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Research Article

Examination of maritime education within frame of gamification

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Abstract: Gamification is a new design for many fields in changes in the expectations and satisfaction levels of each individual with digital literacy skills, as well as in their behavior and habits. Utilizing the benefits of its frame is also a critical issue for the maritime education. In this context, it is aimed to measure the predisposition and interest of the maritime university students in the game contents by conducting a survey. Statistical results are obtained regarding the attitudes of the participants towards learning with computer games, their attitudes and expectations towards gamification and how useful gamification could be for non-game systems. Lastly, it is revealed which courses in maritime can be gamified. Accordingly, it is seen that the majority of the students are intertwined with games every day. The reason why the majority of the people prefer to play 'multiplayer' games is the desire to be successful brought by the competitive environment or the communication-based system being more interesting and increasing motivation even more. Attendances consider that gamification will make the lessons more interesting, specifically electronic navigation and maritime security courses.

Key Words: Gamification, maritime, maritime education, attitudes toward game, game

Denizcilik eğitiminin oyunlaştırma çerçevesinde incelenmesi

Özet: Oyunlaştırma, dijital okuryazarlık becerisine sahip her bireyin beklenti ve memnuniyet düzeylerinin yanı sıra davranış ve alışkanlıklarındaki değişiklikler açısından birçok alan için yeni bir tasarımdır. Oyunlaştırma çerçevesinin faydalarından yararlanmak, denizcilik eğitimi için de kritik bir konudur. Bu kapsamda denizcilik üniversitesi öğrencilerinin oyun içeriklerine yönelik yatkınlık ve ilgilerinin anket yapılarak ölçülmesi amaçlanmaktadır. Katılımcıların bilgisayar oyunlarıyla öğrenmeye yönelik tutumları, oyunlaştırmaya yönelik tutum ve beklentileri ve oyunlaştırmanın oyun dışı sistemler için ne kadar yararlı olabileceğine ilişkin istatistiksel sonuçlar elde edilmiştir. Son olarak denizcilikte hangi derslerin oyunlaştırılabileceği ortaya konulmuştur. Buna göre öğrencilerin büyük çoğunluğunun her gün oyunlarla iç içe olduğu görülmektedir. Öğrencilerin çoğunluğunun 'multiplayer' oyunları oynamayı tercih etmelerinin nedeni, rekabet ortamının getirdiği başarılı olma isteği veya iletişim temelli sistemin daha ilgi çekici olması ve motivasyonu daha da artırmasıdır. Katılımcılar, oyunlaştırmanın dersleri, özellikle elektronik navigasyon ve deniz güvenliği derslerini daha ilginç hale getireceğini düşünmektedir.

Anahtar Kelimeler: Oyunlaştırma, denizcilik, denizcilik eğitimi, oyuna yönelik tutum, oyun

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1. Introduction

In the technology world of the 21st century, it is seen that there are undeniable changes in the expectations and satisfaction levels of each individual with digital literacy skills, as well as in their behavior and habits. These changes make it a necessity to reorganize the existing education methods in accordance with the innovative structure of the age, in today's world where information is accessible at any time regardless of space and time. In this context, it is great importance to feed the educational content not only with printed books, but also with digital games, motion pictures, virtual and augmented reality applications, and to invest in the creation of such content. When focusing on the topic of participation in education, although technology and the Internet increase the opportunity for people to develop intercultural skills and learn new ways of thinking, they can make participation in education difficult. The greater participation of the learner in education is usually achieved through pedagogical tools in active education (Wood and Reefke, 2010). Another tool used for this purpose in recent years is the gamification approach (Juárez and Carballo, 2016).

The concept of gamification, which started to be used as a term in the 2000s, is a preferred approach for realizing a person's attitude and behavior change. In general terms, gamification is the use of game components in the design of non-game contents or environments in order to increase the experience and interest of users (Deterding et al. 2011a; Deterding et al. 2011b; Deterding et al. 2011c; Werbach, 2014; Domínguez, 2013). The game is a design that has an enjoyment-oriented and rule-based, definable result and that the players who participate in the game environment strive to change this result (Juul, 2003). It is expressed by Prensky (2007) as a concept that includes elements such as goals, results, rules, feedback, interaction, and competition. Similar to this idea, Järvinen (2008) expressed the game as a structure that has a certain context, rule, environment, in which the player participates. There are game elements or components that the game designer needs to design this system. Game elements vary according to game content, subject, purpose and designer (Arkun-Kocadere and Samur, 2016; Bunchball, 2013). The biggest impact of game elements is on motivation, so it needs to be oriented towards basic human desires (Bunchball, 2013). Huang and Soman (Hsin-Yuan Huang and Soman, 2013) examined the game elements in two titles as individual and social elements. The individual game elements include items such as score, level, medal, virtual resource, story, time, and aesthetic. The social game elements involve items such as leaderboard, virtual resource, interactive collaboration, and story. According to this classification, the individual elements are used to complete the determined levels, and the social elements are used to ensure that the player continues the game with the interaction with the game and other players (Ar, 2016). In accordance with the definition of game, game elements and gamification, the game and game elements are critical issues for gamification. Because, gamification not only takes the origin of the name and entertainment elements from the concept of game, but also includes a systematic method such as being bound to a set of rules, reward/punishment system, fiction and implementation. For this reason, not only the use of game elements but also game design is important in gamification studies. On the other hand, there are sharp contrast between game and gamification. While the main purpose of the game is entertainment, the purpose of gamification is to direct human behaviors and tendencies by combining them with entertainment. Gamification uses game only as a tool in a game-free environment. The detail difference between game and gamification is as Table 1.

Today, gamification is already used in many fields such as health, public relations, sports, advertising, economy, innovation, work efficiency, employee performance, psychology, media and journalism, resource and time management, digital information systems, tourism, entertainment, and especially education (Burke, 2014; Ferrer and Karlsson, 2015; Kapp, 2012; Mora et al., 2017; Pamfilie et al., 2016; Vardarlıer and Inan, 2017). Instead of using digital games for education, some researchers have focused on transferring the beneficial aspects of these digital games to non-game learning areas (Domínguez, 2013). As a result, a term called gamification has emerged, which we can apply as an educational method.

In recent years, with the application of the concept of gamification in different sectors, it has also been applied in maritime education. However, gamification concept has been evaluated more for the transport - logistic sector than maritime in the literature (Bastug and Aydın, 2020). For instance, The Beer Game (Sterman, 1960), Fresh Connection (Cotter et al., 2009), Responsive.net, - The Supply Chain Game (Freng and Ma, 2008), Supply Chain Risk Management Game (Kuijpers, 2009) are some gamification

application on logistic and supply chain sector. Port Simulator 2012-Hamburg (2012) is one of the limited gamification on the maritime education.

In this context, it is aimed to measure the predisposition and interest of the maritime university students in the game contents by conducting a survey. It is aimed to obtain statistical results regarding the attitudes of the participants towards learning with computer games, their attitudes and expectations towards gamification, and how useful gamification could be for non-game systems. Lastly, it is revealed which courses in maritime can be gamified.

Table 1. Difference between game and gamification

Game	Gamification
It has defined rules and goals	It can consist of only a collection of quests along with a type of reward.
It includes the possibility of losing	There may or may not be a chance to lose, as the goal is to motivate people to do something.
Sometimes playing games causes an internal reward	Internal reinforcement is optional
Producing games is often difficult and expensive	Gamification is relatively cheap and easy
Content is mostly aligned to game scenes and story	Not much change in content

2. Literature review

The concept of gamification is first introduced by the expert of British information technology - Nick Pelling in 2002 (Marczewski, 2012). Although the first documented use of gamification as a term dates back to Bret Terrill's 2008 blog post (Oliver, 2017), it is not until 2010 that the concept is widely accepted and used in academic studies (Richter et al., 2015). Although the concept of gamification comes before us as a new term in the literature, the basis of this concept is actually based on information communication technologies and the "digital media industry". Different studies and researches examining this concept are gaining more and more visibility in daily life as well as in the literature. It is an incomplete and incorrect idea to think of gamification as a concept only related to digital technologies. Technology is not the birthplace of the concept of gamification, it is only one of the areas where gamification is applied. The concept of gamification refers to applications that affect people without having to be connected to the computer (Danelli, 2015). At this point, it can be stated that technological developments and innovations facilitate gamification applications.

According to studies in the literature, the specifications of gamification are as Table 2.

Table 2. The specifications of gamification

The specifications of gamification	
From an educational point of view, the gamification process is not only to include the game in the teaching of skills or knowledge, but also to benefit from the potential of facilitating the learning of the students in the current learning area by combining it with the game characteristics.	(Karatas, 2014)
Gamification is the use of game design components and game mechanics in non-game environments.	(Mora et al., 2017)
Game components are used not only in education but also in many non-game computer, smartphone and tablet applications. Such activities can be expressed as gamification.	(Kim and Lee, 2015)
Gamification is trying to positively affect learning, problem solving and motivation by using game components and strategy.	(Brigham, 2015)
In the gamification process, users are provided with an effective experience process and the user is encouraged to participate more in the application.	(Guler, 2015)
The concept of gamification is an educational platform that aims to internalize people's external motivations and offers those rewards and feedback. Leveling up, giving rewards, specializing, etc., which causes players to become almost addicted to the games. It is the application of tools with the aim of improvement in education.	(Gokkaya, 2014)
Gamification is applications that enable the user to be involved in the process to increase their motivation.	(Guler and Guler, 2015)
Gamification is the successful use of psychology and game components to change attitudes.	(Procopie et al., 2015)
Gamification; Since the new generation spends more time playing computer games than school-related things, it is seen as a solution to the computing (enhancing student engagement) problems faced by most teachers around the world in any learning situation.	(Polat, 2014)
Gamification is listening to think about what games can teach us and what we can learn from game design, psychology, marketing, management, economics and their systems, through motivational and entertainment-based methods.	(Gurcay, 2015)
The use of basic elements and concepts used in game design and development processes in environments other than game production is called gamification.	(Yılmaz and O'Connor, 2013)
Gamification is trying to increase student participation by turning the traditional classroom environment into a competitive multiplayer game.	(De Freitas and De Feritas, 2013)
Gamification is expressed as the process of increasing motivation to achieve gaming experience and more behavioral outcomes.	(Hamari et al., 2014)
Gamification; It is the application of game elements in non-game fiction and continues to develop as a method used to increase student information in the classroom environment.	(Hanus and Fox, 2015)

Although there are many definitions about gamification, some common main ideas draw attention. These are increasing the motivation and commitment levels of users, non-game contexts (Tunga and Inceoglu, 2016), creating and maintaining the desire to be involved in the process, making the process fun, sharing information, acquiring new skills and experiences, and providing competitive cooperation among employees (Uskav and Sakar, 2015). The motivation is the most important key of gamification and there are some theoretical principles for the basis of gamification such as flow theory, self-determination theory, fogg behavior model, and goal setting theory. These theories explain that why a system or target should be gamification and which rules can be used for this.

The game industry describes a large area. This sector has become one of the most important parts of the entertainment industry. According to Newzoo's 'Global Game Market' report (2021), it is estimated that the game market will reach a value of approximately 175.8 billion dollars by the end of 2021. Another factor for developing game and gamification sector expressed by Reeves and Read (2009) is large groups of people, that is, target audiences. The games appeal to and are played by a very large audience. According to the Reeves and Read, 27% of the players are over the age of 40. This value is expressed as 9% in 1999. According to the ESA 2014 report (2014), on average, every person living in America has at least 1 computer, 1 smart phone or 1 console in their home. The average age of the players is 35. The last big concept expressed by Reeves and Read (2009), which he calls big time, is the time people spend with computer games. It is stated that an average of 3 billion hours a week is spent playing games in the USA (Reeves and Read, 2009). On the other hand, McGonigal states that an average player spends ten thousand hours playing games until he reaches the age of 21, and this time is the same as the number of lessons a student takes in middle school and high school (McGonigal, 2011).

Researches and studies on gamification show that gamification models and designs can be grouped as Generic Framework and Business-Specific Framework. When this classification is examined, it is seen that the models consist of two parts, component-based and design-based (Reiners and Wood, 2015). Component-based gamification models are Hunicke ve Zicherman's Mechanics, Dynamics, and Aesthetics model and Pyramid of game elements – Dynamic, Mechanics, and Components model (Hunicke et al., 2004; Matsubara et al., 2017). They are related with some gamification elements; levels, points, badges or leaderboards. However, it would be wrong to limit gamification only to these. Because gamification is not to make conventional actions a game, it is expressed as the redesign of business processes with game techniques for an enjoyable experience. Design-based gamification are Werbach's D6 model which is a gamification framework, Octalysis model, and Hook model (Hunicke et al., 2004; Matsubara et al., 2017). It is expected from these model that the gamification design will achieve success by using the right mechanics and dynamics suitable for the intended purpose, together with the use of visual representations that will appeal to the target audience.

In the perspective of education, gamification is not a learning method in education, it is an approach that aims to make learning more remarkable in the education process. Gamification in education can be considered as the transfer of the structure designed in the form of points, badges, experience points and levels to the classroom environment. Gamification activates the motivation that leads learners to work more (Muntean, 2011), triggers the competitive instinct, and encourages learners to display productive behaviors and at the same time reduce their non-productive passive behaviors. In addition, gamification supports not only the individual competition motivation, but also collaborative efforts to win (Glover, 2013).

On the other hand, the gamification and game-based learning in education are different each other. These two confused concepts are not the same when reviewed. Among these concepts, gamification is expressed as the use of game rules in situations outside the playground (Bozkurt and Genc Kumtepe, 2014), game-based learning, generally providing open or hidden learning within a playground. As mentioned before, in order for the application to be gamification, the game dynamics must be integrated into the planned action and provide a motivation for the action to be taken. In game-based learning; game and learning are fully integrated and learning already takes place while the game is being played. In game-based learning, the game is used as a tool to provide learning; there is no central game in gamification of a teaching environment; instead, game components such as badges, levels, leaderboards

are used by integrating them with the teaching environment. For this reason, gamification, which takes its basis from the game, has similar effects to the effects of games (Huotari and Hamari, 2012).

Although the use of gamification in educational applications is newer than other applications, it is one of the most used areas of gamification applications today. Gamified educational applications help students to increase their motivation and support their engagement in educational activities. The aim of the applications developed with gamification is to support students' learning for long periods of time and having fun, just like in video games.

In today's world, a change has been observed in the characteristics of learners and the need to create and organize educational systems that can meet the demands of the G-generation has emerged. Gamification is an approach that has emerged in order to meet the mentioned need, and it has been determined that the use of gamification applications in education and training activities is quite effective. The main reason for this is that teachers and students can participate in these activities voluntarily through gamification applications. With gamification, it is seen that teachers and students participate more in the learning process and these activities have become more efficient, attractive, fun and sustainable. However, the gamification approach is a process-oriented design. It should be considered that the quality of a poorly designed teaching situation will not be changed by gamification or a similar design (Bozkurt and Genc Kumtepe, 2014).

Another point to be considered in the application of gamification in the field of education is the adaptation of gamification to learners. Accordingly, games focus on problem solving and schools on teaching knowledge. In this context, every learner has different skills just like the players. Good learning environments should also allow gamification to be adapted to individual learning needs within the framework of this idea, and in this way, it should enable learners to solve problems by using different strategies. In a learning ecology supported by gamification, the learning action is continuous because the learners are intrinsically motivated.

The use of gamification in educational activities actually helps students become aware of their personal goals and shape their learning habits within this framework. In this process, students' failures are redefined and the frequency of feedback given to students is increased slowly and without boring the student. Giving students real-time feedback allows them to participate in activities confidently and comfortably, without fear of making mistakes. Because even if students make mistakes, they know that a correction for their mistakes will be indicated on time and on the spot. Therefore, students do not hesitate to try new things. In addition, with the gamification application, students are constantly aware of their progress in learning, feeling that every little effort has an effect.

When examined in general, it is evaluated that the benefits summarized below will be obtained with the use of gamification applications in educational activities (David, 2016). Accordingly, with the use of gamification:

a) Students gain a sense of belonging and ownership about their own learning,

b) They gain the desire to learn easily and by trying again, without fear of making mistakes,

c) The classroom environment has become much more enjoyable and thus absenteeism habits have decreased,

d) The progress of learning can be monitored much more clearly and effectively,

e) Intrinsic motivation for learning is more developed in students,

f) It has been observed that students feel much more comfortable while learning with gamification applications.

Quest to Learn (Q2L) school operating in New York, USA can be given as an example for the successful application of gamification techniques in educational activities (Oxan, Oxford Analytica, 2016). Q2L is a high school funded by the Institute of Play (IoP) and operating in the Manhattan area since 2009. All of the courses given in Q2L have been updated using gamification techniques. Educational applications used in the lessons are carried out with the help of offline games and in-class

activities that do not have an Internet connection. Among the main objectives of these activities is the discovery of students' predispositions with these gamification applications.

In recent years, with the application of gamification in different fields, it is seen that there are developments on the gamification approach in maritime education. It is necessary to evaluate the concept of gamification in terms of the logistics sector before the maritime sector such as “Fresh Connection” and “The Beer Game”. Fresh Connection is a computer-based logistics game based on fruit juice production. In this game, students are asked to keep up with the changing conditions in the supply chain and to respond successfully to the supply chain functions presented to them. The game can be run in one session, alternately every week for an entire term, or daily. The beer game, which is developed in 1960 at MIT laboratories, is a simulation designed to demonstrate the "whiplash effect" on the supply chain.

By examining the studies related to maritime education in the concept of gamification, various studies, which have focused on different view, in order to give a clear picture of concept on the field are found in the literature. For instance, Voloshynov (2019) presented the usage of digital escape room in educational electronic environment of maritime higher education institutions. It is highlighted that the communicative competency of future maritime professionals can be formed via the engagement of digital escape room with the maritime education. Yurzhenko et al. (2022) investigated the ways of a distance communication channel with gamification elements created in the electronic educational environment (on LMS Moodle) of maritime higher education institutions in order to form communicative competency of future maritime professionals. According to the received results, the quality and success of training increased. The use of gamification proved useful and helpful in the distance education of future maritime specialists. Rosedi et al. (2018) focused on the use of online quizzes and gamification in enhancing students’ motivation for Diploma in Nautical Studies programme. This exploratory study aims to reap the benefits of using learning technologies such as the online quizzes and gamification in maritime education and training. Sartini (2020) aimed to examine the use of online gamification-based Kahoot quiz Platform in Maritime English learning. He proved to improve the speaking skill of nautical science cadets by the increasing number of maritime vocabularies as an indication. Consequently, there are several studies showing that games and gamification can provide both a strong incentive, support and application of knowledge for blended learning as well as on the formation of communicative competence of maritime students, professionals and marine engineers (Sherman and Yurzhenko, 2020; Markopoulos et al., 2019; Wood et al., 2012; Pruyn, 2021).

Since logistics education includes all modes of transport, it has a great impact on maritime education as well, but some gamification experiments specific to maritime education have been applied. For example, Port Simulator 2012 Hamburg game, which is based on a port operation scenario, is a computer-based simulation game that allows competition between players. The aim of the game is to manage and regulate the cargo handling operation of various types of ships coming to the port, to prepare the financial statements of the operations and to solve the problems that arise during the management process. This game is one of the limited number of computer based gamification applications in the maritime field. For this purpose, in this study, a situation analysis was conducted to understand students' perspectives on gamification in maritime education and to learn which courses are gamified.

3. Materials and methods

3.1. Data

In this study, it has been aimed to conduct a survey on university students who are studying maritime education in Türkiye. For this purpose, it is required to determine the data collection method. The sampling technique used in this study is simple random sampling. A simple random sample is a randomly selected subset of a population. In this sampling method, each member of the population has an exactly equal chance of being selected. (Thomas, 2022). There are 4 key steps to select a simple random sample; (i) to decide the population on target topic, (ii) to decide on the sample size, (iii) to select randomly the sample, (iv) to collect data from the sample. Accordingly, a random selection of

university students who are studying maritime education in Türkiye is followed, asking detailed questions about their thoughts in order to draw conclusions about the maritime education within the frame of gamification. In Türkiye, there are many institutions, which give maritime education, such as universities, high schools, naval academies, and private courses (Nas et al., 2017). However, in this study, the university level in considered. Accordingly, totally around 3000 maritime students exists in the universities in Türkiye for each year (Nas et. al., 2017). In order to determine the appropriate sample size, the confidence level of the sample size is checked by considering the %90 confidence level and %10 margin of error for 3000 population size via a calculator tool for sampling size. The ideal sample size, which meets these confidence level, is 67. In this study, 76 students have been participated in the survey and 8 questions have been asked to the participants. The survey includes two parts. In the first part, the participants have been asked to answer questions about their gaming experiences. Most of the questions in this section are multiple choice questions. The questions in the second part of the questionnaire are about the participants' attitudes towards learning with computer games, their attitudes towards gamification, their expectations, and their ideas about how useful non-game systems can be in making fun.

3.2 Statistical analysis

In the context of outputs obtained from literature review, the hypothesis for this study is expressed as below:

H1: Gamification designs in education increases the motivation of the maritime students and interest of them to the lesson.

Accordingly, it is obvious that the academic success of the students whose motivation and interest increase will undoubtedly increase. Students with increased motivation, interest and academic success will be able to carry the country's education system to better points in terms of occupation quality, prestige of the country in foreign country, and pioneer country for maritime education. For understanding the gamification design contribution in the maritime education on the motivation and interest of the students to the lessons, a statistical analysis is carried out via surveys. The findings are presented and analysed as below.

3.3 Findings

As a result of the survey analysis, the findings are presented by examining the questions one by one.

In the first question, students have been asked how often they played computer games. According to Figure 1, 67.1% (51 people) of the participants play computer games at least once a week and 55.3% (42 people) of participants play computer games every day.

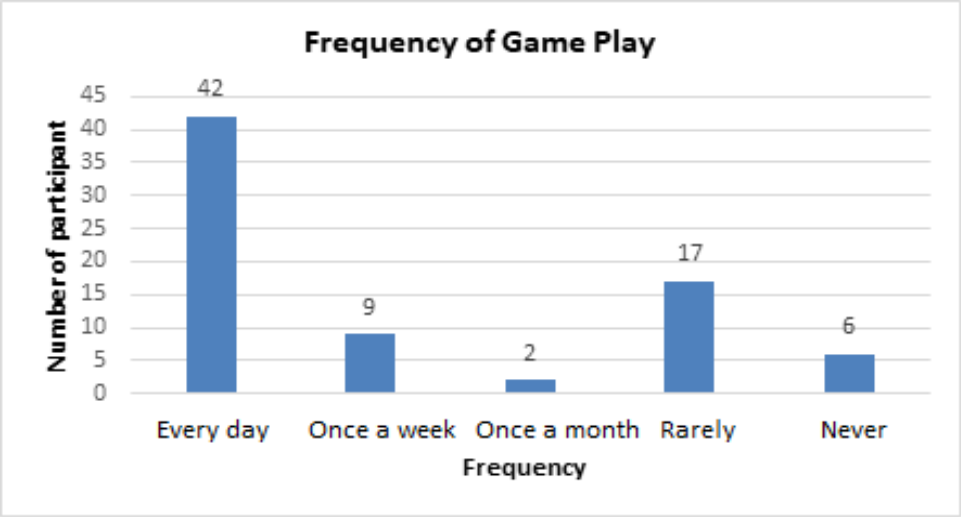

Figure 1. Frequency of game play.

In the second question students have been asked which types of computer games they play. According to Figure 2, 71% (54 people) of the participants are Multiplayer, 36.8% (28 people) of participants play Simulation, 35.5% (27 people) of them play Adventure type game, and 39.5% (30 people) of them play strategy. It can be said that the reason of the preference of multi-player games so much is the cooperation of people with the communication they establish among themselves or the sense of success brought by the competitive order increases the commitment to the environment.

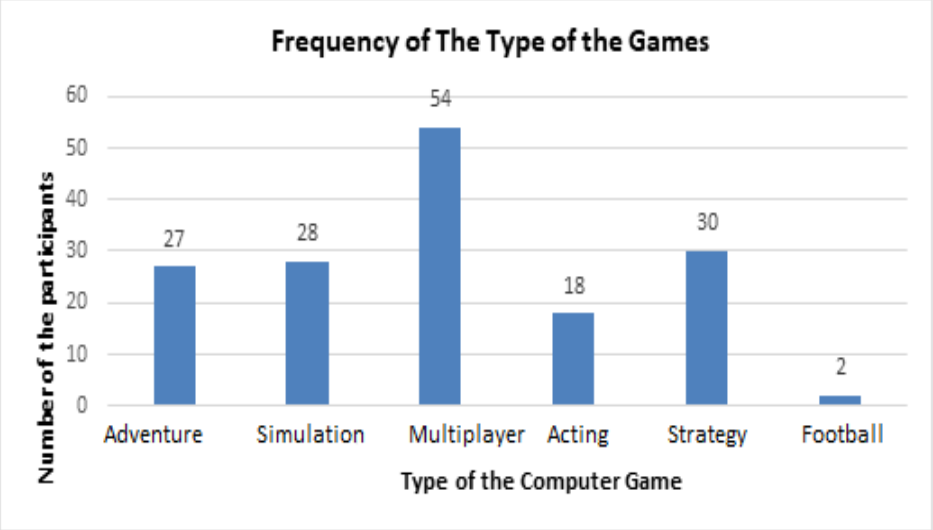

Figure 2. Frequency of type of the games.

In the third question students have been asked why they play computer games. In accordance with Figure 3, the most common reasons are boredom 78.9%, mental competition 43.4% and playing with others 42.1%, respectively.

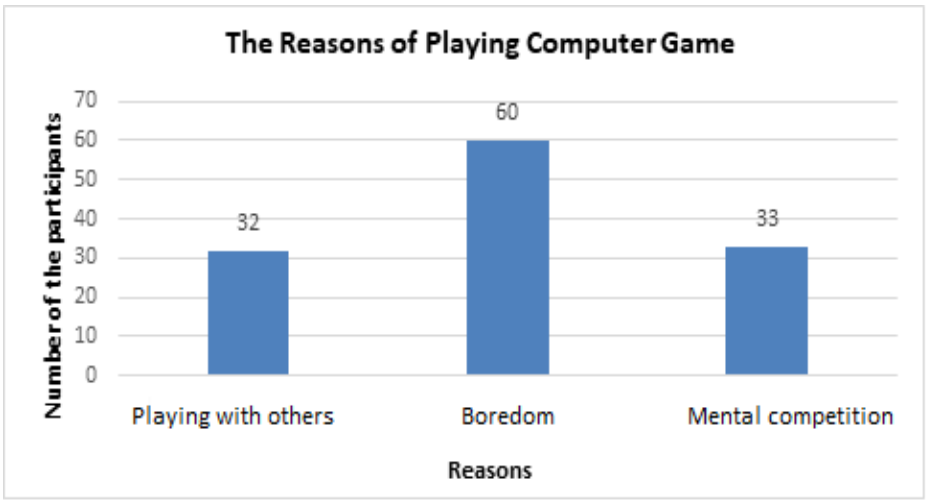

Figure 3. The reasons of playing computer game.

In another question, students have been asked about their thoughts on their attitudes towards learning using computer games. According to Figure 4, while a significant part of the students (72%) have been found it interesting to use games to learn, 21.1% of them have been undecided and 6.6% of them have been stated that they would not be interested.

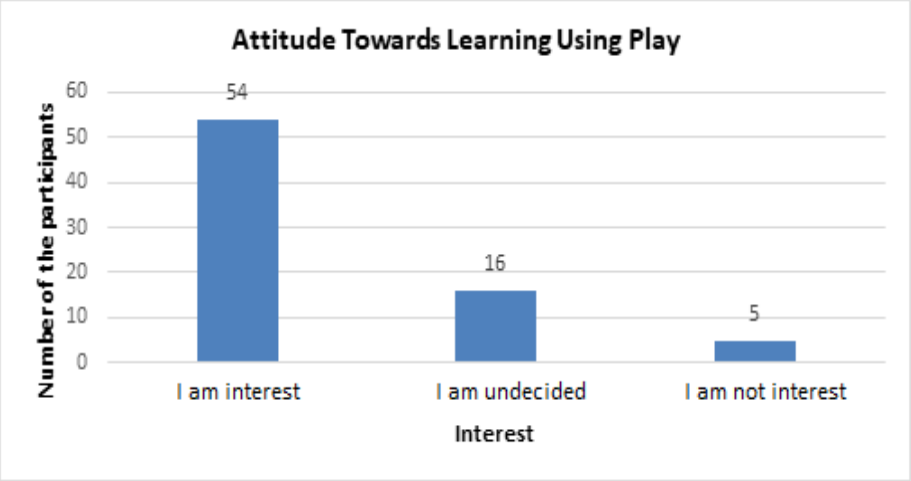

Figure 4. Attitude towards learning using play.

From these results, it is deduced that the students have game experience. The fact that the most preferred game type is multiplayer games shows that the social interaction of the participants in the game is attractive. Besides, this preference is a common combination of playing with others and relieving boredom.

In another question, students have been asked about whether they know the term of 'Gamification'. According to Figure 5, 54 people (72%) have been stated that they had not heard the term gamification before.

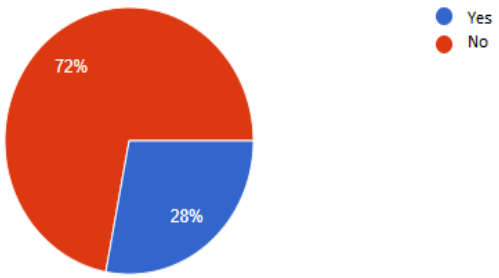

Figure 5. Knowledge of the term of "gamification".

However, in another question, when a general definition of the term of the "Gamification" is given and students have been asked about their expectations about gamification in education, 75% of respondents have been said that gamification would make the lesson more interesting. 52.6% of them have been stated that it would improve the learning environment and 5% less of them have been stated that it would make the lesson more difficult in accordance with Figure 6. In addition, an answer given under the 'other' option is that gamification can help increase student motivation. These data show that most of the students have positive expectations about gamification in maritime education. Most students think that the use of gamification in education will make the lessons more interesting and improve the learning environment.

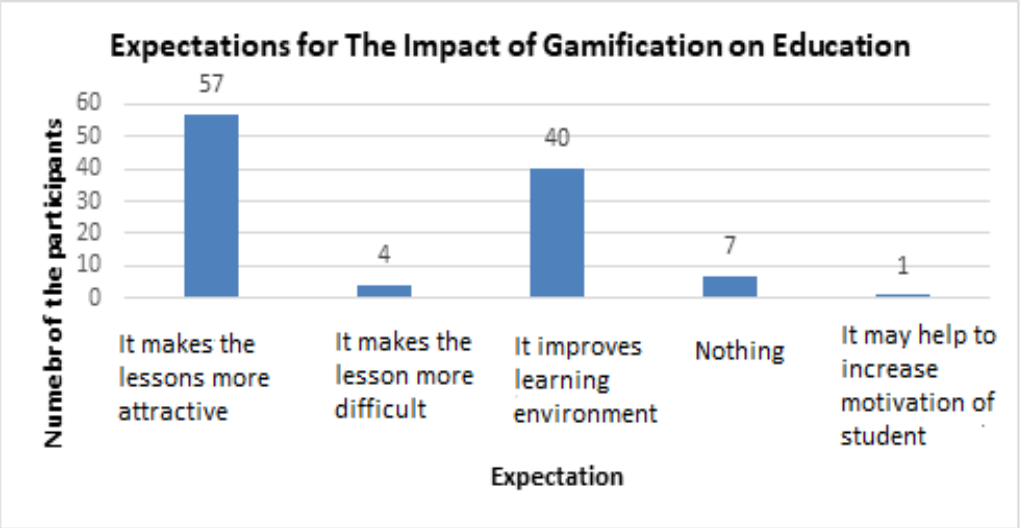

Figure 6. Expectations for the impact of gamification on education.

In addition, in the survey, the students have been also asked about the benefits of gamification. In accordance with Figure 7, 85.5%, 40.8%, 27.6%, and 21% of the participants have been chosen the answer 'to make it easier to understand the course content', 'to specify the points I need to improve myself', 'to allow me to compare my level of knowledge with other students', 'to prove how much they know about the subject', respectively.

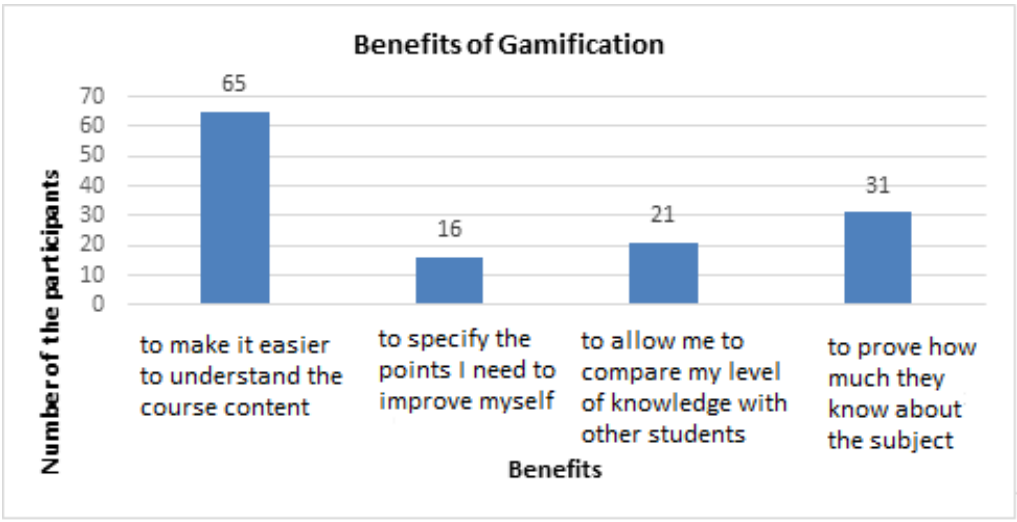

Figure 7. Benefits of gamification.

In the survey, an open-ended question has been asked to the students as the last question. 'Which lessons in your lesson plan do you think are gamified lessons?' When the answers given by the students have been examined, it was seen that a total of 40 participants have given answers and only 38 answers could be examined. 13 of the 38 answers (34.21%) include the course of 'Navigation' for gamification. In addition, 7 people (18.42%) who answered the question have said the "Celestial Navigation" or "Electronic Navigation" courses, which are a part of the Navigation course. In addition, 11 people have said the "Safety at Sea" course.

When we look at the courses given in maritime education, it is the common opinion of most students that the difficulty level of the navigation course is higher than other maritime courses. The fact that the "Navigation" course is more in the answers given to the survey question can be evaluated as an expectation that gamification will make difficult lessons easier to understand.

When the results of the survey are examined, it is seen that the majority of the students are intertwined with games every day. This shows that the game is a part of the students' life. In addition, it can be concluded that the reason why the majority of people prefer to play 'multiplayer' games is the desire to be successful brought by the competitive environment or the communication-based system being more interesting and increasing motivation even more. In other answers to the questions, a significant portion of the students, such as 71%, think that gamification will make the lessons more interesting.

4. Conclusion

In general terms, gamification, which is expressed as the inclusion of game design in non-game content, is used in many different areas such as health, trade and education. With the game design, which positively affects the loyalty and motivation of the users, larger masses can be reached. The inclusion of gamification designs in education will increase the motivation of the students and increase the interest shown by the students to the lesson. The academic success of the students whose motivation and interest increase will undoubtedly increase. Students with increased motivation, interest and academic success will be able to carry our country's education system to better points.

The increase in the use of gamification designs is of great importance in increasing the motivation and attracting the attention of today's generation who grew up with digital games. Studies should be expanded by researchers who will lead the increase of gamification designs and it should be applied more in educational institutions. It is thought that the role of the concept of gamification will be high in the positive attitude towards learning of the Z generation, who develop and grow with technology and have a high sense of commitment to digital game elements.

With the COVID-19 pandemic, which has affected the world, disruptions have occurred in many areas such as education and business life. It can be foreseen that some of the online solutions created with the compulsory innovations and changes brought by this epidemic period to both business and education life will become continuously sustainable, and in this way, the need to prepare new digital gamification designs with different content and integrate them with the existing education system. In this context, digital gamification experiences, which will be prepared in collaboration with experts in the field, following current technologies, will be one of the most important contributions to the field of education.

For future studies, it is tried to proof via multiple regression statistical analysis that the use of gamification designs for maritime education positively affects the interest shown by the students to the lesson and motivation of the users and whether the interest shown by the students to the lesson and motivation of the users positively affect the academic success of the students.

Researchers' Contribution Rate Statement

Author's contributions have equality.

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