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Awareness and Implementation of Disaster Risk Reduction Management in Private Higher Education Institutions

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ABSTRACT

The Philippine Disaster Risk Reduction and Management (DRRM) Act of 2010, mandates the integration of DRRM in the school curriculum and other educational programs to enhance awareness of natural disasters among the academic community. This study examined the level of DRRM implementation and awareness at private higher education institutions (HEIs) in the 1st Congressional District of Negros Occidental across four thematic areas: prevention and mitigation, preparedness, response, and rehabilitation and recovery. A descriptive, comparative, and correlational research design was employed. Three private HEIs participated, with respondents from administrators, faculty, staff, and students. A total of 273 participants completed a survey questionnaire on DRRM, with responses measured using a five-point Likert scale. The study also explored factors that facilitated or hindered the effective implementation of DRRM. Findings revealed that the academic community's awareness of DRRM across the four thematic areas is high, and the extent of implementation in private HEIs is great. This indicates that most members are knowledgeable about DRRM concepts, and that DRRM plans, programs, and activities are regularly implemented. Moreover, a high level of awareness corresponded with a greater extent of implementation. Differences in awareness and implementation were observed among groups; for example, students demonstrated lower awareness in prevention and mitigation compared to staff, while students and faculty contributed to significant differences in implementation in the same area. The study also identified contributing factors that facilitated effective DRRM implementation, particularly in prevention and mitigation, and hindering factors, especially in preparedness. These findings provide valuable insights for developing a proposed DRRM action plan for private HEIs, ensuring more effective disaster preparedness and risk reduction within the academic community.

Keywords: DRRM, Private HEIs, Awareness, Implementation, Academic Community

How to Cite:

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INTRODUCTION

Background of the Study

The international community, including the Philippine government, has increasingly recognized the need for a comprehensive policy and institutional framework to address disasters effectively (Stagen, De Torres, & Vargas, 2022). In the Philippines, disasters cause high mortality, human suffering, and significant disruptions to local economies that hinder development progress (Tabangcura et al., 2024). With more than 7,100 islands regularly exposed to typhoons, sea-level rise, flooding, earthquakes, and extreme temperatures, the Philippines remains one of the most disaster-prone countries in the world (National Disaster Response Plan, 2024).

Republic Act 10121, or the Philippine Disaster Risk Reduction and Management (PDRRM) Act of 2010, strengthens the national DRRM system through the National Disaster Risk Reduction and Management Plan (NDRRMP) and the National Disaster Risk Reduction and Management Framework (NDRRMF), which envision "safer, adaptive, and disaster-resilient Filipino communities toward sustainable development" (Torreliza, 2025). These frameworks are anchored on good governance, environmental protection, and poverty reduction, and are implemented from the national level down to the barangays as the smallest political unit.

As a member of the National Disaster Risk Reduction and Management Council (NDRRMC), the Commission on Higher Education (CHED) is mandated to integrate disaster risk education into higher education curricula (Tabangcura et al., 2024). Private Higher Education Institutions (PHEIs), being partners of the government in national development, must therefore ensure that their academic communities are adequately informed and prepared to respond to disaster-related risks.

The 1st Congressional District of Negros Occidental, composed of two cities and three municipalities, includes areas identified as flood-prone due to steep slopes, unstable soil conditions, weak rock characteristics, and inadequate vegetation. Higher Education Institutions located in these coastal-and-mountainous zones are therefore more susceptible to natural hazards and require strengthened DRRM measures to safeguard their constituents.

While the government has outlined expected outcomes, indicators, and activities for each of the four DRRM thematic areas—disaster prevention and mitigation, preparedness, response, and rehabilitation and recovery—there is still no standardized instrument for measuring DRRM awareness and implementation across institutions (Agriculture Department-DRRM Section, 2025). This lack of assessment tools highlights the need for research-based evaluations, particularly in higher education institutions.

A review of existing literature shows that although studies have examined DRRM awareness among secondary students (Toyado, 2022) and investigated DRRM awareness and implementation in public elementary schools (Cubillas, Aviles, & Cubillas, 2022), there is limited research that simultaneously examines both the level of DRRM awareness and the extent of DRRM implementation in private HEIs across the four thematic areas.

This underscores a clear research gap that this study aims to address. Therefore, this study determined the level of awareness and extent of implementation of DRRM among private HEIs in the 1st Congressional District of Negros Occidental. The results served as the basis for formulating disaster-resilience policies and measures and for crafting an academic-community DRRM action plan.

OBJECTIVES OF THE STUDY

This study aimed to determine the level of awareness and the extent of implementation of Disaster Risk Reduction and Management (DRRM) in private Higher Education Institutions (HEIs) across the four thematic areas of disaster prevention and mitigation, preparedness, response, and rehabilitation and recovery, as assessed by members of the academic community. It also sought to identify the factors that contributed to or hindered effective DRRM implementation in private HEIs.

To determine whether significant differences exist in the level of DRRM awareness among members of the academic community across the areas of disaster prevention and mitigation, disaster preparedness, disaster response, and disaster rehabilitation and recovery, when grouped according to their designation.

LITERATURE REVIEW

Recent studies highlight the critical role of Disaster Risk Reduction and Management (DRRM) awareness and implementation in educational settings in the Philippines. Dominguez (2020) emphasized the importance of equipping public school teachers with training, workshops, and school-based DRRM teams to strengthen awareness across the four thematic areas of DRRM. His study demonstrated that institutional support and partnerships are essential in translating awareness into actionable preparedness. Similarly, Toyado (2022) assessed student awareness in a disaster-prone Philippine Island setting, showing that gaps persist in curriculum integration, particularly in hazard mapping and applied knowledge, even when general awareness is present. Marskole et al. (2022) stressed that awareness alone is insufficient without practical application, highlighting the need for systematic education and purposeful training programs. Stagen, De Torres, and Vargas (2022) examined the role of local government communication during the COVID-19 pandemic, demonstrating that effective information channels are critical for enhancing awareness among diverse audiences.

Regarding DRRM implementation, Brower, Magno, and Dilling (2020) traced the historical evolution of disaster management in the Philippines, emphasizing the shift from reactive responses to community-based approaches addressing root vulnerabilities. They highlighted the importance of collaboration across public, private, and voluntary sectors to achieve effective disaster risk reduction. Tabangcura et al. (2023) examined private higher education institutions (HEIs) and found that while overall student awareness was satisfactory, specific areas such as human resources and structural resilience were weak, indicating a need for targeted interventions. Cubillas, Aviles, and Cubillas (2022) demonstrated that awareness does not always translate into full implementation, revealing persistent gaps between knowledge and practice. Dela Cruz and Ormilla (2022) showed that institutional integration of DRRM through school-based teams and safe learning facilities supports effective implementation and provides a model for private HEIs.

Studies on disaster prevention and mitigation further reinforce these insights. Meng-Han et al. (2022) introduced innovative "game-initiated learning" methods to actively engage participants in flood mitigation, demonstrating that experiential learning enhances both awareness and behavior. Greenberg et al. (2021) emphasized aligning school-based prevention programs with broader educational policies to ensure sustainability through evaluation and professional development.

Disaster preparedness and response studies, including Antonio and Antonio (2021), Hoffmann and Muttarak (2020), and Ngatu et al. (2022), highlighted the significance of periodic evaluation, training, and the use of technology and social media to improve community readiness. Rehabilitation and recovery research by Viloria et al. (2022) and Davie et al. (2021) stressed the importance of structured local plans, stakeholder coordination, and child-friendly spaces to protect vulnerable populations and promote long-term resilience.

Collectively, these studies show that effective DRRM requires educational interventions, institutional support, innovative learning strategies, clear communication channels, and coordinated action across sectors. These findings provide a strong foundation for examining DRRM awareness and implementation in private HEIs in the Philippines.

Framework of the Study

This study theorizes that a higher level of DRRM awareness leads to a greater extent of DRRM implementation. The study is guided by the **Theory of Reasoned Action (TRA)**, which explains the relationship between attitudes and behaviors. According to TRA, an individual's decision to engage in a particular behavior is influenced by their beliefs and expected outcomes.

In the context of this study, the academic community's awareness of DRRM concepts influences their behavior regarding proper DRRM implementation. The more informed the academic community is about DRRM—including factors contributing to or hindering effective implementation—the more likely they are to implement DRRM practices across the four thematic areas: disaster prevention and mitigation, disaster preparedness, disaster response, and disaster rehabilitation and recovery. In other words, higher awareness is expected to lead to more effective and comprehensive DRRM implementation.

Conceptual Framework

Disaster Risk Reduction and Management (DRRM) is a structured approach to identifying, assessing, and reducing disaster risks. It involves administrative directives, organizational capacity, and operational skills to implement strategies, policies, and

interventions that minimize the adverse impacts of hazards. The DRRM Act mandates the integration of disaster risk reduction education into school curricula at both basic and tertiary levels. Private HEIs respond to this mandate by equipping students and faculty with DRRM knowledge and skills.

The conceptual model of this study posits that **the attitude and behavior of the academic community directly influence the level of DRRM awareness and the extent of DRRM implementation**. The model assumes that Private HEIs act as implementers of school-based DRRM programs. Awareness and implementation are measured through self-made survey questionnaires and interview schedules. Respondents include administrators, faculty, staff, and students of the academic community. The higher the level of awareness, the greater the extent of DRRM implementation, leading to effective disaster management within the institution.

The findings of the study will serve as a basis for crafting a **proposed action plan** to enhance DRRM practices in private HEI;

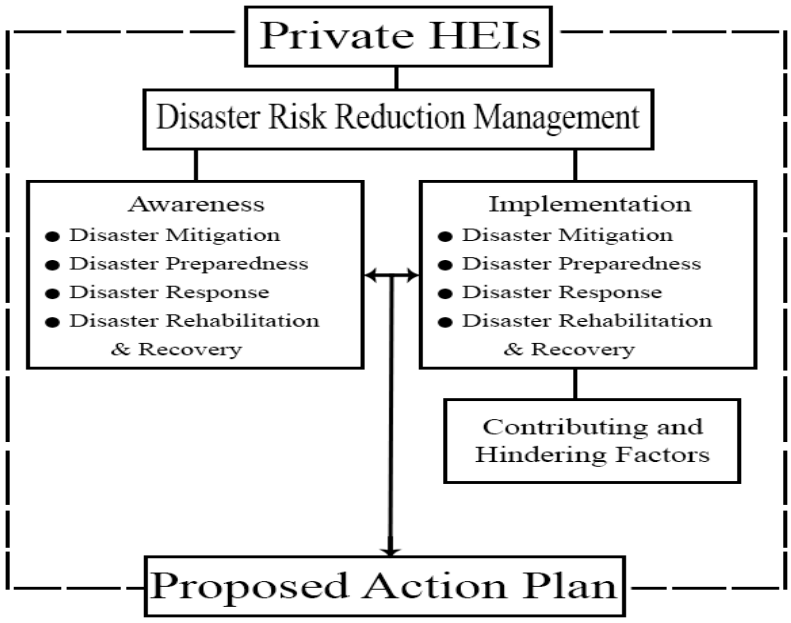

Figure 1. Conceptual Model

METHODOLOGY

Research Design

The researcher used descriptive–comparative and correlational designs, considering the quantitative nature of the study. This design was used to describe and interpret behavior without affecting it in any way. It was also employed because the study compared different groups in an attempt to draw conclusions (Toyado, 2022). The researcher aimed to identify and analyze similarities and differences between groups. The study also sought to understand the natural relationships among variables. In simple terms, correlational research examines whether two or more variables are related and, if so, in what way.

This study involved the use of a survey questionnaire to describe and interpret the level of awareness and extent of implementation of DRRM in private HEIs across the four thematic areas, as assessed by members of the academic community. It also aimed to compare the level of awareness and extent of implementation among members of the academic community along the four thematic areas when grouped according to designation, and to examine the relationship between DRRM level of awareness and DRRM extent of implementation.

Respondents of the Study

The respondents of the study were the total population of 273 academic community members – 8 administrators, 36 faculty, 17 staff, and 212 students – from three (3) private HEIs in the 1st Congressional District of Negros Occidental. Stratified random sampling was used to obtain a total sample of 273 respondents from a total population of 863.

Research Instrument

This study made use of a researcher-made survey questionnaire, which was developed based on the NDRRMP 2011–2028, as stipulated in R.A. 10121, and focused on four thematic areas: disaster prevention and mitigation, disaster preparedness, disaster response, and disaster rehabilitation and recovery. The instrument has three parts:

Part I includes the respondents' profile, identifying the name of the private HEI and the designation of the respondent.

Part II is the questionnaire proper, consisting of 80 items to assess the level of awareness and extent of implementation of DRRM across the four thematic areas.

Part III is an interview schedule on the factors that contribute to or hinder the implementation of DRRM in private HEIs.

To measure the level of awareness and extent of implementation, the following scales were used:

Level of Awareness Scale

Score	Mean Range	Verbal Description	Verbal Interpretation
5	4.21 - 5.00	Very High Awareness	The member of the academic community is aware of all DRRM related concepts.
4	3.41 – 4.20	High Awareness	The member of the academic community is aware of most DRRM related concepts.
3	2.61 – 3.40	Moderate Awareness	The member of the academic community is aware of some DRRM related concepts.
2	1.81 – 2.60	Low Awareness	The member of the academic community is aware of few DRRM related concepts.
1	1.00 – 1.80	Very Low Awareness	The member of the academic community is almost never aware of all DRRM related concepts.

Extent of Implementation Scale

Score	Mean Range	Verbal Description	Verbal Interpretation
5	4.21 - 5.00	Very Great Extent	The PHEI's DRRM plans, programs, projects, activities are always implemented.
4	3.41 – 4.20	Great Extent	The PHEI's DRRM plans, programs, projects, activities are oftentimes implemented.
3	2.61 – 3.40	Moderate Extent	The PHEI's DRRM plans, programs, projects, activities are sometimes implemented.
2	1.81 – 2.60	Least Extent	The PHEI's DRRM plans, programs, projects, activities are rarely implemented.
1	1.00 – 1.80	Very Least Extent	The PHEI's DRRM plans, programs, projects, activities are almost never implemented.

Content Validity and Reliability of the Instrument

The survey questionnaire was subjected to content validation by the following jurors: Provincial DRRM Officer, City DRRM Officer, Civil Society Organization, Barangay DRRM Council, and private HEIs. Relevant items included in the questionnaire

were extracted from literature reviews. The Good and Scates criteria were used to evaluate the validity of the questionnaire, which resulted in a score of 4.29. This was interpreted as excellent, indicating that the questionnaire is valid. After establishing the validity of the questionnaire, it was pilot tested on 30 respondents to determine its reliability. The questionnaire was administered to another private HEI that was not included in the actual respondents. The Cronbach's alpha test was used to determine internal consistency reliability, which resulted in an alpha of 0.983, indicating that the instrument is highly reliable.

Data Analysis Procedure

Descriptive and inferential statistics were used to analyze the survey results regarding the level of awareness and extent of implementation. Comparative and correlational analyses were used to examine significant differences and relationships.

The mean was used to determine the DRRM level of awareness and DRRM extent of implementation among the private HEIs in the 1st Congressional District of Negros Occidental. To measure significant differences in the DRRM level of awareness and extent of implementation among members of the academic community in the four thematic areas when they are grouped according to designation, Analysis of Variance (ANOVA) was used.
Likewise, in measuring the significant relationship between the level of awareness and extent of implementation, the Pearson r was used. The frequency and percentage were used to determine the factors that contribute and hinder to the effective implementation of DRRM.

Ethical Considerations

The purpose of the study was made clear to all respondents. Their written informed consent was first obtained to ensure their willingness to participate in the study. No one was compelled to answer the questions if they were not willing to. The respondents' participation was voluntary. This ensured the anonymity of the respondents and the confidentiality of all data gathered. The disposal of answered questionnaires was done through shredding.

RESULTS AND DISCUSSION

Profile of the Respondents

The respondents of the study consisted of 273 members of the academic community of the private HEIs in the 1st Congressional District of Negros Occidental, including administrators, faculty, staff, and students. Table 1 shows the distribution of respondents by private HEI and designation.
In terms of private HEIs, the majority of respondents were from Private HEI A (44.69%, n = 122), followed by Private HEI B (28.21%, n = 77) and Private HEI C (27.11%, n = 74). Regarding designation, most respondents were students (77.66%, n = 212), followed by faculty (13.19%, n = 36), staff (6.23%, n = 17), and administrators (2.93%, n= 8).

Table 1

Profile of Respondents

	Administrator		Faculty		Staff		Students		TOTAL	
Private HEI	(n)	%	(n)	%	(n)	%	(n)	%	(n)	%
A	2	0.73	13	4.76	9	3.30	98	35.90	122	44.69
B	4	1.47	7	2.56	3	1.10	63	23.08	77	28.21
C	2	0.73	16	5.86	5	1.83	51	18.68	74	27.11
TOTAL	8	2.93	36	13.19	17	6.23	212	77.66	273	100.00

Level of Awareness as Assessed by the Members of the Academic Community

Table 2 shows the mean results and the interpretation of the level of awareness by thematic areas as assessed by the members of the academic community. The grand mean (M = 3.58, SD = 0.69) was interpreted as "High Awareness," indicating that members of the academic community are aware of most DRRM-related concepts. Among the four thematic areas, Disaster Prevention and Mitigation had the highest mean (M = 3.68, SD = 0.66), which was also interpreted as "High Awareness."

This finding is supported by the study of Meng-Han et al. (2022), which reported that local decision makers invest heavily in prevention measures. The study revealed that participants indicated they would pay more attention to issues surrounding disaster prevention.

Furthermore, when members of the academic community were grouped according to designation, administrators had the highest mean in all areas (M = 3.99, SD = 0.42), interpreted as "High Awareness," indicating that this group is aware of most DRRM-related concepts. This was followed by staff (M = 3.65, SD = 0.66). This is necessary to improve the disaster risk reduction management practices of school managers in their schools and communities. The DRRM high awareness of the administrators in private HEIs in the area of prevention and mitigation should be continued and expanded. A school-based information dissemination network to inform members of the academic community in event of emergency and disaster such as the use of short messaging service must be established. This is necessary to improve disaster risk reduction and management (DRRM) practices among school managers in their schools and communities. The high level of DRRM awareness among administrators in private HEIs, particularly in the area of prevention and mitigation, should be maintained and further strengthened. A school-based information dissemination network, such as the use of short messaging service (SMS), should be established to inform members of the academic community in the event of emergencies or disasters.

Among members of the academic community, when grouped according to designation, students had the lowest mean across all areas (M = 3.52, SD = 0.79), yet it was still interpreted as "High Awareness." This indicates that students are aware of most DRRM-related concepts. The mean scores for students in each thematic area were as follows: prevention and mitigation (M = 3.59, SD = 0.66), preparedness (M = 3.50, SD = 0.78), response (M = 3.56, SD = 0.83), and rehabilitation and recovery (M = 3.44, SD = 0.88), all interpreted as "High Awareness."

This finding is supported by the study of Marskole et al. (2022), which emphasized the importance of awareness in disaster management. The study found that awareness of disaster management among children is still insufficient, highlighting the urgent need for providing knowledge and training. Since the inclusion of disaster management in the curriculum is mandatory, active and purposeful training and awareness programs should be conducted.

Table 2

Level of Awareness of by Thematic Areas as Assessed by the Members of the Academic Community

	Administrator			Faculty			Staff			Students			Average Mean		
Thematic Areas	M	SD	VI	M	SD	VI	M	SD	VI	M	SD	VI	M	SD	VI
Prevent and Mitigation	4.16	0.42	HA	3.89	0.62	HA	4.21	0.4	HA	3.59	0.66	V HA	3.68	0.66	HA
Preparedness	4	0.39	HA	3.68	0.65	HA	3.89	0.64	HA	3.5	0.78	HA	3.56	0.76	HA
Response	3.93	0.46	HA	3.56	0.7	HA	3.98	0.64	HA	3.56	0.83	HA	3.6	0.8	HA
Rehabilitation and Recovery	3.88	0.4	HA	3.47	0.69	HA	3.81	0.62	HA	3.44	0.88	HA	3.48	0.83	HA
Average Mean	3.99	0.42	HA	3.65	0.66	HA	3.65	0.66	HA	3.52	0.79	HA	3.58	0.69	HA

Legend: HA - High Awareness VH - Very High Awareness

Level of Awareness of DRRM in the Area of Prevention and Mitigation

Table 3 presents the mean results on the level of awareness in the area of prevention and mitigation. In general, the level of awareness in the area of prevention and mitigation is high (M=3.68, SD=.94), indicating that the members of the academic community are aware of most DRRM related concepts. Ranking their responses on awareness in the area of prevention and mitigation, the emergency preparedness training and drills for all academic community members (*M*=4.01, *SD*=1.01) ranked first. While the establishment of a school-based committee that will conduct capacity building and research activities on DRRM (M=3.47, SD= 0.93) ranked least followed by the linkages with the LGU for the institutionalization of Early Warning System (EWS) for information sharing and communication system between LGU and academic community (M=3.56, SD=1.01), and risk assessment of critical facilities in the school (M=3.57, SD=0.86).

Ranking their responses on awareness in the area of prevention and mitigation, the emergency preparedness training and drills for all academic community members (*M*=4.01, *SD*=1.01) ranked first. While the establishment of a school-based committee that will conduct capacity building and research activities on DRRM (M=3.47, SD= 0.93) ranked least followed by the linkages with the LGU for the institutionalization of Early Warning System (EWS) for information sharing and communication system between LGU and academic community (M=3.56, SD=1.01), and risk assessment of critical facilities in the school (M=3.57, SD=0.86).

The findings are supported in the study of Dominguez (2020) on awareness of public-school teachers to the DRRM along the four thematic areas. The finding shows that the respondents are aware on all four thematic areas. It stated that the city should continue to do all possible measures to ensure high awareness of the academic community. Furthermore, the study indicated that there should be a provision of assistance to the public elementary teacher in terms of training and workshops on the four thematic areas of DRRM, support in the creation, organization and operation of the school-based DRRM team, provision of all DRRM information, coordination with the school and granting life-saving equipment such as the early warning systems to aid the school during and after the disaster. It was recommended that partnership with the school and other concerned agencies with regards to the implementation and possible integration of the research-based action plan should be instigated and strengthened.

The study by Ngatu et al. (2022) on Flood Disaster Risk Reduction and Management in Pasig City supports the present study. The authors **noted** that training, simulation exercises, and local drills are conducted at the community level. They also recommended encouraging respondents to participate in DRR training, which should be conducted periodically.

Additionally, the study by Dominguez (2022) recommended further strengthening DRRM to ensure strong local counterparts, utilize relevant information and technology, address the shortage of human resources for DRRM, and explore partnerships with universities and private institutions.

Furthermore, the findings of the present study are supported by Stagen et al. (2022) in their study on **Priority, Capacity, and Information: A Three-Stage Approach to Implementing Disaster Risk Reduction and Management at the Local Level**. They indicated that the implementation of RA 10121 will continue to lag unless local government units recognize the need for and urgency of DRRM. It was recommended that national agencies involved in capacity-building efforts focus on local needs. To make capacity building cost-effective, differences in risks between areas must be understood. Scarce resources should be invested in the areas most at risk and in need of assistance.

With increased capacity, local government units can obtain support from their communities for disaster risk reduction programs. Therefore, local officials need to be professionalized in DRRM. Capacity building can only succeed if information on hazards and risks, legal implementation of the law, and DRRM in general is easily accessible.

It was also recommended that enforcement mechanisms be established to ensure local government officials participate in DRRM capacity-building programs and training. Trainings should be conducted regularly to respond to changes in local officials and maintain community awareness. Such trainings should be complemented by investments in systems and infrastructure at the local level and by efforts to advance local policies to ensure sustainability.

Table 3

Level of Awareness of DRRM in the Area of Prevention and Mitigation

	Administrator	Faculty	Staff	Students	Total

Indicators	M	SD	VI	M	SD	VI	M	SD	VI	M	SD	VI	M	SD	VI
1.policies and plans	4.25	0.71	VHA	3.92	0.55	HA	4.24	0.56	VHA	3.78	0.79	HA	3.84	0.76	HA
2.committee	4.50	0.39	HA	3.68	0.75	HA	4.29	0.59	VHA	3.58	0.87	HA	3.70	0.87	HA
3.risk assessments	4.00	0.53	HA	3.67	0.99	HA	4.24	0.75	VHA	3.48	0.82	HA	3.57	0.86	HA
4.emeregency equipment and supplies	4.13	0.83	HA	3.97	0.88	HA	4.24	0.75	VHA	3.47	0.89	HA	3.60	0.91	HA
5.building code and green	4.13	0.35	HA	3.61	0.99	HA	4.29	0.59	VHA	3.58	0.96	HA	3.64	0.95	HA
6.training and drills	4.25	0.71	VHA	4.17	0.91	HA	4.35	0.79	VHA	3.95	1.04	HA	4.01	1.01	HA
7.information dissemination (SMS)	3.63	0.92	HA	4.03	0.81	HA	3.82	0.88	HA	3.55	1.05	HA	3.63	1.01	HA
8. communication between LGU and school	4.38	0.52	VHA	4.00	0.83	HA	4.24	0.56	VHA	3.41	1.02	HA	3.56	1.01	HA
9.emeregency warning system and devices	4.25	0.89	VHA	3.78	1.0	HA	4.41	0.62	VHA	3.75	1.17	HA	3.81	1.14	HA
10. capacity building and research	4.13	0.64	HA	3.83	0.70	HA	3.94	0.75	HA	3.34	0.95	HA	3.47	0.93	HA
TOTAL	4.16	0.66	HA	3.89	0.85	HA	4.21	0.68	VHA	3.59	0.96	HA	3.68	0.94	HA

Legend: HA - High Awareness VHA - Very High Awareness

Level of Awareness of DRRM in the Area of Preparedness

Table 4 presents the level of awareness of DRRM in the area of preparedness. In general, the level of awareness of DRRM in the area of preparedness is high (M=3.56, SD=.98), indicated that the member of the academic community is aware of most DRRM related concepts. Ranking their responses on awareness of DRRM in the area of preparedness, the items that the respondents are highly aware of are in the aspects of scenario-based preparedness and response plans of the school such as fire and earthquake drill (*M*=4.04, *SD*=0.94), while the integration of DRRM in school curricula and manuals such as student manual and faculty manual (M=3.38, SD=0.99) ranked the least.

The findings are supported in the study of Hoffmann and Muttarak, (2020). It was discovered that it is an essential target of Goal 13 of the Sustainable Development Goals to strengthen resilience to climate-related hazards. Preparation for a disaster can minimize loss and damages substantially from natural hazards. It was found that the effect of training on disaster preparedness is mainly mediated. However, the findings on the preparedness and response plan contradict to the findings in the study of Meng-Han et al. (2022). It was found that there is no existing disaster preparedness plan during super typhoon Yolanda. Despite the fact, there were no recorded casualties in the municipality although there were apparent damages caused by the typhoon.

The study concludes that civil society's political participation influences the immediate preparations of the Local Government Unit during a super typhoon. The findings on the integration of DRRM in school curricula and manuals, such as student and faculty manuals, contradict the study of Marskole et al. (2022). One of the provisions of the Philippine DRRM Act of 2010 is to integrate DRRM into the school curriculum and other educational programs to enhance students' resilience to natural disasters. The results showed a high percentage of students understood disaster-related concepts, were aware of and prepared

for the risks posed by disasters, and had low disaster-risk perception. The authors concluded that students had high levels of disaster-related knowledge, preparedness, adaptation, and awareness. This may be attributed to the integration of disaster education into the curriculum.

Table 4

Level of Awareness of DRRM in the Area of Preparedness

	Administrator			Faculty			Staff			Students			Total		
Indicators	M	SD	VI	M	SD	VI	M	SD	VI	M	SD	VI	M	SD	VI
1.school curricula and manuals	4.25	0.71	VHA	3.17	0.77	MA	4.12	0.70	HA	3.32	1.01	MA	3.38	0.99	MA
2.training modules	3.88	0.83	HA	3.39	0.87	MA	3.82	0.73	HA	3.33	1.06	MA	3.39	1.02	MA
3. capacity building training for specific groups	4.00	0.53	HA	3.67	0.96	HA	3.88	0.78	HA	3.46	1.08	HA	3.53	1.04	HA
4.information communication and Education Advocacy plan	4.25	0.71	VHA	3.53	0.84	HA	3.71	0.77	HA	3.68	1.04	HA	3.68	0.99	HA
5.plan contingency plan	3.63	0.74	HA	3.72	0.81	HA	3.71	0.85	VHA	3.42	1.03	HA	3.48	0.99	HA
6.fire and earthquake drills	4.63	0.52	VHA	4.31	0.89	VHA	4.35	0.79	VHA	3.95	0.95	HA	4.04	0.94	HA
7.communication systems between LGU and schools	3.88	0.64	HA	3.92	1.02	HA	3.88	0.93	HA	3.45	0.85	HA	3.55	0.89	HA
8.key stakeholders database	3.75	1.16	HA	3.83	0.65	HA	3.71	0.99	HA	3.49	0.94	HA	3.56	0.92	HA
9.agreed protocols for emergency	3.88	0.99	HA	3.58	0.87	HA	3.94	0.90	HA	3.48	0.99	HA	3.56	0.92	HA
10.response assessment tool	3.88	0.64	HA	3.58	0.87	HA	3.82	0.81	HA	3.40	1.01	MA	3.47	0.98	HA
TOTAL	4.00	0.75	HA	3.68	0.88	HA	3.89	0.82	HA	3.50	1.00	MA	3.56	0.98	HA

Legend: MA – Moderate Awareness HA - High Awareness VH - Very High Awareness

Table 5 presents the level of awareness of DRRM in the area of response. In general, the level of awareness of DRRM in the area of preparedness is high (M = 3.60, SD = 1.03), which means that the members of the academic community are aware of most DRRM-related concepts. Significantly, the respondents are highly aware of the establishment of school-based coordination systems for effective and efficient response operations in case of emergency (M = 3.78, SD = 0.89), while the availability of maps for emergency exits and evacuation routes (M = 3.44, SD = 1.23) ranked the least.

The establishment of school-based coordination systems for effective and efficient response operations in case of an emergency that ranked first contradicts to the study of Greenberg (n.d.). It stated that the current impact of development programs is limited because of insufficient coordination with other components of school operations. The need for the maps for emergency

exits and evacuation routes is supported in the study of Davie et al. (2021). It was discovered that having an evacuation plan as preparation for a disaster can minimize loss and damages substantially from natural hazards. The study of Dominguez (2020) also recommended to strengthening the development of a unified vulnerability map.

Table 5

Level of Awareness of DRRM in the Area of Response

	Administrator			Faculty			Staff			Student			Total		
Indicators	M	SD	VI	M	SD	VI	M	SD	VI	M	SD	VI	M	SD	VI
1.coordination systems	4.00	0.93	HA	3.81	0.75	HA	4.12	0.70	HA	3.75	0.92	HA	3.78	0.89	HA
2.communication with agencies	4.00	0.53	HA	3.61	0.73	HA	4.00	0.61	HA	3.67	1.00	HA	3.70	0.94	HA
3.evacuation system	4.25	0.89	VHA	3.72	1.00	HA	4.18	0.73	HA	3.66	0.98	HA	3.72	0.97	HA
4.maps	4.25	0.89	VHA	3.22	1.29	HA	4.35	0.61	VHA	3.37	1.23	MA	3.44	1.23	HA
5.temporary shelters	3.88	0.99	HA	3.61	0.73	HA	3.94	0.90	HA	3.53	0.96	HA	3.58	0.93	HA
6.women and child-friendly spaces	3.63	0.74	HA	3.39	0.90	MA	3.71	0.77	VHA	3.58	1.16	HA	3.56	1.10	HA
7.damage and needs assessment	3.50	1.20	HA	3.61	0.87	HA	3.94	0.97	HA	3.46	1.01	HA	3.51	1.00	HA
8.available hospital services	4.00	0.53	HA	3.39	0.94	HA	4.12	0.70	HA	3.65	1.07	HA	3.67	1.03	HA
9.Mental Health and Psychosocial Services	4.00	0.76	HA	3.39	1.29	MA	3.47	1.07	HA	3.51	1.22	HA	3.47	1.20	HA
10.Early recovery procedure	3.75	0.71	HA	3.69	0.79	HA	3.47	1.07	HA	3.51	1.08	HA	3.54	1.03	HA
TOTAL	3.93	0.82	HA	3.56	0.93	HA	3.98	0.79	HA	3.56	1.06	HA	3.69	1.03	HA

Legend: MA – Moderate Awareness HA - High Awareness VH - Very High Awareness

Level of Awareness of DRRM in the Area of Rehabilitation and Recovery

Table 6 presents the level of awareness of DRRM in the area of rehabilitation and recovery. In general, the level of awareness of DRRM in the area of rehabilitation and recovery is High (M=3.48, SD=1.04), which means that the member of the academic community is aware of most DRRM related concepts. The items that the respondents are highly aware of are in the aspects of analysis of the disaster and improvement of the plans, policies, and activities in light of the experience (M=3.67, SD=1.02), while formulation of the rehabilitation and recovery accomplishment report (M=3.30, SD=1.10) ranked the least. The formulation of the rehabilitation and recovery accomplishment report that ranked the least is supported in the study of Antonio and Antonio (2021) that used the checklist of Disaster Preparedness divided into four thematic areas namely; Disaster Prevention and Mitigation, Disaster Preparedness, Disaster Response, and Disaster Rehabilitation and Recovery to measure the effectiveness of the Barangay disaster risk reduction and management committees (henceforth: BDRRMCs). The study revealed

the need for periodic evaluation of the effectiveness of BDRRMCs and for setting the standard of performance not only for policy evaluation but also for measuring community involvement disaster risk reduction. Therefore, it is worthy to note that rehabilitation and recovery accomplishment report should always be presented to evaluate the effectiveness of the DRRM implementation in the academic communities.

Table 6

Level of Awareness of DRRM in the Area of Rehabilitation and Recovery

	Administrator			Faculty			Staff			Students			Total		
Indicators	M	SD	VI	M	SD	VI	M	SD	VI	M	SD	VI	M	SD	VI
1. Identification of damages	4.00	0.53	HA	3.44	1.00	HA	3.94	0.66	HA	3.40	0.96	MA	3.45	0.95	HA
2.appropriate plan for disaster affected areas	3.88	0.64	HA	3.61	0.77	HA	3.88	0.93	HA	3.57	1.08	HA	3.60	1.02	MA
3.(PDNA) plans	4.25	0.71	VHA	3.28	1.09	MA	4.18	0.88	HA	3.27	1.07	MA	3.36	1.08	HA
4.funding sources	3.63	0.92	HA	3.44	0.88	HA	3.53	1.07	HA	3.41	1.02	HA	3.43	1.00	HA
5.LGU and other DRRM partners	3.88	0.64	HA	3.50	0.88	HA	3.76	0.75	HA	3.52	1.07	HA	3.55	1.02	HA
6.repair of damage infrastructure	3.75	0.89	HA	3.44	0.84	HA	3.88	0.70	HA	3.43	1.08	HA	3.47	1.03	HA
7.conservation plan	4.13	0.35	HA	3.72	0.70	HA	3.82	0.81	HA	3.48	1.10	HA	3.55	1.04	HA
8.psychosocial care	3.75	0.52	HA	3.31	0.98	MA	3.71	0.85	HA	3.42	1.19	HA	3.44	1.13	HA
9.accomplishment report	3.88	0.71	HA	3.31	0.86	MA	3.53	0.72	HA	3.26	1.17	MA	3.30	1.10	HA
10.analysis plans ,policies and activities	3.88	0.64	HA	3.67	0.76	HA	3.88	0.78	HA	3.64	1.08	HA	3.67	1.02	HA
TOTAL	3.88	0.65	HA	3.47	0.87	HA	3.81	0.81	HA	3.44	1.08	MA	3.48	1.04	HA

Legend: MA – Moderate Awareness HA - High Awareness VH - Very High Awareness

CONCLUSION

The academic communities in private HEIs in the 1st Congressional District of Negros Occidental are highly aware of most DRRM related concepts. This high level of awareness can be a good indicator to implement the DRRM to a very great extent among private HEIs. The academic community members must however give focus to the awareness in the area of rehabilitation and recovery especially in the aspects of the evaluation of the damages or repair of the damages, accomplishment report, and the analysis of disaster and improvement plan with the involvement of the faculty and students.

Likewise, the great extent of implementation of DRRM in the private HEIs attributed to the DRRM high awareness of the academic community members. The DRRM implementation in private HEIs must, however, give focus on regular drills and seriousness of training during the conduct of emergency preparedness training and drills; information dissemination in the event of disaster and linkage with the LGUs for the provision of Early Warning System; DRRM advocacy and agreed protocols for the academic community emergency response team; strong linkage with the LGUs; DRRM capacity building training and

standard training modules for the school members; maps for emergency exit during the disaster are displayed in the campus; DRRM committee to spearhead the school programs for DRRM; immediate actions of evaluation of the damages or rehabilitation and repair of damages at school; and faculty and students are not being involved in the analysis of disaster and improvement plans.

Moreover, the correlation that exists between awareness and implementation suggest that awareness attributes to implementation. Private HEIs are important influencers to change attitudes and practices towards a specific action. The higher awareness leads to an increased effort to achieve the implementation, which also increases the effectiveness of the implementation.

If Private HEIs can implement DRRM effectively, it will contribute to a safer environment. Thus, a DRRM propose action plan must be enhanced and must be realized to make the academic community very high aware of the DRRM related concepts and implement the DRRM to a very great extent. The private HEIs attitude of being very high aware has a strong influence upon the academic community member's behaviour of implementing DRRM to a very great extent which will result to the effective DRRM implementation. The more informed the academic community of the DRRM concepts including the understanding of the factors contributing and hindering the effective implementation of DRRM, the more likely it must implement the DRRM properly along the four thematic areas namely: disaster prevention and mitigation, disaster prevention, disaster response, and disaster rehabilitation and recovery. The decision of the academic community to properly implement the DRRM is based on the academic community's desired outcome resulting in the academic community's effective DRRM implementation. Once the academic member is educated, it can strongly influence other academic community members to change a desired behavior towards a specific reasonable action geared on providing benefits to the all members of the academic community and to their families. Knowing that the academic community members are highly aware, the private HEIs have greater extent of implementation.

RECOMMENDATIONS

Based on the findings, the following recommendations are hereby proposed to the private HEIs in the 1st Congressional District of Negros Occidental to effectively implement the Disaster Risk Reduction Management.

Commission on Higher Education (CHED). The CHED may guide the private HEIs in the implementation of DRRM. As partner of the NDRRMC to carry out DRRM programs, policies and activities intended for private HEIs the CHED may also formulate DRRM monitoring and evaluation assessment tool for private HEIs, strict guidelines of DRRM implementation and integration of DRRM in the curriculum.

Private Higher Education Institution. The private HEIs may integrate effectively the disaster risk reduction management into the curricula and may comply to the effective DRRM implementation base on the assessment tool develop specifically by the CHED to monitor and evaluate the integration and implementation of DRRM in private HEIs.

Board of Trustees and administrators. The board of trustees and administrators of the private HEIs may develop a school-based DRRM propose action plan that may include enhance DRRM projects, programs, and activities. The board of trustees may direct and the administrators may coordinate with all academic community members to ensure the effective implementation of the school-based DRRM action plan. And also, both may take part in the creation DRRM committee composed of academic community members, establishment of school-based committee that will conduct research activities and capacity building on DRRM, development of advocacy plan, development of agreed protocols for the academic community emergency response team, development of academic school response assessment tools and mechanisms, establishment of school-based coordination systems for effective and efficient response operations in case of emergency, conduct of damage and needs assessment for the affected academic community members, formulation of rehabilitation and recovery accomplishment report, and analysis of disaster and improvement of the plans, policies, and activities in light of the experience.

Faculty. The faculty may intensify all efforts in educating the members of the academic community with the DRRM concepts through the conduct of capacity building and research activities especially to the students to ensure the safety of the academic community. And also, may take part in the creation DRRM committee composed of academic community members, and development of advocacy plan.

Staff members. The staff members of the academic community may escalate all efforts in advocating the DRRM awareness and implementation to ensure the safety of the academic community. The same with the faculty, the staff may also take part in the creation DRRM committee composed of academic community members, establishment of sschool-based committee that will conduct research activities and capacity building on DRRM, development of agreed protocols for the academic community emergency response team, development of academic school response assessment tools and mechanisms, establishment of school-based coordination systems for effective and efficient response operations in case of emergency, conduct of damage and needs assessment for the affected academic community members, formulation of rehabilitation and recovery accomplishment report, and analysis of disaster and improvement of the plans, policies, and activities in light of the experience.

Students. The students of the academic community may engage in advocating the DRRM awareness and be keen its proper implementation to ensure the safety of the academic community. The same with the faculty and staff, the students may also, take part in the creation of DRRM committee composed of academic community members, school based committee that will conduct research activities on DRRM, development of agreed protocols for the academic community emergency response team, development of school-based coordination systems for effective and efficient response operations in case of emergency.

Office of Civil Defense (OCD) officials. The Office of Civil Defense Officials may develop and ensure national standards to achieve disaster risk reduction programs for PHEIs awareness including the DRRM thematic areas namely: prevention and mitigation, preparedness, response, and rehabilitation from data collection and analysis, planning, implementation, monitoring, and evaluation.

Future researchers. This researcher may replicate the study of DRRM awareness and implementation among the private HEIs to enhance the existing DRRM programs, programs, and activities of the academic community in responding to the Philippines Disaster Risk Reduction Management focusing in four thematic areas.

National Disaster Risk Reduction Management Council (NDRRMC) and Regional Disaster Risk Reduction Management Council (RDRRMC). NDRRMC and RDRRMC may revisit the R.A. 10121 and make its implementing rules and regulations more detailed, specific, and easy for the PHEIs to execute, come up with clear policies, structures, coordination mechanisms, and programs for the private higher education institutions. Both may create the coordination, integration, supervision and evaluation actions of the RDRRNS and private HEIs. The RDRRMC may include the private HEIs in the regional development plan that should be aligned with the NDRRMP.

Provincial Disaster Risk Reduction Management Council (PDRRMC) and City Disaster Risk Reduction Management Office (CDRRMO). The PDRRMC and CDRRMO may use this study as a ready reference to carry out emergency measures necessary during and the after the occurrence of human-made and natural disasters.

PROPOSED ACTION PLAN FOR THE ENHANCED IMPLEMENTATION OF DRRM IN PHEIs

This proposed action plan for the enhanced implementation program of DRRM in private HEIs is designed to facilitate the integration of the four thematic areas of DRRM namely: prevention and mitigation, preparedness, response, and rehabilitation and recovery in the DRRM implementation of the private HEIs in the 1st Congressional District of Negros Occidental.

Context

In response to the call of the Philippine DRRM Act (RA 10121) that required CHED to integrate disaster risk education in school curricula, the CHED officials agreed, saying that faculty and students must be equipped with awareness on mitigating and managing risks brought by any forms of natural disasters (Miasco, 2017). Colleges are capacitated through civic education and defense preparedness program. Disaster mitigation, preparedness and management are among the topic being taught to students in colleges through the National service training program (NSTP).

Private HEIs is taking initiatives in responding to this call. However, there are actors that hinder to the effective implementation of DRRM in private HEIs as the result of the study showed. The level of awareness of DRRM is high and the extent of

implementation of DRRM is great in the private HEIs along the areas namely: prevention and mitigation, preparedness, response, and rehabilitation and recovery as assessed by the academic community, yet there are plans, programs, policies and activities that need to be enhanced. Hence, the enhanced DRRM implementations program for private HEIs is presented below.

Objectives of the Plan

1. Develop relevant and effective strategies to enhance the level of awareness and extent of implementation of DRRM in the private HEIs.

2. Create opportunities for the members of the academic community to participate in the review of DRRM implementation and recommend better ways to enhance plans, programs, and activities of the school.

3. Offer strategies to integrate DRRM in private HEIs.

Conflict of Interest

This article was authored by a member of the journal's editorial/review team. An independent editor handled the manuscript, an external reviewers evaluated it to ensure transparency and avoid conflict of interest.

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