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Araştırma Makalesi / Research Paper

Examining the Effect of AFAD Training on Science Teacher Candidates' Perceptions towards Natural Disasters [1]

AFAD Eğitiminin Fen Bilgisi Öğretmen Adaylarının Doğal Afetlere Yönelik Algılarına Etkisinin İncelenmesi [2]

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Abstract. The aim of this study is to determine the awareness of pre-service science teachers about natural disasters. With this research, it is aimed to reveal the awareness levels of science teacher candidates about natural disasters before and after their education. The participant group of the study consists of 19 pre-service science teachers studying at the faculty of education of a public university. Science teacher candidates received basic disaster training at AFAD. A semi-structured interview form developed by the researchers was used as a data collection tool. In the interviews, it was aimed to evaluate the perceptions of science teacher candidates towards natural disasters and to bring their awareness to the fore. Based on the qualitative findings, it was concluded that pre-service science teachers had a high perception and awareness of natural disasters. Most of the pre-service teachers did not attend any additional training on this subject. In this context, it is thought that organizing preparedness and awareness trainings on natural disasters can make important contributions in terms of emotional control and disaster prevention, and the knowledge and skills of science teacher candidates can be used in possible natural disasters.
Keywords: Natural disasters, AFAD training program, Science teacher candidates, Sustainability.

Öz. Bu araştırmanın amacı fen bilgisi öğretmen adaylarının doğal afetlere ilişkin farkındalıklarını belirlemektir. Bu araştırma ile fen bilgisi öğretmen adaylarının aldıkları eğitim öncesi ve sonrası doğal afetlere yönelik farkındalık düzeylerinin ortaya konması amaçlanmıştır. Araştırmanın katılımcı grubunu bir kamu üniversitesinin eğitim fakültesinde öğrenim gören 19 fen bilgisi öğretmen adayı oluşturmaktadır. Fen bilgisi öğretmen adaylarının aldıkları AFAD'ta temel afet eğitim almışlardır. Veri toplama aracı olarak araştırmacılar tarafından geliştirilen yarı yapılandırılmış görüşme formu kullanılmıştır. Yapılan görüşmelerde, fen bilgisi öğretmen adaylarının doğal afetlere yönelik algıları değerlendirilerek farkındalıklarının ön plana çıkarılması hedeflenmiştir. Elde edilen nitel bulgulara dayanarak, fen bilgisi öğretmen adaylarının doğal afetlere ilişkin algı ve farkındalıklarının yüksek olduğu sonucuna varılmıştır. Öğretmen adaylarının büyük bir kısmı bu konuda ek bir eğitime katılmamıştır. Bu bağlamda, doğal afetlerle ilgili hazırlık ve farkındalık eğitimleri düzenlenmesinin duygusal kontrol ve afet önleme açısından önemli katkılar sağlayabileceği ve fen bilgisi öğretmen adaylarının bilgi ve becerilerinin olası doğal afetlerde kullanılabileceği düşünülmektedir.
Anahtar Kelimeler: Doğal afetler, AFAD eğitim programı, Fen bilgisi öğretmen adayları, Sürdürülebilirlik

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Genişletilmiş Türkçe Özet

Giriş. İnsanlık ve doğa arasındaki ilişkinin yanlış planlanması; doğal ve insan yapımı afetler, çevre sorunları, doğaya uyumlu yapı ve uygulamaların bulunmaması nedeniyle mekanların yanlış kullanımı gibi çeşitli sorunlara yol açar. Bu sorunlar arasında insan ve mal kayıpları açısından en etkili olanı afetlerdir (Akar, 2013; Karaçayır, 2022). Afet, doğa, insan veya teknoloji tarafından aniden meydana gelen, etkilenen bölgede önemli yıkım ve can ve mal kaybına yol açan olağanüstü olaylar olarak tanımlanır (Ergünay, 1996). Doğanın kendine özgü bir düzeni ve işleyişi vardır. Dünya üzerinde devam eden doğa olayları canlıları önemli ölçüde olumsuz etkilediğinde bu duruma doğal afet denir (Atalay, 2004).

Doğal afetler, yalnızca doğal kaynaklardan kaynaklanan olaylar olarak değil, aynı zamanda uluslararası yardım gerektirebilecek toplumsal olaylardan kaynaklanan durumlar olarak da tanımlanır (Akar, 2013). Doğal afetlerle ilgili araştırmalar incelendiğinde öğretmen adaylarının afet türleri hakkında bilgi eksikliği yaşadıkları ve afet bilgisini davranışa dönüştürme düzeylerinin düşük olduğu görülmüştür (Torlak, 2021). Öğretmen adayları deprem, orman yangını, sel, erozyon ve kuraklık gibi doğal afetler konusunda yanılgılara düşmektedir (Karakuş, 2019). Ayrıca öğrenciler arasında genel afet önleme bilgi düzeyinin düşük olduğu tespit edilmiş olup en bilinen doğal afetlerin deprem ve yangın olduğu görülmüştür (Chung ve Yen, 2016).

Öğrencilerin afet farkındalıklarını ve becerilerini geliştirmek için okullarda afet eğitiminin gerekliliği konusunda güçlü bir görüş birliği vardır (Zhu ve Zhang, 2017). Lisans ve ön lisans öğrencileri arasında afet farkındalığı ve hazırlığı açısından anlamlı bir fark gözlenmiş, lisans öğrencileri daha yüksek bilgi düzeyi ve olumlu tutumlar göstermiştir. Üniversite öğrencilerinin %85,5'inin düzenli afet eğitimi almak istediği sonucuna da varılmıştır (Tan vd., 2017). Bu araştırmanın amacı fen bilgisi öğretmen adaylarının doğal afetlere ilişkin farkındalıklarını belirlemektir. Bu araştırma ile fen bilgisi öğretmen adaylarının aldıkları eğitim öncesi ve sonrası doğal afetlere yönelik farkındalık düzeylerinin ortaya konması amaçlanmıştır.

Yöntem. Bu araştırmada nitel araştırma yöntemlerinden (b) olgubilim (fenomenoloji) deseni kullanılacaktır. Fenomenolojik bir yaklaşım seçmenin temel amacı, insanların çeşitli bakış açıları ve yorumlarının ayrıntılı bir tanımını sunulmanın istenmesidir (Creswell, 2002; Creswell ve Poth, 2016). Ayrıca, fenomenoloji yöntemi bir fenomene ilişkin bireysel algıları sunmayı amaçlamaktadır (Yıldırım ve Şimşek, 2008). Bu araştırmanın odağı sürdürülebilirlik ve doğal afet eğitimi olduğundan, amaçlı örnekleme yöntemine uygun olarak fen bilgisi öğretmen adayları çalışma grubu olarak seçilmiştir. Araştırma, 19 fen bilgisi öğretmen adayı ile yürütülmüştür. Fen bilgisi öğretmen adaylarına AFAD tarafından verilecek eğitim hakkında ön bilgi verilmiş ve tüm eğitim oturumlarına katılımları sağlanmıştır.

Araştırmada veri toplama aracı olarak araştırmacılar tarafından geliştirilen yarı yapılandırılmış görüşme formu kullanılmıştır. Yarı yapılandırılmış görüşme formu, test ve anketlerin sınırlılıklarını ortadan kaldırarak derinlemesine bilgi edinmeye olanak vermesi nedeniyle tercih edilmiştir (Yıldırım ve Şimşek, 2008). Hazırlık sürecinin ardından görüşme formu iki ayrı uzman tarafından incelenerek gerekli düzeltmeler yapılmıştır. Eğitim oturumlarının ardından araştırmacılar tarafından fen bilgisi öğretmen adaylarıyla yüz yüze görüşmeler gerçekleştirilmiş ve yanıtlar kayıt altına alınmıştır.Yarı yapılandırılmış görüşme formundan elde edilen veriler tablolaştırılarak araştırmanın sonuçlarına dahil

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edilmiştir. Veriler analiz edilirken ortak yanıtlar tablolaştırılmıştır ve farklı yanıtlar araştırma kapsamında ayrı ayrı ele alınarak değerlendirilmiştir.

Bulgular. Araştırmanın bu bölümünde, fen bilgisi öğretmen adaylarıyla eğitim sonrasında yapılan yarı yapılandırılmış görüşme formuna verilen yanıtlar tablo halinde sunulmuştur. Görüşme formu, fen bilgisi öğremtne adayları hakkında genel bilgiler, alınan eğitime ilişkin görüşler ve öğretmen adaylarının gelecekteki mesleki yeterliliklerine nasıl katkıda bulunacağına ilişkin görüşler olmak üzere üç ana alt başlık altında düzenlenmiştir. Bu bölümde, bu üç ana alt başlıkla ilgili görüşme sorularına verilen yanıtlar tablolar ve grafikler yardımıyla özetlenmiştir. "Evet" veya "hayır" ile yanıtlanabilen sorular sayısal olarak ifade edilmiş ve pasta grafiği olarak gösterilmiş, katılımcıların yorumları ise tablolar halinde açıklanmıştır. Katılımcıların çoğu daha önce afetle ilgili bir eğitime katılmamıştır. Aday öğretmenlerin bu tür bir eğitimle ilgili ilk deneyimleri olacağı için görüşleri önemlidir. 14 fen bilgisi öğretmen adayı daha önce herhangi bir eğitime katılmamıştır. Katılımcı fen bilgisi öğretmen adaylarının daha önce aldıkları eğitimlerin genellikle depremlerle ilgili olduğunu göstermektedir. Bu, katılımcıların bu eğitimi daha ayrıntılı olarak değerlendirmelerine olanak tanır. Az sayıda da olsa, daha önce eğitime katılmış fen bilgisi öğretmen adayları da çalışmaya farklı bir bakış açısı sunmaktadır.

Tartışma, Sonuç ve Öneriler. Afet önleme ile ilgili eğitimde genel olarak önemli bir eksiklik vardır ve eğitim afet önlemeye karşı olumlu bir tutum geliştirirken, öğrencilerin bilgi ve beceri düzeylerinin düşük kaldığı görülmüştür (Wang vd., 2012). Daha önce herhangi bir afet müdahale ekibinde yer almış veya ilk yardım eğitimi almış öğrenciler, herhangi bir eğitim almamış öğrencilere kıyasla daha yüksek düzeyde afetlere hazırlık göstermiştir. Sınıf öğretmeni adayları ile yapılan bir araştırmada, okul tabanlı afet eğitimlerinin “afet eğitim yılı” ve “afet tatbikat yılı” olarak adlandırılması, fen bilgisi öğretmen adaylarının afet farkındalığına ilişkin algılarını olumlu yönde etkilediğini göstermiştir (Goddard, 2017). Üniversite öğrencilerinin dahil olduğu doğal afetlerle ilgili eğitimlerde, teorik ve pratik bilgi sağlamanın yanı sıra, öğrencilerin duygularını ifade edebilecekleri ortamlar yaratılması ve duygusal destek sağlanması gerektiği belirtilmiştir (Demir-Yıldız ve Demir-Öztürk, 2023). Araştırma sonucunda, katılan fen bilgisi öğretmen adaylarının çoğunluğunun önceden bir eğitim almadığı görülmüştür. Doğal afetlerin sıkça yaşandığı bir ülkede, üniversite son sınıfta olan katılımcıların bu konuda eğitim almış olmalarına rağmen ek bir eğitim almamış olmaları dikkat çekicidir. Bu durum bu alanda yapılan çalışmaların yetersiz olduğunu göstermektedir. Bu bağlamda daha önce eğitim alan fen bilgisi öğretmen adaylarının ağırlıklı olarak deprem konusunda yoğunlaştığı görülmüştür. Deprem eğitiminin öneminin hepimiz farkındayız ancak çeşitli doğal afetlerin yaşanabileceğini ve fen bilgisi öğretmen adaylarımızın bu durumlara hazırlıklı olmaları gerektiğini de göz ardı etmemek gerekmektedir. Doğal afetlere karşı hazırlıklı ve bilinçli olmanın yolu eğitimden geçmektedir. Daha önce doğal afet yaşamış fen bilgisi öğretmen adaylarının görüşleri, katılımcılarımızın afet anında ne yapmaları gerektiği konusunda yeterli bilgiye sahip olmadıklarını göstermektedir.

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Introduction

Background

The incorrect planning of the relationship between humanity and nature leads to various issues, such as natural and human-made disasters, environmental problems, and the improper use of spaces due to the absence of nature-compatible structures and practices. Among these issues, disasters are the most impactful in terms of human and property losses (Akar, 2013; Karaçayır, 2022). A disaster is defined as extraordinary events caused suddenly by nature, humans, or technology that result in significant destruction and loss of life and property in the affected area (Ergünay, 1996). Nature has its own order and functioning. When ongoing natural events on Earth significantly negatively affect living beings, this situation is termed a natural disaster (Atalay, 2004; Steiner and Thimm, 2009). Natural disasters are defined not only as events originating from natural sources but also as situations arising from social events that may require international assistance (Akar, 2013). When examining research related to natural disasters, it has been found that teacher candidates have a lack of knowledge regarding types of disasters and that their levels of converting disaster knowledge into behavior are low (Torlak, 2021). Teacher candidates have fallen into misconceptions regarding natural disasters such as earthquakes, forest fires, floods, erosion, and drought (Karakuş, 2019). It has also been identified that the overall level of disaster prevention knowledge among students is low (Chung and Yen, 2016; Otto, 2009), with the most well-known natural disasters being earthquakes and fires. Additionally, it has been determined that female teacher candidates have more knowledge about natural disasters compared to their male counterparts (Uşak, Şensoy, Yıldırım and Hançer, 2005). There has been a strong consensus regarding the need for disaster education in schools to improve students' disaster awareness and skills (Zhu and Zhang, 2017). A significant difference in disaster awareness and preparedness has been observed between undergraduate and associate degree students, with undergraduate students showing higher levels of knowledge and positive attitudes. It has also been concluded that 85.5% of university students desire regular disaster training (Tan et al., 2017).

Emergency situations and disasters significantly affect people with disabilities, particularly children. Furthermore, it is crucial to make sure that schools serving students with special health care requirements are prepared for disasters because a large portion of the student body at these institutions would require assistance and supplies in the case of a crisis. Better results would be attained if an effective disaster management strategy was developed that took into account children with unique health care requirements (Jang and Ha, 2021). Personal experiences, attitudes, and cultural and demographic factors can all have an impact on disaster preventive awareness. A lot of instructors have never been in a disaster before. To increase understanding of catastrophe avoidance, educators must get training. Nonetheless, there is some ambiguity in the notion of disaster preventive awareness. Additionally, disaster preventive awareness education encompasses a number of initiatives, including catastrophe education and even disaster recovery awareness. One effective strategy for risk mitigation and disaster readiness is education that increases public knowledge of disasters (Torani et al., 2019).

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When looking at historical developments, it can be said that the invention of steam engines around the mid-eighteenth century significantly changed the interaction between humans and their natural environments. Although the environmental issues that arose due to rapid technological advancements and increased industrialization did not receive enough attention at that time, they have become one of the most discussed and sought-after solutions in today's world. People's sensitivity towards their environments reflects the harmony between humans and nature. It is essential for individuals to start considering environmental problems as significant issues, beginning with their immediate surroundings. To do this, we must first accept ourselves as part of the environment. The environment is defined as the biological, physical, social, economic, and cultural setting in which living beings maintain their relationships and interact with one another (Ministry of Environment and Urbanization, 2008). Based on this definition, we can say that changes in a person's immediate environment will affect their physical and psychological structure. Therefore, it is crucial that the developments and changes occur in a way that does not disrupt the natural environment and is sustainable for future years. The concept of sustainability, which we frequently hear about today, arises precisely at this point. Although sustainability has entered our lives only in the last few years, its importance is rapidly increasing. This concept encompasses many sub-topics, such as natural disasters occurring around us, undeniable environmental issues, the rapid depletion of energy resources, and poverty. It illustrates what needs to be done for the future. In this context, sustainability can be defined as restoring the balance and harmony between humans and nature, planning for the present and future, and taking necessary precautions to leave a more livable world for future generations (Yapıcı, 2003; Yalçın, 2021; Atmaca, 2018). The human-environment coordination perspective is being developed in a progressive manner. A key component of developing geographical core literacy—which is also in line with the demand for sustainable social development—is teaching about natural disasters. It assists students in developing a scientific understanding of disasters, learning effective disaster reduction and preventive techniques, and ensuring the protection of their own lives and property (Li et al., 2022). One of the seminal studies on sustainability, the WCED (1987) report, defines sustainable development as meeting the needs of today without compromising the ability of future generations to meet their own needs, and it includes two key concepts:

- The concept of prioritizing needs.
- The notion of the limitations imposed by technology and social organization on the ability to meet current and future environmental needs.

The sustainability concept encompasses many sub-goals. The United Nations has organized today's sustainable development goals into 17 sub-targets:

No Poverty: End all forms of poverty everywhere.

Zero Hunger: End hunger, achieve food security and improved nutrition, and promote sustainable agriculture.

Good Health and Well-being: Ensure healthy lives and promote well-being for all at all ages.

Quality Education: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.

Gender Equality: Achieve gender equality and empower all women and girls.

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Clean Water and Sanitation: Ensure availability and sustainable management of water and sanitation for all.

Affordable and Clean Energy: Ensure access to affordable, reliable, sustainable, and modern energy for all.

Decent Work and Economic Growth: Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all.

Industry, Innovation, and Infrastructure: Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation.

Reduced Inequality: Reduce inequality within and among countries.

Sustainable Cities and Communities: Make cities and human settlements inclusive, safe, resilient, and sustainable.

Responsible Consumption and Production: Ensure sustainable consumption and production patterns.

Climate Action: Take urgent action to combat climate change and its impacts.

Life Below Water: Conserve and sustainably use the oceans, seas, and marine resources for sustainable development.

Life on Land: Protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and biodiversity loss.

Peace, Justice, and Strong Institutions: Promote peaceful and inclusive societies for sustainable development, provide access to justice for all, and build effective, accountable, and inclusive institutions at all levels.

Partnerships for the Goals: Strengthen the means of implementation and revitalize the global partnership for sustainable development (United Nations Turkey, 2022).

Initially, when the concept of sustainable development began to be discussed, it was considered primarily an economic concept. However, over time, studies and meetings have shown that the adoption of this concept and the actions taken have evolved to encompass social and environmental aspects as well. Disasters cannot be ignored when it comes to reducing environmental issues or achieving sustainable development. Particularly, the development speed of developing countries is hindered by natural disasters. When preparedness for disasters is lacking, all material or moral gains achieved over a long period can be lost due to the devastation caused by uncontrolled disasters. It is important to cultivate awareness among university students, who play a significant role in development, within the educational system to prepare them for disasters. In general, it is stated that preventing natural disasters is possible through individual responsibility, societal awareness, and consciousness (Torlak, 2021). One effective strategy for risk reduction and disaster readiness is education that increases public knowledge of disasters. The impact of education was not systematically evaluated since the concept of disaster preventive awareness was ambiguous. To particularly boost disaster preventive awareness, it is critical to identify characteristics that may enhance it. People's psychological health may benefit from receiving knowledge on catastrophe preparedness and response in an effective manner. Disaster preparedness issues highlight a disconnect between what is known (information provision) and what must be done (Jonidi Jafari et al., 2018).

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Based on research findings, there is a need for educational efforts targeting university students, who make up a large portion of the population, for the prevention of natural disasters and the establishment of disaster awareness. From this point, this study aimed to determine the perceptions of students studying in the faculty of education regarding natural disasters, which is thought to provide insights to researchers in this field and guide future applications related to natural disasters. In this research, the main purpose is to determine the awareness and preparedness of science teacher candidates in the concept of natural disasters. In line with this general aim, the views of science teacher candidates regarding the training they have received from AFAD, which is the Turkey's Disaster and Emergency Management Authority and an organization that plans and coordinates post-disaster response, encourages collaboration amongst government departments, and works to avoid catastrophes and reduce damage from them, were evaluated.

Method

Research design

The phenomenology approach was used in this study as part of the qualitative research method. The primary goal of selecting a phenomenological approach is to provide a detailed description of people's various perspectives and interpretations (Creswell, 2002; Creswell and Poth, 2016). Additionally, the phenomenology method seeks to present individual perceptions regarding a phenomenon (Yıldırım and Şimşek, 2008). In-depth interviews with participants are the main technique used to collect data for this phenomenological study (Creswell 2007). To explain the significance of a phenomena that several people share is the aim of a phenomenological interview (Marshall and Rossman, 2006). Each study subject is often interviewed more than once in phenomenological investigations (Creswell, 2007). Other methods, such focus groups, observations, and video recordings, can also be used to gather data. The study setting can be observed using an observation approach in addition to interviews. For triangulation, information can be gathered from a variety of sources. Since the research will also address experiences related to disaster training, the phenomenology method has been preferred among qualitative research designs.

Participants

Participants in a phenomenological framework must be comparatively homogeneous (Creswell, 2007). Participants in phenomenological research should thus have firsthand knowledge of the same phenomena. According to Cresswell (2007) and Moustakas (1994), those chosen to take part in phenomenological study should have had substantial and meaningful encounters with the phenomena under investigation. Qualitative research frequently uses purposeful sampling. According to Creswell, the researcher uses a purposeful sampling strategy in which they choose participants based on their understanding of the phenomenon. This allows the researcher to determine whether participants have relevant and meaningful experiences related to the phenomenon being studied.

In this study, research focus was on sustainability and natural disaster education, therefore science teacher candidates were selected as the study group in accordance with the purposeful

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sampling method. The study was conducted with 19 science teacher candidates who are still pursuing their education in science teaching education. The students participating were chosen depending on a voluntary basis. Preliminary information about the training to be provided by AFAD was given to the science teacher candidates wishing to participate, and they were asked to attend all the training sessions.

Data collection

In this study, a semi-structured interview form was used as the data collection tool. Although the questions were prepared based on the topic, it allows the researcher to ask different questions depending on the flow of the interview (Güler, Halıcıoğlu and Taşğın, 2015). For this reason, it is deemed appropriate to use the semi-structured interview form for interviews conducted with science teacher candidates. It is thought that using this method will be more effective, not only for participants to answer questions related to the topic but also to express different opinions if they have any. The semi-structured interview form has been preferred as it eliminates the limitations of tests and surveys, allowing for in-depth knowledge (Yıldırım and Şimşek, 2008). The semi-structured interview form was prepared by the researcher. After the preparation process, the interview form was reviewed by two separate experts, and necessary adjustments were made. After the training sessions, the researcher conducted face-to-face interviews with the participants, and the responses were recorded.

Data analysis

According to Moustakas (1994), identifying the phenomena being studied is the first step in the research process. The data was evaluated using Moustakas' phenomenological data analysis process after being gathered through phenomenological interviews with co-researchers who had seen the phenomena. In this study, the data obtained from the semi-structured interview form were tabulated and included in the study's results. While analyzing the data, common responses were tabulated, and different responses were separately addressed within the research. The obtained data were evaluated separately for different aspects of the study.

Reliability and ethics

Permission from ethics was obtained by Bartın University Ethics Commission (2023-SBB-0738). Persuasiveness is used for internal validity by Miles and Huberman (1994), while transferability and appropriateness are used for external validity. The degree to which a surveyor's observations and interpretations of a situation accurately reflect reality is known as internal validity. The generalizability of survey results is related to the external reality. To guarantee internal validity, Miles and Huberman's (1994) recommendations were considered. To ensure internal validity, the results of the study were reviewed in a way that was appropriate for the setting in which the data were collected. The results are self-consistent and significant.

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Findings

In this part of our study, the responses given to the semi-structured interview form that were conducted with participant science teacher candidates after training are presented in tabular form. The interview form is organized under three main subtopics, which were listed as follows:

General information about participants
Opinions regarding the training received
Views on how it will contribute to the future professional qualifications of teacher candidates

In this section, answers to the interview questions related to these three main subtopics were summarized with the help of tables and graphs. Questions that can be answered with "yes" or "no" were expressed numerically and showed in the forms of tables and as pie charts, while participants' comments were explained as tables.

Answers to the first subtopic

The questions in this section are organized to gather general information about the participants. These questions correspond to questions 1, 2, 3, and 4 in the interview form. For the first question in the interview form, "Could you please introduce yourself?", we can state that a total of 19 participants are in the 4th grade of Science Education. The responses to the question 2, 3, and 4 are presented in Table 1.

Table 1.
Answers to the questions of first subtopic

Questions	Answers	
	Yes (%)	No (%)
Q2. Have you ever previously participated in training related to natural disasters?	26	74
Q3. Have you ever experienced a natural disaster in your lifetime?	63	37
Q4. Have you ever worked as a volunteer in a disaster area before?	11	89

As can be understood from Table 1, most of the participants have not attended any disaster-related training before. Since this will be the first experience of candidate teachers in terms of this type of training, their opinions are important. A total of 14 participants have not attended any training before. The result we extracted from Table 1 shows that a large portion of the science teacher candidates have encountered a natural disaster before. Most of the participants have never volunteered in a disaster area before. Only two of them answered yes to this question. Both have participated in the work carried out after the earthquake centered in Kahramanmaraş on February 6, 2023. Both participants stated that they took part in the distribution of food and tents.

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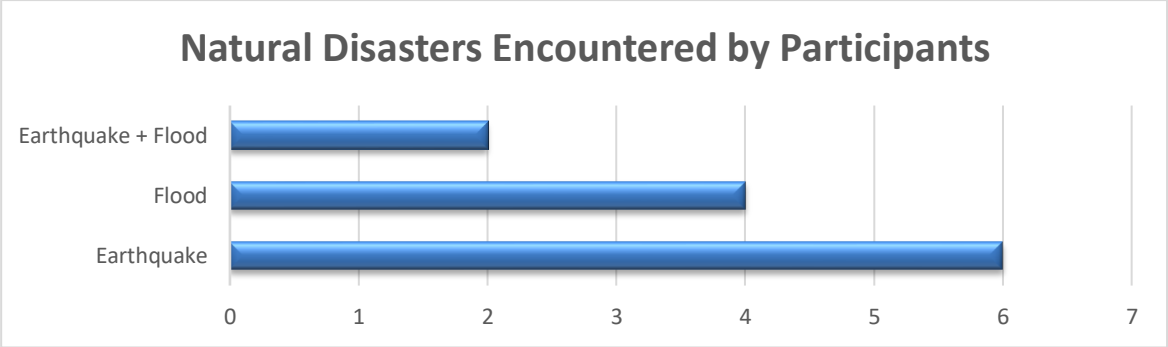
Table 2.
Content, year and scope of the training attended by science teacher candidates who have attended a training before

Contents	Years	Scope
How to respond to earthquakes and fires	2023	Theory and practice
Earthquake and fire	2023	Theory and practice
Earthquake fire flood	2023	Theory and practice
Earthquake volunteering	2023	Application
Fire and earthquake	2021	Theoretical

Table 2 shows that the trainings that participating science teacher candidates have received before are generally about earthquakes. This allows these participants to evaluate this training in more detail. Even though they are few, science teacher candidates who have attended a training before also offer a different perspective to the study.



Graph 1. Rates of natural disasters encountered by participants

When we look at the rates of natural disasters, they have encountered from Graph 1, it can be seen that earthquake is the most encountered natural disasters. The number of participants who encountered two different natural disasters is just two.

Table 3.
Some of the participants' previous experiences with natural disasters

Participant code	Experiences of participants about natural disasters
P1	I realized we were unprepared and then I realized we were inadequate in case of intervention.
P3	We were shaken by the earthquake. We didn't know what precautions to take. We noticed it. We didn't leave the house during the flood. We tried to be more cautious after the earthquake
P4	I have encountered earthquakes that were not very strong. My first thought during an earthquake was to inform my family and get out of the house.
P8	It was the day I first learned about the earthquake when I was in primary school. My mother

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	had noticed it. She had prepared some blankets. After the shaking had passed, we went outside.
P13	I realized that I really didn't have any experience during the earthquake. I went downstairs without doing the "Drop-Cover-Hold" procedure during the earthquake, I can't talk about my experience.
P15	It was so bad I don't want to remember it.
P16	Even though it was magnitude 4.2, I was very scared and I remember shaking a lot. I still remember the fear because it was my first time experiencing it and I was very young.
P18	It was bad. May God not let it happen to anyone. What is said and what is experienced are never the same.

As can be seen from Table 3, science teacher candidates do not know what to do when they encounter natural disasters. It can be said that even science teacher candidates who know what to do respond that they panic.

Answers to the second subtopic

This section includes the views of science teacher candidates related to the training they have attended. The questions in this section correspond to Questions 5, 6, 7, 8 and 9 in the interview form.

Table 4.
Some of the responses to Question 5 on the interview form: 'What were your thoughts about going to a disaster area as a volunteer before receiving this training?'

Participant code	**Answers to the Q5**
P1	I said I would abstain but now I think I will volunteer.
P2	I don't plan on volunteering without training.
P5	I was prejudiced against going to a disaster area as a volunteer because I didn't know what kind of aid the area would provide.
P6	I would like to go but I was not competent and knowledgeable about the subject, so I think I would not be effective.
P7	I don't think it's a good idea. You should go after getting volunteer training first.
P8	I thought that AFAD volunteers were doing difficult work under the rubble, I could not think of myself as an AFAD volunteer.
P9	I do not think it is right to go to a disaster area voluntarily before receiving this training because we can only help in such crisis areas if we are educated and conscious.
P10	Actually, I had some fears, both physically and psychologically, I think I won't be able to do it.
P12	I was willing to join before, but I had questions about how to proceed.
P15	I worked in the disaster area because I thought I should
P16	It was something I had already thought about, and with this training my desire increased even more.
P18	I was thinking I wouldn't go much. I wouldn't eat because I wouldn't feel enough.
P19	I had some fears. I thought I would have a hard time if I went voluntarily.

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When we examine Table 4, the majority of science teacher candidates have a positive view on the idea of volunteering, but they are afraid of not being able to help due to their inexperience and lack of knowledge.

Graph 2. The percentage of responses to the 6th question in the interview form, 'Have you changed your mind about going as a volunteer after receiving this training?'

According to Graph 2, more than half of the participants changed their minds about volunteering after the training. However, it is not right to comment by looking only at this graph. When it was asked the participants why their ideas have changed or not, it was seen that many participants said they did not change their ideas, because they were already willing to work as volunteers and that they continued to think positively about volunteering. Table 4 represents their ideas in detail and clearly. For this reason, it can be said that the ratio of participants who did not consider volunteering after the training is quite low.

Table 5.
Some of the answers given to the 6th question of the interview form, 'Have you changed your mind about going as a volunteer after receiving this training? Why?'

Participant code	**Answers to the Q6**	
P1	Yes	After gaining knowledge on these issues, my desire to give benefits increased.
P2	No	My opinion has not changed for now, but I can help with matters such as material, spiritual, clothing and food.
P3	Yes	After learning what kind of work was being done in the disaster area, my willingness to go increased.
P4	Yes	It has changed positively because we have gained knowledge
P6	Yes	I have gained more knowledge about the subject and I would like to see myself in the disaster area.
P7	No	After receiving volunteer training, I will go to the disaster area. I wanted to go there before receiving training, but my mind has not changed.
P8	Yes	I learned that AFAD volunteers do not only work in the debris field, but also systematically work in many areas in search and rescue operations.
P10	Yes	I still have the fears I mentioned, but when I participate in these studies, it will be nice

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		to do something for people and help someone, so I changed my mind.
P11	No	I think this education is not enough to go there. Personal characteristics of a person are also an important factor for this. I do not see that competence in myself right now.
P12	No	Actually, it can't be said that it has changed. I wanted it to be like before. Helping people makes me happy.
P13	No	I already like helping people as a volunteer and as a person from Kahramanmaraş, I know how important this is.
P14	Yes	After the training, my awareness increased, and I want to go as a volunteer.
P16	Yes	Because I think I'm more knowledgeable now
P18	No	It hasn't changed much, but education has added a lot to me. I couldn't get over the effects of the earthquake. I think I need time.

Table 6.
Some of the answers given to the 7th question in the interview form, 'What was the most neglected issue or practice in the training?'

Participant code	**Answers to the Q7**
P1	The use of the latest technology for disaster recovery efforts caught my attention.
P3	Microphone and video device system regarding what they can do after an earthquake
P4	We had the chance to apply fire extinguishing application.
P5	It was a device that detected very small movements of people trapped under rubble after an earthquake.
P6	The tools and equipment used during the disaster were remarkable, especially the airbags.
P8	We learned how to set up an earthquake tent, it was a nice and permanent event.
P9	There was a tent-building practice, and other cutting and similar materials and tools were used at the same time.
P10	The tents set up during the disaster really caught my attention.
P12	Common mistakes during the earthquake caught my attention.
P14	The part about setting up the tent really caught my attention, I had no idea before.
P15	Power of stone cutting machine.
P16	The tools shown caught my attention.
P17	The stone cutting activity was the most enjoyable activity.
P18	The fire extinguishing part caught my attention.

As can be seen from Table 6, the most striking points of the training are the tent-setting and rescue equipment. The fire-fighting drill is another notable point.

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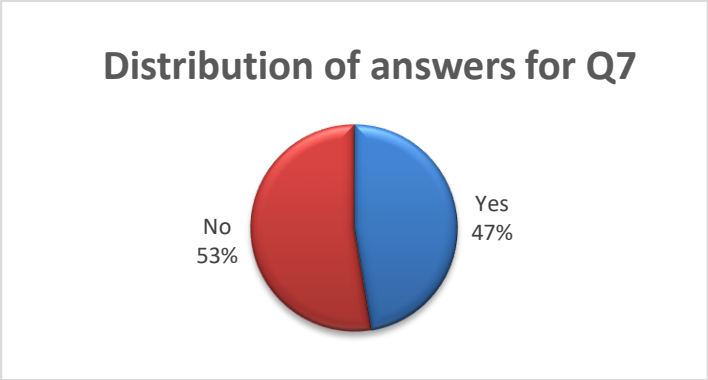
Table 7.
Some of the answers given to the question "Have you encountered any mistakes that we thought were true about natural disasters or what needed to be done?" which is a continuation of Question 7 in the interview form.

Participant code	Answers to the Q7-contiunation	
P2	Yes	With this information I have confirmed what I thought was wrong.
P4	Yes	I learned that you should not squirt water on burning oil in a pan.
P6	Yes	I realized that I had some misinformation about using a fire extinguisher or device.
P7	Yes	I learned the truth about where we can hide during an earthquake.
P9	Yes	I learned that some areas that we know to be safe are not actually safe when we practice trap and hold.
P11	No	I had a general grasp of what was said in the training.
P12	Yes	I thought that if we stayed in soft-sided places during an earthquake, it would be better to avoid being affected by the impact, but this was wrong.
P13	Yes	Trying to leave the building during an earthquake, even though I knew the truth, would cause so many people to be in chaos at that moment.
P14	No	I just realized the importance of wearing a seat belt on long bus journeys.
P16	Yes	I learned the truth about my incomplete knowledge of our stance during the earthquake.
P19	Yes	I learned that if the building is solid, you should not go out directly during an earthquake.

As can be seen from Table 7, science teacher candidates had the opportunity to correct their mistakes that they knew as true, with the help of this training.



Graph 3. The percentage of responses to the 7th question of the interview form, 'Have you ever encountered any mistakes that we thought were true about natural disasters or what needed to be done?'

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Table 8.
Some of the answers given to the question "What are your views on education in general?" which is a continuation of Question 8 in the interview form

Participant code	Answers to the Q8
P2	The training was quite sufficient and useful for us. I would like to participate in such trainings voluntarily.
P3	It was a useful and practical training that you can experience.
P4	When I evaluate the training in general, it was informative. However, I am not very satisfied with its permanence. I would like to participate in such a training again.
P5	It was a useful training, we learned the features and usage of some devices. I think it is important information to help during and after a disaster.
P6	The training was very nice and effective. I would participate again. I would also like to receive training in other areas.
P8	The training was productive, we learned how to manage crisis moments.
P9	The training was efficient, especially the practice after the theoretical knowledge increased the permanence. I would join
P10	It was a very useful and beneficial training. I would love to take it again if I could. Even if I don't volunteer in the light region, I will have basic information when faced with such a situation.
P12	We learned how to set up a tent and how to behave when faced with a disaster.
P13	I really didn't know that AFAD had so many tools in terms of education. I always participate in the training again.
P14	Yes, I think it was a very useful training, it was a training of great importance in terms of raising awareness.
P16	The training was useful and good. I would consider attending again. The tools used in disasters were remarkable and informative.
P18	I liked it very much. It was the first time I received such training. I learned a lot. I would like to participate.
P19	I think it helped me to raise my awareness and improve myself.

It can be understood from Table 8 that all the participants were satisfied with the training. As a continuation of this question, when it was asked whether they wanted to participate in such training again, all the science teacher candidates stated that they would participate and that they would be happy about it. Moreover, they stated that they became more conscious at the end of the training, and they have expressed their satisfaction with the process.

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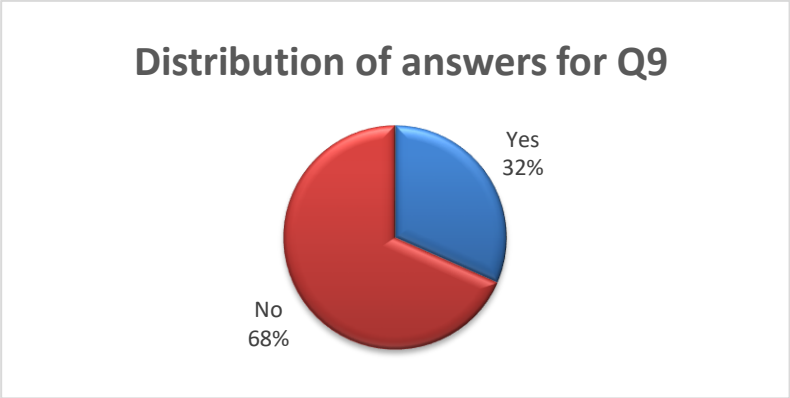
Table 9.
Some of the answers given to the question 'Was there any activity or information that you thought should have been included in the training but was not?' which is a continuation of Question 9 in the interview form

Participant code	**Answers to the Q9**	
P1	Yes	I would expect there to be an event or information transfer about floods in education.
P4	No	Considering the duration, it was an event with maximum efficiency.
P6	Yes	It would be nice if there was a longer period and reenactments could be made of events that can be encountered in the fields.
P7	No	However, this training can be given as a compulsory course.
P10	Yes	There is not much information given about what to do in case of flood.
P11	Yes	Could be done for earthquake drill
P17	No	There was enough content
P19	No	We have completed all activities from equipment introduction to theoretical information, fire extinguishing to concrete blasting.



Graph 4. Response rates to question 9 of the interview form: 'Was there any activity or information that you thought should have been included in the training but wasn't?'

It is understood from Table 9 and Graph 4 that the participants were quite satisfied with the training. Among the suggestions made, it is noteworthy that there should be more systematic training, and that more extensive information should be provided about different natural disasters.

Answers to the third subtopic

In this section, it was tried to reveal the views of the prospective teachers on how the training they attended would contribute to their future professional competence. The answers to Question 10 in the interview form were tabulated and included in the study.

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Table 10.
Responses to the question "What kind of impact do you think this training will have on your teaching career?"

Participant code	Answers to the Q10
P1	I learned how to intervene correctly in case of a disaster at school.
P2	I learned the information you knew wrongly and learned how to help or ask for help when a disaster occurs.
P3	I can use it as a permission letter to educate students and raise awareness.
P4	Considering that we will be science teachers, the event was a valuable event for me in every way. I would like to share the practical information given to me with my students in the future.
P5	I think you can raise more conscious students who know what to do during and after a disaster.
P6	In the future, I will share with them the knowledge and experience I have gained here and encourage them in this regard.
P7	When I become a teacher, I intend to teach the information I have learned to everyone.
P8	I don't want to learn details about earthquakes, such as traps, etc. It will make it easier for my students to answer their questions.
P9	I think we can raise more conscious students.
P10	We have gained enough knowledge to provide at least basic information to our students in the classroom in the future, and in this sense, it will provide students with awareness about natural disasters.
P11	I will take this training to my own students in the future, it is an education that will be effective for them and their environment.
P12	I think that not only teachers, but also conscious citizens should have this information.
P13	When it is my turn to explain these issues to my students, I will emphasize my experiences and how serious the issue is regarding what to do and what not to do.
P14	I pass on what I have learned to my students. It has also made them aware of this issue.
P15	I think people are more conscious when approaching a disaster or an event.
P16	I think it will be useful not only in teaching but also in many aspects of our lives. If I teach in an earthquake zone, I think I can inform and raise awareness of the students and parents there.
P17	I can say that it was a memory that I can tell you about in the future.
P18	I can give more information to the students in class. There are many details. The simplest one is that when the fire extinguisher is empty, it should be laid on its side.
P19	I know that in my future professional life, I can raise awareness in my own students. I can visit the AFAD center while teaching the appropriate gains in the science curriculum.

When we look at Table 10, the general view is that the participants will benefit from this training in their teaching careers. Science teacher candidates stated that they became more confident in transferring the knowledge and awareness they gained to their students in the future. They also stated that they became more conscious about how to intervene in the event of a disaster at school.

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Discussion, Conclusion and Recommendations

There is a significant overall lack in training related to disaster prevention, and while training has developed a positive attitude towards disaster prevention, it has been observed that students' knowledge and skill levels remain low (Wang et al., 2012). Students who have previously participated in any disaster response teams or have received first aid training demonstrated higher levels of disaster preparedness compared to students who had not received any training A study conducted with prospective classroom teachers indicated that naming school-based disaster training as “disaster education year” and “disaster drill year” positively influenced science teacher candidates' perceptions of disaster awareness (Goddard, 2017). . In training related to natural disasters involving university students, it has been noted that, in addition to providing theoretical and practical knowledge, environments should be created for students to express their emotions, and emotional support should be provided (Demir-Yıldız and Demir-Öztürk, 2023). As a result of the study, it was observed that the majority of the participating science teacher candidates have not received prior training. It is noteworthy that the participants who are in their final year of university have not taken additional training in a country where natural disasters occur quite frequently, despite having received education on this topic. This indicates that the efforts made in this area are inadequate. In this context, we see that science teacher candidates who had previously received training mainly focused on earthquakes. While we are all aware of the importance of earthquake training, it is essential not to overlook that various natural disasters can occur, and our science teacher candidates need to be prepared for these situations as well. Being prepared and conscious of natural disasters comes from education. The opinions of science teacher candidates who have experienced a natural disaster before show that our participants do not possess sufficient knowledge about what to do during a disaster. Similar results have emerged in various studies (Sözcü, 2020). For the participants who have realized their own inadequacies based on their experiences, this training provides a different perspective in this regard.

Another finding is that science teacher candidates view volunteering positively, but they hesitate to get involved due to feeling inadequate. This suggests that if adequate training is provided and people become more conscious, the number of volunteers who can help during a disaster will also increase. This, in turn, will facilitate a quicker response in a disaster situation, making interventions easier and minimizing loss of life and property. Additionally, many of our participants have changed their mindset about the idea of volunteering after this training, which further supports our earlier conclusion. Other studies have also shown that AFAD training increases willingness to volunteer (Arıcı, 2021). While different sections caught the attention of science teacher candidates during the training, they generally reported that the training was successful and productive. Practical training sessions, such as tent pitching and fire extinguishing drills, were of particular interest to the participants. Furthermore, seeing the use of tools and equipment by search and rescue teams helped them better understand the importance of utilizing technology in these operations. They frequently expressed that they have become more conscious in this regard. Beyond the practical activities, many participants found the opportunity to correct misconceptions during the theoretical lessons. Finally, when the science teacher candidates about their thoughts on how this training could create a difference in their teaching careers, very positive responses have been received. Science teacher

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candidates have realized the importance of becoming more conscious for their future students, particularly emphasizing that as science teachers, they need to act more diligently in this regard. While all teachers bear responsibility for sustainability and disaster education, it would not be incorrect to say that it becomes particularly significant for science teachers when examining the curriculum (Park, 2020). Considering all this information, we can say that the participating science teacher candidates found the training beneficial. They also expressed their desire to participate in such training opportunities in the future. A few science teacher candidates stated that they wanted to engage actively in this area by conducting research without waiting for such training to be provided, indicating that they have seen the importance of these training courses more clearly. This suggests that as such training sessions continue, the number of participants will increase, leading to greater overall awareness among individuals.

In today's world, in addition to the reality that people from different geographical areas are under various types of natural disaster threats, Turkey occupies a position where natural disasters occur much more frequently and with greater variety due to its geographical location and characteristics (Yılmaz, 2005). The types of disasters are classified into six main groups by the Disaster Research and Epidemiology Center: geophysical, hydrological, meteorological, climatological, biological, and space-related (Mata-Lima, Alvino-Borba, Pinheiro, Mata-Lima, and Almeida, 2013). It is noted that in Turkey, meteorological disasters include hail, floods, inundations, frost, forest fires, drought, heavy rainfall, strong winds, lightning, avalanches, snow, and storms (Yılmaz, 2022). The natural disasters experienced are ranked in terms of the number of damaged settlements as follows: earthquake, landslide, flood, rockfall, and forest fires (Gökçe, Özden, and Demir, 2008). When assessing the destruction caused by natural disasters in terms of human and material losses, it is observed that the type of disaster leading to the most losses is earthquakes. On average, a large earthquake occurs approximately once every five years in Turkey, resulting in significant human and material losses (Benli et al., 2018). In a developing and constantly changing world profile, societal needs are continuously being renewed. The systematic movements resulting from the changes and developments most significantly affect the field of education. In this sense, the transformation of a workforce that can respond to and keep pace with the desires, needs, and expectations of the changing world can only be achieved through education (Doğru, 2019). It is crucial to nurture individuals who can meet the needs and expectations of society, who can utilize technology in accordance with the requirements of the information age, and who are prepared and equipped for potential disaster situations. From this perspective, it becomes facilitative for every individual to have knowledge about natural disasters, to be educated, and to attain awareness, thereby helping to protect against the potential damages that disasters may cause (Koç, 2013).

In conclusion, it was believed that such training should be conducted more frequently. Although there are courses on sustainability and natural disasters in teacher education faculties, it was emphasized that practical training provided by institutions like AFAD should also be disseminated widely from teacher education faculties and conducted regularly. This study was conducted with 19 science teacher candidates. Training and studies with a larger participant group would support the findings of this research. Additionally, expanding the scope of the training would benefit both the participants and contribute to research in the field

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