University Students’ Views on the Application of Gamification in Distance Education

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Abstract—The COVID-19 affecting the whole world has also affected education. Education has changed from face-to-face education to distance education. In distance education, it is the most basic duty of teachers to increase students’ participation in the lesson, motivate their learning and increase their motivation. Gamification, which is one of the new learning approaches that has come to the fore in the education process, can be used for active learning activities in this model. This study was aimed to determine university students’ views on gamified education. In this context, gamification activities were used in the teaching process. In this study, the qualitative research method was used. The study group of the research consists of 30 second-grade students studying at North Cyprus and some Russian Universities, in the Faculty of Education, Department of Preschool Education. The application was carried out within the scope of the computer I course in the 2020–2021 fall semester. The interview form developed by the researchers was used as a data collection tool within the scope of the research. In preparing the interview questions, the final form of the questions was given by taking the opinions of four experts. Content analysis was used in the study of the data. The findings obtained as a result of the research are given in detail in the findings and results section.

Keywords—distance education, gamification, preschool, motivation, opinion, university students, computer lesson, university student

1 Introduction

The concept of ‘education’, which has many definitions in the literature, can be explained as a dynamically structured process that starts with the interaction of an individual with his/her family and environment from the moment s/he is born and continues with the school, aiming to gain knowledge, values and skills [35]. In the technology world of the 21st century, it can be seen that there are undeniable changes in the behaviour and habits of individuals of all ages with digital literacy skills, as well as in their expectation levels [24] [32] [30] [37]. All these changes make it a necessity to reorganise the current education methods in accordance with the innovative structure of the
age, in today’s world where information is accessible at any time regardless of place and time [17]. The habits of digital natives to access and share information differ from generations (digital immigrants) who are more acquainted with technology [29]. Palfrey and Gasser [22] emphasise that there is a high probability that digital natives will prefer the Google Search engine to do research instead of the library and online communities, and instead of asking for help from a librarian. In this context, another important task of educators should be to adapt to the current habits of digital natives. In this context, it is of great importance to feed the educational content not only with printed books, but also with motion pictures, digital games, virtual and augmented reality applications, and to invest in the creation of such content. The concept of gamification has emerged for these reasons.

A term of neologism derived from the field of digital media is called ‘gamification’. Gamification was first invented in 2002 [20][34][36]. In 2008, the documentation process was carried out. The concept of gamification has started to spread rapidly since 2010 [7]. So how is gamification carried out? Gamification is often designed differently from other gaming apps. While categorising the games to be prepared within the scope of gamification, it is necessary to think about the main task of the game. In other words, while designing the game, it is necessary to decide whether it will be designed for entertainment or learning at the beginning [11].

Although recreational games such as Mario, Candy Crush and Pubg are primarily developed for entertainment, they also improve information acquisition and strategy development in individuals, which are the main purposes of learning. Games for education aim to train their players on a particular skill and digital games are designed for learning in some academic fields [39] [40]. The concept of gamification is defined as transforming activities, system capabilities, services, products or organisational structures into gaming experiences [12]. Individual differences are also taken into account in gamification. The game to be designed, the purpose of use and the instructions of the task can play an important role in the formation of the resulting product [13] [14].

In recent years, the concept of gamification, defined as ‘the use of game design elements in non-game contexts’ [7], has received increased attention and interest in academia and practice, with education among the top fields of gamification research [8] [9] [12] [28].

Gamification, which will be designed in the learning context, can also be called gamified learning [4] [16]. Game-based learning or gamified learning is overlapping concepts. According to the literature review, a common game design element has a toolkit [18] and a (serious) focus on adding value beyond entertainment, i.e., using the playful quality of gamification interventions. Learning games are different from other games due to their structure [7] [35]. Game-based learning approaches are literally defined as the design of games. But gamified learning approaches literally enable people to reinforce and modify an existing learning process to create a revised version of the process they experience as a game [18]. While gamification may seem like a game, it is not a product; Gamification in the context of learning is the case of adding game elements to education in order to make a difference in existing learning processes [7] [18].
Past research shows how a solid theoretical foundation and a sound methodological approach can support its scientific and educational significance. A comprehensive review of recent studies conceptualises the theoretical frameworks of empirical research. Likewise, it sheds light on future studies by determining the relevant methods related to education. The studies carried out offer suggestions to researchers who work in harmony with previous educational research studies [2] [5] [25] [40].

As a result of the literature review, a critical review of the latest work in the field of gamification, when looking at educational research, also revealed research gaps that unintentionally raise the criteria for future research. The study by Landers et al. [18] also highlights the need to establish a strong theoretical foundation for gamification. Therefore, in order to support gamification in education, it is important to try to measure the effects of games on students’ learning situations. In addition to being important to the popularity of the game, it is also very important to determine whether it contributes to the increase in academic performance. However, it can be said that the studies on this field are limited. Looking at previous studies, some researchers have argued that gamification offers positive effects with academically varying effect sizes [21]. Other criteria reported no effect [23], reporting mixed findings. Edgar Dale (1969) theorised the ‘Cone of Experience’ as an analogy in instructional design that provides a concrete foundation for promoting top-notch learning, raising student achievement and encouraging active participation [26] [6]. Given the novelty of gamified learning developed in the field of educational technology, Lee and Reeves [19] also suggest that Dale’s cone’s instructional design is specific and effective.

It seems more appropriate to start with algorithm education since preschool periods are early ages in terms of giving coding education, especially since they are illiterate. One of the methods that can be used in the tools to be designed for preschool students is gamification. Learning environments that benefit from gamification elements will help attract children’s attention as they will include game activities that they love. Integrating gamification dynamics into educational activities can be expressed as ‘gamification in education’. Making learning environments more enjoyable for children will also improve their attitudes towards future educational activities in a positive way. Making the process more useful and fun for children becomes possible with gamification. The people who will provide training are the teachers. The qualifications of teachers are very important. In this context, the opinions of future teacher candidates on gamification education are very important.

1.1 Purpose of the research

Gamification education is very important in the education of children in the preschool period. Education is effective when technology-supported education is given to illiterate children at this age. Education with gamification, one of the technology-supported trainings, has been a very effective technique in recent years. In achieving these goals, the perspectives of future preschool teacher candidates on gamification education are very important. In order to achieve this general purpose, answers were sought for the following sub-objectives:
1. What are the activities you have conducted in the computer lesson?
2. What do you think about technology supported education?
3. What are your views on education with gamification for preschool children?
4. What are the disadvantages of the training given by gamification.

2 Method

The aim of this research is to determine the opinions of the students of the preschool teaching department in the Faculty of Education of the university about the gamification subject they learned in the computer course. For this purpose, the qualitative research method was preferred as it allows explaining their views in depth. The research was designed in a phenomenological pattern, one of the qualitative research types. The phenomenological design is a qualitative research design that aims to highlight the perceptions and experiences of individuals according to their own perspectives (Ersoy, 2016).

2.1 Research group

The study group of the research consisted of the students of the preschool teaching department studying at the university. Maximum variation sampling was used in the sample selection of this study. The aim of the researcher in using this method was to reflect the differences of individuals who may be a party to the problem in a small sample group at the highest level [38]. A total of 30 students, who were selected on a voluntary basis and studying in the second year of the department of preschool teaching at the university, participated in the research. The personal information of the participants is given in Table 1.

Table 1. Demographic information

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
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<tbody>
<tr>
<td>Gender</td>
<td>Female</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>13</td>
</tr>
</tbody>
</table>

2.2 Data collection and analysis

Ethics committee approval was obtained from the universities included for the research in this study. Data were collected using a semi-structured interview form prepared by the researchers. After the interview questions were prepared, expert opinion was taken from four faculty members who completed their doctorate in computer science. A pilot application was conducted to measure the intelligibility of the questions. As a result of the interview, the form was given its final shape and four questions were included. The interviews carried out were recorded with a voice recorder. The answers were confirmed by the group participating in the research. It is explained in detail with the content analysis method.
3 Findings

3.1 Findings on the activities taught in the computer lesson

Table 2. Activities taught in the computer course

<table>
<thead>
<tr>
<th>Theme</th>
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<tbody>
<tr>
<td>Office programme applications</td>
<td>20</td>
</tr>
<tr>
<td>Gamification</td>
<td>18</td>
</tr>
<tr>
<td>Education with social media</td>
<td>4</td>
</tr>
<tr>
<td>Kahoot</td>
<td>4</td>
</tr>
</tbody>
</table>

It aimed to determine the opinions of the second-grade students studying in the department of preschool teaching at the university about the education they have carried out in the computer course. The subject of gamification, which is included in the education programme in the computer course, is very important. The students stated that they took office programmes and gamification training as an educational activity in the computer class. 20 students stated that they received the office programme, 18 students received the gamification programme, 4 students received the social media activities and 4 students received the Kahoot activity.

Opinions of some university students on the activities taught in the computer lesson:

“The applications we learned in the computer course will be very effective in our future professional life. There are many programmes used in education and I did not know about them. In the Office programme, homework can be given by adding pictures in the word programme and matching, and students can be trained by preparing beautiful slides in PowerPoint. With gamification education, illiterate students can be taught in an enjoyable and fun way. The applications learned in the computer course can also be used in the field courses”.

“Computer course is one of our common compulsory courses. As an activity, it is very important to teach us the programmes that we can use in the future. It should be added in the material design course or other technology supported courses. We learned about Office programmes. Gamification training was taught in accordance with our department”.

3.2 Findings on the opinions about technology-assisted education

Table 3. Opinions about technology-assisted education

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Adaptation to the developing age</td>
<td>18</td>
</tr>
<tr>
<td>Effective learning</td>
<td>8</td>
</tr>
<tr>
<td>Turning the abstract into concrete</td>
<td>8</td>
</tr>
<tr>
<td>Fun content</td>
<td>6</td>
</tr>
</tbody>
</table>
It aimed to determine the opinions of the second-grade students studying in the department of preschool teaching at the university about the place of technology in education. Students stated that technology-supported education adapts to the developing age, provides effective learning, offers entertaining content, teaches abstract concepts by transforming them into concrete concepts and provides entertaining content opportunities.

Opinions of some university students about technology-assisted education:
“Technology is in every aspect of our lives. Even the mobile phones we use are smart devices. I do not think of education without technology. The age is the digital age”.
“The place of technology in education is indisputable. If I am to speak more clearly, the trainings given with technology are more effective”.
“The most difficult concepts to learn in education are abstract concepts. It is the technology that presents this situation to us in the easiest way. Thanks to technology, we can enable learning by turning abstract concepts into concrete ones”.

3.3 Gamification in preschool children

<table>
<thead>
<tr>
<th>Findings related to gamification in the preschool period</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Supporting game-based pedagogy</td>
<td>16</td>
</tr>
<tr>
<td>Concretising abstract concepts</td>
<td>11</td>
</tr>
<tr>
<td>Attract attention</td>
<td>10</td>
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<tr>
<td>Increase motivation</td>
<td>5</td>
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</tbody>
</table>

It aimed to determine the opinions of the second-grade students studying in the preschool teaching department about the effectiveness of the gamification application on preschool children. Most of the students answered the question posed for this purpose stating that the use of gamification in the preschool period supports game-based pedagogy. In the same way, they stated that it is easier for them to learn by transforming abstract concepts into concrete concepts. Another opinion stated that it increases the motivation of the students by attracting the attention of the students.

Opinions of some university students on gamification in preschool:
“Gamification is an effective learning activity in every age group. It occupies an important place in the education of children, especially in the preschool period. It is very important in their pedagogical development.”
“Education with gamification is very enjoyable. It is very important to use especially in children who are in the age of play, that is, children who are illiterate. In this way, preschool children reach the goals to be taught through gamification more easily. Getting their attention is the most important thing. By attracting their attention, it is ensured that they learn by increasing their interest in the lesson”.
“Considering the individual characteristics of the students, gamification is an effective method for children in a certain age group to focus their attention and increase their motivation, for children who get bored very quickly and get distracted very quickly”.
3.4 Disadvantages of the gamification application

Table 5. Findings regarding the disadvantages of the gamification application

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</thead>
<tbody>
<tr>
<td>Difficulty determining content</td>
<td>19</td>
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<tr>
<td>Lack of design</td>
<td>8</td>
</tr>
<tr>
<td>Lack of material</td>
<td>7</td>
</tr>
<tr>
<td>Classroom control</td>
<td>5</td>
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</tbody>
</table>

It aimed to determine the opinions of the second-grade students studying in the preschool teaching department on the effectiveness of gamification in preschool children and their disadvantages. Most of the students stated that they may have difficulties in determining the appropriate content while preparing the gamification programme. While preparing the gamification activity, not having enough information during the design phase was identified as a disadvantage. Likewise, the students stated the lack of materials and classroom control as disadvantages.

Opinions of some university students on the disadvantages of the gamification application:

“Choosing appropriate materials is very important when preparing a gamification proposal. The content must be compatible with our goal. This task belongs to the teacher”.

“While preparing the gamification application, appropriate content should be selected according to the characteristics of the target group. It is very important to know the application while preparing the gamification design after the appropriate content selection”.

“The lack of materials, lack of equipment is a disadvantage when designing events. Likewise, the class is crowded and classroom control is difficult to maintain”.

4 Conclusion, discussion and suggestions

In this research, the pre-service teachers, who will be the future preschool teachers, were taught the gamification application in the computer lesson. Their views on gamification education were consulted. Today’s teachers are a valuable part of the innovative journey from chalk blackboards to touchscreen black screens, where new technology is introduced every day. In this journey, it is very beneficial for teachers and students to absorb and use up-to-date tools and methods without being limited to traditional education methods. It is very effective to provide education to illiterate children, especially in the preschool period, with technology. One of the technology-supported trainings is gamification. According to Kapp et al. (2014), gamification can be used to encourage and motivate students to progress on the way to the goal, to encourage innovative thinking, to create a new skill and to facilitate knowledge acquisition through repetition.
The subject of gamification, which is included in the education programme of the students studying in the department of preschool teaching at the university, is very important. The applications that the students learned in the computer lesson are office programmes, gamification, social media applications and Kahoot applications. It will be beneficial for students to include a technology course in addition to the computer course at the university. Giving practical training to students in the technology course will be very useful in terms of information.

University students stated that technology-supported education adapts to the developing age, provides effective learning, offers entertaining content, teaches abstract concepts by transforming them into concrete concepts and provides entertaining content opportunities. Studies show that gaming technologies have a direct impact on learning and enriching the educational environment in the new digital age. Hamari et al. [12] stated that badges are described as an effective learning tool that is widely used for gamification because of the often positive reviews that give people the feeling that they are in line with social norms and standards. When the gamification researches in the academic field are examined, it can be concluded that most studies do not have a theoretical principle and they are insufficient in this field. In addition, previous studies have addressed the current lack of theory in gamified instructional design and stated that training needs should be determined and training should be given and more studies should be carried out in order to discuss the theoretical foundations of gamification in education [18] [1].

It aimed to determine the opinions of the second-grade students studying in the preschool teaching department about the effectiveness of the gamification application in preschool children. The majority of university students concluded that gamification supports game-based pedagogy and improves students’ skills. It has also been concluded that gamification enables students to learn more easily by transforming abstract concepts into concrete ones. Another result of the importance of gamification is that it increases the motivation of the students by attracting the attention of the students [31]. Most of the gamification studies were based on SDT [27] [3] [10] [15] [33]. Kuo and Chuang [15] described the positive effects of gamification in an online context on the promotion of academic dissemination.

When the results of the findings of the second-grade students studying in the department of preschool teaching in the faculty of education at the university regarding the disadvantages of the gamification application in preschool children are examined, it can be concluded that most students will have difficulties in determining the appropriate content while preparing the gamification programme. While preparing the gamification activity, they stated that not having enough information during the design phase is a disadvantage. Likewise, it was concluded that students’ lack of materials and classroom control are disadvantages. It can be said that the disadvantages for gamification stem from the fact that students do not have enough knowledge. It can be suggested that education should be increased in order to increase technology knowledge and provide technology integration in education.
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6 References


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