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LEARNING FIRST AID WITH DIGITAL GAMES FOR PRIMARY SCHOOL STUDENTS

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Abstract:
First aid is the emergency response to a person injured due to an accident or illness, by the people at the scene until the paramedics arrive. First aid is a lifelong essential skill for people of all ages. For this reason, knowing first aid from a young age is very important in dealing with emergencies that may occur in both school and home life. In this study, digital health games were designed and implemented in a first-aid health area. The aim of this study is to examine the effects of digital health games developed on primary school students' first aid awareness. Throughout the study, a game was selected each week and played with the students. The study group consists of 12 primary school 4th-grade students. The criterion sampling model was adopted in the selection of the study group. In the research, a semi-structured interview was used as a data collection tool and content analysis was applied in the analysis of the data. It has been reached that the knowledge of the students about the definition of first aid and possible application situations, first aid kit and emergency ambulance number has increased after the implementation. As a result of the study, it was found that digital health games improved the first aid awareness of primary school students.

Keywords: first aid, awareness, digital health games, primary school

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1. Introduction

First aid is the emergency interventions made by the people at the scene until the paramedics arrive at a person injured due to an accident or illness (Alomari, 2011). First aid is a lifelong essential skill for people of all ages (Tse et al., 2022). For this reason, knowing first aid from an early age is very important in dealing with emergencies that may occur in both school and home life (Banfai et al., 2017).

It has been reached that most of the child deaths in the world occur due to the lack of knowledge and practice in emergencies and accidents. To prevent this situation; it is very important to teach first aid from an early age with a teaching style for today's children (Guardian, 2010). Digital health games have become health learning and teaching tools that appeal to many generations, especially the younger generation. Digital game-based learning is a pedagogical learning method based on using digital games to increase students' knowledge and support their cognitive development (Garcia et al., 2020). Digital games are not only for entertainment purposes but also today's tools used in many areas including health (Michael, 2006). Scenarios that are physically difficult or impossible to experience in real life can be created by digital games (Squire, 2003). The potential of digital health games has become important in health education and interventions. Therefore, it is used in awareness and interventions of physical, cognitive and psychological conditions and diseases (Graafland and Schijven, 2018). In the literature, there are studies in which digital health games for first aid education are designed and developed (Yang, 2018).

In a study by Chung and Chang (2017), a digital health game for first aid was developed. In the developed game, first aid scenarios were given and students were asked to act according to these scenarios. 100 4th-grade students participated in the study. As a result of the study, it was found that the students in the experimental group showed better results in first aid learning outcomes than the control group.

In a study by Rodriguez Benitez (2020), first aid training was provided to undergraduate students with digital games. In the study, emergency scenarios for digital games were modeled and integrated into the games. Undergraduate students performed by solving emergencies.

Carmen et al. (2020), digital game-based health interventions were developed for children with cancer. In the study, 11 various digital games were developed and game mechanisms were examined. Cancer education, which includes childhood cancer symptoms and treatments, was included in the digital games developed in the study. For this purpose, simulations such as role modeling and playing, perceiving and acting are included. In another study by Rebollo et al. (2021), a first-aid game was developed and its effectiveness was evaluated. It was stated that the first aid health game developed in the study facilitated the learning of first aid procedures in the participants (18-26 years age), and it has been reached that it provides a fun and attractive learning environment.

Lee et al. (2021), a digital game was developed with the help of the Google Jamboard application in learning first aid skills for adults. In the developed game,

emergency scenarios are given with simulations. In the study, it was found that student participation and the acceptability of the game were high.

In this study, unlike other studies in the literature, first aid content for primary school students was created and various digital health games were applied accordingly. In this direction, the research problem of the study is; "How is the effect of digital health games on primary school students' first aid awareness?" determined as. In this respect, it is expected to contribute to the literature.

2. Method

2.1 Study group

The study group consist of 12 primary students (9-10 years age). Of the primary students, 10 students are boys and 2 students are girls. The criterion sampling method was used in the selection of the study group. In this method, the sample is determined according to some screening methods determined by the researcher(s) before the study (Palinkas et al., 2015). In this study, it was taken into account that the students were 4th-grade students in primary school, were interested in digital games and were volunteers in the selection of the sample.

2.2 Data collection tools

Semi-structured interviews are semi-planned interviews to get the opinions of the participants on any topic. In these interviews, predetermined questions are asked and new questions can be added depending on the situation (Kallio et al., 2016). In the research, a semi-structured interview form was applied before and after the digital game experience. Interviews were conducted online between researchers and students for about half an hour with each student. The answers received during the interviews were recorded and analyzed.

2.3 Data analysis

Content analysis was used in the analysis of the qualitative data obtained in this study. The answers of the students were coded by the researchers, the codes of the percentage of agreement between the researchers was determined as 88%. The data obtained in content analysis is divided into meaningful parts in the form of specific codes, themes and categories (Harwood and Garry, 2003).

In this study, a long implementation was carried out with students to ensure validity and reliability. Expert opinion was taken in the development of the data collection tool used in the research. Data analysis was done by more than one researcher (Noble and Smith, 2015).

2.4 Setting

In the study children played a different digital game as two class hour (40 min + 40 min) for each week. When students gave not true answer while playing the game, they could

not complete the game successfully. They found the correct answers by discussing them with other friends, and if still not found, the researchers helped at this point.

2.5 Study process

In the digital games applied in the study, first aid definition, first aid kit materials, procedures to be done in emergency situations and emergency ambulance number information are included. There are first aid scenarios in all the games played and there are questions suitable for the scenarios. During the application, the students were asked to follow the instructions in accordance with the scenarios and answer the questions. The games were implemented for 15 weeks, with 2 lesson hours (40 minutes+40 minutes) per week. Each student played the games individually and shared their score. Feedback was given to students who could not progress to the next stage or lost because they did not know the first aid questions in the games. Images of one of the games are given below.

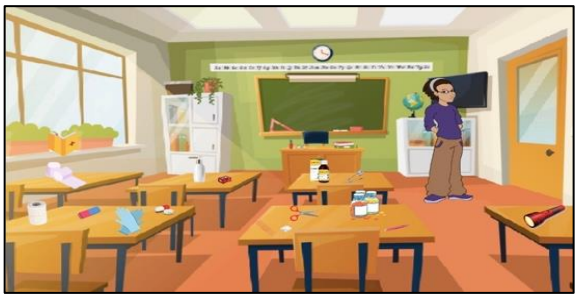

Figure 1: Preparing a first aid kit

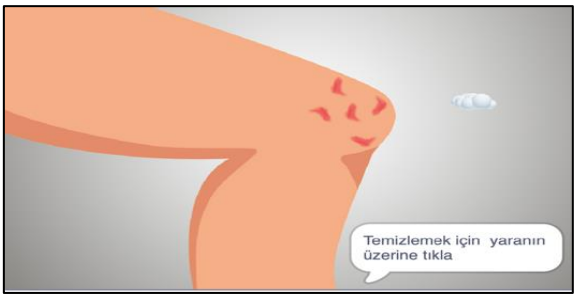

Figure 2: First aid for injuries

Figure 3: Emergency ambulance number

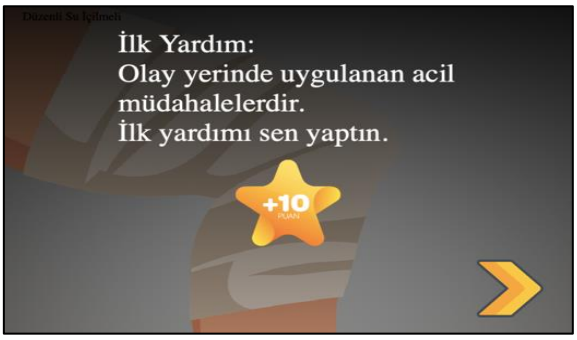

Figure 4: Definition of first aid

3. Results

The answers given by the students were given as codes before and after the implementation.

Question 1: What does first aid mean?

The answers given by the students to question 1 are given in Table 1.

Table 1: Students' codes question of "What does first aid mean?" in before and after implementation

Codes	Before	After
I do not know	S1, S2, S3, S4, S5, S6, S7, S8, S9, S10, S11, S12	
Correct answer*		S1, S2, S3, S4, S5, S6, S7, S8, S9, S10, S11, S12

(*): Application until the arrival of paramedics at the scene

When Table 1 is examined, the definition of first aid could not be given by the students before the implementation and all of the students gave the answer "I do not know". After the implementation, it was found that all of the students correctly defined first aid.

An example of a student answer before the implementation;

"I mean, I don't know, but if they tell me what to do, I guess I will do it." (S12, boy)

An example of a student's answer after the implementation;

"For example, if we know until the ambulance or the doctor or nurse arrives, we provide first aid. Thus, that person can be saved." (S4, boy)

Question 2: What is in the first aid kit?

The answers given by the students to question 2 are given in Table 2.

Table 2: Students' codes of the question of "What is in the first aid kit?" in before and after implementation

Codes	Before	After
Band-aid	S1,S3	S1, S3, S4, S5, S6, S9, S10, S11, S12
Medicine	S1, S4, S8, S11	
Scissors	S1, S3	S1, S2, S3, S4, S5, S6, S7, S8, S9, S10, S11, S12
Dry food	S2, S6	
Neddle	S5, S9, S11	
Stethoscope	S5, S9	
Whistle	S10, S12	
Bandage	S11	S1, S3, S4, S6, S7, S8, S9, S10, S11, S12
Safety pin		S1, S2, S5, S9, S12
Tweezers		S3, S4, S6, S7, S8, S10, S11
Gloves		S3, S4, S10
First aid book		S3, S4, S6, S8, S10
Solution		S2, S5, S7, S8, S10, S11, S12
Cotton		S3, S6, S8, S10

When Table 2 is examined, the question of "What is in the first aid kit?", most of the students gave an example of the wrong materials that were not in the bag before the

implementation. Also, most of the students answered the question "I don't know" before the implementation; all students replied “I know” and all of the students correctly stated the materials in the first aid bag after the implementation.

An example of a student answer before the implementation;

“Be prepared for emergencies. Our name and surname should be on the bag, and inside it may be water in a clean bottle or dry food.” (S2, boy)

Question 3: What should we do when we have injured or bled somewhere?

The answers given by the students to question 3 are given in Table 3.

Table 3: Students’ codes “What should we do when we have injured or bled somewhere?” in before and after implementation

Codes	Before	After
I do not know	S1, S2, S3, S4, S5, S6, S7, S8, S10	
Cleaning the wound		S1, S2, S3, S4, S6, S8, S9, S11, S12
Pressing with cotton		S1, S2, S4, S8
Using solution		S2, S3, S7, S10, S11, S12
Covering with bandaging		S1, S3, S4, S5, S6, S8, S9, S10, S12
Stopping bleeding		S4, S5, S7, S8, S10

As seen in Table 3, “What should we do when we have injured or bled somewhere?” The majority of the students could not answer the question "I do not know" before the implementation. All of the students talked about the correct first aid practices such as “stopping bleeding, using a solution, cleaning the wound, pressing with cotton, covering with a bandage” after the implementation.

An example of a student answer before the implementation;

“We should not worry, we should inform. My brother fell off the bike, his eyebrow was split. Our cousin was with us, he informed the relative. We went to the hospital.” (S11, boy)

Question 4: What should we do when we see an accident on the road?

The answers given by the students to question 4 are given in Table 4.

Table 4: Students’ codes question of “What should we do when we see an accident on the road?” in before and after implementation

Codes	Before	After
I do not know	S1, S2, S3, S4, S5, S7, S8, S9, S12	
We have to get it out of the car	S6	
We must give first aid	S10	
Take to hospital - try to calm down	S11	
I call 112*		S1, S2, S3, S4, S5, S6, S7, S8, S9, S10, S11, S12

I apply first aid		S1, S5, S7, S10, S11

(*)Emergency hotline in Turkey

An example of a student's answer after the implementation;

"If there is an accident on the road and I see it, first I call the emergency ambulance, 112. I give first aid with my current knowledge, if it's not enough, I don't do it." (S1, boy)

Question 5: What should we do if we feel something moving in our ears?

The answers given by the students to question 5 are given in Table 5.

Table 5: Students' codes question of "What should we do if we feel something moving in our ear?" in before and after implementation

Codes	Before	After
I do not know	S1, S3, S4, S5, S6, S7, S8, S10	
We have to go to the hospital	S2	
I try to remove	S9	
I will inform my father	S11	
Depends on what's gone	S12	
Go to the nearest health facility		S1, S2, S4, S5, S6, S7, S9, S10, S11, S12
Go to the hospital		S3,S8

When Table 5 is examined, "What should we do if we feel something moving in our ear?" Before the application, most of the students could not give any answer to the question. The answer given by the most after the application was "Go to the nearest health facility".

An example of a student's answer after the implementation;

"We should go to the nearest health facility to our home or where we are. A place where there are doctors and nurses like a hospital, like a health center." (S7, boy)

4. Conclusion

The present study aimed to examine the effects of digital health games on the first aid awareness of primary students. It has been reached that the knowledge of the students about the definition of first aid and possible application situations, first aid kit and emergency ambulance number has increased after the implementation. As a result of the study, digital health games improved the first aid awareness of elementary school students was reached. Similarly, in a study conducted by Chung and Chang (2017), it was found that digital health games developed for first aid had a positive effect on students' first aid learning. Likewise, in a study conducted by Rodriguez Benitez (2020), it was found that students performed well in first-aid training with digital games. In addition, the soft skills of the students were also positively affected. In the study, students' answers about being an example and guiding their environment in first aid indicate that there is an improvement in leadership, which is one of the soft skills. Similarly, in a study

conducted by Picka and Stuchlikova (2019), it was found that digital games improve the leadership skills of elementary school students. Other studies in the literature are also supportive (Sardone and Devlin-Scherer, 2010; Arpin, 2021). In the study of Cela-Ranilla et al. (2014), it is reached digital games develop teamwork skills. In this study, it has been found that first aid training can be given with digital games. In order to generalize the research, studies with other age groups can be carried out or longer periods can be preferred during the study period.

Conflict of Interest Statement

The authors declare no conflicts of interest.

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