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ASSESSMENT ON DISASTER PREPAREDNESS, RELATED-KNOWLEDGE, AND ADAPTATION AMONG INTERMEDIATE-LEVEL STUDENTS

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Abstract:
This study aimed to assess disaster preparedness, disaster-related knowledge, and disaster adaptation among intermediate-level students. The study employed the non-experimental quantitative research design utilizing the descriptive-comparative method and stratified random sampling with Mean, t-test, and Analysis of Variance (ANOVA) as statistical tools. Researchers used adapted and validated survey questionnaires in gathering the data from the seventy (70) target respondents. The result showed that the levels of students' disaster preparedness, related knowledge and adaptation were high or oftentimes manifested. This means that students understand the importance of sharing knowledge and learning from experts, are confident in school preparedness, and are willing to engage in discussions about disasters with various groups. It was also found that the students' demographic profiles do not have a significant difference in their disaster preparedness and disaster-related knowledge. There was a significant difference in the disaster adaptation of the students when analyzed according to grade level. However, no significant differences were found when analyzed according to gender and age. Overall results emphasize how crucial it is to have inclusive, effective, and context-sensitive disaster risk reduction (DRR) programs included in school curricula. Maintaining and reinforcing existing initiatives aimed at disaster preparedness, including sharing knowledge, learning from experts, and instilling confidence in school preparedness measures, is recommended.

Keywords: disaster preparedness, disaster-related knowledge, disaster adaptation, intermediate-level students

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1. Introduction

The increasing risk of disasters causes a significant challenge to communities worldwide, and children are among the most vulnerable groups. Tipler *et al.* (2017) highlighted that during natural hazards, students, especially those at school during such events, are at an increased risk of harm. This heightened risk is due to the significant amount of time children spend at school, making them particularly susceptible when disasters strike. Disasters, whether natural or artificial, affect children in different ways, directly or indirectly, and their impact is considered more for elementary school-age children, as they cannot rescue themselves at such a young age (Umairoh *et al.*, 2023). This is because they lack the physical strength, cognitive skills, and emotional resilience to effectively respond to and recover from disaster situations (Makwana, 2019). The increased vulnerability of these young children means that special consideration and targeted efforts are necessary to ensure their safety and well-being in the face of disaster risks.

On the other hand, schools as educational institutions play a significant role in enhancing students' preparedness, knowledge, and ability to adapt to disasters (Pambudi & Ashari, 2019). It can serve as a core for educating children about potential hazards and teaching them how to respond effectively in emergencies.

As places of learning, they can provide essential skills and knowledge to students. The required knowledge and skills can be provided to the child in various ways in schools, one of which is practical information on safety procedures, such as evacuation plans, first aid, and emergency contact protocols, which empower students with the skills and confidence needed to act quickly and appropriately during a disaster (Epstein & Harding, 2020). Promoting access, quality, and sustained DRRM activities for learners in schools could enhance the adaptive capacities of learners and mitigate the risks and hazards affecting them (Bicar *et al.*, 2021).

Additionally, in a local setting, the region of Mindanao in the Philippines is particularly vulnerable to various natural and artificial disasters, with significant consequences for the population. For example, the Super Typhoon Bopha and the Mayo River Debris-Flow Disaster in Mindanao led to debris flow that buried a large area and resulted in many casualties. The region's vulnerability to such disasters worsens because of population growth and unwise settlement practices (Rodolfo *et al.*, 2018). As the population increases, more people live in areas prone to hazards, such as floodplains, coastal regions, and slopes susceptible to landslides. This growth often leads to the development of informal settlements that lack proper infrastructure and are poorly planned, making them particularly vulnerable to the impacts of disasters. The effect of these disasters extends beyond the immediate loss of life, affecting the region's environment, health, and economic performance (Freitas *et al.*, 2019).

Moreover, Denpasar City, Indonesia, noted that children are vulnerable to disasters, so efforts are needed to determine disaster preparedness factors for elementary school students (Yusniawati & Suantika, 2020). This acknowledges children's unique needs and vulnerabilities in disaster situations and emphasizes the importance of

targeted preparedness strategies to ensure their safety and well-being during emergencies. On the other hand, reducing vulnerability is one way to protect children in disasters (Seddighi *et al.*, 2021). Focusing on a child's preparedness, knowledge, and adaptation before and after disasters is part of reducing their risk of vulnerability.

Furthermore, transitioning to the urgency of the situation, it is essential to assess the level of disaster preparedness, knowledge, and adaptation of intermediate-level students in Camudmud Elementary School because children are highly vulnerable during disasters, and equipping them with the necessary knowledge and skills can significantly enhance their safety and resilience, both at school and at home. The safety and well-being of children depend on their ability to respond effectively. Assessing their preparedness, knowledge, and ability to adapt when a disaster occurs helps identify strengths and areas for improvement. Moreover, numerous studies have been conducted on disaster preparedness in high schools and colleges, aiming to understand older students' knowledge, attitudes, and readiness in the face of potential disasters (Matunhay, 2022). However, a noticeable research gap exists in elementary schools because most existing studies focus primarily on secondary schools and higher education institutions. In contrast, elementary schools have received less attention, resulting in an insufficient understanding of their specific needs and challenges.

Similarly, the study by Hafida (2018) emphasized the critical importance of providing disaster education to elementary school students. This is due to the findings that these young students generally have deficient levels of preparedness when handling disaster situations. Also, the study by Rosyida and Adi (2017) highlighted that elementary school students living in areas prone to flooding were found to have insufficient knowledge about floods and exhibited negative attitudes toward flood preparedness. This indicates a significant gap in their understanding and readiness to handle flood-related emergencies, highlighting the need for targeted educational interventions to improve their awareness and attitudes toward flood preparedness. Thus, the need for more research in elementary schools is a significant gap as it overlooks a critical phase in a child's development. Addressing this research gap is essential for developing tailored disaster preparedness programs to effectively engage and educate elementary school students, equipping them with crucial skills and knowledge to protect themselves and others during emergencies. This indicates a need for more research and educational efforts to enhance disaster preparedness, learning, and adaptation among elementary students.

The primary goal of this study is to assess the level of disaster preparedness, disaster knowledge, and disaster adaptation among intermediate-level students at Camudmud Elementary School. The Research attempts to respond to the following questions:

1) What is the demographic profile of the respondents in terms of:
   1.1 age;
   1.2 grade level; and
   1.3 gender?

2) What is the student's level of disaster preparedness, disaster-related knowledge, and disaster adaptation?
3) Is there a significant difference in the students' disaster preparedness, disaster-related knowledge, and disaster adaptation when categorized according to their demographic profile?

The disaster preparedness, knowledge, and adaptation study primarily employs the Protection Motivation Theory as its theoretical framework. The Protection Motivation Theory suggests that students' motivation to engage in preparedness activities is influenced by their perception of the threat posed by disasters and their belief in the effectiveness of recommended actions (Rogers & Prentice-Dunn, 1997). If pose students perceive a high threat level and believe that the suggested preparedness measures are effective and within their capability to execute, in that case, they are more likely to take proactive steps to prepare for potential disasters.

Additionally, the Social Cognitive Theory underscores the critical role of observational learning and self-efficacy in shaping preparedness behaviors. According to this theory, students learn and adopt behaviors by observing others, particularly role models or peers who effectively prepare for disasters. This process, known as observational learning, is complemented by self-efficacy, which refers to students' confidence in their abilities to execute the necessary actions for disaster preparedness. Bandura (2002) emphasizes that when students see others successfully engaging in preparedness activities and believe in their competence to do the same, they are more likely to adopt and maintain these critical behaviors. This theory highlights the interplay between social influences and personal confidence in encouraging effective disaster preparedness.

Moreover, the Hyogo Framework for Action (HFA) was a global disaster risk reduction plan from 2005 to 2015, promoting knowledge, innovation, and education for a safer society. It aimed to enhance disaster preparedness and response worldwide by providing a comprehensive approach to disaster risk reduction, emphasizing the need for cooperation among various sectors and stakeholders. The HFA aimed to build community, national, and international resilience by promoting proactive measures and long-term strategies to manage disaster risks.

The conceptual framework for assessing disaster preparedness, related knowledge, and adaptation in children, considering demographic profiles of ages 9-13, grades 4-6, and gender, can be structured around several key components. According to Ronan *et al.* (2016), children's knowledge of disaster preparedness varies significantly with age and education. Younger children may struggle with complex concepts, but their cognitive abilities improve as they age and advance in education. However, research has shown that children as young as 9-13 can conduct scientific investigations, although their abilities may vary based on their grade level and cognitive development (Valanides *et al.*, 2014). Gender differences in disaster management are often overlooked, as highlighted in the study (Fordham, 1999), which found that males and females experience disasters

differently, with girls usually facing lower status and boys being encouraged to take risks and assert dominance.

The independent variables are disaster preparedness, disaster-related knowledge, and disaster adaptation. Knowledge refers to understanding emergency procedures and safety measures, which means being well-informed about the steps and actions needed to respond effectively and safely in emergencies (Vinodkumar & Bhasi, 2010). Adaptation involves applying your understanding of emergency procedures and safety measures during emergencies (Elkady *et al.*, 2024). Recognizing these relationships can guide targeted education and policy to enhance children's disaster preparedness. The framework suggests focusing on readiness, knowledge, and adaptation, allowing for age-appropriate and gender-sensitive disaster education programs that help children be more prepared and adaptable in emergencies.

This disaster preparedness, knowledge, and adaptation research among intermediate-level students at Camudmud Elementary School offers essential benefits for many groups. It gives valuable information to DepEd DRRM to help them create and improve policies and programs for better disaster preparedness in schools. It also allows local government units (LGUs) to understand the specific needs and weaknesses of the students so that they can include these insights in their overall disaster preparedness plans. For barangay DRRM teams, the study provides information about how prepared students are for disasters, helping them design and carry out more effective local interventions. The school can use the findings to enhance its curriculum by making disaster preparedness education more relevant and engaging for students. Additionally, the study gives future researchers a baseline to compare and measure the success of new programs over time and identify areas needing more research, thereby contributing to disaster preparedness and education.

2. Material and Methods

2.1 Research respondents

The target respondents for this study are the intermediate-level students attending Camudmud Elementary School, which has a total population of 215 students. To select the respondents, the researchers employed Slovin's formula and stratified random sampling method in the sample selection. As a result, 70 respondents participated in the study: 22 students from grade 4, 21 from grade 5, and 27 from grade 6. The researchers excluded students in grades 1 to 3 who were not classified as intermediate-level. This approach ensures that the sample is representative of the population, allowing for more accurate and generalizable results (Stratton, 2019) regarding the students' disaster preparedness, related knowledge, and adaptation behaviors.

Moreover, randomization techniques give every individual in the population the same chance of being selected in the sample (Stockemer & Stockemer, 2019). It is also an unbiased and impartial selection method (Sharma, 2017). The respondents are free to withdraw at any time if they feel uncomfortable or the criteria are unmet.

The Camudmud Elementary School is situated within Barangay Camudmud, a coastal barangay along Davao Gulf. It is located in the northernmost part of the Island Garden City of Samal, and the location faces multiple disaster risks, including earthquakes, fires, floods, big waves, and sea level rise during extreme weather conditions. According to the Barangay Disaster Risk Reduction Management (BDRRM, 2019-2022) record, students need adequate preparedness, especially when dealing with flood disasters. Thus, disaster preparedness, knowledge, and adaptation are significant for this group.

2.2 Research instrument

The researchers in this study used a survey questionnaire from the study by Tuladhar *et al.* (2017). It was adopted to investigate DRR knowledge. The respondents answered fifteen questions categorized into three categories: disaster preparedness, disaster-related knowledge, and disaster adaptation. The researchers made modifications and refinements to the questionnaire that formed the foundation of their study. The instrument was validated by a panel of experts. The researchers used a Likert-type scale. According to Amidei *et al.* (2019), Likert scales are frequently used to express agreement and disagreement and are meant to represent the subject under study accurately. A five-point Likert-type scale measures students' responses across various categories, where 5 signifies "Very High," 4 corresponds to "High," 3 indicates "Moderate," 2 represents "Low," and 1 signifies "Very Low."

2.3 Design and Procedure

2.3.1 Research design

This study utilized a quantitative research approach, precisely a descriptive-comparative method. The researchers statistically assess disaster preparedness, related knowledge, and adaptation among intermediate-level students in Camudmud Elementary School. Quantitative research involves collecting and analyzing numerical data, enabling the identification of patterns, prediction, causal relationship testing, and the generalization of findings to larger populations (Bhandari, 2023). Its designs are either experimental or non-experimental and seek to obtain accurate and reliable measurements (Rahman, 2020). This study also employed a descriptive-comparative research design. It aims to observe and describe the variations between different groups in a population without intentionally changing any factors (Cantrell, 2011, cited in Villaabrille *et al.*, 2024; Camino *et al.*, 2023; Maranga *et al.*, 2023).

2.3.2 Data collection

For permission to carry out the study, the researchers submitted a letter to the Dean of UM Peñaplata College. Afterwards, the researchers sent a letter to the School Division Office of the Island Garden City of Samal. Subsequently, the school principal of Camudmud Elementary School received a letter from the researchers requesting permission to conduct the study. Following approval, the researchers provided the

respondents' parents with consent forms to secure their participation. Upon obtaining parental consent, the researchers conducted an orientation session with the respondents to explain the study's purpose, procedures, and their rights as participants. They clarified specific terms for the survey participants to ensure accurate responses, emphasizing the importance of providing honest answers. The survey was conducted face-to-face. After the participants completed the questionnaire, the researchers collected and tallied the data and then submitted it to the statistician for analysis. The statistician performed various statistical tests to determine the significance and correlations within the data. Once the analysis was complete, the researchers interpreted the findings and formulated the conclusions and recommendations.

2.3.3 Statistical tools

The researchers used the mean to assess disaster preparedness, related knowledge, and adaptation among intermediate-level students. Demographic factors like age, grade level, and gender were examined to identify significant differences. Mean was used to determine the level of disaster preparedness, disaster-related knowledge and disaster adaptation among intermediate-level students. T-test assessed potential differences in disaster preparedness, related knowledge, and adaptation between various groups within the student population when analyzed according to gender and age. Analysis of Variance (ANOVA) examined the differences in students' disaster preparedness, disaster-related knowledge, and disaster adaptation when categorized according to grade level. These statistical tools allowed for a nuanced exploration of the overall trends and the impact of demographic variables on the student's readiness and capabilities in disaster situations, thereby contributing valuable insights to disaster preparedness education.

2.3.4 Ethical considerations

The researchers ensured that the study was conducted with adherence to ethical standards. It followed protocol and underwent examination. To ensure ethical considerations were met, the researchers followed the necessary processes in conducting the study.

3. Results and Discussion

3.1 Demographic profile of intermediate-level students

The demographic profile of intermediate-level students from Grade 4 to Grade 6 is shown in Table 1, which includes grade level, gender, and age. Seventy respondents from Grades 4 to 6 at Camudmud Elementary School participated in this study. In terms of grade level, 27 students (38.6%) were from Grade 6, 22 students (31.4%) were from Grade 4, and 21 students (30.0%) were from Grade 5. Among the respondents, 38 (54.3%) were male, and 32 (45.7%) were female. Most respondents were aged 11 to 13 years old (36 or 51.4%), with the remaining 34 (48.6%) aged 9 to 10 years old.

The number of respondents was dominated by intermediate-level students who are naturally young. This is because young children are the most at risk in the community during natural or artificial disasters (Lapada *et al.*, 2022). Similarly, the study of Valanides (2014) highlighted that children as young as 9-10 and 11-13 can conduct scientific investigations. However, their abilities may vary based on grade level and cognitive development. This supports the current data that age is important and should be considered when judging how prepared, knowledgeable, and able to adapt students are to disasters.

Table 1: Characteristics of 70 students in the survey

Profile Variables	*f*	%
Grade Level		
Grade 4	22	31.4
Grade 5	21	30.0
Grade 6	27	38.6
Gender		
Male	38	54.3
Female	32	45.7
Age		
9-10 years old	34	48.6
11-13 years old	36	51.4

Additionally, there were more male respondents among the elementary students of Camudmud Elementary School. Gender differences, as highlighted in the study of Fordham (1999), the gendered aspects of disasters are often overlooked and poorly managed. This shows that males and females experience disasters differently. These differences come with girls often having a lower status.

Moreover, boys are being taught to take risks and be dominant. This is supported by the research conducted by O'Neill *et al.* (2016), which indicates that females are more likely to express concerns and anxiety during disasters than their male counterparts. This suggests that gender differences in emotional expression and coping mechanisms significantly affect how students respond to crises. Thus, understanding these differences can help develop more effective support systems and interventions tailored to the needs of both genders before, during, and after disasters.

3.2 Disaster preparedness of students

Table 2 presents the level of disaster preparedness among the students. The data revealed that the overall mean ($\bar{x}$ = 4.06, SD = .54) was described as a high or often manifested level of preparedness. This means that students demonstrate a high level of disaster preparedness, measured through factors such as knowledge of safety procedures, participation in drills, and awareness of Emergency contacts. This finding aligns with a similar study conducted by Charney *et al.* (2020), which also reported high levels of disaster preparedness among elementary students. The study emphasized the importance of early education in enhancing disaster readiness and resilience in young

children. Their research demonstrated that students receiving comprehensive disaster preparedness training are likelier to exhibit knowledge, skills, and confidence in responding to emergencies. This consistency between the researchers' findings and those of Charney *et al.* (2020) underscored the effectiveness of disaster education programs in elementary schools. It highlights the need for continued investment in such initiatives to enhance community resilience.

Table 2: Disaster preparedness of students (n = 70)

Statements	$\bar{x}$	***SD***
1. I understand how important it is to talk about and share what we know when something bad, like a disaster, happens.	4.33	.81
2. I know it's a good idea to talk about disasters with my family, neighbors, relatives, friends, and classmates because it helps us stay safe.	3.97	1.02
3. I believe the school is ready to help when a disaster happens.	4.17	1.08
4. I'm sure that we can fix things and rebuild after a disaster happens.	3.63	1.16
5. I learn a lot about disasters from experts (e.g. DRRM Coordinator) who work to make sure we are prepared and safe when disasters happen.	4.20	1.02
Overall	**4.06**	**.54**

Among the statements, the statement "*I understand how important it is to talk about and share what we know when something bad, like a disaster, happens*" got the highest mean ($\bar{x}$ = 4.33, SD = .81), which was described as very high or always manifested. This indicates that students deeply understand disaster preparedness principles and practices due to expert guidance. This suggests a general agreement on the effectiveness of expert guidance in teaching students about disaster preparedness.

On the other hand, the statement *"I'm sure we can fix things and rebuild after a disaster happens"* got the lowest mean ($\bar{x}$ = 3.63, SD = 1.16), which was still described as high or often manifested. Despite being the lowest mean score among the statements, it still indicates a generally high confidence level among students in rebuilding after a disaster. Some students might be confident in their rebuilding capabilities, while others might be more uncertain.

3.3 Disaster-related knowledge of students

Table 3 shows the level of disaster-related knowledge of students. The data revealed that the overall mean ($\bar{x}$ = 3.97, SD = .57) was still described as high or evident. This means that students generally have a good understanding of disaster-related knowledge, such as knowing the different kinds of natural and artificial disasters (e.g., earthquakes, floods, fires) and how to prepare for potential disasters, such as creating emergency kits and plans, being aware of whom to contact, and knowing where to go for help during a disaster. The low standard deviation suggests slight variation in the responses, indicating that most students have similar levels of knowledge regarding the topic being assessed.

Moreover, disaster-related knowledge is essential for an individual's safety, and this importance is reflected in the students' responses regarding their intellectual capacity. Achmad (2023) found a significant improvement in students' preparedness for

disasters after receiving disaster emergency education. Similarly, the students have a high level of knowledge about disaster-related concerns, emphasizing their readiness for potential disasters. This test ensures that students clearly know what to do when a disaster occurs, especially considering that the locality is in an Island City.

Among the statements, the statement "*I know the specific actions to do to inform others by spreading the information about disaster-related knowledge*" got the highest mean score ($\bar{x}$ = 4.17, SD = 1.04), which was described as high or evident. This means that students are confident in their knowledge of the specific actions required to disseminate disaster-related information to others and feel capable of sharing this vital information. The standard deviation indicates some variation, which still supports the idea that many students feel strongly confident in this area. The spread in the data suggests that while most students are optimistic, a few may feel less sure about their ability to spread disaster-related knowledge.

Table 3: Disaster-related knowledge of students (n = 70)

Statements	$\bar{x}$	***SD***
1. I am aware of when a disaster might occur.	3.77	1.17
2. I recognize that it is often difficult to completely prevent disasters from occurring.	3.89	1.06
3. I have been a participant in disaster risk reduction and management program.	4.04	1.17
4. I have actively taken part in disaster risk education and drills in school.	4.00	1.10
5. I know the specific actions to do to inform others by spreading the information about disaster-related knowledge.	4.17	1.04
Overall	**3.97**	**.57**

On the other hand, the statement "*I am aware of when a disaster might occur" got the lowest mean* ($\bar{x}$ = 3.77, SD = 1.17), which was still described as high or evident. Despite being the lowest mean among the statements, it still reflects a significant level of awareness among students regarding the potential timing of disaster. The higher standard deviation suggests a broader spread in the data, indicating that students' perceptions of their awareness vary more for this statement than others. Some students might be very confident about their awareness, while others may not be as sure.

3.4 Disaster adaptation of students

Table 4 shows the level of disaster adaptation of students. The data reveal that the overall mean ($\bar{x}$ = 4.01, SD = .66) is highly or often manifested. This means that students exhibit a strong ability to adapt to disaster situations. This could involve knowing how to respond during a disaster, taking preventative measures, or recovering effectively after a disaster. The low standard deviation reinforces that this high level of adaptation is typical among most students, with most of them consistently showing these adaptive behaviors. Wijayanti and Hafida (2023) further support this, reporting high levels of psychological adaptation among students in disaster-prone areas of Mount Merapi. Their research

highlights how students in these regions have developed robust coping mechanisms and resilience, likely due to their repeated exposure to natural disasters and the ongoing implementation of disaster preparedness programs.

Among the statements, "*I have learned enough about how to get ready for disasters from what the school teaches*" got the highest mean ($\bar{x}$ = 4.31, SD = 0.86), which is described as very high or always manifested. This means that students strongly agree that they have learned enough about disaster preparedness from their school. It highlights the significant role of educational institutions in equipping students with the necessary knowledge and skills to prepare for and respond to disasters effectively.

Table 4: Disaster adaptation of students (n = 70)

Statements	$\bar{x}$	***SD***
1. I know where the safe places and open areas are at my school if there is a disaster.	4.16	.97
2. I am aware of the appropriate government agency to contact in the event of a disaster.	4.11	1.07
3. I know where the places are that might have more disasters.	3.57	1.21
4. I've learned enough about how to get ready for disasters from what the school teaches.	4.31	.86
5. I know all about how my school's plan for getting out safely in of a disaster.	3.90	1.38
Overall	**4.01**	**.66**

On the other hand, the statement "*I know where the places are that might have more disasters*" had the lowest mean ($\bar{x}$ = 3.57, SD = 1.21), which was still described as high or often manifested. This means that students are highly aware of areas that are more likely to experience disasters. This awareness is essential for disaster preparedness and risk management. However, the higher standard deviation shows more diversity in students' responses, indicating that while most students feel knowledgeable, there are notable differences in the level of certainty among students. Some students might understand disaster-prone areas strongly, while others may be less confident. This suggests a need for further education and awareness campaigns focusing on disaster-prone areas and effective risk mitigation.

3.5 Significance of the difference in the level of students' disaster preparedness when analyzed according to grade level

In Table 5, an analysis of variance was performed to examine the differences in students' disaster preparedness when categorized according to grade level. The results indicate no significant differences in disaster preparedness among the three grade levels, F (2,67) = 2.952. This means that disaster preparedness levels are similar across the three grade levels. This might suggest that educational programs or initiatives aimed at disaster preparedness are uniformly effective across these grades.

Moreover, factors influencing disaster preparedness, such as curriculum content, instructional methods, and student engagement, are likely consistent across these grade

levels, leading to similar preparedness levels among students. This result might reflect that the educational strategies implemented to enhance disaster preparedness are equally impactful regardless of the grade level. Similarly, the study by Sari and Ridhwan (2022) found no significant difference between gender and academic level of disaster preparedness knowledge. This suggests that disaster preparedness education is equally effective across genders and academic levels. It highlights the success of educational programs in delivering consistent expertise to all students, regardless of these demographic factors. Thus, students showcase the same level of disaster preparedness.

Table 5: F-test result showing the differences in students' disaster preparedness when analyzed by grade level

	Sum of Squares	**df**	**Mean Square**	**F**
Between groups	1.622	2	.811	2.952
Within groups	18.406	67	.275	
Total	**20.028**	**69**		

*p<0.05

3.6 Significance of the difference in the level of students' disaster preparedness when analyzed according to gender

Table 6 presents the results of an independent samples t-test, which was used to compare the means of two independent groups, male and female students, to determine if there are significant differences in their disaster preparedness levels when analyzed according to gender. The overall mean scores for male ($\bar{x}$ = 4.00, SD = .52) and female ($\bar{x}$ = 4.13, SD = .551) students, t (68) = -1.016, p = .313, indicate that there is no statistically significant difference in disaster preparedness between male and female students. The p-value is well above the significance level of 0.05, suggesting that any observed differences in the mean scores are likely due to random variation rather than an actual difference in disaster preparedness levels.

Table 6: Independent samples t-test results showing the differences of students' disaster preparedness when analyzed by sex

Statements	**Group**	**n**	$\bar{x}$	***SD***	***t***	***p***
1. I understand how important it is to talk about and share what we know when something bad, like a disaster, happens.	Male	38	4.34	.847	.151	.880
	Female	32	4.31	.780		
2. I know it's a good idea to talk about disasters with my family, neighbors, relatives, friends, and classmates because it helps us stay safe.	Male	38	4.05	1.038	.723	.472
	Female	32	3.88	1.008		
3. I believe the school is ready to help when a disaster happens.	Male	38	4.34	.938	1.457	.150
	Female	32	3.97	1.204		
4. I'm sure that we can fix things and rebuild after a disaster happens.	Male	38	3.37	1.261	-2.152	.035*
	Female	32	3.94	.948		

5. I learn a lot about disasters from experts (e.g. DRRM Coordinator) who work to make sure we are prepared and safe when disasters happen.	Male	38	3.89	1.134	-2.991	.004*
	Female	32	4.56	.716		
Overall	**Male**	**38**	**4.00**	**.528**	**-1.016**	**.313**
	Female	**32**	**4.13**	**.551**		

*$p<0.05$

These findings indicate that both male and female students have similar levels of disaster preparedness, implying that gender does not play a significant role in determining disaster preparedness in this context. This could also mean that the educational programs and interventions aimed at improving disaster preparedness are equally effective for both male and female students. Similarly, a study by Patel *et al.* (2020) found that gender did not significantly impact student disaster awareness and preparedness. The findings revealed that both male and female students exhibited comparable knowledge and preparedness for disaster situations. This suggests that disaster education programs are equally effective across genders, highlighting the importance of inclusive and comprehensive training that addresses the needs of all students regardless of gender. Additionally, recognizing and addressing gender roles in disaster planning is essential for creating solid and effective preparedness strategies. Equal involvement of men and women in decision-making and preparedness activities, as advocated by Mangones (2024), can lead to more resilient and well-prepared communities. This could involve creating opportunities for both men and women to participate actively in training, simulations, and community planning sessions.

Among the statements, the statement "*I learn a lot about disasters from experts (e.g., DRRM Coordinator) who work to make sure we are prepared and safe when disasters happen*" between male ($\bar{x}$ = 3.89, SD = 1.134) and female ($\bar{x}$ = 4.56, SD = 0.716) students, t(68) = -2.991, p = .004, indicates a statistical significance difference in the level of agreement with the statement between male and female students, since the p-value is much smaller than the significance level of 0.05, the researcher reject the null hypothesis that there is no difference between the groups. The higher mean score for females significantly suggests that female students learn more about disasters from experts than males. These differences might imply that female students either have more exposure to expert information on disasters or perceive the information as more impactful or useful than male students.

On the other hand, other statements, such as "*I know it is a good idea to talk about disasters with my family, neighbors, relatives, friends, and classmates because it helps us stay safe*" and "*I understand how important it is to talk about and share what we know when something bad, like a disaster, happens*" did not show a statistical significance. These findings indicate a widespread awareness and acceptance of the importance of communication and preparedness in disasters. Students likely recognize the benefits of discussing disaster-related topics with others and have confidence in their school's disaster readiness. The consistent responses across different groups reflect the effectiveness of educational

programs emphasizing the importance of communication and preparedness in disaster situations. Since there are no significant differences, there might not be a need for targeted interventions for specific groups regarding these particular beliefs and attitudes. Instead, current educational approaches can continue to reinforce these concepts uniformly.

3.7 Significance of the difference in the level of students' disaster preparedness when analyzed according to age

Table 7 presents the independent samples t-test results, a statistical method used to compare the means of two independent groups. In this case, the groups are 9-10 and 11-13 students. The analysis aims to determine if there are significant differences in disaster preparedness levels when analyzed according to age. For students aged 9-10, the overall mean ($\bar{x}$ = 4.059, SD = .632) and those aged 11-13 ($\bar{x}$ = 4.061, SD = .443), t = -.017, p = .986 indicate that there are no significant differences in disaster preparedness between these age groups, suggesting that students across these ages have similar levels of disaster preparedness. The minimal difference in mean scores for ages 9-10 and 11-13 is not statistically significant, meaning the preparedness levels do not differ meaningfully between these age groups. The t-statistic and p-value indicate no statistically significant difference in disaster preparedness levels between these age groups.

The t-statistic and p-value indicate no statistically significant difference in disaster preparedness levels between these age groups. These findings imply that the disaster preparedness programs these students receive are equally effective, and both younger and older students appear to have similar understanding and readiness regarding disaster readiness, indicating consistent knowledge and awareness across the ages of 9-13. Likewise, the study conducted by Reeba (2015) highlights the effectiveness of programs across different age groups, emphasizing the importance of comprehensive educational strategies to ensure all students are equally prepared for disaster.

Among the statements, the statement "*I understand how important it is to talk about and share what we know when something bad, like a disaster, happens*" between age 9-10 ($\bar{x}$ = 4.68, SD = .638) and those aged 11-13 ($\bar{x}$ = 4.00, SD = .828), t = 3.812, p < .001, indicates a statistically significant difference. The mean score for younger students is significantly higher than older students, indicating that younger students more strongly agree with the importance of talking about and sharing knowledge during disasters. This difference might imply that the younger students are more impressionable and receptive to messages about communication during disasters, possibly because they have been taught this concept more recently.

Table 7: Independent samples t-test results showing the differences of students' disaster preparedness when analyzed by age

Statements	Group	n	$\bar{x}$	*SD*	*t*	*p*
1. I understand how important it is to talk about and share what we know when something bad, like a disaster, happens.	9 – 10	34	4.68	.638	3.812	<.001*
	11 – 13	36	4.00	.828		
2. I know it's a good idea to talk about disasters with my family, neighbors, relatives, friends, and classmates because it helps us stay safe.	9 – 10	34	3.68	1.147	-2.407	.019
	11 – 13	36	4.25	.806		
3. I believe the school is ready to help when a disaster happens.	9 – 10	34	4.35	1.070	1.380	.172
	11 – 13	36	4.00	1.069		
4. I'm sure that we can fix things and rebuild after a disaster happens.	9 – 10	34	3.47	1.237	-1.112	.270
	11 – 13	36	3.78	1.072		
5. I learn a lot about disasters from experts (e.g. DRRM Coordinator) who work to make sure we are prepared and safe when disasters happen.	9 – 10	34	4.12	1.149	-.656	.514
	11 – 13	36	4.28	.882		
Overall	**9 – 10**	**34**	**4.059**	**.632**	**-.017**	**.986**
	11 – 13	**36**	**4.061**	**.443**		

*p<0.05

On the other hand, the statement "*I believe the school is ready to help when a disaster happens*" between ages 9-10 mean ($\bar{x}$ = 4.35, SD = 1.070) and those aged 11-13 mean ($\bar{x}$ = 4.00, SD = 1.069), t = 1.380, p = .172, indicates no significant difference in their belief regarding the readiness of the school to assist with a disaster. The mean scores for ages 9-10 and 11-13 suggest that both age groups generally believed that their school is prepared to handle disasters, though younger students show slightly higher confidence. The t-statistic and p-value indicate no statistically significant difference in the belief that the school is ready to help when a disaster happens. The p-value greater than 0.05 suggests that any observed differences in the mean scores are likely due to random variation rather than a fundamental difference between the groups. Since there is no significant difference in perceptions between the age groups, there might not be a need for age-specific interventions in this area, and the current approach seems effective across the age range of 9-13. The lack of difference implies that the perception of school readiness for disasters is consistent across both younger and older students, which could indicate the effective communication and efforts by the school that resonate similarly with both age groups.

3.8 Significance of the difference in the level of students' disaster-related knowledge when analyzed according to grade level

In Table 8, an analysis of variance was performed to examine the differences in students' disaster-related knowledge when categorized according to grade level. The F(2, 67) = 2.766 indicates that there is some variability in disaster-related knowledge between different grade levels, but this value alone does not determine statistical significance since the p-value is greater than 0.05, the researcher concludes that any observed differences in means are not statistically significant and could have occurred by chance. This suggests that students across different grade levels have comparable understanding and disaster preparedness. The lack of significant differences could be attributed to consistent and effective disaster education programs implemented across all grades, ensuring that students receive uniform levels of knowledge regardless of their academic year. Similarly, the study conducted by Lapada (2022) highlighted that grade level could have significantly differentiated students' understanding of disaster risk reduction. Even though grade level is not a factor in disaster-related knowledge, educational institutions can still consider implementing standardized disaster risk reduction programs that are effective for all students, regardless of grade. Thus, educators could focus on other factors, such as teaching methods, engagement strategies, and contextual relevance, to enhance the effectiveness of disaster education.

Table 8: F-test result showing the differences of students' disaster-related knowledge when analyzed by grade level

	Sum of Squares	df	Mean Square	F
Between groups	1.732	2	.866	2.766
Within groups	20.981	67	.313	
Total	**22.714**	**69**		

*p<0.05

3.9 Significance of the difference in the level of students' disaster-related- knowledge when analyzed according to gender

Table 8 presents the results of an independent samples t-test, which compares the means of two independent groups. In this case, the groups being compared are male and female students to determine if there are significant differences in their disaster preparedness levels when analyzed according to gender. The overall mean of male ($\bar{x}$ = 3.93, SD = .553) and female ($\bar{x}$ = 4.03, SD = .601) students, t (68) = -.760, p = .450, indicates that there are no significant differences in disaster-related knowledge levels between male and female students. A negative t-statistic suggests that the mean score for male students is slightly lower than that for female students. The p-value is greater than the common significance level of 0.05, which indicates that the observed difference in means is not statistically significant and is likely due to random variation rather than a real difference between the groups. The lack of significant difference means that the current disaster preparedness programs are equally effective for both male and female students, suggesting that there is no need for gender-specific interventions or adjustments to the program based on

gender. Similarly, the study conducted by Pertiwi and Zakiyah (2021) found no significant difference between gender and disaster preparedness knowledge. The findings indicate that both male and female participants demonstrated similar knowledge and preparedness regarding disasters, suggesting that gender does not significantly influence disaster preparedness knowledge in this context. This aligns with the idea that effective disaster education programs are designed to be inclusive and comprehensive, addressing the educational needs of all students regardless of gender.

When examining each statement of students' disaster-related knowledge, all the statements such as "*I am aware of when a disaster might occur*," "*I recognize that it is often difficult to completely prevent disasters from occurring*," "*I have been a participant in disaster risk reduction and management programs*," "I have actively taken part in disaster risk education and drills in school," and "*I know the specific actions to take to inform others by spreading the information about disaster-related knowledge*", did not show statistical significance. This means that, based on the analysis conducted, there is no clear evidence to suggest that gender plays a significant role in students' understanding of when disasters might occur, their recognition of the challenges in preventing disasters, their participation in disaster risk reduction programs, their involvement in disaster risk education and drills in school, or their knowledge of specific actions to inform others about disaster-related knowledge. In other words, male and female students appear to have similar levels of awareness and preparedness regarding disaster-related knowledge, as indicated by their responses to these statements.

Table 8: Independent samples t-test results showing the differences of students' disaster-related knowledge when analyzed by gender

Statements	**Group**	**n**	$\bar{x}$	***SD***	***t***	***p***
1. I am aware of when a disaster might occur.	Male	38	3.66	1.047	-.884	.380
	Female	32	3.91	1.304		
2. I recognize that it is often difficult to completely prevent disasters from occurring.	Male	38	3.95	1.038	.529	.599
	Female	32	3.81	1.091		
3. I have been a participant in disaster risk reduction and management program.	Male	38	4.11	1.110	.483	.631
	Female	32	3.97	1.257		
4. I have actively taken part in disaster risk education and drills in school.	Male	38	3.95	1.064	-.432	.667
	Female	32	4.06	1.162		
5. I know the specific actions to do to inform others by spreading the information about disaster-related knowledge.	Male	38	3.97	1.052	-1.768	.082
	Female	32	4.41	.979		
Overall	**Male**	**38**	**3.93**	**.553**	**-.760**	**.450**
	Female	**32**	**4.03**	**.601**		

*$p<0.05$

3.10 Significance of the difference in the level of students' disaster-related knowledge when analyzed according to age

Table 9 presents the independent samples t-test results, a statistical method used to compare the means of two independent groups. In this case, the groups are 9-10 and 11-13 students. The analysis aims to determine if there are significant differences in their disaster-related knowledge levels when analyzed according to age. For students aged 9-10, the overall mean ($\bar{x}$ = 3.84, SD = .676) and those aged 11-13 ($\bar{x}$ = 4.11, SD = .426), t = -1.988, p=.052, indicate that there is a borderline difference in disaster-related knowledge levels between students aged 9-10 and those aged 11-13. Although the older group tends to have higher knowledge levels, the difference is not statistically significant at the 0.05 level. The slightly lower mean for younger students suggests that additional focus or tailored educational interventions might benefit this age group to enhance their disaster-related knowledge. Since the knowledge levels are relatively close, a comprehensive disaster preparedness program with activities and materials suitable for both age groups can be effective. This is supported by the study of Torani *et al.* (2019), which emphasized the importance of age-appropriate educational strategies in improving disaster awareness. Additionally, tailored interventions significantly improved the understanding and retention of disaster-related information among younger students. The finding also highlighted that younger students may benefit from more interactive and engaging learning methods, such as simulations, games, and hands-on activities, making the learning process more relatable and memorable. In contrast, older students may require more in-depth and detailed information, allowing them to understand disaster preparedness principles and practices better.

Table 9: Independent samples t-test results showing the differences of students' disaster-related knowledge when analyzed by age

Statements	**Group**	**n**	$\bar{x}$	***SD***	***t***	***p***
1. I am aware of when a disaster might occur.	9 – 10	34	3.56	1.460	-1.467	.149
	11 – 13	36	3.97	.774		
2. I recognize that it is often difficult to completely prevent disasters from occurring.	9 – 10	34	3.79	1.250	-.694	.490
	11 – 13	36	3.97	.845		
3. I have been a participant in disaster risk reduction and management programs.	9 – 10	34	3.79	1.200	-1.750	.085
	11 – 13	36	4.28	1.111		
4. I have actively taken part in disaster risk education and drills in school.	9 – 10	34	3.91	1.215	-.647	.519
	11 – 13	36	4.08	.996		
5. I know the specific actions to take to inform others by spreading the information about disaster-related knowledge.	9 – 10	34	4.12	1.274	-.414	.680
	11 – 13	36	4.22	.760		
Overall	**9 – 10**	**34**	**3.84**	**.676**	**-1.988**	**.052**
	11 – 13	**36**	**4.11**	**.426**		

*p<0.05

Among the statements, the statement "*I have been a participant in disaster risk reduction and management programs"* between age groups 9-10 ($\bar{x}$ = 3.79, SD = 1.200) and 11-13 ($\bar{x}$ = 4.28, SD = 1.111), t = - 1.750, p = .085 shows that there was a marginally non-significant difference. This indicates that students aged 11-13 reported slightly higher levels of participation in disaster risk reduction programs than those aged 9-1. This difference was not strong enough to confidently conclude that age is not a factor in participation in such programs. However, the evidence is insufficient to conclusively state that age significantly affects participation in disaster risk reduction programs. This means that age may slightly influence participation levels, but it is not a definitive factor. This implies that other factors beyond age might play a more crucial role in influencing participation levels, such as the accessibility of programs, the methods used to engage students, the support and encouragement from teachers and parents, and the student's interests and motivations.

Similarly, the study by Krishna *et al.* (2022) highlighted that involving children in developing DRR interventions improved their confidence, self-worth, and self-efficacy; they learned essential skills for hazard preparedness and effectively communicated DRR messages. Engaging children in DRR activities not only enhances their preparedness but also aids in disaster recovery, builds resilience, and positively impacts their mental well-being. Thus, disaster risk reduction programs should remain inclusive and consider implementing tailored interventions to enhance participation across all age groups.

3.11 Significance of the difference in the level of students' disaster adaptation when analyzed according to grade level

In Table 10, an analysis of variance was performed to examine the differences in students' disaster adaptation when categorized according to grade level. The F (2, 67) = 4.809 suggests significant differences in disaster adaptation among the grade levels. Students' disaster adaptation skills vary depending on their grade level. This might be due to different maturity levels, varying educational content, or different experiences related to disaster preparedness as students progress through grades. The results highlight the need for tailored educational strategies that address students' specific needs and capabilities at different grade levels. For example, younger students might need more foundational information and basic awareness activities, while older students might benefit from more complex and detailed disaster adaptation strategies. Additionally, the significant difference in disaster adaptation among grade levels found in the current study is consistent with the findings of Hung *et al.* (2021), who highlighted that effective disaster education programs improve students' disaster management capacity and contribute to their overall adaptability and response capabilities. Hence, it strengthens the importance of implementing and maintaining effective disaster education within the school curriculum.

Table 10: F-test result showing the differences of students' disaster adaptation when analyzed by grade level

	Sum of Squares	df	Mean Square	F
Between groups	3.805	2	1.902	4.809*
Within groups	26.506	67	.396	
Total	**30.311**	**69**		

*p<0.05

3.12 Significance of the difference in the level of students' disaster adaptation when analyzed according to gender

Table 11 presents the results of an independent samples t-test, which compares the means of two independent groups. In this case, the groups being compared are male and female students to determine if there are significant differences in their disaster adaptation levels when analyzed according to gender.

The overall mean of male ($\bar{x}$ = 4.05, SD = .690) and female ($\bar{x}$ = 3.97, SD = .637) students, t (68) = -.034, p = .973, indicates that there are no significant differences between them. The p-value is much higher than the conventional threshold of 0.50, suggesting that the observed mean difference is not statistically significant. This implies that gender does not play a crucial role in how students adapt to disaster. Both male and female students demonstrate comparable abilities to cope with and adapt to disaster situations. This could suggest that disaster education and adaptation programs are equally effective across genders, providing both male and female students with the necessary skills and knowledge to manage disasters. Similarly, the study of Pertiwi and Zakiyah (2021) found no significant in disaster-related knowledge and adaptation between male and female students, reinforcing the idea that gender-neutral education strategies are effective. Therefore, by adopting and maintaining gender-neutral educational practices, schools can promote a more inclusive and effective learning environment, ensuring that all students are well-prepared to manage and adapt to disasters.

Looking at each statement of students' disaster adaptation, all the statements, such as "*I know where the safe places and open areas are at my school if there is a disaster*," "*I am aware of the appropriate government agency to contact in the event of a disaster*," "*I know where the places are that might have more disasters*," "*I have learned enough about how to get ready for disasters from what the school teaches,"* and *"I know all about my school's plan for getting out safely in a disaster"* did not show statistical significance. This means that gender is not a factor influencing the disaster adaptation of the students. The absence of statistical significance implies that other factors beyond those mentioned could substantially influence students' readiness, such as their past encounters with disasters, economic status, or access to information. More investigation and examination might be necessary to identify these underlying elements and create more focused strategies for teaching disaster preparedness.

Table 11: Independent samples t-test results showing the differences of students' disaster adaptation when analyzed by sex

Statements	Group	n	$\bar{x}$	*SD*	*t*	*p*
1. I know where the safe places and open areas are at my school if there is a disaster.	Male	38	4.26	1.032	.994	.324
	Female	32	4.03	.897		
2. I am aware of the appropriate government agency to contact in the event of a disaster.	Male	38	4.00	1.186	-.986	.328
	Female	32	4.25	.880		
3. I know where the places are that might have more disasters.	Male	38	3.79	1.119	1.663	.101
	Female	32	3.31	1.281		
4. I've learned enough about how to get ready for disasters from what the school teaches.	Male	38	4.29	1.037	-.273	.786
	Female	32	4.34	.602		
5. I know all about how my school's plan for getting out safely in of a disaster.	Male	38	3.89	1.467	-1.768	.082
	Female	32	3.91	1.304		
Overall	**Male**	**38**	**4.05**	**.690**	**-.034**	**.973**
	Female	**32**	**3.97**	**.637**		

*p<0.05

3.13 Significance of the difference in the level of student's disaster adaptation when analyzed according to age

Table 12 presents the independent samples t-test results, a statistical method used to compare the means of two independent groups. In this case, the groups are 9-10 and 11-13 students. The analysis aims to determine if there are significant differences in their disaster adaptation levels when analyzed according to age. For students aged 9-10, the overall mean ($\bar{x}$ = 3.94, SD = .695) and those aged 11-13 ($\bar{x}$ = 4.08, SD = .633), t = -.860, p = .393, indicate that there is no significant difference. This is because the p-value is much higher than the significance level of 0.05, suggesting that the observed difference in means is not statistically significant. This means that age does not play a crucial role in how students adapt to disasters, and younger and older students demonstrate comparable abilities to cope with and adapt to disaster situations. These findings suggest that age alone may not significantly influence students' disaster adaptation readiness, highlighting the importance of considering other variables or factors that might contribute to differences in preparedness levels among students.

Table 12: Independent samples t-test results showing the differences of students' disaster adaptation when analyzed by age

Statements	**Group**	**n**	$\bar{x}$	***SD***	***t***	***p***
1. I know where the safe places and open areas are at my school if there is a disaster.	Male	34	4.24	1.075	.651	.517
	Female	36	4.08	.874		
2. I am aware of the appropriate government agency to contact in the event of a disaster.	Male	34	4.00	1.073	-.878	383
	Female	36	4.22	1.045		
3. I know where the places are that might have more disasters.	Male	34	3.44	1.236	-.873	.386
	Female	36	3.69	1.191		
4. I've learned enough about how to get ready for disasters from what the school teaches.	Male	34	4.18	.936	-1.309	.195
	Female	36	4.44	.773		
5. I know all about how my school's plan for getting out safely in of a disaster	Male	34	3.85	1.417	-.274	.785
	Female	36	3.94	1.372		
Overall	**Male**	**34**	**3.94**	**.695**	**-.860**	**.393**
	Female	**36**	**4.08**	**.633**		

*p<0.05

This finding aligns with the study of Pertiwi and Zakiyah (2021), which investigates the correlation of demographics (age, grade level, and gender) with disaster preparedness and found that age was not a significant factor in students' disaster preparedness. The results suggest that disaster preparedness programs and educational interventions are equally effective across different age groups. The lack of significant differences based on age implies that these programs successfully reach and educate all students, regardless of age. The study of Hoffman and Muttarak (2017) added to this by demonstrating that education, rather than age, is vital in promoting disaster preparedness. Thus, age alone may not significantly affect students' disaster adaptation readiness.

Looking at each statement, all statements such *as "I know where the safe places and open areas are at my school if there is a disaster," "I am aware of the appropriate government agency to contact in the event of a disaster," "I know where the places are that might have more disasters," "I have learned enough about how to get ready for disasters from what the school teaches,"* and *"I know all about how my school's plan for getting out safely in a disaster*" did not show statistical significance. This means that, regardless of age, students generally exhibit similar levels of preparedness in terms of knowing safe places, understanding government agencies to contact, being aware of disaster-prone areas, and learning from school teachings about disaster preparedness, and understanding school evacuation plans.

4. Recommendations

Based on the findings at the selected location of the study, where children generally demonstrate a high level of disaster preparedness, numerous recommendations can assist in boosting their efforts even further. First and foremost, current activities such as knowledge sharing, expert learning, and creating confidence in the school's preparedness measures must be maintained and enhanced.

For DepEd DRRM, it is essential to continue and expand teacher training programs, ensuring educators are equipped with skills to deliver disaster preparedness content effectively, tailored to different age groups. Furthermore, the differences in students' knowledge and confidence levels can be addressed by incorporating interactive exercises for younger students and more in-depth content for older students. Local government units (LGUs) should assist schools by offering funds and resources for infrastructure upgrades, training, and supplies. They should also encourage community involvement by forming alliances with neighborhood organizations. Barangay DRRM should concentrate on community education programs, including seminars and workshops for children and their families to support the knowledge given in schools and encourage a preparedness-oriented culture. To ensure inclusion across age and gender, schools must create customized instructional interventions to accommodate students' diverse confidence levels. Expanding disaster preparedness outside the classroom can be accomplished by involving parents in workshops and informational sessions.

Future researchers should compare various instructional approaches, evaluate the effects of community and local government support on school-based programs, look into other aspects besides age and gender to provide comprehensive disaster preparedness efforts, and include children as they are also impacted during disasters to help bridge the gap. With the help of these suggestions, we hope to guarantee that every student is equipped to handle and react to emergencies with competence. Also, the school may continue to provide its children with the knowledge and skills they need to effectively prepare for and respond to disasters, promoting a safer and more resilient school environment.

5. Conclusion

Based on the findings, the level of disaster preparedness of students generally exhibits a high level of disaster preparedness as evidenced by their understanding of the importance of sharing knowledge, learning from experts, and confidence in school preparedness, and willingness to engage in discussions about disasters with various groups. The findings indicate no significant differences in disaster preparedness between male and female students or between students aged 9-10 and 11-13. This suggests that gender and age do not show significant difference in the overall disaster readiness. Disaster preparedness knowledge is uniformly distributed among students, regardless of grade level, gender, or age. Students show a solid foundation in disaster-related

knowledge and adaptation skills, with no significant gender-based differences in these areas. While minor differences in responses were noted, they were not statistically significant, indicating comparable levels of disaster adaptation abilities across genders. Age also was not a factor in disaster adaptation readiness, emphasizing the importance of other factors in disaster preparedness.

The results, taken together, show that student acceptance and effectiveness of expert-led disaster preparedness instruction are high, resulting in a thorough comprehension of disaster preparedness concepts. Although students' confidence levels differ, with some feeling less confident in their skills in particular areas, such as rebuilding after a disaster, overall responses indicate a consensus regarding the quality of the instruction given. Students' levels of disaster preparedness are not significantly impacted by their age or gender, indicating that the instructional programs are equally beneficial for all of these groups. This homogeneity emphasizes the value of inclusive teaching methods that serve all pupils, regardless of age or gender.

The consistency in preparedness levels across different grade levels and the general confidence in disaster-related knowledge further support the efficacy of current educational approaches. However, the confidence and awareness levels variations among students indicate a need for ongoing efforts to address these disparities. Tailored educational interventions, such as interactive and engaging learning methods for younger students and more detailed information for older students, can enhance the effectiveness of disaster education. Overall, these results emphasize the importance of including inclusive, effective, and context-sensitive disaster risk reduction (DRR) programs in school curricula. Teachers may ensure that every student is equipped to respond to and handle disasters by improving these programs and attending to individual requirements.

This is supported by the Sendai Framework for Disaster Risk Reduction 2015-2030, which offers a holistic approach to reducing disaster risks, highlighting the importance of collaboration among different sectors and stakeholders. It emphasizes inclusive and equitable education, expert-led instruction, and continuous learning. These principles align with the findings that disaster preparedness knowledge is uniformly distributed among students regardless of age or gender and that expert-led instruction is effective in fostering a thorough understanding of disaster preparedness concepts.

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Conflict of Interest Statement

The authors declare no conflicts of interest.

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