Id: 1286989

Participatory Educational Research (PER)
Vol.10(5), pp. 64-80, September 2023
Available online at http://www.perjournal.com
ISSN: 2148-6123
http://dx.doi.org/10.17275/per.23.75.10.5

I Am Learning Destructive Natural Disasters: Technology-Enriched "My Hero Water Drop Activity"

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Article history
Received:
24.04.2023

Received in revised form:
10.06.2023

Accepted:
24.07.2023

Key words:
Technology-enriched activity; destructive natural disasters; web 2.0 tools

In this study, it is aimed to develop the technology - enriched "My Hero Water Drop" activity for use in synchronous distance education courses and to gather student opinions about this interactive activity. The activity focused on natural phenomena such as earthquakes, floods, volcanic eruptions, landslides, hurricanes and tornados, aiming to facilitate learning through research. In addition, the development of social skills such as cooperation within the group in order to get rewards is embedded in the activity, developing a sense of responsibility by sharing different tasks, and showing respect by waiting for the other team's turn when the turn passes were taken into consideration. The participants of the research were determined by convenience sampling, and the study was conducted with ten 5th-grade students (six girls, four boys) during five class hours. Following the implementation of the activity, semi-structured interviews were conducted with five students to evaluate their opinions on the activity. Descriptive analysis method was used in the analysis of the data. The results of the research indicated that the students found the technology - enriched "My Hero Water Drop" activity beneficial for learning about precautions against natural disasters, and they also expressed that the activity was enjoyable.

Introduction

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Natural disasters have a profound impact on communities, economies, and ecosystems worldwide, often causing devastating consequences that challenge our ability to respond and recover effectively. Preventing natural disasters and reducing their damage are among the issues that countries give importance and priority. The high level of awareness of the society to deal with disasters plays an active role in the society's coping with and preparing for disasters. Raising individuals with high awareness about destructive natural disasters will minimize the damage caused by these events (Chung & Yen, 2016). Therefore, it is vital that individuals gain knowledge and awareness at an early age about the natural disasters that they may encounter frequently in daily life. The subject of destructive natural disasters has been included in life science and science curricula from an early age (Ministry of National Education [MoNE], 2018a, 2018b; Next Generation Science Standards [NGSS], 2013).

Because of the Covid-19 epidemic, teaching was carried out largely through online education for a long time. Online education is carried out when conditions require. For example, after the earthquake in Türkiye on February 6, 2023, tens of thousands of people died, millions of people were left homeless, and many buildings were destroyed. And then, due to this natural disaster, campuses have been closed and online education decision was taken in the universities for a temporary period.

Without digital tools, it is inconceivable to envision how distance education would function. In addition to assisting students in developing their knowledge, abilities, and competences, digital technologies also make it easier for teachers to carry out their duties. Computers and other technological materials are also important part of students' lives outside of school today. Students prefer accessing information via computers and the internet to their teachers' explanations (Spires et al., 2008). All technologies used outside the classroom, including mobile phones and games, should be used in the classroom as a motivational tool for learning (Prensky, 2007). In this context, it is of great importance to include activities supported by digital applications, instead of traditional teaching methods and approaches such as lectures and question-answers, in order for students to realize meaningful learning about destructive natural events. Therefore, it was aimed to design a technology-enriched activity related to “Destructive Natural Disasters” in the science lesson and to examine the students' opinions about the designed activity. It is thought that this online interactive activity will guide practitioners in teaching destructive natural disasters and raising awareness about these disasters.

Theoretical Framework

Destructive Natural Disasters

Natural disasters are natural events that occur spontaneously and cannot be prevented, such as earthquakes, volcanic eruptions, and landslides (Benzer & Arpalık, 2021). According to The Centre for Research on the Epidemiology of Disasters (CRED) (2015), meeting two or more of the following four criteria is sufficient to classify a natural event as a natural disaster: (1) 10 or more people reported killed, (2) 100 or more people reported affected, (3) declaration of a state of emergency, (4) call for international assistance.

Although destructive natural disasters are not preventable or controllable events, they are major physical, social and economic events that can be mitigated by measures to be taken and educating the society. Therefore, it is important to provide students with the precautions to be taken before, during and after natural disasters at a young age and to provide training on what can be done in the face of such events. Considering that individuals are involved with technology from an early age and the advantages of technology-assisted teaching are taken into

account, the first thing that comes to mind at this point is the use of instructional technologies in the teaching of natural disasters.

Using technology in education

Digital natives, who were born at the time of the fastest development of digitalization, are expressed as individuals who recognize, know, actively use and enjoy using digital media tools (Prensky, 2001). Traditional education methods do not meet the needs of the digital natives. With the rapid development in technology, there have been changes in the field of education in terms of accessing and sharing information, and producing new information. Technology-Enriched Learning and Teaching (TELT) has emerged as a powerful approach to enhance educational experiences and outcomes. Advanced technologies such as Web 2.0, mobile learning and interactive surfaces have offered new opportunities and conveniences for learning (Bishop & Elen, 2014).

Technology use in educational settings has several beneficial effects. It is known that modern technology, if used correctly, increases the interaction between students and facilitates learning. In particular, the inclusion of visual expressions in the teaching process makes the teaching of concepts more understandable and enjoyable (Raja & Nagasubramani, 2018). Technology application in education is gaining more importance day by day and especially the use of web 2.0 tools that offer a cooperative learning environment comes to the fore.

Web 2.0 technologies for learning

Web 2.0 tools allow users to access information interactively, sharing of information, to establish a collaborative working environment, to store content, to evaluate information and make information visual (Ajjan & Hartshorne, 2008). Moreover, web 2.0 tools allow meaningful learning to take place, students to actively participate in the lesson, produce new content, publish and share content, and socialize with established communication and cooperation (El Mhouti et al., 2017). There are many web 2.0 tools that are free and easy to use. In addition to web 2.0 tools specially developed for education, many other web 2.0 tools such as Facebook, Twitter and YouTube are also used in education (Avcı Yücel, 2017; Dewitt et al., 2015).

Considering the contribution of Web 2.0 tools to the learning process, in the current study, Baamboozle, Padlet and MindMeister web 2.0 tools were used as well as PowerPoint, YouTube and Google forms that can provide teacher-student, student-student and student-technology interaction. These tools are chosen because they are free, easy to use, and suitable for cooperative learning. It is clear from the literature that tools like Baamboozle, Padlet, and MindMeister are frequently employed in studies pertaining to language instruction (Alimova, 2023; Chen, 2022; İnal & Arslanbaş, 2021). It is anticipated that these applications will also be helpful in teaching a variety of disciplines, keeping in mind that applications that put the student at the center and support active learning should be employed in online education.

The importance and purpose of the study

Although it is included in the curriculum, there are limited studies on the subject of destructive natural disasters in the literature. Some of these studies were carried out with high school students (Cvetković & Stanišić, 2015; Duman, 2018; Pınar, 2017), preservice teachers (Bozyiğit & Kaya 2017; Karakuş, 2019; Tekin, 2020), and teachers (Gutierrez et al., 2002). In studies conducted with middle school students on destructive natural disasters, generally, students' knowledge levels about these natural disasters (Kıvrak, 2019; Santos-Reyes et al., 2017; Uzunyol, 2013) and their misconceptions (Dereli 2019; Gençoğlu, 2019; Solmaz &

Kaymak, 2012; Tokcan & Yiter, 2017; Turan & Kartal, 2012) were tried to be determined. Uzunyol (2013) determined that 8th grade students have the most knowledge about flood and the least about landslide. Studies show that secondary school students misidentify the concept of disaster (Dikmenli & Gafa, 2017) and have misconceptions about natural disasters (Gençoğlu, 2019; Solmaz & Kaymak, 2012; Tokcan & Yiter, 2017; Turan & Kartal, 2012). Turan and Kartal (2012) stated that 5th grade students have misconceptions about the concepts of landslide and erosion. Similarly, as a result of the research they conducted with 6th grade students, Solmaz and Kaymak (2012) concluded that they have misconceptions about flood. Ursavaş (2016) determined that the awareness of the students about natural disasters is insufficient as a result of the large sample study they conducted with 8th grade students. Based on the findings of the aforementioned studies, it is concluded that the subject of destructive natural events is not sufficiently understood. This situation suggests that the teaching methods and techniques used in the teaching of natural disasters in the courses may be insufficient. As a matter of fact, most of the science teachers stated that they found the curriculum on natural disaster teaching inadequate and stated that they thought the subject should be taught with activities (Buluş Kırıkkaya et al., 2011). Effectively learning about natural disasters will create awareness in students and will make future adults aware of natural disasters (Benzer & Arpalık, 2021). It is predicted that this will help to minimize the damages that may arise from natural disasters in the long term.

In the related literature, it is seen that different teaching methods and techniques such as case study method, storytelling and flipped education model are generally used in the teaching of natural disasters (Altundaş, 2019; Fırat, 2019; Karagöz, 2019). Kısa (2019) in his research examining the activities on natural disasters in social studies textbooks, concluded that there are activities to consolidate knowledge in the textbooks, and stated that the activities that enable students to actively participate in the lesson are not included enough. In addition, Kısa (2019) suggested that teachers should deal with natural disasters in their lessons by making use of current technologies, in a fun way and by making students active. Şahan (2019) found that using simulation in disaster education supports middle school students' learning of disaster topics. Additionally, Doğan and Koç (2017) found that incorporating digital games into social studies courses while teaching earthquake subjects positively impacts students' academic achievement. These studies highlight the potential benefits of leveraging technology and interactive methods in education, particularly in the context of natural disaster-related topics, to enhance students' understanding and academic performance. By integrating TELT principles with Web 2.0 tools and interactive activity, educators can create immersive learning experiences that foster active exploration, critical thinking, and collaboration among students. In the context of TELT, this article aims to explore the potential of using the activity designed with Web 2.0 tools in science classrooms, especially in addressing multifaceted issues related to natural disasters. The research question of the study is determined as:

- What are the opinions of the fifth grade students about the technology-enriched activity "My Hero Water Drop"?

Method

In the study, case study design from qualitative research methods was used. In the case study, the current situation is examined and defined in depth through observations, interviews, documents and/or reports carried out in a certain period (Merriam & Tisdell, 2015). In this context, single-case holistic research design was used to examine the students' opinions about the activity in the present study. A single-case holistic study aims to present a thorough and in-

depth analysis of the case as a whole, without segmenting it into subunits or subcases (Yin, 2009).

Participants

The activity was carried out with ten fifth grade students in a middle school where one of the researchers worked. The participants of the research was determined by convenience sampling, which is one of the purposeful sampling methods. In this sampling, the researcher selects individuals or groups that are easy to access (Fraenkel et al., 2012). In this framework, the participants of the research consists of five students (3 girls, 2 boys) who were attending a public school with low socio-economic level. One of the students is 12 years old, and four students are 11 years old. While examining the data, student names were coded as S1, S2, S3, S4 and S5 in order to keep students' personal information confidential.

Data Collection Tool

In the study, seven open-ended questions adapted from the study of Şahin Çakır et al. (2020) were used to determine students' opinions on the activity "My Hero is Water Drop". The interview questions are presented in Appendix 1. The questions were examined in terms of content validity and rearranged by taking the opinions of two science education experts. As a result of the expert feedback, the question "Was there anything that you thought difficult in the activity?" was reorganized as "What are the natural disasters that you have difficulty in learning in the activity?"

The interviews were conducted online using the Zoom program and were recorded with the consent of the participants. Each interview lasted approximately 10 minutes.

My Hero Water Drop Event: Content and Implementation Stages

In this study, an activity enriched with technology for the subject of "Destructive Natural Disasters", which can be applied in the classroom or online, has been developed and implemented. While designing the activity, the learning outcomes in the subject of "Destructive Natural Disasters" in the subject area of "Living Things and Life" of the "Human and Environment" unit in the science curriculum were taken into account. In the activity, attention was paid to the fact that the students were able to do research, learn meaningfully about destructive natural events, and have fun during the lesson.

Table 1. Learning outcomes related to destructive natural events

Grade level	Unit	Subject	Learning outcomes
5	Human and Environment	Destructive Natural Disasters	F.5.6.3.1. Explain the destructive natural disasters caused by natural processes.
			F.5.6.3.2. Express the ways of protection from destructive natural disasters.

The activity was developed by the authors of this study in line with the two learning outcomes in Table 1. Before the implementation of the activity, two science education experts and two science teachers were evaluated the activity considering the criteria for content validity, applicability and compatibility with the student level. As a result of the evaluation, the activity was finalized. "My Hero Water Drop" activity consists of 13 stages. The recommended time for the activity is five lesson hours (200 minutes). Information about the content, duration, rules and purpose of each stage of the activity is given in Appendix 2. Students took an active part in every stage of the activity. They conducted various researches in each stage of the activity.

Care was taken to ensure that the students carried out group work in the form of cooperative group work.

Stage 1

In the first stage, the hero of the activity “water drop” was introduced to the students with a remarkable story. Then, by giving brief information about the “water drop” activity, it was aimed to increase the motivation of the students towards the activity. An example of the visuals used in the introduction stage of the activity is given in Figure 1.

Figure 1. An example of the visuals used at the entrance stage of the activity

Stage 2

In the second stage, students were divided into two groups and included in the activity in order to improve their collaborative working skills. Considering the academic achievements of the students, attention was paid to show a heterogeneous distribution within the groups and a homogeneous distribution among the groups. In addition, in order to provide group motivation, students were asked to name their groups.

Stage 3

The "My Hero Water Drop" activity was held in the Zoom environment in the form of simultaneous online education. By using the breakout rooms feature in the Zoom environment, it is aimed for students to perform group competitions independently of each other. During the activity, five stars that students can earn as a group and three badges that they can earn individually were created. While it is aimed to increase group work and cooperation between students in the awards won as a team, it is aimed to increase the competition among students and to research the subject they will learn in more detail in the individual awards. Before starting the activity, the students were told about the awards. However, what they won as a result of the award was shown after the activity ended. In this way, it is aimed to increase the curiosity of the students and to be constantly involved in the activity.

Stage 4

In the fourth stage of the activity, it was aimed to determine the students' prior knowledge about the subject. For this purpose, “What comes to your mind when you say destructive natural disasters?” question was asked. Students shared the concepts that came to their minds in the MindMeister which is a word cloud application. In line with the answers of the students, the word cloud in Figure 2 emerged. At this stage, the concepts that emerged in the word cloud were discussed, and the concepts were brainstormed in line with the students' prior knowledge.

Figure 2. Word cloud created by the students on natural disasters

Stage 5

At this stage, the students were asked to do research on the subject of "earthquake", which was discussed within the scope of "Destructive Natural Disasters", and to write an informative story about the earthquake for their peers. 15 minutes were given for these studies. The students carried out their story writing activities in cooperation with the Google documents prepared by the researchers in advance. The students were asked to reveal what they knew about the earthquake during the activity. Afterwards, the students were informed that their activities would be evaluated by another group. In this way, it was aimed to increase students' interest in the activity, and to search more information by acting with a sense of competition. At this stage of the activity, the students conducted research as a team in the breakout rooms related to the earthquake. Students were warned every five minutes to complete the activities within the required time. One of the researchers visited the rooms during the time and tried to answer the questions of the students (“Teacher, should there be a flashlight in the earthquake bag?”, “Where should the earthquake bag be stored?” etc.).

At the end of the determined time, the researcher closed the breakout rooms and moved all students to the main room. Then, the students shared their stories they prepared as a group with their peers. Each group evaluated the strengths and weaknesses of their peers' stories. This stage was completed by awarding the stars to the group who has the most strength story.

Stage 6

At this stage, the experiment video titled “How a Volcano-Volcano Explosion Occurs” (URL-1) on the subject of volcanic eruption, which was discussed within the scope of destructive natural disasters, was shared with the students. After watching the video, students were asked to share their research results on the digital board "Padlet" by conducting research on the concept for five minutes. While creating the padlet, a separate section was prepared for each group. The group that shared the most correct information in these sections became the owner of the star.

Figure 3. Screenshots of student posts on the padlet regarding the concept of volcanic eruption (URL-1)

In Figure 3, there is a screenshot of the digital board where the students share their research results on the concept of volcanic eruptions. As seen in Figure 3, the students included how the volcanic eruption occurred, images related to volcanic eruptions, and the regions where volcanic eruptions could occur.

Stage 7

After giving the star to the group members, the students were asked to research the volcanoes on Earth and write the names of the volcanoes they found in the Google form web 2.0 tool prepared by the researcher. In this stage, the student who shared the most correct information was given a badge. In this way, it is aimed that students have an idea about the volcanic mountains in the world. As a result of their research, the students included “Mount Kilimanjaro, Mount Etna, Volcano Hekla, Virunga Mountain and Mauna Loa Mountain" in the Google form.

Stage 8

At this stage, within the scope of destructive natural disasters, a definition was given as “Sudden, irregular, large floods that cover the soil are called as ..... .”, and the students were asked to which concept this definition belonged. Upon the correct answer “flood” from the students, the game prepared with the Baamboozle web 2.0 tool was played by the students in groups and the winning group became the owner of the star. The screenshot of the game is given in Figure 4.

Figure 4. Screenshot of the game prepared in Baamboozle

In the “Baamboozle” application; The students were asked questions about the concepts of earthquake, volcanic eruption and flood. In this way, the concepts that students learned during the activity were reinforced. At the end of the activity, a discussion was held with the students on the concept of flood. What should be done to be protected from floods was discussed with the students, and the precautions to be taken to protect themselves from floods, which are a natural disaster, were mentioned.

Stage 9

At this stage, a word puzzle was created on the subject of "landslide" within the scope of "Destructive Natural Disasters". Students were asked to compete individually and find the natural phenomenon in the word puzzle. The created word puzzle is in Figure 5. In this section, the first student to solve the puzzle with the chat feature in the Zoom environment was determined. The winning student was awarded a badge. At the end of the activity, visuals related to the landslide were shown to the students, and the precautions to be taken for the landslide and what to do during and after the landslide were discussed in the classroom environment.

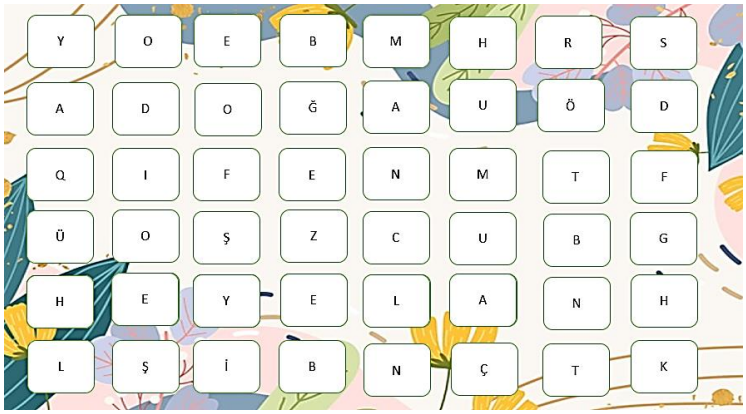

Figure 5. Screenshot of the word puzzle prepared for the concept of landslide

Students find the word “landslide” in the word puzzle (Figure 5). Afterwards, a talk was held in the classroom about the landslide. Students' ideas about the landslide were discussed.

Stage 10

As the fifth topic, a video about the hurricane, was watched named “The most destructive and most intriguing natural disaster: Hurricane.” (URL-2). After watching the video, a brainstorming was made about the hurricane and the students' ideas were taken, and then brief information about the hurricane was given. In this section, the question in the video "What is the name of the hurricane that took place in the United States in 2005?" was asked. The student who gave the first correct answer was given a badge. In this way, it is aimed that the students watch the video carefully. The badge here has a different feature. With this feature, the student will go to the opposing team for five minutes in the next section chosen and will be able to learn what they are doing.

Stage 11

For the last topic, the "tornado" natural disaster, the students were asked to prepare a poster in the digital board Padlet environment, and the students were given 10 minutes for this. Students were informed that another group would evaluate their posters. In this way, it is aimed that students learn the concept of tornado. Padlet boards were prepared by the researcher separately for both groups in advance. The students were assigned to the breakout rooms by the

researcher. The related Padlet links have been shared with groups. The students added the information they obtained about the concept of tornado to the board.

Figure 6. Screenshot of the poster prepared by the students in Padlet

As it is seen in Figure 6, the students enriched the poster they prepared about tornado on the digital board by including images and videos. By making the content pre pared in the Padlet open to interaction, students were enabled to communicate. At the end of the time, the researcher combined the groups. Students discussed the concept of tornado by stating the strengths and weaknesses of their peers' posters.

Stage 12

Finally, related to all natural events, one group was asked to make a show and the other group to write a story within 20 minutes. The presentation prepared by the researcher is given in Figure 7. This activity aims to enable students to present all natural disasters together, to reinforce their understanding of the subject, and to enable them to conduct research on concepts. At this stage, the groups were provided to evaluate each other and give feedback. The students were sent to the breakout rooms in groups by the researcher and their time were started. Students were given the opportunity to do new research within the specified time. In addition to the information, they learned during the entire activity, they expanded their information network by conducting new research. At the end of the determined time, student groups were moved to the main room and presented the research results to each other. At the end of the activity, the groups evaluated each other and the winning group was given a star.

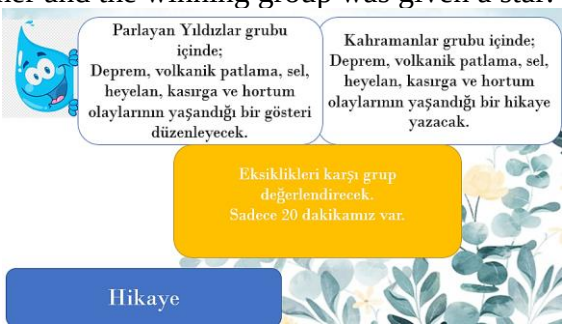

Figure 7. A part of the presentation prepared by the researcher

Stage 13

At the end of the activity, the meanings of the stars and badges were presented to the students using the visual in Figure 8. Since it is an online education activity, the rewards in this game were determined as points and book gifts. The activity was concluded by giving rewards to the students.

Figure 8. Table showing the rewards

Data analysis

In this research, which was carried out to determine the opinions of the participants about the activity, the analysis of the data was carried out with descriptive analysis. Descriptive analysis is defined as describing the data and explaining the descriptions (Merriam & Tisdell, 2015). Before the data analysis, the audio recordings of the interviews were transferred to the computer and were transcribed verbatim. After the data set was created according to the order of the items, first they were read sentence by sentence and the codes were determined. Themes were created by combining the codes.

Trustworthiness

Credibility, reliability, confirmability, and transferability are the standards for trustworthiness in qualitative research (Guba & Lincoln, 1982). To ensure credibility in a qualitative study, it is advised to mention one or more of these four criteria (Creswell & Creswell, 2017). In order to ensure a thorough description that enables a reader to go beyond the presentation of specific facts to true knowledge, the findings were supported with direct quotations in terms of transferability. The first researcher spent a considerable amount of time interacting with the participants, and a member-checking system was conducted to help ensure the credibility of the findings. In order to ensure reliability data obtained from the interviews were independently analyzed by two researchers. Then, the results of the two analyses were read in detail and the general codes were determined. Respondent validation was also employed to increase confirmability of the findings.

Findings

The students' opinions on the "My Hero Water Drop" activity were evaluated within the scope of five themes: Emotion, learning, positive aspects of the activity, difficulties encountered and suggestions (Table 2).

Table 2. Themes and codes obtained from the students' opinions on the activity "My Hero Water Drop" and examples of quotations

Theme	Code	Students	f	Quote examples
Emotion	Fun	S1, S2, S3, S4	4	*"I found the activity fun and instructive"* (S3)
	Excitement	S2, S3	2	*"The activity was good and exciting"* (S2)
	Liking	S1, S2	2	*"Obviously I liked the activity."* (S2)
	Happiness	S5	1	*"I felt happy at the activity."* (S5)
	Fear	S5	1	*"I thought I might answer questions I don't know wrong; I was a little afraid."* (S5)
Learning	Learning about natural disasters	S1, S2, S3, S4, S5	5	*"I learned new information about natural disasters."* (S4)

	Learning ways to protect against natural disasters	S1, S3, S4, S5	4	*"...I learned how to protect ourselves from natural disasters."* (S1)
	Ascertain	S5	1	*"I learned the correct answers from my wrong answers."* (S5)
Positive aspects of the activity	Being instructive	S1, S2, S3, S4, S5	5	*"We learned how natural disasters occur, such as hurricanes, tornadoes, floods. We learned how to take precautions."* (S3)
	Increasing the communication	S2, S5	2	*"While I was performing, I shared information with my friends."* (S5)
	Having a good flow of activity	S2	1	*"The flow of the activity was good."* (S2)
Difficulties encountered	Writing a story using Google form	S2	1	*"It seemed a little long for me to write a story."* (S2)
	Lack of information	S5	1	*"I had a hard time with questions that I didn't know."* (S5)
Suggestions		S1	1	*"Technology-enriched activities can also be carried out in other courses."* (S1)

As seen in Table 2, there are five codes in the emotion theme: Fun (f=4), excitement (f=2), liking (f=2), happiness (f=1) and fear (f=1). One of the participants, S3, expressed their feelings about the activity as "I found the activity fun and instructive." There are three codes under the learning theme: Learning about natural disasters (f=5), learning ways to protect against natural disasters (f=4) and ascertain (f=1). S1 expressed her thoughts as "…I learned how to protect ourselves from natural disasters." There are three codes under the theme of positive aspects of the activity. These are being instructive (f=5), increasing communication (f=2) and having a good flow of activity (f=1). In the code of being instructive for the positive aspects of the activity, student S3 said, "We learned how natural disasters occur, such as hurricanes, tornadoes, floods. We learned how to take precautions."

Students did not report any negative opinions about the activity. However, there are two codes in the theme of difficulties encountered: Writing a story using Google form (f=1) and lack of information (f=1). While S5 stated that she had difficulty with questions she did not know, S2 stated that it took a very long time to write a story in Google form. In the theme of suggestions, S1 stated that activities enriched with technology can be carried out in other lessons as well.

Conclusion and Discussion

In this study, it is aimed to develop the "My Hero Water Drop" activity, which can also be used in synchronous learning, and to examine the opinions of 5th grade students about this activity. In this study, it is aimed to develop the "My Hero Water Drop" activity, which can also be used in synchronous online education lessons, and to examine the opinions of 5th grade students about this activity. While designing the activity, it was aimed that the students learn about all natural disasters. In the interviews, the students' expressing that they learned the subject through the activities carried out supported the aims of the activity. This result is similar to the results of the related literature (Karaca et al., 2021; Varinlioğlu et al., 2022).

With the activity developed in the study, it is aimed not only to improve students' cognitive skills, but also to develop 21st century skills such as cooperation, communication, creativity and technology literacy. In this sense, the development of social skills such as the students' cooperation within the group in order to win the rewards included in the activity, the development of their sense of responsibility by sharing different tasks, and the team's waiting for their turn and respecting the other teams when it is the turn of the opposing team were taken into consideration. As a matter of fact, according to the findings obtained from the interview,

the participants stated that the activity was instructive and increased the communication between them. In parallel with this finding, it has been stated in the literature that many web 2.0 technologies, especially Baamboozle, Padlet and MindMeister, improve communication, collaboration and creative thinking skills by supporting active learning (Ajjan & Hartshorne, 2008; İnal & Arslanbaş, 2021; Ünal, 2021).

As a result of the research, it was determined that the 5th grade students learned the concepts in the subject of "Destructive Natural Events" by having fun as a result of the application of the designed "My Hero Water Drop" activity. Parallel to this finding, studies carried out in the literature also emphasize that science lessons become more enjoyable with educational activities (Karaca et al., 2021; Varinlioğlu et al., 2022). In addition, in studies involving activities supported by web 2.0 tools in online education, it was concluded that the participants found the lessons taught with these applications enjoyable (Chen, 2022; Efe & Umdu Topsakal, 2021).

Students did not report any negative opinion about the activity. However, one student stated that s/he had difficulty in writing a story using a Google form, and another student stated that s/he had difficulty in answering questions s/he did not know.

It was concluded that the "My Hero Water Drop" activity, which was designed on the subject of "Destructive Natural Events" of the "Human and Environment" unit, is an applicable activity as a result of student opinions. Activities designed in this way make it easier for students to learn (Karaca et al., 2021; Karamustafaoğlu & Yurtyapan, 2016; Varinlioğlu et al., 2022). As a result, it is thought that the activity designed in this research will contribute positively to the teaching of the concepts in the topic of "Destructive Natural Events".

Suggestions

Based on the research findings, the following suggestions can be put forth:

(1) The current research was conducted with 10 students in two groups. It is also possible to increase the students and groups.
(2) It is possible to change the durations of the show and story elements of the activity (stage 12) in accordance with the students' performance.
(3) The activity was conducted through online education during the pandemic period. It can also be implemented face-to-face in the school environment.
(4) Experimental studies can be conducted to determine the effects of the activity on different variables such as academic achievement and long-term retention of knowledge.

Limitations

In this research, fifth grade students were studied. The effectiveness of this technology-enriched interactive activity can also be examined at different grade levels. In this context, the inclusion of students from different grades in studies can enrich the research and also provide different results. Similarly, the technology-enriched activities used in the study were carried out remotely using web 2.0 tools. The different effects of technology-enriched activities carried out face-to-face can also be discussed.

Ethical Approval: The ethics committee permission required for the study was approved by the Erciyes University Social and Human Sciences Ethics Committee *with issue date and*

number 31 /X08/2021-36. All the participants were informed about the research purpose and activity. The manuscript has not been submitted to elsewhere other than Participatory Educational Research.

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