy with the task map	4
	Difficult task	3
	Losing points due to uncompleted tasks	2

Table 3 reveals that primary school students report systemic disadvantages of gamification apps, such as experiencing connection problems and not receiving feedback on the completion of the task. Ö23 states, "The application was frozen or didn't respond." In addition, students think that the gamification app has some

functional disadvantages, such as not getting the character they want, the task being too simple, being dissatisfied with the task map, the task being more difficult than necessary, and losing points when the task is delayed. S12 states, "I didn't like not getting the character that I wanted."

The views of primary school students about using gamification applications in the lesson are given in Graph 1.



Graph 1. Students' views about using gamification in English lesson

According to Graph 1, the majority of primary school students expect gamification applications to be used in lessons. S2 states, "I would like to use gamification in all lessons because we progress and learn more quickly." Only four students stated that it should sometimes be used. S6 states, "In fact, it may not always be the same, because I would like to do homework in our notebook." Only two of them think that gamification shouldn't be used in lessons. S13 states, "I don't want to use the game in class. I think books are more fun and educational."

Findings on the Effect on Students' Procrastination Behaviors of Foreign Language Teaching with Gamification Applications at the Primary School Level

The results of the follow-up chart, which was created to determine the time for students to complete their homework and procrastination behaviors in the gamification processes, are given in Table 4.

Table 4. The effect on students' procrastination behaviors of foreign language teaching with gamification application

Duration	N	Average time to complete homework (day)	Frequency of students who have not done their homework at least once
Implementation of the teaching program	33	6.5	25
Using a gamification app	33	2	6

Table 4 reveals that the gamification application shortens the time students' doing their homework. In addition, with these applications, the situation of students not doing their homework has also decreased.

Discussion, Conclusion, and Recommendations

It is known that attitude has three dimensions: cognitive, affective, and behavioral (Karatay & Kartallıoğlu, 2016). In this study, it was determined that gamification applications significantly increased the attitude of primary school students towards the English lesson compared with classical teaching methods. Similar results have also been revealed by some other studies (Çayır, 2021; De-Marcos et al., 2014; Gelen & Özer, 2010; İnesi, 2022; Kalkan, 2016; Kunduracıoğlu, 2018; Meriç, 2022; Türkan, 2019; Yıldırım, 2016; Yıldırım, 2017). It can be stated that this effect is due to affective factors such as increasing interest and willingness to participate in the process (Çayır, 2021) with gamification applications. In this study, students stated that their attitude changed in a positive way due to the affective reasons in the semi-structured interviews. The affective element, which is also associated with the value judgments of the person, can be defined as liking the lesson in which the person has a positive attitude. A person with a positive attitude towards a lesson will have positive feelings towards the lesson and the content (Bilgin & Cengiz, 2019). The other dimension that supports the positive change in

attitude has been identified as cognitive elements. The cognitive element is the perception of a concept or situation. The affective element is related to feelings and emotions. These feelings are formed around the cognitive element. A person is made up of stimulants and experiences in his environment (Taşancıl, 2006). The more confident the individual is in the authenticity of the information he or she obtains, the more the permanence of the attitude increases (İnceoğlu 2000). Shortly, the cognitive element consists of the knowledge and beliefs that people have around them. As a result of this research, another factor that positively supports the students' attitudes towards English lessons is the behavioral field. The literature supports this situation with the view that feelings formed by cognitive and affective elements are evaluated as good or bad and turned into behavioral elements (Karatay & Kartallıoğlu, 2016). The behavioral element can be expressed as the state of acting towards the object of an individual's attitude. The student who has a positive attitude towards a lesson will demonstrate behaviors that are aimed at reacting positively to this lesson. If he or she does not, he or she will be distracted from the lesson and the content (Bilgin & Cengiz, 2019). As a result of the research, it is supported in accordance with the literature that attitude consists of these three elements in the interaction of cognitive, affective, and behavioral, and that the change in one of these elements will affect the others (Karatay & Kartallıoğlu, 2016). Considering the positive effects of attitude on cognitive, affective, and behavioral dimensions and the positive opinions regarding the use of primary school students in this research, it can be stated that the practice of gamification can be used in teaching foreign languages and other lessons.

Another finding of this research is that gamification apps support the foreign language teaching process at the primary school level. Within the scope of the research, it is concluded that gamification facilitates the learning process in the interviews with primary school students and that what is learned has cognitive contributions such as reinforcement and permanent learning. In the literature, it has been determined that gamification facilitates students learning of vocabulary in foreign language education (Türkmen, 2022), provides reinforcement (China, 2022), and promotes permanent learning (Ak, 2022; Candan, 2022; İnesi, 2022; Meriç, 2022; Türkmen, 2022). The students who participated in the research stated that they considered gamification practices as fun, developing a positive attitude towards the process, supporting participation in the lesson, increasing their desire to be successful, and increasing their curiosity about learning. As a matter of fact, gamification apps create a fun learning environment (Ak, 2022; Candan, 2022; Çağlar & Arkun-Kocadere, 2015; China, 2022; Dicheva et al., 2015; Ertan, 2020; Inesi, 2022; Tunga, 2016); increase participation in English lessons (Abi, 2021; Tan et al., 2018); and other lessons (Candan, 2022; Ertan, 2020; Fidan, 2016; Fotaris et al., 2016; Hamari, 2014; Hong & Masood, 2014; Inesi, 2022; Juárez & Carballo, 2016; Kırıcı & Kahraman, 2019; Pesare et al., 2016; Yellow & Altun, 2016; Karamert, 2019; Candan, 2022; Karamert, 2019; In this research, students stated that gamification applications also have behavioral contributions, such as enabling tasks to be performed and increasing the ability to use technology. In fact, gamification applications have many cognitive, affective, and behavioral benefits as they provide active learning and are found to be fun and interesting by students (Ertan, 2020; Fidan, 2016). As a result, gamification applications can be used to bring innovation to the learning process.

The criticisms of gamification applications in the research are issues such as having connection problems, the task being too simple or difficult, not being satisfied with the task map and the characters presented, and not receiving feedback about the completion of the tasks. Technical problems such as the inability to connect to the internet in digital-based games, access, and audio feedback are among the issues criticized in similar studies (Candan, 2022). In addition, negative situations such as the competitive environment for this application leading to pressure or conflict (Ağaoğlu, 2020; Ak, 2022; Candan, 2022; Hamari, 2014; Hanus & Fox, 2015; Yıldırım & Demir, 2014), stress (Çin, 2022), and time limitation (Ağaoğlu, 2020; Candan, 2022; Çin, 2022) have been revealed in the literature. While teaching with gamification, some system- or application-based disadvantages may be encountered, and in order to avoid these negativities in future applications and research, measures such as creating tasks and characters according to the levels and expectations of the students, continuous monitoring of the process, and instant guidance can be taken.

In this research, it was determined that the majority of primary school students think that gamification should be used in the teaching process because the gamification application increases attitude, desire, curiosity, fun learning, and enables active learning and performing tasks. In some studies in the literature, it has been determined that students have a positive attitude towards the use of this application in lessons (Ertan, 2020; Polat, 2014; Sarı & Altun, 2016), and students expect it to be used (Ak, 2022; Bayram & Çalışkan, 2019; Çilengir, 2019). However, two students who prefer to learn by reading and writing have expressed the opinion that this app should not be used in lessons. This can be explained by the fact that while these students have an auditory learning style (Dunn & Dunn, 1993), technology-enhanced teaching such as gamification is more appropriate for visual and kinesthetic learners (Gülay, 2021). In this context, gamification can be used to take into consideration that individuals prefer more visual and kinesthetic learning (McVay, 2004; Reid, 1987) and to ensure higher participation during the learning process.

One of the striking findings of the research is that the gamification application shortens the completion times of the homework given in the English lesson at the primary school level, and the behavior of not doing homework is seriously eliminated. In the interviews with the students involved in the research, it was revealed that this

situation was caused by the gamification application. In the literature, it was stated that gamification application increases the level of substantiation of students' tasks and homework (Brewer et al., 2013; Selvaslı, 2018), performance, and duration (Pesare et al., 2016). This can be explained by the fact that the gamification application includes fun and interesting components such as collecting points and rewards, character development, leveling up, and being different from the classic homework that has reading and writing activities that are time-consuming and boring (Duru & Cogmen, 2017; Soy, 2022). Zamki (2022) points out the possible causes of procrastination behaviors such as failure, negative thoughts about one's abilities, personal problems, unrealistic expectations, a lack of motivation and organizational skills, an inability to concentrate on work, fear, and anxiety. Procrastination stems from three basic cognitive styles that include unrealistic views of the self, others, and the world. At the end of the research, the fact that the answers given by the students in the interviews focused on these issues in the cognitive field also supports this situation and shows the effect of the process in reducing procrastination behavior. It can be stated that the results of the research have a positive effect on students' procrastination behaviors and can be used in homework assignments. A limited number of studies have found a link between procrastination behavior and gamification. It can be suggested that new and longer-duration research be carried out to examine this process deeply.

Authors Contribution Rate

All authors contributed equally to the research.

Conflicts of Interest

There is no conflict of interest.

Ethical Approval

Ethical permission (27.01.2023 - 2023-1/2.9) was obtained from Trabzon University Social and Human Sciences Ethics Committee for this research.

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