Assessing the Functionality of DRRM Resources in Terms of Preparedness, Prevention and Mitigation, and Response

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Abstract

This study aimed to determine the level of Disaster Risk Reduction and Management (DRRM) practices at Agusan National High School (ANHS) in the Division of Butuan City for the school year 2023–2024. Specifically, it assessed the functionality of DRRM resources in terms of preparedness, prevention and mitigation, and response. The study employed a descriptive research design and involved 243 respondents, consisting of 45 student members of the ANHS School DRRM Committee (SDRRMC), 178 teachers, and 20 non-teaching staff. Stratified random sampling ensured representative data, with the sample size determined through Slovin's Formula. Findings revealed that DRRM resources at ANHS were generally functional and practical. Regarding disaster preparedness, the resources received an overall weighted mean of 4.53, interpreted as "very satisfactory" and "functioning very well." The most effective practice was the regular conduct of earthquake and fire drills (mean = 4.83), while the lowest-rated was the regular review of the school contingency plan (mean = 4.25). For disaster prevention and mitigation, the resources achieved an overall mean of 4.42, categorized as "satisfactory" and "functioning well." The highest functionality was seen in the preparation of site maps by DRRM personnel (mean = 4.60). In contrast, the availability of a database on elements at risk, such as chemistry laboratories and libraries, scored lowest (mean = 4.16). In disaster response, the overall functionality was rated at 4.29, again "satisfactory" and "functioning well." The strongest aspect was the school's partnerships with external DRRM offices (mean = 4.57), while the rehabilitation or repair of damaged infrastructures received the lowest rating (mean = 4.13). These findings suggest that while DRRM resources at ANHS are generally adequate, specific areas—particularly in contingency planning, data management, and infrastructure rehabilitation—require improvement for a more resilient school environment.

Index Terms: Disaster Risk Reduction and Management (DRRM), Mitigation Preparedness, Prevention

I.INTRODUCTION

Natural disasters continue to affect countries across the globe, with developing nations facing higher risks due to limited resources (Quesada & Duran, 2023). One of the most disaster-prone countries is the Philippines, ranked as the most vulnerable nation to natural hazards by the World Risk Index (2022). Its geographic location in the Pacific Typhoon Belt and the Ring of Fire exposes it to frequent typhoons, earthquakes, landslides, and volcanic eruptions (Espinoza et al., 2023). In response to these risks, the Philippine government has enacted strategies to mitigate disaster impacts.

A key legislative response is the Philippine Disaster Risk Reduction and Management Act (R.A. 10121), which marked a shift from reactive to proactive disaster management. This law established an integrated, preventive, and preparedness-based approach that emphasizes resilience-building and community empowerment. It set the foundation for comprehensive strategies and policies to enhance local capacity and reduce the impact of disasters on lives and property. In the education sector, the Department of Education (DepEd) implemented DepEd Order No. 37, s. 2015, known as the Comprehensive Disaster Risk Reduction and Management in Education Framework. This policy integrates DRRM into the educational system and mandates the establishment of School DRRM Committees to oversee the development of school-level disaster plans and programs.

Agusan National High School (ANHS) in Butuan City faces several environmental challenges, including traffic congestion, recurrent flooding, and occasional seismic events. These issues highlight the importance of strong and functional DRRM systems within the school setting. ANHS implements the School Disaster Risk Reduction and Management Program (SDRRP) in line with national policies, but there is limited research evaluating the actual functionality of DRRM resources in the school.Specifically, there is a gap in assessing how well DRRM resources function in terms of preparedness, prevention and mitigation, and response. The level of awareness, readiness, and engagement among teachers, students, and administrators remains unclear, creating an urgent need to evaluate DRRM practices and their effectiveness. Understanding the current state of these resources is essential to identifying weaknesses, improving implementation, and enhancing school safety.

This study seeks to address that gap by assessing the functionality of DRRM resources at ANHS. It aims to determine how effectively these resources support disaster preparedness, prevention and mitigation, and emergency response. The findings will serve as the basis for developing a contextualized DRRM manual tailored to the specific needs of ANHS. Such a manual could inform policy improvements, strengthen stakeholder collaboration, and ultimately contribute to creating a safer, more resilient learning environment.

II.RESEARCH METHODOLOGY

This study utilized a descriptive research design to assess the functionality of Disaster Risk Reduction and Management (DRRM) resources at Agusan National High School (ANHS). The design allowed for the collection and analysis of factual data without manipulation, providing a clear understanding of existing DRRM practices and conditions. ANHS, located in Butuan City, is a "mega school" with more than 10,000 students. It was selected as the research site due to its vulnerability to various disasters, its role as an evacuation center during emergencies, and the researcher's current designation as the school's DRRM Coordinator.The study involved 243 respondents, composed of 45 student members of the ANHS School Disaster Risk Reduction and Management Committee (SDRRMC), 178 teaching personnel, and 20 non-teaching staff. These groups were selected because of their direct engagement with the school's DRRM efforts and their valuable insights into its implementation. Stratified random sampling was used to ensure balanced representation, and the sample size was determined using Slovin's Formula.

The survey instrument used to measure the functionality of DRRM resources was adapted from the study of Baluran (2023). It underwent content validation by three DRRM experts and was pilot-tested with 50 students, teachers, and staff from another school. The instrument showed very high reliability, with Cronbach's Alpha coefficients ranging from 0.911 to 0.972.Responses were measured using a 5-point Likert scale, with qualitative interpretations ranging from "Needs Improvement" to "Very Satisfactory." Before administering the survey, the researcher obtained the necessary approvals from the Department of Education (DepEd) and distributed consent letters to all participants. A pilot test was conducted to confirm the tool's validity and reliability.For data analysis, responses were organized, tabulated, and interpreted using statistical tools such as frequency, percentage, weighted mean, and standard deviation. These tools helped determine the level of functionality and effectiveness of DRRM resources and their implementation at Agusan National High School.

III.RESULTS AND DISCUSSION

Table 1 shows the level of functionality of the DRRM resources in terms of disaster preparedness. Overall, the level of functionality of the DRRM resources in terms of disaster preparedness was functioning very well with an overall rating (Wtd Mean=4.53, SD=0.468). The findings suggest that ANHS have effectively used the school's resources required for disaster preparedness. It reflects the school's commitment to ensuring that emergency protocols, equipment, and training programs are robust and reliable. This level of preparedness likely contributes to a safer school environment and enhances the confidence of stakeholders—students, teachers, parents, and administrators—in the school's ability to handle potential disasters effectively. This is consistent with the research of Viado (2023) titled: "Extent of Disaster Management Program Implementation and Preparedness Level in Selected Public Secondary Schools in Zambales, Philippines" showing DepEd students and teachers' preparedness to disasters.

Table 1

Level of Functionality of the DRRM Resources in terms of disaster preparedness

Indicators	Wtd Mean	SD	VD	Interpretation
1. Involvement of the community during risk assessment and vulnerability…	4.51	.658	VS	FVW
2. The school conducted DRR training.	4.56	.732	VS	FVW
3. The school conducted risk assessment and mapping.	4.53	.657	VS	FVW
4. The school formulated a DRRM Plan.	4.59	.696	VS	FVW
5. The school has DRRM hub information sharing.	4.54	.729	VS	FVW
6. DRRM is integrated in the education curriculum.	4.41	.773	S	FW
7. The school contingency plan is available.	4.40	.722	S	FW
8. The school contingency plan is regularly reviewed.	4.25	.827	S	FW
9. The school has evacuation plan and early warning system.	4.62	.615	VS	FVW
10. The school conducted periodic conduct of earthquake and fire drills.	4.83	.439	VS	FVW
11. The school conducted regular DRR meetings.	4.44	.760	S	FW
12. The school has standard operating procedure for deployment and....	4.66	.563	VS	FVW
13. There is training on disaster preparedness and response, search, rescue, retrieval operations.	4.63	.620	VS	FVW
14. There are simulation exercises.	4.55	.728	VS	FVW
15. There is a training on Psychological First Aid Providers.	4.39	.813	S	FW
Overall Weighted Mean	**4.53**	**.468**	**VS**	**FVW**

Legend:1.00-1.49-*Needs Improvement (NI)/ Functioning Poorly (FP); 1.50-2.49-Poor (P)/ Functioning Minimally (FM); 2.50-3.49-Fair (F)/ Functioning Adequately (FA); 3.50-4.49-Satisfactory (S)/ Functioning well (FW); 4.50-5.00-Very Satisfactory (VS)/ Functioning very well (FVW)*

The indicator, “The school conducted periodic conduct of earthquake and fire drills” had the highest rating (Wtd Mean=4.83, SD=0.439). The highest rated indicator was expected as DepEd through DepEd Order No. 53 s. 2022 required public elementary and secondary schools to conduct unannounced earthquake and fire drills every first and third week of every month. This suggests that effective disaster preparedness initiatives can result in positive outcomes. This shows that Agusan National High School (ANHS) conducts regular emergency preparedness activities. This high rating shows that the school has strategies in place to help keep everyone on campus trained and ready for in the event an emergency. Through consistent earthquake, and fire drills, the school community prepares and builds confidence, which goes a long way to minimize panic and confusion when real-life disasters strike. This proactive measure is probably one of the many ways by which the school promotes a culture of safety and preparedness, leading to optimal performance in overall Disaster Risk Reduction Management.

The indicator, “The school contingency plan is regularly reviewed” had the lowest rating (Wtd Mean=4.25, SD=0.827). The respondents' lowest rating on regular review of the school contingency plan could be attributed to the crafting and review of the school contingency plan only once a year and just participated by a maximum of six participants, including, the school head, DRRM coordinator, and other members of school DRRM Team (DepEd Memorandum OUOPS No. 2023-04 titled, Guidelines on the Utilization and Reporting of FY 2023 Disaster Preparedness and Response Program (DPRP) Funds). This finding shows that students, teachers and non-teaching personnel are not well informed to the contingency plan formulated by the school leaders and coordinators. To make sure that the contingency plans remain relevant and successful in dealing with changing risks and challenges, more thorough and frequent assessments of them are necessary.

Table 2 shows the level of functionality of the DRRM resources in terms of disaster prevention and mitigation. Overall, the level of functionality of the DRRM resources in terms of disaster prevention and mitigation was functioning very well with an overall rating (Wtd Mean=4.42, SD=0.547). This comes without surprise as the DepEd Order No. 21 s. 2015 mandated schools to focus on disaster prevention and mitigation (Cruz & Ormilla, 2022).

Table 2

Level of Functionality of the DRRM Resources in terms of disaster prevention and mitigation

Indicators	Wtd Mean	SD	Verbal Description	Interpretation
1. Site maps are prepared by the school DRRM personnel.	4.60	.631	Very Satisfactory	Functioning very well
2. Database on elements at risk (such as chemistry laboratories, library.	4.16	.850	Satisfactory	Functioning well
3. The school disseminates standard operating procedures (SOPs) in …	4.43	.697	Satisfactory	Functioning well
4. The school conducts periodic conduct of safety inspections.	4.49	.718	Satisfactory	Functioning well
5. The school performs periodic maintenance of the installations/facilities.	4.29	.824	Satisfactory	Functioning well
6. The school conducts hazard assessment.	4.42	.764	Satisfactory	Functioning well
7. The school conducts risk assessment and vulnerability analysis.	4.43	.737	Satisfactory	Functioning well
8. The school followed environmental ordinances/policies.	4.45	.716	Satisfactory	Functioning well
9. The school monitored and evaluated infrastructure resiliency.	4.42	.747	Satisfactory	Functioning well
10. The school implemented safety and resiliency standards of infrastructure projects.	4.46	.745	Satisfactory	Functioning well
Overall Weighted Mean	**4.42**	**.547**	**Satisfactory**	**Functioning well**

Legend:1.00-1.49-*Needs Improvement/Functioning Poorly; 1.50-2.49-Poor/Functioning Minimally; 2.50-3.49-Fair/Functioning Adequately; 3.50-4.49-Satisfactory/Functioning well; 4.50-5.00-Very Satisfactory/Functioning very well*

The indicator, “Site maps are prepared by the school DRRM personnel” had the highest rating (Wtd Mean=4.6, SD=0.631). These findings confirm that in all classrooms, infrastructures and other high traffic areas in ANHS has visible Building Emergency Evacuation Plan. This map informs the students, teachers and non-teaching personnel about where to go in an event of an emergency. This proves that the school’s effort to improve its disaster prevention and mitigation is having a positive impact and may result in a safer and better-prepared learning environment in the event of disaster or emergencies. This result also coincided with the study of Manliguez, De la Cruz, and Manliguez (2023) titled: “A Proposed Model on Disaster Risk Reduction Management for Basic Education Schools” showing that recent school and evacuation maps, school officials and stakeholders' safety inspections, infrastructure standards were indispensable in disaster prevention and mitigation.

Table 2 also shows that the indicator, “Database on elements at risk (such as chemistry laboratories, library” had the lowest rating (Wtd Mean=4.16, SD=0.85). The result shows that the school is lacking of standardized documentation to identify areas considered high risk and in need of regular monitoring in order to be adequately prepared for any disaster. Failure to provide the necessary resources or funds to maintain and update an extensive risk database may lead to such a low rating, and ultimately inhibit the school's ability to rapidly identify and address vulnerabilities. The identified gap needs to be addressed to enhance the over-all DRRM strategy of Agusan National High School to keep all key aspects safeguarded as well as to make sure that the preparedness plan will be fully grounded and informed by relevant risk information. Similarly, Cortejo et al. (2024) research titled: “Disaster Vulnerability and Preparedness in The Implementation of RA 10121 (Philippine Disaster Risk Reduction and Management Act Of 2010) Of the Province of Sultan Kudarat” noticed the weakness in database for at-risk elements not only in DepEd schools but the local community as well Dipon (2023) showed the need of DepEd schools to perform regular maintenance of facilities and assessment of hazards.

Table 3 shows the level of functionality of the DRRM resources in terms of disaster response. Overall, the level of functionality of the DRRM resources in terms of disaster response was functioning well with overall rating (Wtd Mean=4.29, SD=0.626). The results show that Agusan National High School (ANHS) has already managed to provide relevant resources and developed protocols to when it comes to addressing or facing disasters. Such a good rating indicates that the school is, in general, well-prepared to manage emergencies, with suitable resources and procedures implemented. This is consistent with the study of Tizon and Comighud (2020) titled: “Implementation of the public schools’ disaster risk reduction management program and level of capabilities to respond” showing the high extent of response compliance of public schools to disasters.

Table 3

Level of Functionality of the DRRM Resources in terms of disaster response

Indicators	Wtd Mean	SD	Verbal Description	Interpretation
1. Undertaken rehabilitation or repair of damaged infrastructures.	4.13	.860	Satisfactory	Functioning well
2. There is active participation of NGOs, business, private sectors, people's organizations, and others.	4.28	.844	Satisfactory	Functioning well
3. The school has resource mobilization.	4.15	.830	Satisfactory	Functioning well
4. The school has existing LGU alliances.	4.32	.746	Satisfactory	Functioning well
5. The school has exiting alliances with PDRRMO/ CDRRMO/MDRRMO.	4.57	.615	Very Satisfactory	Functioning very well
6. Involvement of multi-stakeholders in the rehabilitation and recovery programs.	4.30	.773	Satisfactory	Functioning well
Overall Weighted Mean	**4.29**	**.626**	**Satisfactory**	**Functioning well**

Legend:1.00-1.49-*Needs Improvement/Functioning Poorly; 1.50-2.49-PoorFunctioning Minimally; 2.50-3.49-Fair/Functioning Adequately; 3.50-4.49-Satisfactory/Functioning well; 4.50-5.00-Very Satisfactory/Functioning very well*

Table 3 further showed that the indicator, "The school has exiting alliances with PDRRMO/ CDRRMO/ MDRRMO" had the highest rating (Wtd Mean=4.57, SD=0.615). The City Disaster Risk Reduction Management Office provides free Basic and Standard Life Support training to ANHS students, teachers and non-teaching personnel. These training enhances the capability of the school to provide first aid to its stakeholders and improves the overall response of the school in an emergency. These data confirms that cooperation between local government DRRM agencies and Agusan National High School improves schools' overall capacity to withstand disasters. These alliances probably make it easier to share information, resources, and experience as well as to coordinate emergency preparation and response activities. These relationships greatly enhance the safety and well-being of students, staff, and the community at large by utilizing the assets of both educational institutions and local government organizations.

This finding was consistent with the research of Cruz and Ormilla (2022) on the crucial and critical factor played by school alliances with local government DRRM agencies in the implementation of DRRM.
The indicator, "Undertaken rehabilitation or repair of damaged infrastructures" had the lowest rating (Wtd Mean=4.13, SD=0.86). With huge number of employees, high bills and other expenses, the school operate on a tight budget. Allocating budget for major repairs the process can be slow and sometimes need approval from higher authorities. This result is supported by the research of Epe (2023) titled: "Children and Disaster Risk Reduction: Building Resilience from Education, Local Government Units, and Communities" showing the difficulty of DepEd schools in facing the challenge of damaged infrastructures.

These findings confirm that for Agusan National High School to respond to infrastructure damage in the wake of catastrophes in a timely and efficient manner, the school require better resources and support. This could entail taking steps like designating specific funds for rehabilitation following a disaster, expediting repair-related administrative procedures, and offering technical support to guarantee prompt and high-quality reconstruction work. Agusan National High School can more effectively guarantee the security and continuity of instruction for children in disaster-affected communities by tackling these issues.

IV. CONCLUSIONS and RECOMMENDATIONS

The assessment of the functionality of DRRM resources at Agusan National High School revealed both strengths and areas for improvement across the domains of disaster preparedness, prevention and mitigation, and response. High functionality was observed in

preparedness efforts, particularly in the conduct of periodic earthquake and fire drills. However, other aspects, such as the regular review and updating of the school contingency plan, were found to be less effective.

To enhance the overall efficiency and effectiveness of the school's DRRM implementation, teachers, school staff, administrators, and other stakeholders are encouraged to maximize the use of available DRRM resources. This collective effort will strengthen the school's capacity for disaster preparedness, prevention, mitigation, and response. Students also play a vital role and are encouraged to actively provide feedback on existing DRRM practices and contribute innovative suggestions for improvement. Involving students in this way promotes a culture of safety, awareness, and innovation within the school community. For future research, it is recommended to adopt a mixed-methods approach, combining quantitative data with qualitative insights through interviews and focus group discussions. This will allow for a more comprehensive understanding of the practical challenges and successes in the implementation of DRRM strategies

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