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Assessment of disaster risk reduction management program: basis for proposed innovations of school administrators in Bagumbayan Sultan Kudarat

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Abstract: This study aimed to assess some schools' disaster risk reduction management practices in Sultan Kudarat Province. School administrators are expected to create innovative plans by seeking assistance from the local government, parents, NGOs, and other stakeholders in preparing the schools to withstand disasters and ensure the structural stability of school buildings, and the safety of teachers and learners. The purpose of innovations is to improve the field of information management, decision support or other disaster management processes. The identified landslide-prone areas and schools in Bagumbayan based on the Landslide Geo-Hazard Map by the DENR-Mines and Geosciences Bureau Landslide Tracker Application (2017) are the Barangay Chua and Barangay Titulok where the Chua Integrated School and Datu SangkiAkoy Elementary School are located, respectively. Results showed that the level of implementation in the disaster risk reduction management area is “moderate” which suggests that the level of school preparedness, mitigation, and resilience is moderately available for all but is often practiced. Moreover, actions, programs, and strategies that have been done for risk reduction management program management are often implemented. The BLGUs and the schools together with the school communities and the stakeholders are collaborating with regards to the implementation and sustainability of the program.

Keywords: Disaster risk reduction management, Landslide-risk, Comprehensive Disaster Management (CDM) strategies, Disaster preparedness and response, Recovery, Mitigation, Rehabilitation

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INTRODUCTION

The Disaster Risk Reduction Management (DRRM) cycle encompasses all phases of disaster management, including prevention, mitigation, preparedness, response, recovery, and rehabilitation. It plays a vital role in addressing global issues related to disaster management, particularly in regions prone to common disasters such as typhoons, earthquakes, fires, floods, and landslides.

Local government units, with support from allied government agencies, implement advanced plans and well-funded programs to protect communities, and assets, and ensure economic stability (Iuchi, Jibiki, Solidum Jr, & Santiago, 2019). These initiatives aim to generate effective responses, including early warnings and temporary evacuations, to eliminate threats and hazards.

At the school level, Dube and Orodho (2016) emphasize the importance of disaster management and risk reduction strategies in public schools. Recommendations include installing adequate firefighting equipment, engaging qualified personnel in training, ensuring accessibility to doors and windows during emergencies, and implementing disaster alarms. However, a gap exists between knowledge strategy implementation in many schools, highlighting the need for continuous exposure to disaster management techniques. The study focuses on landslide-prone areas in Bagumbayan, aiming to identify innovative programs and strategies by school administrators to mitigate disaster risks and enable quick responses in emergency situations.

Statement of the problem
Specifically, this study aimsto:

1) Develop an intervention to address passivity prevalent among the people in identified landslide-prone areas and learners of schools located in high-risk areas.
2) Strengthen the practice and develop a culture of preparedness, knowledge, and skillfulness among learners, teachers, parents, stakeholders, barangay local government units, and the broader school community regarding landslides.
3) Sustain the practice of Disaster Risk Reduction Management (DRRM) programs and innovations through collaboration between schools, parents, barangay local government units, and the community.
4) Update DRRM skills with innovations to foster safety and precautionary measures.

METHODOLOGY

Research design
This study utilized both quantitative and qualitative research methods to assess the problems and implementation levels of Disaster Risk Reduction and Management (DRRM) programs in identified districts within Bagumbayan, Sultan Kudarat Province. Quantitative research provided factual data pertinent to the study's objectives, while qualitative methods offered deeper insights into learning and teaching research. Primary data was collected through a survey questionnaire answered by school administrators and DRRM coordinators, while secondary data was gathered through a literature review. Additionally, focus group discussions (FGD) and key informant interviews (KII) were conducted to address specific research questions identified in previous chapters. These combined methods facilitated a comprehensive understanding of the status of DRRM programs in the studied districts.

Locale of the study and respondents
The study was conducted in the two districts of Bagumbayan, Sultan Kudarat Province and included two public elementary schools, Chua Integrated School Chua from District III and Datu SangkiAkoy Elementary School from District 1.The study comprised 26 respondents, consisting of two barangay captains, two school heads, two DRRM school coordinators, and 22 teachers. All respondents were residents or professionals in the Municipality of Bagumbayan and possessed experience living or working in landslide-prone areas.

Research instruments
The survey used in the study was adapted from the DRRM Online Course Preparatory Meeting Report by CITYNET-Yokohama (2013). It was designed to assess the level of participation from schools and communities in terms of preparedness, mitigation, resilience, and vulnerability. Additionally, focus group discussions (FGD) and key informant interviews (KII) were conducted to identify the programs and activities implemented by schools and communities to address disaster risks, as well as the contributions of the community. These discussions and interviews also provided insights into how schools and communities collaborate to manage the adverse effects of natural hazards. Ultimately, the results will inform the development of school and community-based disaster risk management plans for sustainable development in Bagumbayan, Sultan Kudarat Province.

Data analyses procedure

To determine the level of school and community participation in terms of preparedness, mitigation, resilience, and vulnerability. The rating scale ranges from 1 to 5, with each number corresponding to a description and interpretation of the level of school preparedness, mitigation, resilience, and vulnerability: 5: Very High - The level of preparedness, mitigation, resilience, and vulnerability is consistently available and practiced; 4: High - The level of preparedness, mitigation, resilience, and vulnerability is usually available and practiced; 3: Moderate - The level of preparedness, mitigation, resilience, and vulnerability is often available and practiced; 2: Sometimes - The level of preparedness, mitigation, resilience, and vulnerability is occasionally available and practiced; and 1: Never - The level of preparedness, mitigation, resilience, and vulnerability is never available and practiced.

FINDINGS AND DISCUSSION

Quantitative Results

Landslide prone-areas and schools in Bagumbayan, Sultan Kudarat

This study utilized the Landslide Geo-Hazard Map of Bagumbayan, Sultan Kudarat, provided by the Department of Environment and Natural Resources (DENR) Mines and Geosciences Bureau Landslide Tracker Application (2017), to identify landslide-prone areas and schools in Bagumbayan, Sultan Kudarat. Specifically, two barangays and their nearby schools, Chua Integrated School in Barangay Chua and Datu SangkiAkoy Elementary School in Barangay Titulok, were identified. These areas, where schools and houses are located, are also near earthquake fault lines and sinkholes.

Level of implementation of the disaster risk managementprograms of the identified schools

The findings highlight poor coordination with other agencies as a key issue in implementing DRRM programs, with a weighted mean of 2.58, indicating sporadic utilization. This inconsistency may lead to inadequate DRRM skills during future landslides. Other solutions to encountered problems show a “moderate” level of implementation, slightly higher than poor coordination. Overall, the findings align with Clarke (2016), suggesting that those at risk often rely on government and donor assistance, which may be insufficient or delayed.

Level of implementation on the organization of the school disaster risk reduction group

Organization of the school disaster risk reduction group

The dataset outlines key indicators of the school's Disaster Risk Reduction (DRR) group organization, as observed by respondents. These include assessing teacher leadership qualities and expertise, identifying emergency coordinators, and forming various response teams. However, the Incident Command System (ICS) received the lowest rating, suggesting incomplete implementation. The ICS is vital for managing emergencies efficiently, with functions like Incident Command, Operations, and Logistics. Jensen and Kirkpatrick emphasize its role in organizing temporary teams for public safety management during emergencies, aiming to optimize efficiency and prevent inertia.

Level of implementation on the disaster risk reduction measures

The result shows that 11.18% of the respondents have observed the implementation such as the identification of exits and evacuation sites known to the school community, as a part of their preparation, operation and possible response. They ensure that 10.59% of instruction should be followed and 10.59% of documentation is in chronological order, (10.59%) is exerted efforts to protect DepEd properties (buildings, fixtures, and equipment and records).

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Level of implementation on the availability of the instructional venues (alternative learning venue) for the identified schools

The result displays the availability of alternative instructional venues for identified schools. The most accessible venue for evacuation is barangay halls (34.00%), as they are near the school and can accommodate a large population, especially learners. Informants mentioned gaining support from the barangay council for evacuation sites. makeshift classrooms (28.00%) and other alternative structures (18.00%) with safe and adequate structures follow. The social action center and covered court both scored 10.00%. Tents received the lowest percentage score of 0.00%, as they are unavailable and not prioritized due to their location atop mountains, making them unsuitable for calamity preparation facilities.

This highlights the availability of alternative evacuation venues, with barangay halls being the most accessible option (34.00%). Their proximity to schools and capacity to accommodate large populations, especially learners, make them favorable. Informants noted receiving support from the barangay council for evacuation sites, such as utilizing senior citizens' buildings and areas offered by stakeholders. makeshift classrooms follow at 28.00%, along with other safe and adequate alternative structures at 18.00%. The social action center and covered court both scored 10.00%. Tents received the lowest score of 0.00%, as they are unavailable and not prioritized due to their location atop mountains, making them unsuitable for calamity preparation facilities

Level of implementation on preparedness and mitigation

The finding illustrates that 25.00% of school preparation and mitigation rely on utilizing existing information available as alternative materials from the District/Division/Regional Office, upon request of school heads/district supervisors. An implementation plan focusing on alternative delivery of instruction received 23.44%, while preparation for an inventory of existing available materials was at 21.88%. The lowest percentage was 6.00%. Other modes of delivery, such as internet connections, are deemed useful for addressing crises like earthquakes, flash floods, and landslides. Lastly, prioritizing equipment accessibility is crucial for maximizing network connections to facilitate evacuation and roadside debris cleanup during calamities' aftermath.

Level of implementation of the DRRM response

Table 2.6 reveals that three categories received identical percentage ratings regarding the level of implementation in disaster response. These include the identification of learning competencies and concepts to cover during class disruptions, coordination with parents and other teachers to ensure continuous guidance for children during disasters, and constant monitoring of learner progress during disruptions. Conversely, the orientation of learners and parents on the utilization of alternative materials obtained the lowest percentage rating (18.39%).

Level of implementation on the rehabilitation

The findingsshow that 34.69% of the allocation is designated for conducting assessments to establish the baseline of learners' progress, providing a starting point for lesson continuation. Additionally, 32.65% is allocated for inventorying materials to gauge effectiveness, serving as a basis for analyzing the impact of process changes on performance. Similarly, another 32.65% is earmarked for inventorying damaged textbooks and equipment for potential replacement or procurement. These processes coincide with other changes, such as the implementation of data-management technologies and reengineering, to ascertain their actual impact on overall performance (Mawed& Al-Hajj, 2017).

Qualitative Results

Coordination

Disaster Preparedness. Effective disaster preparedness requires coordination with stakeholders, including barangay councils and Local Government Units (LGUs). This collaboration ensures the sustainability of school programs, as seen in the coordination between schools and barangay councils for calamity preparedness. The barangay provides support such as basic first aid training for teachers and students and financial assistance for the school.

Additionally, external organizations like the Red Cross and individual agencies specializing in Disaster Risk Reduction Management (DRRM) contribute to school readiness through training sessions supported by the Bureau Fire Protection and DRRM. Scholars such as Twig (2004) and McEntire (2005) emphasize the importance of disaster preparedness in avoiding threats and reducing human vulnerability through various measures, including hazard assessments and public education. The school also conducts regular drills like the National Simultaneous Earthquake Drill (NSED) to practice safety measures and first aid applications. Plans for municipal-wide programs, such as tree planting and canal cleaning to prevent hazards like landslides, are also integrated into the school's activities. Sustainability is ensured through ongoing training, including tools training for students aimed at surpassing teacher expertise (Informant 1).

Support and Assistance. The school maintains close coordination with the Barangay council, which promptly responds to school concerns by conducting assessments of calamity causes. Upon identifying significant issues, the barangay seeks support from the Local Government Unit (LGU) by forwarding their assessments, leading to immediate action. The Department of Public Works and Highways (DPWH), alongside municipal engineering and Disaster Risk Reduction Management (DRRM), validates these assessments and orders the closure of damaged classrooms or restricts entry. Additionally, the school conducts its own

assessment to determine necessary humanitarian actions and cooperation. Immediate assistance arrives, including heavy equipment for clearing water passages and removing debris, facilitating disaster recovery efforts.

Camaraderie. One informant emphasized the inherent camaraderie among Filipinos, highlighting their natural helpfulness, bravery, and resilience in facing challenges. They believe that when people unite, nothing is impossible, especially in times of crisis. Cooperation and collective effort are essential, particularly in tasks like cleaning and repairing damaged classrooms. The participation of children in such activities is greatly valued, as it demonstrates solidarity and support for those affected by disasters. In moments of adversity, Filipinos demonstrate an unwavering commitment to helping one another, showing that support and assistance are crucial for overcoming challenges together.

School preventive measures

The school preventive measure is one of the best tool to support the program. It needs to be sustained particularly in hazardous place. The constant communication with Local Government and other agencies is the key to make the programs stronger since we are dealing with unpredicted calamities that may attack any time. Best practices that have learned during training and seminars should be imposed in realistic way, just like Chua Integrated School which is prone to Landslide. They submit a project proposal to barangay council asking for financial support to purchase equipment like megaphones and whistle which is useful in case of emergency. They tap the LGU to send expert focal person in disaster preparedness to conduct trainings and seminars to the teachers and selected learners.

Theme 1. There is an interaction between Schools Preventive Measures, External Support and Challenges Encountered with school DRR facility and equipment, school preparedness and problems encountered.

The Local Government Unit provides vital support in financial matters, including the provision of Rescue Vehicles per barangay, which aids in emergency response and the procurement of equipment and first aid kits. However, identified barangays and schools are vulnerable to landslides due to their location in areas with high susceptibility. Chua Integrated School, for example, has experienced significant impact during past earthquakes and faces ongoing challenges related to landslide susceptibility and lack of preparation. Despite efforts to seek assistance from stakeholders and the Barangay Council, such as through resolutions passed by the Parents Teachers Association (PTA) for funding and technical support, challenges remain in terms of equipment delivery and inadequate training. The school's disaster preparedness program includes preventive measures like the National Simultaneous Earthquake Drill (NSED) conducted quarterly to enhance disaster awareness and response effectiveness among learners and teachers.

Disaster Awareness. Disaster awareness and preparedness are crucial aspects highlighted by Informant 2, emphasizing the importance of educating people on how to respond to disasters like landslides and the necessity for everyone, including teachers, parents, learners, barangay officials, and high-ranking officials, to be involved. Integrating Disaster Risk Reduction (DRR) into the curriculum is a trend within the Department of Education, aiming to enhance children's resilience and reduce vulnerability. DRR education not only teaches children to identify and respond to risks but also builds necessary knowledge, skills, and attitudes to prepare for, cope with, and adapt to disasters. This integration leads to increased school attendance and learning, especially for girls, and empowers children to become confident and security-aware individuals, capable of disseminating vital information to their communities. Additionally, there's a notable interaction between school preventive measures and external support, demonstrating

linkages, coordination, and support from Local Government Units (LGUs) and Barangay Councils.

Theme 2. There is an interaction between School Preventive Measures and External Support with linkages, coordination, programs initiated, and LGU/Barangay Council support.

Conduct Training and Seminars. Informant 1 stresses the importance of providing Disaster Risk Reduction and Management (DRRM) training and seminars for learners, along with promoting information dissemination campaigns in the area. Additionally, health services should be readily available during landslides to aid affected individuals. Informant 2 emphasizes the significance of adequate training or drills, stating that they enable individuals to assist effectively by knowing the correct actions to take.

Coordination / Linkages. The school DRR Coordinator coordinates with the barangay council and invites them to join in programs they want to do for example in disaster risk reduction drill which is quarterly done following the National Simultaneous Earthquake Drill (NSED), the school also taps the barangay for financial assistance to purchased needed tools and equipment or any things that can be used of school in preparation for any tragedy. The school DRR Coordinator passed a report to the barangay if someone is hurt during calamities. The school asks for some data from the Local Government Unit about the updated maps presented by the Marines and Geoscience Bureau (MGB) since they are the ones who conducted first the assessment through the data that has been passed per barangay for example hazard map.

Programs initiated

Following disasters, the school initiates rehabilitation and recovery efforts, beginning with Disaster Education for both students and educators. This education aims to equip students with the necessary knowledge and skills to recover from disasters, thereby improving their preparedness and response capabilities.

Moreover, the school collaborates with the Local Government Unit and Barangay council to prioritize innovative programs like the Greening Program, which involves planting trees in landslide-prone areas to strengthen soil foundations and prevent erosion. Additionally, the installation of gutters on school roofs helps divert water away from landslide-prone areas, reducing potential risks. These proactive measures are designed to promote disaster prevention and bolster the resilience of the school and its surroundings.

DRRM actions

The Disaster Risk Reduction Management, Department of Public Works and Highways, and municipal engineering come together to assess the school about the preparation in any calamities, they insinuate the standard operating procedure in applying first aid for casualties, they educate the teachers and learners about the safety measure to be taken in case of emergency. They provide financial assistance from the LGU to be used to purchase equipment, first aid, support materials for the training, etc. they provide fast communication using the radio connections per barangay with the support of a repeater located at a pine tree at the top of the mountains who can reach up to 50 kilometers.

LGU/Barangay Support. The barangay council and Local Government Unit collaborate closely to support the stakeholders, particularly the schools located in landslide-prone areas like Chua Integrated School. The barangay regularly assesses these schools and provides additional evacuation venues, demonstrating their commitment to the safety of the community. Meanwhile, the Local Government Unit offers full support to the school and barangay, providing necessary equipment, joint training sessions, and financial assistance during calamities. This partnership ensures comprehensive disaster preparedness and response efforts for the benefit of all stakeholders.

Coordination/Linkages. The school's Disaster Risk Reduction (DRR) Coordinator collaborates with the barangay council, engaging them in programs such as disaster risk reduction drills, aligned with the National Simultaneous Earthquake Drill (NSED). Additionally, the school seeks financial assistance from the barangay to procure necessary tools and equipment for disaster preparedness. The DRR Coordinator ensures prompt reporting to the barangay in case of injuries during calamities. Furthermore, the school requests updated hazard maps from the Local Government Unit, which are provided by agencies like the Marines and Geoscience Bureau (MGB), enabling proactive measures based on hazard assessments per barangay.

Theme 3. There is an interaction between External Support and Challenges Encountered with disaster experiences and assessment.

The theme focuses on the external support provided by the Local Government Unit (LGU) to the school administrators and barangay council, particularly in disaster preparedness, mitigation, response, and rehabilitation efforts. Despite this support, challenges such as implementation consistency have been encountered, highlighting the importance of collaborative efforts. To sustain plans and programs, the LGU, school administrators, and barangay council convene to discuss potential disasters like landslides and flash floods. They aim to develop effective and useful programs based on past experiences and assessments, such as relocating Chua Integrated School due to landslide risk and sinkholes and fault line detection by the Mine and Geoscience Bureau (MGB). The positive outcome of finding a relocation site demonstrates successful collaboration. Additionally, the LGU instructs residents in gold fields to vacate due to deteriorating land conditions and subsidence.

CONCLUSIONS AND RECOMMENDATION

The findings underscore the critical need for collaboration among the Barangay Local Government Units (BLGUs), schools, stakeholders, and communities, particularly in areas highly susceptible to landslides as indicated by the Landslide Geo-Hazard Map. Sustaining existing programs is paramount to reducing the risk of calamities such as landslides and ensuring the safety of all involved.

Moreover, the level of implementation in disaster risk reduction management reflects the preparedness, mitigation, and resilience of the community, which currently stands at a moderate level of availability and practice. Failure to actively engage with and utilize these programs could significantly increase the likelihood of landslide occurrences in identified areas and schools.

Despite the implementation of various actions and strategies, the persistence of moderate practice levels suggests that the risk of landslide-induced destruction remains high. It is imperative that resources allocated for DRRM programs, including financial support from BLGUs, school communities, and stakeholders, are maximized to enhance preparedness, mitigation, and resilience efforts.

Furthermore, the strong collaboration observed among learners, teachers, stakeholders, and local government units presents an opportunity to initiate innovative programs aimed at bolstering DRRM skills among learners and influencing the broader school community. Leveraging these collaborative relationships can lead to more effective disaster preparedness and response initiatives, ultimately enhancing the safety and well-being of all involved parties.

Based on the findings and conclusions of the study, several recommendations emerge. Firstly, it is imperative that schools and residential areas identified as having very high susceptibility to landslides prioritize the development and demonstration of high-level

Disaster Risk Reduction and Management (DRRM) skills. Discouraging housing in these high-risk areas can help mitigate potential disasters and safeguard communities from the threat of landslides.

Secondly, the implementation of DRRM programs should not only be initiated but consistently practiced by all stakeholders in identified areas. Utilizing available resources and leveraging the support of Barangay Local Government Units (BLGUs) and communities will enhance the effectiveness of these programs.

Thirdly, existing DRRM actions, programs, and strategies must be regularly demonstrated to instill long-term preparedness skills among learners and the community. This continuous reinforcement is essential for ensuring a proactive response to landslide risks.

Fourthly, effective communication strategies should be accompanied by tangible action. In addition to designated officers, the establishment of an organized team tasked with monitoring and managing program improvements is crucial for sustained progress in DRRM initiatives. Lastly, the collaborative behavior demonstrated by BLGUs, schools, and communities must persist and be continuously reinforced to foster a culture of active DRRM response to landslide risks. Strengthening these collaborative efforts will further enhance resilience and preparedness against the threat of landslides and other natural disasters.

REFERENCES

DENR-Mines and Geosciences Bureau Landslide Tracker Application (2017) Landslide geo-hazard map by the Department of Environment and Natural Resources (DENR) Mines and Geosciences Bureau. http://region12.mgb.gov.ph/geology-and-geohazard/geohazard-maps/sultan-kudarat/135-municipality-of-bagumbayan

DRRM Online Course Preparatory Meeting Report by CITYNET-Yokohama (2013). Survey on community DRRM. DRRM Online Course Preparatory Meeting Report. Retrieved from http//www.city-yh.org

Department of Environment and Natural Resources (DENR) Mines and Geosciences Bureau Landslide Tracker Application (2017). Landslide geo-hazard map by the Department of Environment and Natural Resources (DENR) Mines and Geosciences Bureau. http://region12.mgb.gov.ph/geology-and-geohazard/geohazard-maps/sultan-kudarat/135-municipality-of-bagumbayan

Dube, A. K., Ibrahim, A. H., &Orodho, J. A. (2016). Disaster management and risk reduction strategies in public secondary schools in Mandera County, Kenya. International Journal in Management and Social Science, 4(04), 398-411.

Iuchi, K., Jibiki, Y., Solidum Jr, R., & Santiago, R. (2019). Natural hazards governance in the Philippines. In Oxford Research Encyclopedia of Natural Hazard Science.

Jensen, J., & Kirkpatrick, S. (2022). Local emergency management and comprehensive emergency management (CEM): A discussion prompted by interviews with Chief Resilience Officers. International Journal of Disaster Risk Reduction, 79, 103136.

Mawed, M., & Al-Hajj, A. (2017). Using big data to improve the performance management: a case study from the UAE FM industry. Facilities, 35(13/14), 746-765.

McEntire, D. A. (2005). Why vulnerability matters: Exploring the merit of an inclusive disaster reduction concept. Disaster Prevention and Management: An International Journal, 14(2), 206-222.

Twigg, J. (2004). Disaster risk reduction: mitigation and preparedness in development and emergency programming. Overseas Development Institute (ODI).