

Enhancing Disaster Literacy in Tourism Education: Evidence for Building Sustainable Societies

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ABSTRACT

The tourism education plays a vital role in training professionals capable of managing the tourism sector, which is directly affected by crises and disasters. This study aims to evaluate the disaster literacy levels of university students and staff in relation to the eleventh Sustainable Development Goal, Sustainable Cities and Communities. In the study, the disaster literacy levels of the participants were compared before and after the disaster literacy and awareness training. The study adopted a quantitative research design and employed the Disaster Literacy Scale as the measurement instrument. The analysis revealed that, prior to the training, the disaster literacy levels of academic and administrative staff were insufficient, while those of students were limited. Following the training, staff members demonstrated limited improvement, whereas students reached a sufficient level. No significant differences were found between participants who had previously experienced a disaster or participated in disaster-related activities and those who had not. Ensuring the continuity of disaster education and providing participants with materials tailored to their characteristics are expected to enhance individual resilience to disasters. Consequently, social resilience will increase, contributing to the development of sustainable cities and societies. The study recommends incorporating a disaster-related course into the curriculum of tourism education conducting disaster drills within the faculty, and developing disaster-resilient hotel and destination projects involving student participation. This research contributes to the literature by comparing pre- and post-training results and grounding its analysis in the goal of sustainable cities and communities.

Keywords: Disaster Literacy in Tourism, Disaster Education, Sustainable Development Goal, Tourism Education

1. INTRODUCTION

Knowledge-based education is seen as an important problem in natural disaster education. The reason for this is that mere knowledge is not enough to solve disaster-related problems, and the skills of understanding and interpreting information are also issues that need to be emphasized. This gives rise to the concept of disaster literacy (Sozcu, 2019). Disaster literacy is about how individuals develop their understanding and skills in coping with disasters (Muktaf et al., 2017). According to Caliskan and Uner (2021) disaster literacy refers to individuals' ability to understand, interpret, and apply information in order to make informed decisions and follow instructions related to disasters. It is an important factor in managing the processes of disaster mitigation, prevention, preparedness, response, recovery, and rehabilitation, with the ultimate goal of maintaining and improving the quality of life throughout individuals' lives. Brown et al. (2014) stated that the disaster literacy is closely related to risk perception and disaster preparedness. In this direction, disaster literacy is defined as the capacity of individuals to read, understand and use information in order to make conscious decisions in disaster preparedness, intervention, rescue and minimizing the impact of disasters and to follow instructions from expert organizations. Individuals' survival skills can be increased with disaster literacy. Understanding and preparing themselves to overcome disaster situations can be provided with disaster literacy (Logayah et al., 2024). Disaster literacy is about individuals and societies having sufficient information about natural disasters, emergencies and crisis situations, where and how they should use this information. The subjects of disaster literacy include disaster preparedness, interventions during a disaster, post-disaster activities, first aid information, risk assessment and social solidarity.

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When the studies on disaster literacy in the literature to date are examined: Brown et al. (2014) developed a new model addressing the concept of disaster literacy. Abdul Rahim and Wu (2015) conducted a study on Taiwanese students. They found that individuals who received at least primary school education had partial knowledge about earthquakes. Sampurno et al. (2015) conducted a study on increasing students' disaster literacy by integrating science, technology, engineering, mathematics and disaster education. Chung and Yen (2016), in their study where they chose Taiwan as the research field, emphasized that school curricula provide students with disaster knowledge. Daramola et al. (2018) developed a disaster severity index that addresses the type and frequency of disasters in Nigeria, the source of information accessible to the public, the way it is used, and the effects of this information on disasters. Sozcu and Altinozu (2019) measured the natural disaster literacy levels of prospective teachers. Zhang et al. (2021) conducted studies to measure the natural disaster literacy levels of college students. Demirdelen and Cakici (2021) conducted a study on primary and secondary school teachers in Osmaniye; Gumus Sekerci et al. (2023) conducted a study on university students' basic disaster awareness and consciousness levels. Celebi and Sarikahya (2024) focused on nursing students; Ozer and Zenginer (2024) examined classroom and social studies teacher candidates; and Yildirim (2024) studied students in the special education department, identifying the factors affecting disaster literacy. Gungor (2023) evaluated the natural disaster literacy of teacher candidates on disaster preparedness and damage prevention. Bulut (2023) measured the disaster literacy of individuals from different age groups in Istanbul and examined the factors causing different levels. Kahraman and Gulacti (2023) conducted a study on the use of artificial intelligence technology in information designs to be prepared to increase natural disaster literacy. Dalmaz (2024) evaluated disaster literacy from a social service perspective. Arslan et al. (2023) developed a disaster literacy scale for secondary school students. Mufit et al. (2020) conducted a study to learn to what extent disaster literacy is integrated into learning in schools. Ustun et al. (2025) identified a positive linear relationship between health literacy and disaster literacy. Genc et al. (2025) proposed, as a practical recommendation, the idea of creating a well-prepared disaster-literate nursing staff. Unlike these studies, Novianti et al. (2021) examined disaster literacy specifically in tourism regions. In their study, they stated that effective use of communication media could be an effective method for nature tourism areas in disaster risk regions and thus tourists could be informed and encouraged.

Based on the literature review, it can be observed that studies on disaster literacy mostly focus on disaster risk regions such as Türkiye, Taiwan, Nigeria, Indonesia, Iran. The sample group consists of students from various levels such as primary and secondary education. Especially nursing department is notable for university. Teachers have also been the focus of numerous studies.

This study differs from similar studies in the literature because it will measure the literacy of the participants both before and after they receive disaster-related training and will be able to make a comparison. In this way, unlike studies that measure the perceptions and attitudes of the participants in scientific research, the fact that the study aims to see the change in disaster literacy by providing training to the participants is seen as an important social contribution to the participants even before the project is concluded. The study aims to understand whether the societies in our country have the ability to overcome this process with the least damage during disaster periods. Especially in disasters where heavy losses are experienced, these difficult processes can be overcome more easily and with solidarity if the citizens can remain calm, read the news in the press correctly, and cooperate. This study is also designed on the problem of measuring the adequacy of disaster literacy of the societies.

In addition, addressing disaster literacy in line with the goal of Sustainable Cities and Communities constitutes another unique value of the study. Effective disaster risk management is inextricably linked to the Global Sustainable Development Goals in a complex structure (Zhang et al., 2024). The goal of sustainable cities and communities is not only about building resilient buildings for societies, but also aims to increase the resilience of societies. In this direction, it is aimed to inform societies on issues such as disaster management, disaster preparedness, resource sustainability, and emergency plans and to increase their awareness. Sustainable development goals have been included in the 2030 agenda to transform the world by overcoming the many challenges faced by humanity and ensuring economic and social prosperity and environmental protection. Unlike traditional development agendas that focus on a limited set, sustainable development goals offer a holistic and multidimensional perspective on development (Pradhan et al., 2017). In the eleventh goal of sustainable development, which has seventeen goals, the majority of cities and communities are working to protect natural resources, improve sustainable development by ensuring socio-economic and environmental balance (Heikkinen et al., 2019). Disasters do not only affect the region where they occur, they also cause physical and economic problems at national and international levels (Cvetković et al. 2024). Therefore, disaster literacy is also an important factor in reducing disaster risk and promoting sustainable development. The reason for this is that with disaster literacy, individuals' thoughts, behaviors and even characters develop, and in this way, they care about themselves, society and the whole world, feel responsible for them and take the necessary steps (Suharini et al., 2019; Logayeh et al., 2024). Damages and losses in urban areas caused by disasters also put the future of the communities living in that city at risk. If a community lacks disaster awareness, it is quite difficult to create a sustainable community

and livable areas that can cope with the destructive effects of disasters (Acmaç Ozden, 2023). Educating communities about possible disaster risks and frequency in the region they live in and ensuring that the training is applicable without remaining theoretical will increase their disaster literacy. In particular, it is necessary to provide individuals with a good internet infrastructure and train them on how to use the internet. In this way, it can be helped to increase the disaster literacy of communities and improve urban disaster resilience and Individuals' resilience to disasters can be enhanced (Farzanegan et al., 2024).

The tourism sector is considered among the industries exhibiting the highest vulnerability to crises (Santana, 2004). Being prepared to cope with natural and human-induced crises is one of the major challenges faced by the sector (Pforr and Hosie, 2008). Crises can damage infrastructure and destabilize national economies, while also undermining tourists' confidence. To overcome these adverse effects, ensure stability, and maintain sustainability, effective crisis management is essential (Silase and Neh, 2025). For successful crisis management in the tourism sector, future professionals need to receive a comprehensive tourism education. This education should include training on how to cope with crises and disasters. Integrating disaster literacy into tourism education plays a critical role not only in enabling individuals to make appropriate decisions during crises but also in enhancing the resilience and sustainability of the tourism sector as a whole.

The aim of the study is to increase disaster literacy levels and social resilience by providing disaster literacy training to academic and administrative staff and students of Selçuk University Faculty of Tourism, with the understanding of spreading education from the closest area to the general area, in line with the eleventh goal of sustainable development, "Sustainable Cities and Communities". In this way, it is aimed to increase disaster literacy levels and social resilience of staff and students in universities, which are one of the important places of education, and to increase their level of helping both themselves and the society voluntarily, by making them more resilient in possible disasters. As a result of the analysis, what needs to be done to improve the inadequate ones among the individuals with inadequate, limited, sufficient and excellent disaster literacy levels and to increase the individual and social contributions of those with excellent levels will be discussed. In light of this information, the following hypotheses have been created:

Hypotheses at the stage before receiving training;

- H1. The disaster literacy level of tourism faculty academic staff is at an excellent level.
- H2. The disaster literacy level of tourism faculty administrative staff is at an excellent level.
- H3. The disaster literacy level of tourism faculty students is at an excellent level.
- H4. There is no difference between the disaster literacy levels of academic staff, administrative staff and students.
- H5: The disaster literacy harm reduction level average scores of the participants are at an excellent level.
- H6: The disaster literacy preparation level average scores of the participants are at an excellent level.
- H7: The disaster literacy intervention level average scores of the participants are at an excellent level.
- H8: The disaster literacy improvement level average scores of the participants are at an excellent level.
- H9: The disaster literacy levels of those who have previously experienced a disaster are more advanced than those who have not.
- H10: Disaster literacy levels of participants who take part in disaster activities are more advanced than others

Hypothesis in the stage after receiving training;

- H11: Disaster literacy levels of participants increased after receiving disaster training.

The study conducted to find answers to the hypotheses was designed in three stages. These stages are shown in Figure 1. A survey was conducted on disaster literacy among volunteer participants in the first stage of the study. In the second stage of the study, disaster training was organized for all faculty staff and students. In the last stage, after the training, the disaster literacy of volunteer participants was measured with the same scale. The obtained data was analyzed and a comparison was made regarding the disaster literacy levels of tourism faculty students and staff before and after the disaster training. Finally, the findings were evaluated within the scope of the eleventh article of the sustainable development goals.

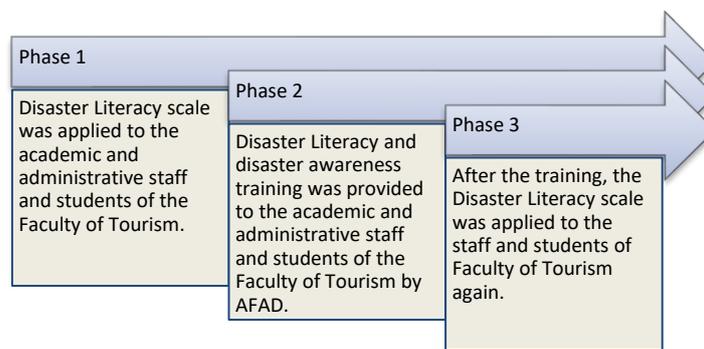


Figure 1. Stages of Measuring Disaster Literacy in the Study

2. METHOD

2.1. Research Universe and Sample

The research universe consists of the academic and administrative staff and students of the Faculty of Tourism, which has approximately 40 staff and 1100 students as of 2024. The sample is all participants who are expected to participate voluntarily. Therefore, a specific sample group was not selected in the research, and Gurbuz and Sahin (2018) stated that a sample of 278 would be sufficient with a sampling error of 0.05 for a universe size of 1000-5000. Based on this, the study was conducted with 390 volunteer participants before the training and 403 volunteer participants after the training. The reason for choosing this universe and sample is that it is easy to reach the participants and it is believed that a high rate of participation will be achieved in both the training and the survey. It is thought that in-depth research will be conducted due to the ease of access to all participants in this way.

Universities host the people with the highest level of education in societies. In these respects, their power to influence other individuals in society is also high. Therefore, it is thought that the selected sample will be a sample suitable for the sustainable city and community goal.

2.2. Data Collection Tool and Process (Phase 1 and 3 of the study)

The research was conducted within the framework of a quantitative research design. Data were collected over a two-month period. First, the first surveys were distributed, then training was organized and surveys were distributed again immediately after the training. The surveys were delivered to the participants face-to-face and online.

A survey technique was used to collect the data. The statements in the survey are the four-dimensional disaster literacy scale (DLS) developed by Caliskan and Uner (2023). These dimensions are;

- Harm reduction 17 items (1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17)
- Preparation 16 items (18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33)
- Intervention 13 items (34,35,36,37,38,39,40,41,42,43,44,45,46)
- Recovery 15 items (47,48,49,50,51,52,53,54,55,56,57,58,59,60,61)

As can be understood from this, the DLS scale is not just about having knowledge. It also addresses a broad learning process that addresses layers such as harm reduction, preparedness, intervention and recovery processes.

Formula=Index= (arithmetic mean-1) x (50/4)

Index= Calculated index specific to the person

Arithmetic mean= Average of responses given to each item

1= Lowest possible value of the mean (causes the index to be at its lowest 0)

4= Range of the average

50= Highest value selected for the new criterion

0 on the scale indicates the lowest DLS, 50 indicates the highest DLS.

After analyzing the surveys according to this scale, the disaster literacy levels of the participants;

- (0-<30): inadequate DLS,
- (30-<36): limited DLS,
- (36-<42): sufficient DLS,
- (42-50): excellent DLS are evaluated.

2.3. Ethics Statement

The necessary ethics committee permission to conduct the study was obtained by the Selçuk University, Tourism Faculty Scientific Ethics Evaluation Board with the decision dated 02.12.2024 and numbered 203/01.

2.4. Disaster Literacy and Awareness Trainings (Phase 2 of the Study)

Disaster education plays a critical role in reducing the negative effects of disasters. With this training, loss of life and property due to disasters can be reduced. Disaster literacy does not only mean sharing information. It also provides the opportunity to understand, analyze the formation of disasters and develop behaviors to solve problems (Turker and Sozcu, 2021).

In order to compare the literacy levels of the participants in the study, they needed to be trained. These trainings were planned as Basic Disaster Awareness Training, Integrated Disaster Management System Training, Türkiye Disaster Response Plan Training, and Evaluation of Experienced Disasters within the Scope of Disaster Management as a result of the interviews with Konya Provincial Disaster and Emergency Directorate (Konya AFAD). The trainings were given by three different expert trainers assigned by AFAD. Necessary correspondence was made to arrange a meeting room in the campus area for the training. Then, a poster request was made from the university's Corporate Communications Unit for the training announcement. The poster was shared on social media and announced to the students. In addition, it was hung in printed form in the faculty building and students were asked to participate in the training.

3. RESULTS

3.1. Pre-Training

In this section, results regarding demographic variables (Table 1) and reliability analysis (Table 2) are given.

Table 1 shows the demographic data of the participants who participated in the survey before the training. Accordingly, 38.2% of the participants were male and 61.8% were female. While 4.6% of the academic staff participated in the study, 1.5% of the administrative staff participated. The highest participation rate was 93.8% by the students. It is also a fact that the administrative staff cannot participate much in scientific studies due to their workload and working hours. The fact that the students of the Faculty of Tourism go on field trips, have kitchen studies, participate in tours, do recreational practices or work part-time due to the characteristics required by the sector also reduces the participation rate of the students in the training. While the majority of the participants are students of the Gastronomy and Culinary Arts Department (57.2%), the least participants are students of the Recreation Management Department (8.2%). While the students of the Tourism Guidance Department constitute 21.3% of the participants, the students of the Tourism Management Department constitute 13.3%. This is due to the fact that the Gastronomy and Culinary Arts Department opens a higher student quota than the other three departments each year (approximately 4 times more than the regular and evening education programs). While 49.5% of the participants had previously experienced a disaster, 50.5% had not. The rate of participation in disaster-related activities is 30.5%. The rate of 69.5% shows those who did not participate in the activities. The rate of participants who had previously received any disaster training is 35.4%. The rate of those who did not receive disaster training is 64.6%. This rate is also proof of how appropriate the project is. With this project, the majority who had not received disaster training before have the opportunity to receive disaster training.

Table 1. Analysis of Demographic Variables of Participants Who Did Not Receive Education

Variable	Response	Frequency	Valid Percentage (%)
Gender	Male	149	38,2
	Female	241	61,8
Your status	Academic Staff	18	4,6
	Administrative Staff	6	1,5
	Student	366	93,8
Department	Gastronomy and Culinary Arts	223	57,2
	Recreation Management	32	8,2
	Tourism Management	52	13,3
	Tourism Guidance	83	21,3
Have you experienced a disaster before?	Yes	193	49,5
	No	197	50,5
Have you participated in disaster activities?	Yes	119	30,5
	No	271	69,5
Have you received disaster training?	Yes	138	35,4
	No	252	64,6

Table 2 shows the reliability analysis result of the scale before the participants were trained. According to the value calculated with the SPSS program, the disaster literacy scale was found to be highly reliable with 0.979.

Table 2. Reliability Analysis of DLS Scale for Participants Who Did Not Receive Training

Scale Name	Cronbach's Alpha	Standardized Cronbach's Alpha	Number of Items
Mitigation	,936	,936	17
Preparedness	,935	,935	16
Response	,928	,929	13
Recovery	,943	,943	15
Total	,979	,979	61

3.2. Post-Training

This section provides results regarding demographic variables (Table 3) and reliability analysis (Table 4).

Demographic data of the participants in the training are shown in Table 3. Accordingly, 34.49% of the participants were male and 65.51% were female. 3.72% of the academic staff participated in the study, while 0.5% of the administrative staff participated. The highest participation rate was again 95.78% by students. While the administrative staff participated more in the first phase of the surveys, the number decreased at this stage. It is thought that the reason for this is that they could not leave their work during working hours and come to the training hall. It is thought that the reason for the increase in the number of students is the interest in the training. While the majority of the participants were students of the Gastronomy and Culinary Arts Department (69.48%), the least participants were students of the Recreation Management Department (3.72%). While students of the Tourism Guidance Department constituted 19.85% of the participants, students of the Tourism Management Department constituted 6.95%. While 43.67% of the participants had previously experienced a disaster, 56.33% had not. The rate of participation in disaster-related activities is 33.50%. The rate of 66.5% shows those who did not participate in the activities. The question of whether they had received any disaster training before was removed at this stage because the surveys were applied to participants who attended the training.

Table 3. Analysis of Demographic Variables of Participants in Training

Variable	Response	Frequency	Valid Percentage (%)
Gender	Male	139	34,49
	Female	264	65,51
Your status	Academic Staff	15	3,72
	Administrative Staff	2	0,50
	Student	386	95,78
	Gastronomy and Culinary Arts	280	69,48
Department	Recreation Management	15	3,72
	Tourism Management	28	6,95
	Tourism Guidance	80	19,85
Have you experienced a disaster before?	Yes	176	43,67
	No	227	56,33
Have you participated in disaster activities?	Yes	135	33,50
	No	268	66,50

Table 4 shows the reliability analysis results of the questionnaires filled out by the participants who received training. According to the value calculated with the SPSS program, the disaster literacy scale was found to be highly reliable with 0.928.

Table 4. Reliability Analysis of DLS Scale of Trained Participants

Scale Name	Cronbach's Alpha	Standardized Cronbach's Alpha	Number of Items
Mitigation	,928	,928	17
Preparedness	,931	,931	16
Response	,925	,925	13
Recovery	,939	,939	15
Total	,963	,963	61

3.3. Hypothesis Tests

In this section, the hypothesis test results are presented in Tables 5-15.

H1. The disaster literacy level of the academic staff of the tourism faculty is excellent.

The disaster literacy levels of academic staff are shown in Table 5. As a result of the analysis, the general average value was 3.4, while the general standardized value was 29.8. As a result, it was determined that the disaster literacy level of academic staff before the training was insufficient. Therefore, H1 hypothesis was rejected.

Table 5. Disaster Literacy Level of Academic Staff

Variable	DLS Level
Academic Staff General Average	3,4
Academic Staff General Standardized	29,8
Academic Staff General Result	Insufficient DLS

H2. The disaster literacy level of the administrative staff of the tourism faculty is excellent.

The disaster literacy level of the administrative staff of the Faculty of Tourism was also found to be insufficient as seen in Table 6. While the general average value was 3.3, the general standardized value was calculated as 28.3. According to these results, the H2 hypothesis was also rejected.

Table 6. Disaster Literacy Level of Administrative Staff

Variable	DLS Level
Administrative Staff General Average	3,3
Administrative Staff General Standardized	28,3
Administrative Staff General Result	Insufficient DLS

H3. The disaster literacy level of the students of the Faculty of Tourism is excellent.

Table 7 shows the disaster literacy level of students. Unlike academic and administrative staff, students' disaster literacy levels were calculated to be limited. H3 hypothesis was rejected.

Table 7. Disaster Literacy Level of the Students

Variable	DLS Level
Student Overall Average	3,7
Student Overall Standardized	34,0
Student Overall Result	Limited DLS

H4. There is no difference between the disaster literacy levels of academic staff, administrative staff and students.

The comparison of the disaster literacy levels of the participants in the three clusters is shown in Table 8. Accordingly, the disaster literacy of the academic and administrative staff is insufficient, while that of the students is limited. Therefore, since two clusters are the same and one cluster is different, hypothesis H4 is partially accepted.

After this stage, disaster literacy levels specific to the sub-dimensions of the scale were calculated.

Table 8. Comparison of Disaster Literacy Levels of Academic Staff, Administrative Staff and Students

Variable	DLS Level
Academic Staff Overall Result	Insufficient DLS
Administrative Staff Overall Result	Insufficient DLS
Student Overall Result	Limited DLS

H5. The disaster literacy harm reduction level average scores of the participants are at an excellent level.

The mean of the harm reduction sub-dimension was 3.8, while the standardized value was 34.4 (Table 9). This shows that the literacy level of this dimension was calculated as limited. H5 hypothesis was rejected.

Table 9. Literacy Levels of All Participants in the Harm Reduction Dimension

Variable	Harm Reduction Dimension Level
Harm Reduction Average	3,8
Harm Reduction Standardized	34,4
Harm Reduction Outcome	Limited DLS

H6. The participants' disaster literacy preparedness level mean scores were excellent.

The mean of the preparedness sub-dimension was 3.7, while the standardized value was 34.1 (Table 10). This shows that the literacy level of this dimension was calculated as limited. H6 hypothesis was rejected.

Table 10. Participants' Preparedness Dimension Literacy Levels

Variable	Preparation Dimension Level
Preparation Average	3,7
Preparation Standardized	34,1
Preparation Result	Limited DLS

H7. The disaster literacy intervention level mean scores of the participants were at an excellent level.

The mean of the intervention sub-dimension was 3.7, while the standardized value was 34.0 (Table 11). This shows that the literacy level of this dimension was calculated as limited. Hypothesis H7 was rejected.

Table 11. Participants' Intervention Dimension Literacy Levels

Variable	Intervention Size Level
Intervention Mean	3,7
Intervention Standardized	34,0
Intervention Outcome	Limited DLS

H8: The participants' disaster literacy improvement level score averages are at an excellent level.

The mean of the improvement sub-dimension was 3.6, while the standardized value was 32.4 (Table 12). This shows that the literacy level of this dimension was calculated as limited. Hypothesis H8 was rejected.

Table 12. Literacy Levels of Participants in the Improvement Dimension

Variable	Improvement Dimension Level
Improvement Average	3,6
Improvement Standardized	32,4
Improvement Result	Limited DLS

H9. Disaster literacy levels of participants who have previously experienced a disaster are more advanced than those who have not.

The general average of participants who had previously experienced a disaster was 3.8, while the general average of those who did not was 3.6. The general standardization of those who did not experience a disaster was 34.7, while that of those who did not was 32.8. According to these results, the disaster literacy levels of both groups were limited. Therefore, no difference was observed between them and hypothesis H9 was rejected. Farzanegan et al. (2024) stated that the effect of natural disaster experience and formal education on natural disaster literacy was limited.

Table 13. Literacy Levels of Participants According to Disaster Experience Status

Disaster Experience Variable	DLS Level
Previous Disaster Experience Overall Average	3,8
Previous Disaster Experience Overall Standardized	34,7
Previous Disaster Experience Overall Result	Limited DLS
Non-Disaster Experience Variable	DLS Level
Previous Disaster Experience Overall Average	3,6
Previous Disaster Experience Overall Standardized	32,8
Previous Disaster Experience Overall Result	Limited DLS

H10. The disaster literacy levels of participants who took part in the disaster activities carried out were more advanced than the others.

As can be seen in Table 10, there is no difference in the literacy level of participants who have previously participated in disaster activities and those who have not. While the general average of those who participated in the activities is 3.6 and the general standardized value is 32.7, the non-participants are 3.7 and 34.2, respectively. The results show that both groups have limited DLS levels. In this case, no difference was observed between those who took part in disaster activities and those who did not, and the H10 hypothesis was rejected.

Table 14. Literacy Levels of Participants According to Their Participation in Disaster Activities

Disaster Activities Participation Variable	DLS Level
General Average of Disaster Activities Participation	3,6
General Standardized Disaster Activities Participation	32,7
General Result of Disaster Activities Participation	Limited DLS
Disaster Non-Participation Variable	DLS Level
General Average of Disaster Activities Participation	3,7
General Standardized Disaster Activities Participation	34,2
General Result of Disaster Activities Participation	Limited DLS

The next stage after receiving training;

H11. After receiving disaster training, the participants' disaster literacy levels increased.

Table 15 shows the change in literacy levels after participants received various trainings on disaster literacy and disaster awareness. According to the table, while the general average and standardized values were 3.7 and 33.7 before the training, these values increased to 4 and 37.4 after the training. Disaster literacy levels increased from limited to sufficient levels. This shows that the trainings were effective for the participants in general and the study achieved its purpose. H11 hypothesis was accepted.

Table 15. Literacy Levels of Participants According to Whether They Received Disaster Training

Pre-Training Variable	DLS Level
Overall Average	3,7
Overall Standardized	33,7
Overall Result	Limited DLS
Post-Training Variable	DLS Level
Overall Average After Training	4,0
Overall Standardized After Training	37,4
Overall Result After Training	Sufficient DLS

4. DISCUSSION AND RECOMMENDATIONS

Türkiye has faced many disasters from the past to the present. In this geography, disasters that left deep marks on society, such as earthquakes, landslides, floods, fires, snow and windstorms, and mine collapses, have occurred. In particular, on February 6, 2023, an earthquake occurred in the Syria-Türkiye region, affecting a very large area and causing the death of approximately fifty-three thousand people in Türkiye, leaving many disabled, and those who

survived having to deal with various psychological problems. After the earthquake, long-term studies were carried out to eliminate the negative effects of the earthquake. These studies included many economic and sociological studies. At this point, the importance of citizens being prepared and resilient against disasters has been understood once again. According to Fadilah et al. (2020), the reason why earthquakes are severe in earthquake-prone regions is that societies have low levels of knowledge. When this situation is taken into consideration, the importance of informing and raising awareness in societies is also realized. This study focuses on measuring the extent to which university students and staff, who constitute a significant segment of society and actively use social media and the Internet, have knowledge about disasters.

According to the study findings (H1), the inadequacy of the disaster literacy level of academic staff has revealed the fact that not only students but also faculty members should be trained in universities that produce information. In light of the available data, it is possible to say that the training provided to instructors is inadequate and that universities should take measures in this regard. The inclusion of university faculty members, who are leading the education of today's information societies, from the preparation stage to the recovery stage of disasters is of critical importance in increasing social resilience. Both the low participation of administrative staff in the work and their inadequate literacy (H2) also pose a risk, especially in terms of intra-university emergency management. Increasing the knowledge and skill levels of administrative staff, who work much longer hours than faculty members and students at universities, regarding disasters will also contribute to the institutional culture. When considered from the perspective of students (H3), limited disaster literacy also poses a risk for the tourism sector. The tourism sector is one of the sectors most rapidly and most affected by disasters. In such a case, it is necessary to prepare students for disasters and emergencies. As students become more aware of disaster training, they can establish and coordinate functional systems in terms of ensuring the safety of tourists, providing services after disasters and emergencies, and recovering as quickly as possible, both in their internships and in their professional lives. Kesumaningtyas et al. (2022) also emphasize the necessity of disaster literacy training, which requires time and effort, so that students can give the right behavioral response to disasters.

When hypotheses H1, H2 and H3 are evaluated, the fact that academic and administrative staff are insufficient and students have limited literacy levels can be attributed to the fact that it varies according to factors representing an individual's socioeconomic background as stated by Paasche-Orlow and Wolf (2007). Kimura et al. (2017) also state that disaster management literacy varies according to users, including citizens and local government representatives, and that data should be prepared accordingly

The literacy levels of the participants divided into three different groups before the training is striking (H4). The need for group-specific training content, method and duration should be taken into consideration for groups with different characteristics. When the focus is on the social structure rather than the individual, that is, when a more inclusive approach is adopted, it will also contribute to the sustainability of cities and communities. Kimura et al. (2017) stated that in disaster and disaster management cases, disaster management literacy is effectively increased when participants receive training content specific to their group characteristics. Contrary to the results of the study, Kanbara et al. (2016) stated that even if earthquakes are predicted in 30 years, the reactions from citizens will differ according to their age, profession and cultural characteristics. However, the study indicated that disaster literacy does not show a significant difference between students of different ages and cultural characteristics and academic and administrative personnel in different professions. When disaster literacy level measurements were made, it was determined that literacy was limited for all four sub-dimensions (H5, H6, H7, H8). However, each of the stages of mitigation, preparation, response and recovery has a separate importance. These dimensions are not interchangeable, but each has its own importance. It is important for communities to be conscious participants in every stage of disaster management. In this direction, while individuals and communities are being made aware, information and practices regarding each dimension should be carried out meticulously. Brown et al. (2014) attribute the successful coping with the effects of disasters to the participation of individuals in all activities in disaster management (mitigation, preparation, response and recovery). For this purpose, they emphasize the importance of developing materials that will educate them.

There was no difference between the literacy levels of those who had and had not experienced a disaster before (H9). Similarly, the disaster literacy levels of those who participated in the disaster activities and those who did not were the same (H10). This situation reveals that individuals cannot eliminate their lack of knowledge even if they experience a disaster, and that it is important to receive training for this. These results are similar to the results of Farzanegan et al. (2024). Accordingly, having experienced a natural disaster alone is not enough to improve individuals' disaster literacy. Chung and Yen (2016), on the other hand, found that participants who had previously experienced a natural disaster had a higher level of disaster prevention knowledge and skills compared to those who had not. Gulsoy et al. (2025) also concluded that the disaster literacy and disaster preparedness scores of those who had disaster experience were higher than those who did not.

After the participants were trained, when the surveys were conducted again, it was observed that the disaster literacy levels of the participants increased from limited to sufficient (H11). This proves that the training provided was appropriate and useful. The benefits of this increase in the knowledge level of the students will be realized when they work full-time in the tourism sector in the future. It provides an important basis for sustainable tourism as well as sustainable communities and cities by contributing to the preservation or improvement of service quality, communication and coordination with other employees, and ensuring tourist safety. Juhadi et al. (2021) argue that increasing public awareness in disaster-prone countries depends on disaster education to be given in schools. They say that this can be improved by integrating disaster education into the subjects taught in school and relating it to the local wisdom of the society. Similarly, Fadilah et al. (2020) argue that disaster education should be added to higher education programs. Farzanegan et al. (2024) stated that specialized disaster training is more effective on literacy levels than disaster training within the curriculum.

While life goes on, in addition to the lives lost, historical buildings, cultural heritage, handicrafts and touristic values that cannot be brought back have also been destroyed or severely damaged. The goal of cities and societies being sustainable also includes the sustainability of tourism. Therefore, the construction of disaster-resistant societies not only protects human life, but also has strategic importance in terms of ensuring the sustainability of cultural heritage, touristic values and cities.

By integrating disaster training into tourism faculties, the safety of students and personnel can be ensured while the crisis management capacity of the sector can be increased. The Basic Disaster Awareness and Crisis Management in Tourism course can be added to the curriculum as a compulsory or elective course. This course can be added to all departments of Accommodation Management, Recreation Management, Travel Management and Gastronomy. With this course, students will be made aware of disaster types, evacuation plans, crisis management and risk perception.

The fact that 78 people lost their lives in a fire that broke out in a popular hotel in our country in the recent past (Gurbuz et al., 2025) has also painfully shown how important evacuation drills are for various types of disasters, especially fire and earthquake. In this context, disaster drills should be conducted for students under the management of AFAD.

Students can be encouraged to become AFAD Volunteers or establish a student community for this purpose. Within the scope of volunteer tourism, disaster victims can be supported with psychosocial support after a disaster, etc. Volunteers can also receive different trainings and certificates can be given to participants in cooperation with unions in the tourism sector.

Disaster-resistant hotel models can be established by collaborating with accommodation businesses.

Project protocols can be developed between graduate students and industry employees to develop disaster-resistant destinations on a regional basis.

4.1. Theoretical Implications

The main contribution of the study is that it does not address disaster literacy only for the purpose of informing, but rather addresses it as an integrated concept that concerns individuals' risk perceptions, decision-making competencies and social resilience in vital situations. In addition, the study fills a gap in the literature by drawing attention to increasing social resilience by establishing a connection between the goal of Sustainable Cities and Communities and disaster literacy.

This research is expected to have an important place in the literature in terms of evaluating the participants before and after providing training. The efficiency of disaster training provided by various institutions and organizations in our country can also be commented on according to the results of this study. In addition, since the participants will evaluate the same questions twice before and after the training, they will actually have the opportunity to evaluate the change in themselves.

The research is focused on social output. After the research is completed, participants will be informed about disaster literacy. It is hoped that this will contribute to societies being able to overcome the devastating disaster periods in our country with minimal damage.

A review of the relevant literature reveals that disaster literacy assessments have generally focused on students and teachers. In the present study, in addition to students and academicians, administrative staff were also included in the sample. The impact of the training will be evaluated in the short term; however, it is expected that the findings will inform future research involving longer durations and diverse training programs in new projects. Particularly in

operational processes, the active participation of administrative staff is anticipated to provide significant benefits for other members of the institution.

4.2. Practical Implications

Disaster training cannot be limited to just having knowledge. These trainings are a priority issue that affects individuals to be as prepared as possible before experiencing disaster and emergency moments, to survive, and to be able to hold on to mistakes afterwards. These trainings given specifically for the Faculty of Tourism should actually be seen as a strategic investment since the students who graduate from here will take on roles in different segments of society. The effects of these trainings, especially those spread through institutional structures such as universities, which are considered as information production centers, have the opportunity to reach more people.

Within the scope of the study, it was observed that awareness was created in the participants even in a short period of time with the comparison made before and after the training. As long as the trainings for academic and administrative staff and students continue, firstly individual awareness and resistance against disasters will increase. Then this development in individuals will be reflected in the societies and disaster-resistant societies will be formed. With the sustainability of this change extending from the individual to the society, from the society to the whole city, public health can be protected especially in times of disasters that cannot be prevented and cause material losses such as life and property.

In addition, integrating disaster training into tourism education will contribute both to students' individual resilience and to the preparedness of the tourism sector for potential crises and disasters.

4.3. Limitations and Recommendations for Future Workers

The data collected in the study was taken from one faculty of a university. The participants were limited to a certain number across the faculty. Therefore, it cannot be assumed that this study will yield the same results for all regions, universities, faculties or disciplines. It was assumed that the participants answered the survey questions carefully and honestly by understanding them. The long-term effects of the results of the training given by experts cannot be seen in this study. It is not known how the participants will use their training gains in the event of a disaster. In addition, participants who answered the same survey questions twice before and after the training may have tended to give more correct answers because they had seen the questions before.

Future studies may conduct this study in different universities, faculties or disciplines and make comparisons. In order to measure the long-term effects of the training, the same questions may be asked to the participants again after a few months or years. Training may even be continued at certain intervals to refresh the information. Data may be collected using techniques that allow for in-depth interviews with the participants instead of survey techniques. Educational content may be created using creative drama, fictional scenarios, games and various digital materials.

Ethical Approval: *This study was prepared in accordance with academic, scientific, and ethical principles. As the author, I declare that all information, documents, and visual materials used in this article do not infringe upon any third-party copyrights. The manuscript has not been published elsewhere and was not under consideration for publication by any other journal at the time of its submission to the Journal of Disaster and Risk.*

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