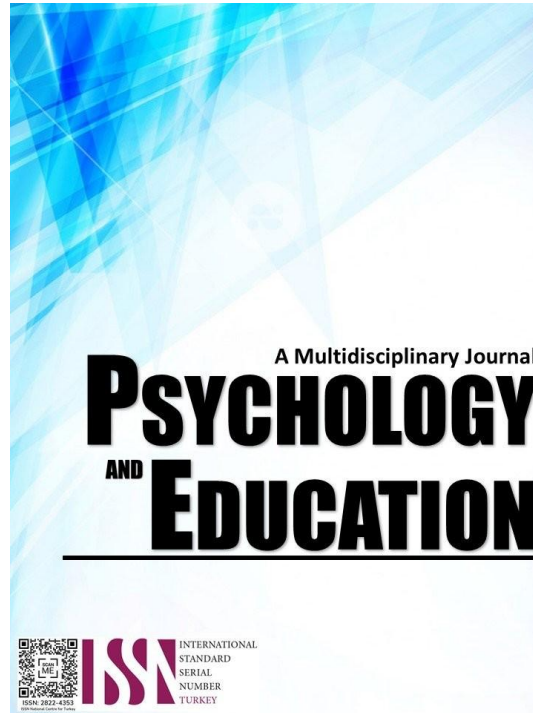


ASSESSING TEACHERS' PREPAREDNESS AND AWARENESS FOR DISASTER RISK REDUCTION AND MANAGEMENT: BASIS FOR SCHOOL-BASED DRRM PROGRAM



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Assessing Teachers' Preparedness and Awareness for Disaster Risk Reduction and Management: Basis for School-Based DRRM Program

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Abstract

In disaster-prone regions, schools serve as critical anchors of community resilience, positioning teachers' preparedness and awareness as essential components of effective Disaster Risk Reduction and Management (DRRM). This study aimed to assess the DRRM awareness, preparedness levels, and implementation challenges among 32 teachers using a descriptive-quantitative research design. Data were collected through structured surveys and analyzed using descriptive statistics and one-way ANOVA. Findings revealed that teachers are generally "Very Aware" of key DRRM concepts, including natural hazards, early warning systems, and climate change impacts, with an overall awareness mean of 4.06. However, awareness was lower regarding disaster recovery, resilience strategies, and curriculum integration. In terms of preparedness, teachers were "Prepared" in understanding roles, emergency procedures, and emotional support, but only "Neither Prepared Nor Unprepared" in training, risk assessment, and access to emergency equipment, yielding an overall preparedness mean of 3.34. ANOVA results showed no significant differences in preparedness based on age ($F = 0.019$, $p = 0.891$), sex ($F = 0.192$, $p = 0.664$), or educational background ($F = 0.991$, $p = 0.411$), but teaching position was a significant factor ($F = 9.89$, $p < .001$), indicating that rank influences readiness. A strong positive correlation ($r = 0.742$, $p < .001$) was found between awareness and preparedness, suggesting that increasing awareness directly enhances readiness. Key implementation challenges included inadequate training, limited resources, and insufficient emergency equipment. The study concludes that while teachers demonstrate high DRRM awareness, targeted interventions, particularly differentiated training and resource allocation, are necessary to strengthen preparedness and overcome systemic barriers to effective DRRM implementation.

Keywords: *disaster risk reduction and management, teacher awareness, preparedness*

Introduction

Climate change continues to escalate the frequency and intensity of natural disasters, posing significant threats to ecosystems, economies, and human well-being (Mix et al., 2024). In the Philippines, one of the most disaster-prone countries globally, typhoons, earthquakes, and floods regularly disrupt communities and educational systems. The devastation caused by Typhoon Odette in Toledo City, Cebu, which left schools without electricity and suspended classes for days, underscores the urgent need for institutional resilience.

Research highlights that teachers play a pivotal role in school-based disaster risk reduction and management (DRRM), yet their preparedness varies widely. Factors such as professional training, self-efficacy, and access to resources influence their capacity to respond effectively (Mohamad, 2023; Aldila, 2024). While many educators express positive attitudes toward disaster readiness, gaps in practical skills and tools persist (Kawano et al., 2021). Recent studies show that psychological stress and burnout exacerbated by pandemic-related disruptions and sustained emotional strain continue to hinder teachers' ability to support students effectively during crises (Davis & Park, 2025). These challenges underscore the need for targeted institutional support and mental health initiatives to sustain teacher resilience in disaster-prone contexts.

This study assessed teachers' preparedness and awareness regarding DRRM at a public high school in Toledo City, Cebu, during the 2024–2025 school year. It aims to provide a basis for designing a context-responsive DRRM training program tailored to educators' needs in disaster-prone areas. It aims explicitly to evaluate teachers' knowledge, skills, and attitudes toward DRRM, identify gaps in preparedness and awareness, and recommend strategies for capacity-building.

Findings from this study will contribute to strengthening school-based DRRM by informing policy, training design, and resource allocation. It also seeks to amplify the voices of Filipino educators in the discourse on disaster resilience, offering insights that can be adapted across similar vulnerable communities.

Research Questions

This study assessed the level of teachers' preparedness and awareness for DRRM at a public high school in Toledo City, Cebu, during the school year 2024–2025 as a basis for the DRRM Training Program. Specifically, this study answered the following questions:

1. What is the level of teachers' awareness of DRRM concepts and principles as perceived by the respondents?
2. What is the level of teachers' preparedness in responding to different types of disasters as perceived by the respondents?
3. Is there a significant difference between the demographic profile of the respondents and their level of preparedness in DRRM?
4. Is there a significant relationship between the level of teachers' awareness and their level of preparedness in DRRM?
5. What are the problems encountered by teachers in implementing disaster risk reduction and management programs in their

schools?

Literature Review

Social Cognitive Theory (SCT) and Disaster Preparedness

SCT emphasizes that self-efficacy, outcome expectations, and knowledge strongly influence teachers' disaster preparedness. Teachers with high self-efficacy are more likely to create emergency plans and conduct drills (Sarac et al., 2024). Belief in positive outcomes further motivates participation (Saida et al., 2022), while knowledge of risks and responses supports sound decision-making (Yujin et al., 2023). Additionally, teachers learn preparedness behaviors by observing peers. Modeling effective drills or responses can influence others to adopt similar actions. Reinforcement, whether positive (recognition) or negative (discipline), also shapes preparedness habits. Further, organizational culture, peer support, resource availability, and school layout affect preparedness (Gaurano & Miranda, 2024). Supportive environments and updated risk plans contribute to higher readiness. Psychological safety also impacts willingness to participate in preparedness activities (Fleming et al., 2024). Hence, SCT helps design interventions that build self-efficacy, promote modeling, and foster supportive environments.

Theory of Planned Behavior (TPB)

Teachers who hold positive attitudes toward disaster preparedness are more likely to participate in activities such as emergency planning, simulation drills, and professional training (Recamadas & Tantiado, 2022). Social norms that are shaped by expectations from colleagues, school leadership, and the broader community can either motivate or inhibit these behaviors (Vinnell et al., 2021). Crucially, perceived behavioral control, or the belief in one's ability to act despite constraints like time or resources, strongly influences actual preparedness actions (Salita et al., 2021). According to the Theory of Planned Behavior (TPB), behavioral intention emerges from the interplay of attitudes, subjective norms, and perceived control. It translates into concrete actions such as conducting evacuation drills or drafting contingency plans. Thus, interventions aimed at improving preparedness should target these three dimensions. However, TPB may not fully account for habitual responses or emotional factors, such as fear, stress, or trauma, which are addressed more directly by affective and dual-process models of behavior.

Protection Motivation Theory (PMT)

Teachers' perceptions of disaster severity and personal vulnerability drive motivation to prepare (Hu et al., 2021; Kurata & Ong, 2023). Strong risk perception correlates with proactive behaviors (Ng, 2022). In fact, emotions, such as fear, can either motivate or hinder preparedness. Balancing fear with empowerment is key to encouraging action. Belief in the effectiveness of actions—like drills or first-aid training—increases adoption. Self-efficacy, or confidence in one's capability, reinforces these behaviors. PMT supports interventions that increase threat awareness, build self-efficacy, and offer clear coping strategies to improve teachers' readiness.

Methodology

Research Design

This study employed a descriptive–quantitative research design to systematically assess teachers' preparedness and awareness of disaster risk reduction and management (DRRM) concepts and principles. Quantitative approaches are particularly suited to measuring attitudes, perceptions, and behavioral tendencies across large populations, enabling statistical analysis of relationships and patterns (Sanguyu, 2023). In the context of DRRM, such designs enable researchers to capture the extent of readiness and identify gaps in knowledge and practice among educators, which are critical for shaping responsive interventions (Recamadas & Tantiado, 2022). This was chosen because of its ability to produce generalizable findings, uncover predictive relationships, and support evidence-based decision-making in educational policy and disaster planning. As highlighted by Sanguyu (2023), quantitative methods are essential for evaluating the integration of DRRM in school systems and for identifying systemic barriers such as a lack of training, limited resources, and uneven implementation. By grounding the study in this design, the research contributes to a growing body of literature that emphasizes data-driven strategies for enhancing school-based disaster resilience.

Respondents

This study employed convenience sampling, selecting participants based on accessibility and willingness to participate. Out of an estimated population of 84 teachers, a total of 32 teachers, comprising 20 from the junior high school and 12 from the senior high school departments, were included as respondents. This public secondary institution, under the Toledo City Division, offers academic tracks and serves students in the area.

The respondents represented a diverse mix of subject teachers across various disciplines, with demographic variation in age, teaching rank, years of service, and civil status. This diversity provided a broad perspective on disaster preparedness and awareness within the school context. By using convenience sampling, the study was able to gather timely and relevant data while navigating logistical constraints. However, it acknowledges limitations in generalizability due to the non-random selection process.



Instrument

The study used an expert-validated, self-constructed survey that was pilot-tested with 15 teachers, with a Cronbach’s alpha of 0.87, establishing its reliability. It consisted of four parts: Part I covered teachers’ demographic profile (age, sex, civil status, teaching experience, educational attainment, and position); Part II assessed their awareness of disaster risk reduction and management (DRRM) concepts using 15 statement-indicators; Part III measured their preparedness for various disasters using 15 statement-indicators; and Part IV identified problems encountered in implementing DRRM programs in schools through ranking from one to ten. Additionally, a five-point Likert scale was used to assess awareness and preparedness.

Procedure

The researcher submitted a request letter to the school head before distributing the questionnaires to ensure proper guidance and compliance. The researcher personally distributed the questionnaire to the respondents face-to-face from November to December 2024 during class hours or as directed by the school head. Collected data were tallied and tabulated for analysis and interpretation.

Data Analysis

On the third week of November 2024, data analysis commenced. The weighted mean was used to assess the teachers’ perceived levels of awareness and preparedness in responding to various types of disasters. Pearson's r was applied to determine the correlation between teachers’ level of awareness and preparedness. Meanwhile, an analysis of variance (ANOVA) was conducted to test differences in participants’ demographic profiles and preparedness in disaster risk reduction and management. Finally, ranking was used to identify the most common problems encountered by teachers in implementing disaster preparedness programs.

Ethical Considerations

This study ensured the ethical treatment of all participating teachers. Informed consent was obtained, and participation was strictly voluntary. Confidentiality and anonymity were maintained to protect participants' personal information. The findings were presented responsibly to avoid any misrepresentation or harm to the teachers or their institution. The researcher also considered the possible emotional impact on participants, especially those with prior disaster-related trauma, and ensured access to support services if needed.

Results and Discussion

This section presents the findings according to the study's questions.

Teachers' DRRM Awareness

This section examines teachers' awareness of DRRM concepts and principles, recognizing their key role in promoting school safety and resilience. Assessing their level of understanding helps identify areas for strengthening their capacity to implement effective disaster preparedness and response strategies.

Table 1. Level of Teachers’ Awareness of DRRM Concepts and Principles

Statements	Weighted Mean	Verbal Interpretation
I am aware of the different types of natural hazards that may affect our community.	4.34	Very Aware
I understand the concept of disaster risk reduction.	4.34	Very Aware
I know the importance of early warning systems in disaster preparedness.	4.38	Very Aware
I am familiar with the basic principles of disaster response and recovery.	3.72	Aware
I have knowledge of the different phases of the disaster management cycle.	3.47	Aware
I am aware of the role of education in disaster risk reduction.	4.22	Very Aware
I understand the importance of community-based disaster risk reduction.	4.22	Very Aware
I am familiar with the different strategies for building resilience to disasters.	3.41	Aware
I know the importance of conducting disaster drills and simulations.	4.50	Very Aware
I am aware of the different government agencies involved in disaster management	3.78	Aware
I understand the impact of climate change on disaster risk.	4.47	Very Aware
I am familiar with the concept of risk assessment and vulnerability analysis.	3.66	Aware
I know the importance of integrating disaster risk reduction into the curriculum.	4.16	Aware
I am aware of the different resources available for disaster risk reduction.	3.59	Aware
I believe that teachers play a crucial role in promoting disaster risk reduction.	4.69	Very Aware
Overall weighted Mean	4.06	Aware

Legend: 4.21–5.00 Very Aware; 3.41–4.20 Aware; 2.61–3.40 Neither Aware Nor Unaware; 1.81–2.60 Unaware; 1.00–1.80 Very Unaware

Table 1 presents the level of teachers' awareness of DRRM concepts and principles based on weighted means and verbal interpretations. Teachers are "Very Aware" of key areas such as natural hazards, disaster risk reduction, early warning systems, disaster drills, climate change impacts, and their role in promoting DRRM. However, they are only "Aware" of disaster response and recovery, disaster management phases, resilience strategies, government agencies, risk assessment, curriculum integration, and available resources. The overall mean of 4.06 suggests a general awareness of DRRM concepts.

This indicates that while teachers have strong knowledge of preparedness-related aspects, there is a need for further training in response,



recovery, and technical areas such as risk analysis and resource use. Their high awareness of their role in DRRM offers a solid foundation for capacity-building and curriculum integration. Research supports embedding DRRM in teacher education to foster community resilience. Iqbal and Nauman (2024) stress that education enhances risk understanding and proactive management, aligning with the Hyogo Framework’s call for integrating DRRM into the curriculum.

Teachers' Preparedness in Responding to Different Disaster Types

This section explores teachers' preparedness in responding to various disaster scenarios. As key figures in ensuring student safety, understanding their readiness is essential. The analysis focuses on their self-reported ability to carry out disaster response actions and to access the necessary resources.

Table 2. Level of Teachers’ Preparedness in Responding to Different Types of Disasters

Statements	Weighted Mean	Verbal Interpretation
I have received adequate training on disaster preparedness and response.	2.91	Neither Prepared Nor Unprepared
I am confident in my ability to assess potential disaster risks in my school.	3.06	Neither Prepared Nor Unprepared
I have a clear understanding of my role and responsibilities during a disaster.	3.77	Prepared
I know how to develop and implement a school disaster preparedness plan.	3.13	Neither Prepared Nor Unprepared
I am familiar with emergency procedures and protocols.	3.78	Prepared
I have access to necessary emergency equipment and supplies.	2.88	Neither Prepared Nor Unprepared
I know how to conduct emergency drills and simulations.	3.41	Prepared
I can effectively communicate with students, parents, and colleagues during a crisis.	3.72	Prepared
I am prepared to provide emotional support to students and staff after a disaster.	3.88	Prepared
I know how to respond to specific types of disasters, such as earthquakes, typhoons, and floods.	3.22	Neither Prepared Nor Unprepared
I have a strong understanding of first aid and basic life support.	3.34	Neither Prepared Nor Unprepared
I can effectively evacuate students and staff during a disaster.	3.31	Neither Prepared Nor Unprepared
I know how to assess and address the physical and psychological needs of students and staff after a disaster.	3.19	Neither Prepared Nor Unprepared
I am confident in my ability to lead and coordinate disaster response efforts.	3.03	Neither Prepared Nor Unprepared
I believe that my school is well-prepared to respond to different types of disasters.	3.47	Prepared
Overall Weighted Mean	3.34	Neither Prepared Nor Unprepared

Legend: 4.21–5.00 Very Prepared; 3.41–4.20 Prepared; 2.61–3.40 Neither Prepared Nor Unprepared; 1.81–2.60 Unprepared; 1.00–1.80 Very Unprepared

Table 2 presents the teachers' preparedness in responding to various disasters based on weighted mean scores and interpretations. The data shows mixed results: teachers are "Prepared" in understanding their roles, emergency procedures, drills, crisis communication, emotional support, and overall school readiness. However, they are "Neither Prepared Nor Unprepared" in areas such as training, risk assessment, disaster planning, access to emergency equipment, first aid, evacuation, post-disaster response, and leadership in emergencies. The overall mean of 3.34 reflects this moderate preparedness.

This suggests that while teachers exhibit basic confidence in their roles during disasters, significant gaps persist in practical competencies and access to essential resources. Targeted training in risk assessment, first aid, and evacuation procedures, paired with improved provision of materials and support systems, is urgently needed. As Recamadas and Tantiado (2022) emphasize, effective disaster risk reduction (DRR) education must embed local hazard awareness and context-specific risk management strategies into the curriculum to empower both teachers and students. Without this integration, preparedness remains theoretical rather than actionable.

Test of Difference between Demographic Profiles and Level of DRRM Preparedness

This section analyzes variance in DRRM preparedness among teachers, accounting for demographic factors. Identifying these differences helps tailor practical training and interventions to ensure all educators are disaster-ready. The analysis focuses on how civil status, sex, and educational attainment influence preparedness, emphasizing the need for targeted, responsive DRRM initiatives.

Table 3. One-Way ANOVA for DRRM Preparedness by Demographic Profiles

Variables	F-value	p-value	Decision on H0
Age	0.019	0.891	Accept
Sex	0.192	0.664	Accept
Civil Status	3.359	0.077	Reject
Educational Background	0.991	0.411	Accept
Teaching Position	9.89	< .001	Reject

The ANOVA results indicate no statistically significant difference in DRRM preparedness across age groups ($F = 0.019, p = 0.891$), leading to the acceptance of the null hypothesis. However, qualitative observations suggest that the 38-year-old cohort may exhibit higher levels of readiness, potentially due to accumulated experience, targeted training, or leadership roles. This anomaly invites further exploration of the specific factors that contribute to their preparedness. Wu et al. (2022) argue that age can influence disaster readiness, particularly when combined with contextual factors such as community engagement and prior exposure. Thus, while age alone may



not be a reliable predictor, it can serve as a proxy for deeper experiential or institutional factors worth investigating. Sex also shows no statistically significant difference ($F = 0.192, p = 0.664$), yet the data suggest that male teachers may feel more prepared than their female counterparts. This disparity could stem from unequal access to DRRM training, gendered expectations in leadership roles, or systemic biases in resource allocation. Önal et al. (2022) similarly found gender-based gaps in disaster preparedness among educators, underscoring the need for gender-sensitive interventions. Addressing these gaps requires inclusive training programs and equitable resource distribution to ensure all educators, regardless of gender, are equally equipped to respond to emergencies.

Further, although civil status approaches significance ($F = 3.359, p = 0.077$), the null hypothesis is rejected, suggesting some variation in preparedness levels. However, the lack of strong statistical significance implies that civil status may not be a primary determinant. Instead, professional factors such as training, experience, and institutional support appear more influential. This aligns with directives from DepEd Isabela and DepEd Leyte Division (2025), which emphasize systemic capacity-building over personal demographics. Nonetheless, the observed variation warrants further qualitative inquiry to uncover subtle influences such as caregiving responsibilities or household dynamics that may intersect with civil status. Neither does educational attainment significantly affect DRRM preparedness ($F = 0.991, p = 0.411$). This finding challenges the assumption that higher degrees automatically translate into greater readiness. Wang et al. (2021) argue that self-efficacy and practical engagement are more critical than formal education in shaping disaster response behaviors. This suggests that DRRM programs should prioritize experiential learning, scenario-based training, and confidence-building measures over academic credentials alone.

On the one hand, teaching position yields a highly significant result ($F = 9.89, p < .001$), indicating that rank within the teaching hierarchy strongly influences preparedness. T1 teachers report markedly higher readiness compared to T2 and T3 counterparts. This may reflect differences in training exposure, role expectations, or institutional support. Sanguyu (2023) and Diquito & Sangil (2025) highlight that while many educators are willing to participate in preparedness initiatives, their actual readiness varies by position and responsibility. These disparities can compromise the coherence of school-wide emergency responses. Therefore, differentiated training tailored to each teaching rank is essential to ensure consistent preparedness across the educational workforce.

Test of Relationship between Levels of DRRM Awareness and Preparedness

This section examines the relationship between teachers’ awareness and their preparedness in DRRM. Understanding this link is crucial, as greater awareness of hazards and DRRM principles is believed to enhance teachers’ ability to respond effectively during emergencies. The analysis aims to determine the strength and significance of this relationship, offering insights into how awareness efforts impact practical preparedness.

Table 4. Significant Relationship between Levels of Preparedness and Awareness in DRRM

Variables	r-value	P-value	Decision on H0
Levels of Preparedness and Awareness in DRRM	0.742	< .001	Reject

Table 4 reveals a strong, statistically significant positive correlation (Pearson $r = 0.742, p < .001$) between levels of DRRM preparedness and awareness, indicating that as awareness increases, so does preparedness among educators. This finding underscores the pivotal role of awareness-building initiatives in enhancing disaster readiness, suggesting that informed individuals are more likely to engage in proactive preparedness behaviors. Such a relationship affirms the strategic value of integrating DRRM education into school systems, where awareness can be cultivated through targeted training, simulations, and community engagement. Consistent with the work of Abejuela et al. (2021), the data support the assertion that educational interventions, particularly those embedded within institutional frameworks, significantly contribute to the resilience of teachers, students, and their families. Consequently, fostering awareness is not merely informational but transformational, catalyzing preparedness and a cornerstone of effective disaster risk reduction strategies.

Problems Encountered in Implementing DRRM Programs in School

This section explores the key challenges teachers face in implementing DRRM programs in schools. While effective DRRM is vital for protecting students and staff during emergencies, various obstacles hinder its successful execution. Identifying these issues is essential for designing targeted interventions and support systems to improve school disaster preparedness.

Table 5. Rank of Problems Encountered by Teachers in Implementing DRRM Programs in School

Problems Encountered	Ranks
Lack of Adequate Training: Insufficient training in disaster preparedness and response techniques.	1st
Limited Resources: Inadequate budget allocation for DRRM programs and activities.	2nd
Insufficient Emergency Equipment: Shortage of essential emergency equipment and supplies.	3rd
Psychological Impact on Teachers: Emotional stress and burnout due to the demands of DRRM.	4th
Limited Access to Information: Difficulty in obtaining accurate and up-to-date information on disaster risks and preparedness.	5th

Table 5 ranks the challenges teachers face in implementing DRRM programs. The top concern is inadequate training on disaster preparedness and response, followed by limited resources, including insufficient budgets. Third, there is a lack of essential emergency equipment. The psychological toll on teachers—such as stress and burnout—ranks fourth, while limited access to current disaster risk information is fifth.

This suggests that improving teacher training should be the primary focus, alongside better resource allocation and access to equipment. Addressing teachers' emotional well-being and enhancing access to updated DRRM information are also vital. Tackling these issues in order of priority will help build safer, more resilient school communities. This supports Waini et al.'s (2023) findings, which emphasize the need for stronger government support and inter-agency collaboration to manage disaster risks, especially in schools.

Conclusions

While teachers generally possess DRRM awareness concepts, particularly in preparedness, their knowledge of response, recovery, and technical aspects remains limited. Their overall preparedness falls within the "Neither Prepared Nor Unprepared" category, highlighting a disconnect between conceptual understanding and practical readiness. It is also concluded that DRRM preparedness levels are influenced by gender and educational background, with male teachers and those holding only college degrees showing higher preparedness than their female and master's degree-holding counterparts. However, age and civil status do not significantly impact preparedness. A strong positive correlation exists between awareness and preparedness, underscoring the importance of awareness-building initiatives. Despite this, teachers face substantial challenges in implementing DRRM programs, primarily due to inadequate training, scarce resources, and a lack of essential emergency equipment. These challenges must be addressed to ensure effective disaster response in schools.

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