

Teachers and Parents' Perceptions on School Safety and Disaster Preparedness: Basis for the Formulation of School-Based Learning Continuity and Resilience Interventions Framework

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Abstract

This study assessed the implementation of the Disaster Risk Reduction Management (DRRM) Program and the extent of disaster preparedness at Dasmariñas Elementary School during School Year 2024–2025 as a basis for developing a School-Based Learning Continuity and Resilience Interventions Framework. Guided by Republic Act No. 10121 and relevant Department of Education policies, the study employed a descriptive-comparative research design involving 35 respondents composed of 21 teachers and 14 parents. Data were gathered using an adopted, modified, and researcher-made survey questionnaire and analyzed using frequency, percentage, mean, standard deviation, ranking, and an independent samples t-test. Results showed that both teachers and parents perceived the DRRM Program as Very Well Implemented, with overall means of 4.776 and 4.622, respectively. Teachers perceived the school as Always prepared for typhoons, earthquakes, volcanic eruptions, and fire, with an overall mean of 4.769, whereas parents rated preparedness as Often, with an overall mean of 3.647. Significant differences were found between teachers' and parents' perceptions of both DRRM implementation and disaster preparedness, indicating greater awareness among teachers. Areas requiring improvement included community participation, safety training, emergency tracking systems, visibility of preparedness materials, parent involvement, and selected hazard-specific measures. The study recommends strengthened stakeholder collaboration, regular training and capacity-building, continuous monitoring and evaluation, and utilization of the proposed Child-Centered School-Based Learning Continuity and Resilience Interventions Framework. The study supports SDG 4 – Quality Education, SDG 11 – Sustainable Cities and Communities, and SDG 17 – Partnerships for the Goals by promoting safe learning environments, disaster resilience, educational continuity, and stakeholder collaboration. It contributes to educational, community, institutional, and governance sustainability by strengthening preparedness, shared responsibility, and continuity of learning during emergencies.

Keywords: Disaster Preparedness, Disaster Risk Reduction Management, Learning Continuity, Resilience Education, Safe Learning Facilities, School Disaster Management, Stakeholder Collaboration

1. Introduction

The Philippines is highly vulnerable to natural hazards that threaten lives, educational facilities, and learning continuity, ranking third among countries with the highest risks worldwide (World Risk Report 2018). Disasters

can disrupt quality basic education and endanger learners, families, school personnel, and educational resources (DepEd Strengthening Resilience in Basic Education). Typhoons alone damaged approximately 5,600 schools in Southern Tagalog in 2006, with losses estimated at PhP 3.1 billion and about eight million school children affected (Villalon, 2021).

School safety and disaster preparedness are essential to reducing risks and sustaining education during emergencies. DepEd Order 033, s. 2021 provides school-based preparedness and response measures for tropical cyclones, flooding, and other weather-related emergencies, while schools are encouraged to assess physical structures and conduct hazard-based preparedness activities (DepEd Order No. 37, 2015). These initiatives support DepEd's goals of access, quality, and governance while strengthening educational resilience.

Republic Act No. 10121 promotes a proactive approach to disaster preparedness, risk reduction, resilience, community participation, and climate-responsive planning. School-based DRRM education is likewise important, as (Adeyoso & Kanegae, 2013) found that its implementation increased students' knowledge, risk perception, critical awareness, and attitudes toward preparedness behaviour. The Department of Education (DepEd) Manual (2007), particularly through DO 55, s. 2007, integrates DRRM into schools through preparedness activities, curriculum integration, hazard mapping, training, and stakeholder collaboration. DO 83, s. 2011 - Disaster Preparedness Measures for Schools further emphasizes safe facilities, preparedness knowledge, and participation among students, families, and communities, while DO 37, s. 2022 guides school operations during disasters and emergencies.

Preparedness is necessary for hazards such as typhoons, earthquakes, volcanic eruptions, and fires. Climate-related risks reinforce the importance of awareness, planning, and mitigation, while earthquakes can cause structural damage, injuries, deaths, and interruption of school operations. Reference: From the introduction to FEMA 395, Incremental Seismic Rehabilitation of School Buildings (K-12), page vi. Fire preparedness is supported by Republic Act No. 9514, which establishes fire prevention and safety requirements (Republic Act No. 9514, sec. 2). DepEd also promotes fire safety awareness, evacuation procedures, proper use of fire extinguishers, and regular drills.

The study is grounded in Philippine DRRM and DepEd policies emphasizing proactive disaster preparedness, safe learning environments, resilience education, stakeholder participation, and learning continuity. Its key dimensions are Safe Learning Facilities and Environment, School Disaster Risk Reduction Management, and Risk Reduction and Resilience Education, together with preparedness for typhoons, earthquakes, volcanic eruptions, and fires.

Despite established DRRM policies and preparedness measures, school-level implementation must be examined within the local context. The study therefore investigates teachers' and parents' perceptions of DRRM implementation and disaster preparedness at Dasmariñas Elementary School and determines whether their perceptions significantly differ. The findings serve as the basis for a research-based, comprehensive, and contextualized School-Based Learning Continuity and Resilience Interventions Framework.

The study aligns with SDG 4 – Quality Education by supporting safe and continuous learning during disasters; SDG 11 – Sustainable Cities and Communities and SDG 13 – Climate Action through disaster preparedness, resilience, and climate-related risk reduction; and SDG 17 – Partnerships for the Goals through collaboration among schools, families, communities, local governments, and other stakeholders.

The study contributes to educational sustainability by supporting learning continuity during emergencies, institutional sustainability by strengthening school-based DRRM implementation, and community sustainability by promoting shared preparedness among teachers, parents, learners, and stakeholders. The proposed School-Based Learning Continuity and Resilience Interventions Framework provides a contextualized basis for strengthening a safer and more disaster-resilient school community.

2. Material and methods

2.1 Research Design

The study utilized a descriptive-comparative research design to determine the level of implementation of the Disaster Risk Reduction Management Program and the extent of disaster preparedness at Dasmariñas Elementary School. An independent samples t-test was used to determine whether a significant difference existed between the perceptions of teachers and parents regarding DRRM implementation and disaster preparedness.

2.2 Locale of the Study

The study was conducted at Dasmariñas Elementary School during School Year 2024–2025. The school served as the setting for assessing the implementation of the Disaster Risk Reduction Management Program and preparedness for identified hazards.

2.3 Respondents of the Study

The respondents consisted of 21 teachers and 14 parents representing different grade levels at Dasmariñas Elementary School during School Year 2024–2025. Their perceptions were gathered to assess school DRRM implementation and disaster preparedness.

2.4 Sample and Sampling Procedure

The study included a total of 35 respondents composed of 21 teachers and 14 parents from different grade levels. The original methodology did not specify the particular sampling technique used to select the respondents.

2.5 Research Instrument

The study utilized an adopted, modified, and researcher-made survey questionnaire. It assessed the implementation of the Disaster Risk Reduction Management Program in terms of Safe Learning Facilities and Environment, School Disaster Risk Reduction Management, and Risk Reduction and Resilience Education. It also measured disaster preparedness for typhoon, earthquake, volcanic eruption, and fire. DRRM implementation was measured using a five-point scale ranging from 5 (Very Well Implemented) to 1 (Poorly Implemented), while disaster preparedness was rated from 5 (Always) to 1 (Never). The responses were interpreted using corresponding mean ranges to determine the level of implementation and extent of preparedness.

2.6 Data Gathering Procedure

The adopted, modified, and researcher-made survey questionnaires were distributed to the identified teacher and parent respondents. After completion, the questionnaires were collected, and the responses were organized and subjected to statistical analysis to determine the level of DRRM implementation and extent of disaster preparedness.

2.7 Data Analysis Techniques

Frequency count and relative frequency in percent were used to describe the respondents' perceptions. Mean, standard deviation, and ranking were used to determine the level of DRRM implementation and extent of disaster preparedness. The mean represented the central tendency of the responses, while standard deviation measured their dispersion. A low standard deviation indicates that responses are close to the mean, whereas a high standard deviation indicates greater dispersion (Andrade, 2020). Ranking was used to identify indicators with the highest and lowest mean scores. The interpretation followed a five-level scale. Mean scores of 4.21–5.00 were interpreted as Very Well Implemented or Always; 3.41–4.20 as Well Implemented or Often; 2.61–3.40 as Implemented or Sometimes; 1.81–2.60 as Fairly Implemented or Rarely; and 1.00–1.80 as Poorly Implemented or Never. An independent samples t-test was used to determine whether teachers and parents differed significantly in their perceptions of DRRM implementation and disaster preparedness.

2.8 Ethical Considerations

The research proposal and validated instruments were submitted to the City Schools Division of Dasmariñas Research Ethics Review Committee for evaluation and approval. Data collection proceeded following the required approval and certification. Informed consent was obtained from respondents before participation. An orientation explained the study's purpose, data collection and use, possible consequences, and the participants' right to access their information and withdraw from the study. Respondents' identities and responses were kept confidential and used solely for the purposes of the study. The principle of beneficence was observed by ensuring that participation caused no harm and that collected information had no effect on the respondents' standing at work. Because the researchers collected data from a school under their supervision and were considered "insiders," potential conflicts of interest were addressed by respecting the research results and maintaining confidentiality throughout the study.

3. Results and Discussion

3.1 Implementation of the Disaster Risk Reduction Management Program

3.1.1 Safe Learning Facilities and Environment

Teachers rated Safe Learning Facilities and Environment with an overall mean of 4.822 (SD=0.089), while parents gave a mean of 4.591 (SD=0.271), both interpreted as Very Well Implemented. Teachers gave the highest rating to maintaining a learning environment free from dangers, while parents rated the school's actions toward unsafe buildings, unobstructed corridors and pathways, and removal of hazardous objects highest. Community participation in school construction and maintenance received the lowest teacher rating, while training programs for safety, security, and protection received the lowest parent rating. The findings indicate that the school has effectively maintained a safe learning environment and addressed physical hazards. However, the comparatively lower ratings indicate areas for improvement, particularly in strengthening community participation and intensifying safety and protection training for teachers, learners, and the community.

3.1.2 School Disaster Management

School Disaster Management obtained overall means of 4.800 (SD=0.100) from teachers and 4.633 (SD=0.168) from parents, both interpreted as Very Well Implemented. High ratings were associated with regular hazard-specific drills, contingency planning, functioning disaster equipment, evacuation maps and procedures, and first-aid resources. These findings show that the school has established essential mechanisms for disaster response and management. Nevertheless, the results suggest the need to further strengthen disaster awareness and capacity-

building for families and learners and establish a more sustainable and accessible personnel and learner tracking system during emergencies.

3.1.3 Risk Reduction and Resilience Education

Risk Reduction and Resilience Education was also Very Well Implemented, with an overall mean of 4.706 (SD=0.092) among teachers and 4.643 (SD=0.202) among parents. The results reflected strong implementation of DRRM/CCA/EiE capacity-building, availability of resource materials, curriculum integration, and student participation in DRRM-related activities. The results indicate that DRRM and resilience education are integrated into the school's educational practices. However, the relatively lower-rated areas suggest that DRRM corners and updated IEC materials should be made more visible and regularly updated and that additional DRRM/CCA/EiE resource materials should be made available.

3.1.4 Overall DRRM Program Implementation

Overall, teachers rated DRRM implementation at 4.776, while parents rated it at 4.622, with both ratings interpreted as Very Well Implemented. Across the three pillars, teachers gave the highest rating to Safe Learning Facilities and Environment, whereas parents gave the highest rating to Risk Reduction and Resilience Education. The findings demonstrate that both groups positively perceived the implementation of the school's DRRM Program. This indicates awareness among teachers and parents of the school's measures related to safe facilities, disaster management, and resilience education, although differences in their ratings suggest varying levels of awareness and exposure to these activities.

3.2 Extent of Disaster Preparedness

3.2.1 Typhoon Preparedness

Teachers rated typhoon preparedness with a mean of 4.733 (SD=0.141), interpreted as Always, while parents gave a mean of 3.771 (SD=0.210), interpreted as Often. Weather updates and typhoon warnings received the highest ratings from both groups. The findings indicate an effective mechanism for communicating weather updates and typhoon warnings to students, parents, and staff. However, the lower ratings suggest a need to further ensure adequate emergency supplies in classrooms and strengthen monitoring and other preparedness measures during and after typhoons.

3.2.2 Earthquake Preparedness

Teachers rated earthquake preparedness at 4.857 (SD=0.075), interpreted as Always, compared with 3.643 (SD=0.262) from parents, interpreted as Often. Practicing basic earthquake response protocols such as Drop, Cover, and Hold received the highest ratings from both groups. The findings show that basic earthquake response procedures are consistently practiced. However, evacuation areas should be made more clearly marked and accessible, while the functionality of the earthquake alarm system should be strengthened based on the comparatively lower ratings given by teachers and parents.

3.2.3 Volcanic Eruption Preparedness

Volcanic eruption preparedness obtained an overall mean of 4.638 (SD=0.173) from teachers, interpreted as Always, and 3.671 (SD=0.211) from parents, interpreted as Often. Teachers rated checking facilities for safety before resuming school operations highly, while parents gave the highest rating to partnerships with LGUs and other agencies for monitoring and response during volcanic activity. The findings indicate that safety inspections and external partnerships contribute to volcanic eruption preparedness. Areas needing improvement include stronger integration of volcanic eruption risks into lessons and greater visibility and availability of educational materials on volcanic eruption preparedness.

3.2.4 Fire Preparedness

Teachers rated fire preparedness with an overall mean of 4.838, interpreted as Always, while parents rated it at 3.500, interpreted as Often. Clearly marked and accessible fire exits received the highest ratings from both teachers and parents. The findings indicate that the school has established important fire preparedness measures, particularly accessible fire exits, safety orientations, and fire extinguisher maintenance. However, the comparatively lower ratings indicate the need to strengthen implementation of the Fire Contingency Plan and other fire emergency mechanisms.

3.2.5 Overall Disaster Preparedness

Teachers gave the school an overall disaster preparedness mean of 4.769, interpreted as Always, while parents gave an overall mean of 3.647, interpreted as Often. Among teachers, earthquake preparedness received the highest mean of 4.857 and volcanic eruption preparedness the lowest at 4.638. Among parents, typhoon preparedness received the highest mean of 3.771 and fire preparedness the lowest at 3.500. These findings show that teachers consistently perceived the school as more prepared across all four hazards than parents did. The difference suggests that teachers may have greater awareness of and exposure to school disaster preparedness

activities, while greater parent involvement and information dissemination may help strengthen shared understanding of preparedness measures.

3.3 Differences Between Teachers' and Parents' Perceptions

A significant difference was found between teachers' and parents' perceptions of DRRM Program implementation. Teachers obtained a mean of 4.776 compared with 4.622 among parents, with a T-computed value of 3.94262 and P-value of 0.008461 at the 0.05 level of significance. A significant difference was likewise found in disaster preparedness, with teacher and parent means of 4.769 and 3.647, respectively, a T-computed value of 3.23459, and a P-value of 0.008904. Based on these results, the null hypothesis was rejected and the alternative hypothesis accepted. The study interprets the difference as indicating that teachers are more aware than parents of the implementation of the school's DRRM Program and disaster preparedness measures.

3.4 School-Based Learning Continuity and Resilience Interventions Framework

Based on the survey findings, the researchers developed a School-Based Learning Continuity and Resilience Interventions Framework centered on Child-Centered Disaster Risk Reduction. The framework aims to promote a disaster-resilient school community and learning continuity by ensuring safe and secure facilities, strengthening disaster preparedness among school stakeholders, integrating DRRM into the curriculum, and increasing learner participation in DRRM activities. The framework serves as the basis for Project SECUREd (Securing safe-inclusive learning Environment through a Comprehensive Unified/Revitalized Disaster Risk Reduction Management). Its interventions include regular hazard mapping and monitoring, capacity-building for personnel, parents, and stakeholders, curriculum integration of DRRM principles, learner participation in preparedness and response activities, development of life-saving skills, and provision of learning materials during class suspensions. These interventions are intended to strengthen disaster awareness, school resilience, and continuity of learning during emergencies.

4. Conclusion & Recommendations

The study concluded that the Disaster Risk Reduction Management Program of Dasmariñas Elementary School was very well implemented in terms of Safe Learning Facilities and Environment, School Disaster Risk Reduction Management, and Risk Reduction and Resilience Education, as perceived by both teachers and parents. Teachers perceived the school as always prepared for typhoons, earthquakes, volcanic eruptions, and fire, while parents perceived it as often prepared, indicating greater awareness and preparedness among teachers. A significant difference was found between teachers' and parents' perceptions of both DRRM implementation and disaster preparedness. The findings served as the basis for developing a research-based, comprehensive, and contextualized School-Based Learning Continuity and Resilience Interventions Framework focused on Child-Centered Disaster Risk Reduction Management, disaster-resilient school communities, and learning continuity.

The school community, parents, and other stakeholders should strengthen collaboration in implementing a comprehensive DRRM Program while promoting innovation, best practices, benchmarking, and continuous evaluation. Regular training, seminars, and capacity-building activities on disaster preparedness should be conducted for teachers, parents, and other stakeholders to promote shared awareness and understanding and strengthen the resilience of the learning environment. The proposed School-Based Learning Continuity and Resilience Interventions Framework should also be utilized to minimize disruptions in learning delivery and promote school safety and security, supported by regular monitoring, evaluation, stakeholder feedback, and dissemination of the study findings through Learning Action Cell sessions, research conferences, and accredited journals.

The study was limited to Dasmariñas Elementary School during School Year 2024–2025 and focused on the perceptions of 21 teachers and 14 parents regarding the implementation of the Disaster Risk Reduction Management Program and the school's preparedness for typhoons, earthquakes, volcanic eruptions, and fire. The findings were based on responses obtained through the survey questionnaire and therefore reflect the perceptions of the participating teachers and parents within the context of the school. Consequently, the findings are specific to the respondents and setting covered by the study and should be interpreted within these defined boundaries.

5. Compliance with ethical standards

The authors declare no conflict of interest. No external funding was identified for this study, which involved teachers and parents of Dasmariñas Elementary School who participated voluntarily after providing informed consent and receiving information about the purpose and use of the data. Data were collected through a non-invasive survey questionnaire, and participants' identities and responses were kept confidential, with no identifying information disclosed.

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