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## Social Studies Pre-service Teachers' Educational Comics Experience for Disaster Education

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### Abstract

The aim of the study is to reveal the experiences of social studies pre-service teachers on the use of educational comics in the teaching of subjects related to disaster education. Phenomenology design, one of the qualitative research methods, was used in the research. 30 social studies teacher candidates participated in the research. Pre-service teachers who participated in the research were given disaster education during one semester (12 week-2 hours). This education process also includes creating and using educational comics in disaster education. In the study, semi-structured interview and observation were used as data collection method. Thematic analysis was used in the analysis of the data obtained in the research. As a result, it has been revealed that social studies pre-service teachers see educational comics as a material that can be used in disaster education in line with their experiences. The pre-service teachers stated that educational comics is attracting attention, engaging participation, making it easier to understand. Pre-service teachers stated that educational comics contain limited information, and takes time to create and use.

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### Introduction

Nature offers many opportunities for human life. In addition, some natural events may pose a threat to humans. Threats posed by natural events should not be interpreted as disasters on their own. For example, natural events such as earthquakes, floods, and storms do not have the characteristics of a disaster by themselves. However, the fact that people are unprepared for the effects of these natural events, that is, they take risks, creates the possibility of disaster. We can deduce the following conclusion from this: While the same natural event does not have the characteristics of a disaster for a prepared society, it may create a disaster for an unprepared society. This shows the importance of being prepared for disasters. Natural events that create disaster situations usually occur suddenly, often cannot be stopped after they have started, and can cause great loss of life and property (Fuhrmann, et al., 2008; Kirikkaya, Unver & Cakin, 2011). In a disaster event, not only the people in the disaster area but also the society, in general, are adversely affected (Celik & Gundogdu, 2022). However, although the hazards are inevitable, it is possible to reduce the risks related to them with conscious and continuous intervention (Petal, 2008).

The importance given to natural or man-made disasters may vary according to a country's geographical, political

and economic conditions. However, many countries have started to give more importance to disaster preparedness studies. Because developing strategies to cope with disasters has become a necessity for the protection and development of countries (Kitagawa, 2015; Sakurai, et. al., 2017). Education is one of these strategies. With disaster education, the capacity of societies to cope with disasters can be increased. Thus, social and economic losses are reduced and recovery is accelerated after adverse situations (Chou, et al., 2015).

The purpose of disaster education is to increase people's resilience to disasters and help them to be prepared for disasters (Ronan & Towers, 2014). Training to be provided within the scope of disaster preparedness reduces the vulnerability of individuals and societies with direct and indirect contributions and provides a more sustainable future (Cvetković, 2015; Johnson, et al., 2016; Kirikkaya, Unver & Cakin, 2011; Monter & Otto, 2018). Disaster education is also necessary for disaster risk management to be sustainable (Asharose et al., 2015). Disaster education affects knowledge, awareness, risk perception, and disaster preparedness about disasters (Adiyoso & Kanegae, 2012; Nikolarazi, 2021).

As the frequency of disasters and the damage caused by them increase worldwide, the tendency for disaster education has increased (Siriwardena, et al., 2013). Because in case of disaster, educated individuals are the most powerful factor in coping with the consequences of the disaster (Takeuchi, Mulyasari & Shaw, 2011). To achieve the objectives aimed at disaster education, information about disasters should be given at the appropriate time, correctly, and with effective teaching activities (Mizrak, 2018). With school-based disaster education, society can be strengthened against disasters (Tatebe & Mutch, 2015; Zhu & Zhang, 2017; Celik & Gundogdu, 2022). Schools, and therefore teachers, are important factors in enabling students to cope with disasters. In addition, teachers are very effective in increasing public awareness and preparedness for disasters and disseminating accurate information (Adiyoso & Kanegae, 2012).

Disaster education should start from an early age. For this reason, the subjects related to disaster education in the curriculum of primary education courses should be seen as an opportunity. The correct use of this opportunity is related to the competence of teachers in disaster education (Çelik & Gündoğdu, 2022). For this reason, pre-service teacher should be informed about disaster education and they should be trained on teaching materials that they can use while teaching this knowledge to someone else.

It is expected that a teaching activity should be suitable for the level of the student, be interesting, facilitate learning, create permanent learning, be economical and easily accessible. Educational comics are among the teaching materials that can be used in line with these needs. Because studies in different fields reveal that educational comics make a positive contribution to attracting students' attention (Astuti, Kismini & Prasetyo, 2014; Topkaya & Şimşek, 2016; Weitkamp & Burnet, 2007), facilitating learning (Celik & İlhan, 2021; Cicek Senturk, 2020; Mamola, 2019; Senturk, 2021), and increasing the permanence of what has been learned (Senturk, 2022; Themelis & Sime, 2020). In addition, educational comics are relatively easily accessible and economical materials with the opportunities offered by today's technology (Akcanca, 2020; Affeldt, Meinhardt, & Eilks, 2018).

It is thought that learning processes that can be personalized and allow discovery can increase success within the

scope of disaster education (Sharpe & Kelman, 2011). Educational comics allow the learner to organize their learning process with the opportunities they offer in the learning process (Senturk, 2021). Dale (1969) proposes to live a real experience or model a real situation in the Cone of Experience for permanent learning.

However, the content of the training or the training environments may make it difficult to meet these recommendations. Educational comics offer opportunities in Dale's cone of life that appeal to almost every recollection level. It can offer learning opportunities by reading or listening, respectively, from the lowest recall level to the highest. Educational comics can contribute to the learning process by visualizing the message to be conveyed. In addition, the scenario in the educational comics can be animated and the opportunity to learn by doing, that is, by creating an experience.

Educational comics can be a powerful supplementary actor in the educational process (Berkowitz & Packer, 2001; Cimermanová, 2015; Rajendra, 2015). Educational comics must meet two basic pedagogical principles to support the educational process. The first of these is to be interesting and the second is to establish a solid connection with real life (Toh et al., 2016). These bring some responsibilities in the use of educational comics. Because educational comics have some limitations in terms of their structure as well as the contributions they can provide to the educational process. The limitations of written expression are among the first examples that can be given here (Topkaya & Yilar, 2015). In addition, teachers may see producing educational comics suitable for the subject as an extra burden (Karagoz, 2018).

Examination of pre-service teachers' experiences with educational comics can offer important clues for the effective use of educational comics. Therefore, in this study, the experiences of social studies pre-service teachers on the use of educational comics in disaster education were examined. In this context, the research questions of the study are as follows:

- What are the opinions of social studies pre-service teachers about disaster education with educational comics?
- What is the experience of social studies pre-service teachers in preparing educational comics?

## **Method**

### **Research Pattern**

Qualitative research is the research in which data collection techniques such as observation, interview and document analysis are used, unlike traditional data collection methods (Best & Kahn, 2017, s. 258; Yildirim & Simsek, 2008). Qualitative research allows researchers to explore social issues without relying on numbers (Aslan & Guzel, 2018). Phenomenology is one of the types of qualitative research used to arrive at the basic structure underlying experience (Merriam, 2018). In the phenomenology design, it is important that the participants in the study have direct experience about the study subject (Patton, 2014, s. 104). In this study, phenomenology design was used to describe the views of social studies pre-service teachers on the use of educational comics in disaster education and to explain their experiences in the process with their expression.

## **Data Collection**

Observation and interview, which are among the qualitative data collection methods, were used in this study. Before the interview questions were formed, the literature was examined. For the questions prepared, the opinions of two field experts, whose fields of expertise are social studies education and educational comics, were taken. Pilot interviews were conducted with the interview form shaped in line with the opinions of the experts. The interview form, which was finalized as a result of this process, was used as a data collection tool. The interviews lasted approximately 30-35 minutes. The interviews were conducted face-to-face and in line with the demands of the pre-service teachers between 12.00-13.00 in the classroom where they took the disaster education course. The interviews were recorded with voice recorders with the permission of the pre-service teachers in order to prevent data loss. In qualitative research using the interview method, it is important for the participants to trust the researcher. Because there is a relationship between the participants' trust in the researcher and their freer response to the questions (Glesne, 2012). Some precautions were taken in the study in order for the participants to trust the researcher. In this context, it was explained to the participants that they could end the interview at any time, that they were free not to answer the questions asked, and that code names would be used in the reporting phase in terms of confidentiality. In order to hide the identity of pre-service teachers, representative names were used by considering gender. Verbal consent was obtained from the pre-service teachers who participated in the research that they voluntarily participated in the research.

Another data collection method in the research is observation. Observation refers to watching the phenomenon to be studied in its natural environment and recording the results of observation (Patton, 2014). Pre-service teachers were observed by the researcher in the process of drawing educational comics. While drawing, the pre-service teachers were evaluated in terms of the structure of the comic, the creation of the scenario for disaster education, and grammar. Observation notes are presented in the findings section of the research.

## **Analysis of Data**

An inductive approach was used in the analysis of the data. The inductive analysis involves finding and revealing patterns, themes, and categories in the data obtained in the research (Patton, 2014). Thematic analysis was preferred as the data analysis method. The thematic analysis involves conceptualizing the data and revealing the themes that can describe the phenomenon. To increase reliability in data analysis, it is recommended that the data collected by interview methods be analyzed by more than one researcher (Kvale, 1996; Merriam, 2018). While analyzing the data in this study, the interviews were first converted into written documents. These were evaluated with repeated readings by the author of the study and another expert. The statements in the documents are marked for coding. The generated codes were associated with the themes in the context of the research questions and presented in tables in the findings section.

## **Results**

In the results section, the findings obtained as a result of the analysis of the data collected through semi-structured interviews and observations and explanations about these findings are given.

The data obtained from the interviews with pre-service social studies teachers were analyzed. For the use of educational comics within the scope of disaster education, four different themes, named "Educational Contributions", "Specific Contributions to Disaster Education", "Limitations" and "Experiences" have been reached.

**Findings on the Theme of "Educational Contributions"**

The codes for the theme of " Educational Contributions " are given in Table 1. When Table 1 is examined, it is understood that pre-service social studies teachers think that educational comics have various educational contributions.

Table 1. Codes for the Theme of Educational Contributions

Theme	Codes	Frequency
Educational Contributions	Attracting attention	20
	Increasing participation	17
	Making it easier to understand	16
	Increasing permanent learning	15
	Increasing motivation	12
	Developing the imagination	12
	Increasing curiosity	10
	Affordable	9

When Table 1 is examined, it is seen that the expressions of the pre-service teachers mostly converge on the point that educational comics are beneficial in terms of attention, participation, understanding and permanent learning. Pre-service teachers stated that the use of educational comics in educational activities would attract the attention of students. Mary attributed *the interestingness of educational comics to their colorful visuals*. Jamie stated that *comics will enable students to make visualizations in their minds with the help of visuals, thus attracting more attention to the problems*. Pre-service teachers stated that educational comics would positively affect active participation in the lesson. Roger thinks that *educational comics will increase participation because they contain humor*. Claire attributes this to the *colorful structures of educational comics*. They drew attention to the facilitating effect of educational comics to understand the course content. Brianna stated that *educational comics facilitate understanding by making the subject simple and concrete*. Jonathan stated that *creative comics make it easier to understand because they appeal to visual and verbal intelligence*. When we examine the table, we can see that social studies pre-service teachers think that educational comics have a positive effect on students' motivation, imagination and curiosity. Pre-service teachers see educational comics as economically accessible teaching materials.

**Findings Concerning the Theme "Specific Contributions to Disaster Education"**

The codes for the theme of "Specific Contributions to Disaster Education" are given in Table 2. When Table 2 is

examined, it is seen that pre-service social studies teachers stated that educational comics can have some specific contributions to disaster education.

Table 2. Codes for the Theme of Specific Contributions to Disaster Education

Theme	Codes	Frequency
Specific Contributions to Disaster Education	Empathizing with natural disaster victims	24
	Giving examples for disasters	21
	Easier teaching	18
	Child-appropriateness	14

When Table 2 is examined, it is seen that the expressions of the pre-service teachers mostly converge on the point that educational comics are beneficial for contributions to disaster education in terms of empathy, giving examples and easier teaching. Pre-service teachers primarily stated that educational comics improve empathy. Rose stated that *students can develop empathy by putting themselves in the place of the characters in educational comics*. Ted stated that *it would be easy to understand the emotions since the texts in the educational comics are supported by pictures*. Pre-service teachers stated that educational comics can be used while showing examples of disaster situations. Barney, think that *students can develop a bond with educational comics and visualize the events in their minds*. Rachel stated that *disaster situations that are not often observed can be illustrated in educational comics*. They think educational comics as a powerful aid in explaining difficult subjects. Joey mentioned that *some abstract topics are easier to understand with visuals in educational comics*. Tracy attributed the facilitation of teaching by *educational comics to the fact that educational comics attract the attention of students*. The pre-service teachers stated that the disaster contents that are not suitable for the age of the students can be easily visualized through educational comics. Jonathan stated that *educational comics can present subject such as earthquakes and fires, which are not suitable for children age and have negative content by cartooning*. Beth noted that *negative situations that cause pain, sadness, and fear can be illustrated by cartooning them*.

### Findings on the Theme of “Limitations”

The codes for the theme of "Limitations" are given in Table 3. When Table 3 is examined, it is seen that the pre-service social studies teachers stated that educational comics may have some limitations. It is possible to collect the limitations of educational comics into two categories as "limitations on preparing educational comics" and "limitations on using educational comics".

While expressing the difficulties they experienced while preparing educational comics, pre-service teachers stated that they needed technological tools. For example, Kevin expressed this difficulty as *"I had to use my friend's computer"*. Ashley stated that *"I drew by hand because I did not have a computer"*. Pre-service teachers also stated that they had access problems. For example, Will stated that *the internet connection makes it difficult to prepare educational comics from time to time*. Claire stated that she *moved away from the scenario she had conceived when her internet connection was weak*. Pre-service teachers think that there will be some difficulties when using educational comics as teaching materials. Pre-service teachers stated that the use of educational comics can take

time. For example, Kate expressed this situation as “*educational comics may take a long time to read because they consist of many boxes*”. Monica, on the other hand, stated that *not every student can read at the same speed, which would negatively affect the use of time*. Pre-service teachers stated that educational comics can provide limited information due to their nature. Wendy expressed this situation by stating that she *could not write enough information on speech balloons*. Bob stated that *when you write long sentences, the visual ground is closed*.

Table 3. Codes for the Theme of Limitations

Theme	Codes	Frequency of utterance
Limitations on preparing educational comics	Requires technological tools	20
	Requires internet access	16
	Time-consuming to prepare	11
	Requires creative thinking	6
Limitations on using educational comics	Time-consuming to apply	13
	Limited information capacity	12
	Weakening of classroom management	10

**Findings Concerning the Theme of "Experiences"**

The theme that emerged as a result of the analysis of the interviews and named "Experiences" and the codes of this theme are given in Table 4. Table 4 shows that pre-service social studies teachers have different experiences while creating educational comics within the scope of disaster education.

Table 4. Codes for the Theme of Experiences

Theme	Codes	Frequency of utterance
Experiences	Fun	26
	Creativity	24
	Vocational development	21
	Artistic perspective	16
	Technical glitch	10

When Table 4 is examined, it is seen that the teacher candidates mostly explain their experiences of creating educational comics with the expressions of fun, creativity, and professional development. Pre-service teachers stated that they had fun while creating educational comics. Ted expressed this as “*creating educational comics was the most fun part of the course process*”. Tracy stated that *considering that we took lessons on disaster education, I can say that creating educational comics makes the process more fun*. Pre-service teachers stated that they felt compelled to think creatively while creating educational comics. Emily expressed this as “*creating educational comics requires serious creativity*”. Claire stated that *creating educational comics may seem simple from the outside, but it definitely takes creativity*. Pre-service teachers stated that they developed professionally while drawing educational comics. Roger expressed this as “*I felt that I could be a better teacher during the*



creating educational comics". Mary stated that "creating educational comics made me feel more professionally equipped."

### Findings on Researcher Observations

As a result of the instructor's observations, it was determined that the pre-service social studies teachers generally did not have difficulty in preparing educational comics scenarios and finding suitable characters for the scenario. In addition, pre-service teachers were able to transfer the things to be done before, during, and after the disaster into educational comics. It is thought that these situations can be explained by the fact that pre-service social studies teachers are well-trained in disasters. However, it was observed that some pre-service teachers had problems during the preparation of educational comics due to a lack of equipment. Since some pre-service teachers did not have a computer, they prepared comics in alternative ways. These alternatives are: using a friend's computer, using a phone or tablet, and drawing by hand (Figure 1 and Figure 2). It has been observed that this situation causes pre-service social studies teachers to lose time while drawing. It has been determined that pre-service teachers using phones or the tablets have difficulties in placing characters and speech balloons. It is thought that this situation affects expressing that preparing educational comics is time-consuming. Some structural mistakes were observed in the educational comics prepared by the pre-service teachers. Grammatical mistakes, inability to determine the order of speech, wrong speech balloon selection and scenario-movement inconsistencies are frequently observed structural mistakes. It has been determined that pre-service social studies teachers generally tend to include characters such as students, teachers, family members, and rescue workers in educational comics.



Figure 1. Hand Drawn Educational Comics Example



Figure 2. Mistakes in Educational Comics

Figure 1 shows an educational comic created by a pre-service social studies teacher who prefers to create educational comics by hand. Making these drawings took more time than drawing with digital programs. Mistakes on drawings made in digital environments can be easily reversed. However, this is more difficult with hand-drawn drawings. There are multiple mistakes in the educational comics frame in Figure 2. First of all, the mistake made in the speech sequence draws attention. Reading speech balloons in comics starts from the left and proceeds to the right. However, if there is a difference in height between the emoticon balloons, the reading is made from the balloon located above to the balloon located below. This is not taken into account in the drawing in Figure 2. Another mistake in Figure 2 is using a thought balloon instead of a speech balloon. Speech balloons are used when verbal expressions are used in comics (See Figure 3). The thought balloons (See Figure 4) indicate a character's thought and the reader thinks that other characters do not know these thoughts. It is understood that the wrong expression balloon was used in the example of the educational comics in Figure 2. Another mistake in Figure 2 is that the characters are depicted with their mouths closed even though they are talking. This reveals the scenario-action mismatch.



Figure 3. Speech balloons

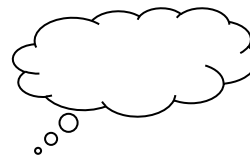


Figure 4. Thought balloons

## Discussion and Conclusion

This study aims to reveal the opinions of pre-service social studies teachers on the use of educational comics in teaching disaster education topics. Pre-service social studies teachers highlighted some features of this teaching material as a result of their experience in preparing educational comics. According to the findings obtained in the

research, these features were gathered under two different themes disaster education-specific features and educational features. The statements of pre-service social studies teachers about the educational features of educational comics reveal that educational comics are interesting teaching material. In addition, pre-service social studies teachers stated that educational comics would increase class participation, permanence, and motivation. It has been emphasized that educational comics will facilitate understanding and develop imagination. These results are also supported by previous research on educational comics (Akanca, 2020; Crăciun & Bunoiu, 2019; Cicek Senturk, 2020; Hosler & Boomer, 2011; Rozkosz & Wiorogórska, 2016; Senturk & Simsek, 2021; Topkaya & Simsek, 2016; Yildirim, 2016). Pre-service social studies teachers attribute these features of educational comics to their colorful structures, the simultaneous presence of visuals and text, and the element of humor.

Another result obtained in the research includes the benefits of educational comics specific to disaster education. According to pre-service social studies teachers, one of the main benefits of educational comics regarding disaster education is that it facilitates empathy. The statements of the pre-service social studies teachers reveal that educational comics will be a good help when examples of disasters should be given. In addition, pre-service teachers stated that educational comics facilitate the narration of difficult subjects. However, it was emphasized by the pre-service teachers that the use of educational comics is more appropriate for children while providing disaster education. pre-service social studies teachers attribute these features of educational comics to their colorful structure, element of humor, and their ability to caricature events.

Another result obtained from the research is that educational comics contain some limitations due to their structure. When the expressions of the pre-service social studies teachers were evaluated, it was seen that these difficulties can be divided into two problems related to the preparation of educational comics and the use of educational comics. It is understood that the need for educational comics preparation tools and the fact that these tools require internet access are the points that pre-service teachers have difficulties with. In addition, some pre-service teachers emphasized that preparing educational comics is time-consuming and requires creative thinking. Similar situations emerged in the study of Akanca (2021).

Another result obtained in the research includes experiences with educational comics drawings. In the study, it was concluded that pre-service social studies teacher generally had positive experiences in the process of preparing educational comics. Accordingly, pre-service teachers had a fun process while preparing educational comics. In this process, their creativity developed and they showed professional development. Pre-service teachers have carried the artistic structure of comics to educational comics. These results are similar to some studies focusing on educational comics experience (Akanca, 2021, Gavaldon & McGarr, 2019; Ilhan, Kaba & Sin, 2021; Zaibon, Azman & Shiratuddin (2019).

According to the observations made within the scope of the research, pre-service teachers were able to use their proficiency regarding disasters while writing educational comic scenarios. However, it was observed that pre-service teachers made various mistakes in the process of preparing educational comics that were not suitable for the structure of the comic. It is thought that the source of these mistakes is the lack of grammar, lack of equipment, lack of attention, and time limitation of pre-service social studies teachers.

In light of the data obtained in the research, it was concluded that the educational comics maker should have some features. The first of these is to know the structure of comics and to grasp the aims of educational comics. In addition, proficiency and creative thinking for comics preparation programs are also important.

## **Recommendations**

In line with the research results the researcher suggests that;

- more educational comics training should be given to social studies pre-service teachers.
- practical lessons on educational comics be given to other pre-service teachers as well.

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