

Developing a Dynamic Approach to Disaster Preparedness in Selected Secondary School: Barriers and Facilitators

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Abstract

The paper ascertained the level of the disaster preparedness of selected secondary schools in Department of Education Division of Caloocan City based on government mandated policies in order to create a model for disaster preparedness plan. This is anchored on the Modern disaster theory of Chen (2013) and used the mixed method approach. It covered total of 4 (four) purposely selected public and private secondary schools in Caloocan City for School Year 2020-2021 in terms of their experiences on natural disasters. Respondents were the Principals, Assistant Principals, Social Studies and Science Coordinators, the School Disaster Risk Reduction and Management Coordinators, and one section of Grade 10 Junior High School students for each respondents school. Students, teachers and the school leaders, including members from school safety committee, needs to be trained regarding disaster preparedness to understand the disaster management framework so that they can use it as a tool to manage disasters at school. Results revealed that disaster preparedness of students and school leaders has been achieved through training and drills conducted by their schools, non-government and government institutions, past experiences from disasters during hazards and based on the knowledge received in classroom discussions and during rehearsals performed at school. Thus, schools must consider funding the training by strengthening their partnership with stakeholders towards promoting and sharing of learning goals and providing opportunities to collaborate that enhance shared responsibility across the whole school community.

Keywords: Disaster, Disaster Preparedness, Secondary Schools, Barriers, Facilitators

Introduction

In developing countries, educating all levels of society for disaster threats is not always possible due to lack of expertise and educational materials. One of the best ways to make them aware of these programs is the integration of disaster preparedness initiatives into the activities of our children. Since over half of the population in many developing countries is under 18 years of age, it is possible to disseminate vital information through the knowledge, skills, and enthusiastic motivation of children with the help from their parents, schools and respective communities. Fortunately, the level of acceptance of parents from their children is high in these countries.

According to the International Federation of Red Cross and Red Crescent Societies, disaster is defined as a sudden, calamitous event that seriously disrupts the functioning of a community or society and causes human, material, and economic or environmental losses that exceed the community's or society's ability to cope using its own resources. Due to the increasing frequency and severity of risks, children become more vulnerable than before.

The United Nations Children's Fund (UNICEF, 2015) reported that the number of children below 18 years who are affected by disasters would increase to 2.5 billion by 2050. Since teachers and students may lose their lives in emergencies and certain calamities, these phenomena would have serious impacts on educational services and suddenly interrupt the educational process leading to students' mental disorders. In developing countries, educating all levels of the society for disaster threats is not always possible due to lack of expertise and educational materials. The Philippines is identified as a natural disaster hot-spot and is ranked ninth among the ten most disaster risk

countries in the world with Vanuatu being the first, followed by Antigua and Barbuda, Tonga, Solomon Islands, Guyana, Papua New Guinea, Brunei Darussalam, Guatemala, and Bangladesh taking the tenth spot out of 180 countries around the world (2019 United Nations University's Institute for Environment and Human Security World Risk Report). Also, the Philippines is especially prone to hydro-meteorological events such as typhoons and floods, which accounted for over 80% of the natural disasters in the country during the last half century. The annual monsoon season causes severe flooding in many places, though floods also occur due to human activity such as deforestation and encroachment in low-lying areas (Asian Development Bank Institute, 2018).

Objectives of the Study

This study determined the level of disaster preparedness of selected secondary schools in Department of Education Division of Caloocan City during the School Year 2020-2021, and created a model for a disaster preparedness plan. More specifically, it sought to

1. Identify the geographic profile of the respondents in terms of description of the locality, types of disasters, and vulnerability of locality to disasters.
2. Determine the level of awareness of the secondary school leaders and students in Caloocan City on the local government's initiative on disaster preparedness, disaster management, disaster mitigation, and response management.
3. Determine if there are significant differences in the responses between and among the respondents in their level of awareness.
4. Determine the extent of compliance with the implementation of the disaster preparedness plan as perceived by the respondents from the secondary schools of Caloocan City in their locality.
5. Identify constraints and challenges in the implementation of existing policies on disaster preparedness in the secondary schools of Caloocan City.
6. Create a disaster preparedness framework that could be developed to address the identified constraints and challenges.

This study is anchored primarily on the Modern Disaster Theory of Jim Chen (2013) where disaster is defined as a sudden, calamitous event that seriously disrupts the functioning of a community or society and causes human, material, and economic or environmental losses that exceed the community's or society's ability to cope using its own resources. As disasters affect lives and bring catastrophic effects to the lives of the students, teachers, and school leaders, particularly in Caloocan City, Jim Chen's Modern Disaster Theory explains how can be more prepared to lessen its impact on the school, stakeholders, and surrounding communities. Hence proper planning clearly mitigates the various kinds of disasters wherein transparent and efficient systems have to be followed. There is a need for systematic identification, preparation, prediction, assessment, evaluation of disaster events, and incorporation of mitigating measures.



Figure 1. Conceptual Framework of the Study

Methodology

The study used the mixed-method approach, particularly the sequential explanatory mixed methods design. Its central premise presupposes that the combination of quantitative and qualitative approaches provides a better understanding of research problems than either approach alone (Creswell and Plano Clark, 2007).

Participants of the Study. The study purposely selected two public secondary schools and two private secondary schools from the Department of Education Division of Caloocan City. Respondents were school leaders including the Principal, Assistant Principal, Social Studies and Science Subject Coordinators, the School Disaster Risk Reduction and Management Coordinator, and one section of Grade 10 Junior High School students for each respondent-school.

Research Instruments

Survey Questionnaire. The adapted and modified survey instrument from Campilla (2016) and Peracullo (2018) consisted of three parts: (1) the geographic profile of the respondents in terms of description of locality, types of disasters experienced and vulnerability of the locality to disasters; (2) knowledge on the disaster preparedness; and (3) level of awareness of the school community in the implementation of the school disaster preparedness plan; and the level of awareness of the respondents from secondary school leaders in Caloocan City on the local government's initiative on Disaster Preparedness, Disaster Management, Disaster Mitigation, and Response Management.

Interview. In observance of the Inter-Agency Task Force protocols during the Enhanced Community Quarantine (ECQ) and Modified Enhanced Community Quarantine (MECQ) which were in effect during the conduct of this research, the proposed face-to-face interview was modified into an online meeting to satisfy compliance. The interview questionnaire consisted of three main focused questions, namely (1) involvement of the school leaders in the school disaster preparedness plan and how the plan is being evaluated and executed; (2) extent of promoting disaster management capacity building, training, and education within the school and insights on the constraints and challenges in the implementation of the effective disaster preparedness, disaster preparedness of the learners and teachers; and (3) extent of secondary learners' and teachers' preparation for any emergency situation. Three out of eleven proposed participants were not able to join citing their busy schedules and other personal-related reasons. The remaining eight participants agreed but only four of them concurred to have the online interview recorded. Interviewees voluntarily signed a consent form regarding their willful participation in the interview including the mode of recording the conduct of the interview.

Data analysis. Data were analyzed statistically using a computer to generate percentages on tables, graphs, and pie charts to reveal trends and patterns. Qualitative data were analyzed inductively to give more meaning to the statistical data. Percentages and frequency measures were used to get the geographic profile of the respondents, while the level of awareness was measured in terms of mean. Statistical analysis included one way ANOVA (analysis of variance) to determine if there were significant differences in the responses between respondent subgroups. Results were statistically significant at 95% confidence level.

Ethical consideration. Parent informed consent was sought for all students involved in the research while consent form was asked for all school leaders. It was made clear that the researcher will not identify their names in any reports using information obtained from this study and will remain confidential and secure. The use of records and data will be subject to standard data use policies which protect the anonymity of individuals and institutions. All involvement was voluntary, and it was discussed that anyone could withdraw from the interview with no consequence. No one was forced or compensated for their involvement in this research.

Hypothesis

There are no significant differences in the responses between and among the respondents regarding their level of awareness of disaster initiatives in Caloocan City

Results and Discussion

1. Geographic Profile of the Respondents

Table 1
Geographic profile of the respondents with the following descriptors

Descriptors	Students	School Leaders
Location of the School	39% of the secondary schools are along the highway and 13% in low land area.	29% of the secondary schools were located along the highway, and 21% were located in low land area
Location of House	29% of them live along the highway but it is a low land area with 18% and with 15% stating that is it flood-prone area.	23% of them live along the highway but it is a low land area with 23% with 14% stating that is it a flood-prone area.
Natural Disasters Experienced in School	Flood, typhoons and earthquake.	Flood, fire, earthquakes, and typhoons
Information Received or Training Conducted Regarding Disaster Preparedness during the past 12 months	50% of the student-respondents answered that they received information or training regarding disaster preparedness in the past 12 months from their schools.	73% percent of school leaders answered that they received information or training regarding disaster preparedness in the past 12 months from their schools.
The institution that initiated the School Disaster Drill and Training	45% - Caloocan City Disaster Risk Reduction Management Office (CCDRRMO) 34% - School Disaster Risk Reduction Management Office (SDRRMO) 21% - Philippine Red Cross (PRC).	43% - Caloocan City Disaster Risk Reduction Management Office (CCDRRMO). 43% - Philippine Red Cross (PRC). 14% - School Disaster Risk Reduction Management Office (SDRRMO).
Sources of information in preparing for disasters	Majority of the respondents were able to experienced earthquake drill (57%) and fire drill (38%).	Internet and social media with 28%. This is followed by broadcast media like television and radio (25%) and school and classroom discussion (22%).
Disaster preparedness training or drills experience in school	Majority of the respondents were able to experienced earthquake drill (57%) and fire drill (38%).	Majority of the respondents were able to experienced earthquake drill (52%) and fire drill (39%).
Awareness on school post on bulletin boards relevant information about what to do before, during and after when a disaster happens	69% were aware 24% they are not sure 7% have not seen anything.	100% are aware
Awareness on what to do before, during and after the disaster happens	91% are aware	100% are aware
Awareness of School Evacuation Centers before, during and after a disaster	62% are aware	82% are aware
Availability of Disaster preparedness kit and materials in their houses	9% phone and chargers are the most available item. This is followed by flashlight, medicines, food items and extra clothes all getting 8% among all other items. However, it is important to take note that fire extinguisher, can opener, and emergency blanket being vital items in times of disaster preparedness yields a very low 2% to 4% from all other items chosen by the student-respondents.	Choices that garnered the highest response were phones and chargers together with first-aid kits, food items, flashlight and personal hygiene kits (9%). The priorities are almost the same except for the first aid kits and hygiene items since school leaders they have their own children to be protected during disasters.

2. Level of Awareness of Local Government Initiative

For the level of awareness of the respondents from secondary school leaders and students in Caloocan City on the local government’s initiative is shown in Table 2 below.

Table 2
Level of Awareness of Local Government Initiative

Local Government Initiative	Student	School Leaders
Disaster Preparedness	<p>Student-respondents obtained an average weighted mean of 3.70 which indicates that disaster preparedness activities are being “Practiced”.</p> <p>Item number 2 which is “identify a possible incident that may happen in school” and item number 4 “there is a school information campaign on disaster preparedness communication plan” obtained the highest mean.</p>	<p>School leader-respondents obtained an average weighted mean of 4.64 described as “Highly Practiced”.</p> <p>Item number 10, which is “identify available support agencies” gaining the highest mean. The items which obtained the least weighted mean of 4.36 are items number 1 and item number 3 which is “make an outline plan for disaster management” and “create a no-cost on low-cost disaster kit”.</p>
Disaster Management	<p>Student-respondents obtained an average weighted mean of 3.73 which is “Practiced”.</p> <p>They are aware on how the Caloocan City government “improve procedures leading to greater levels of health and safety” obtaining the highest mean of 3.88, also followed by “spearhead the implementation of school preparedness guide” with a mean of 3.87 in the area of disaster management.</p>	<p>School leader-respondents has overall weighted mean for disaster management is 4.47 described as “Highly Practiced”.</p> <p>The item which obtained the highest weighted mean is items number 10, which is “manage properly the distribution of the resources intended for the victims of disaster”, and number 13 which is “help manage in the distribution of relief goods”.</p> <p>The item with the lowest mean of 4.18 is “manage health and safety training education on disaster” is still on the classification of “Highly Practiced”.</p>
Disaster Mitigation	<p>Student-respondents obtained an average weighted mean of 3.52 equivalent to “Practiced” indicated in the area of disaster mitigation.</p> <p>The item that obtained the highest mean is number 5 which is “organize emergency task force to tackle earthquake and other disaster in the school”.</p>	<p>School-leader respondents obtained an overall weighted mean of 4.55 in disaster mitigation, which is “Highly Practiced”.</p> <p>The item which obtained the highest rating with a weighted mean of 4.91 described as “Highly Practiced” is number 5 “organize emergency task force to tackle earthquake and other disaster in the school” and 6 which is “the disaster plan on mitigation divide into generic sections that are applicable to all disaster and hazard generic zones”.</p>
Response Management	<p>Student-respondents obtained an average weighted mean of 3.84 equivalent to “Practiced” based on their awareness of the local government’s initiative on response management.</p> <p>The highest mean of 4.30 is from item number 4 with “conduct evacuation drill in the school and the community” followed with item number 5 “develop awareness on response management during disaster”.</p>	<p>School leader-respondents obtained an overall weighted mean for response management is 4.53 rating of “Highly Practiced”.</p> <p>Items number 1, 5, 6 and 15 were rated “Highly Practiced” having garnered same mean ratings of 4.73. Also, items number 3, 9, 11, and 13 all obtained “Highly Practiced” mean rating of 4.36.</p>

3. Extent of Compliance in the Implementation of School Disaster Preparedness Plan

Table 3 below shows the compliance of the respondents with the implementation of the disaster preparedness plan as perceived by the respondents from the secondary schools of Caloocan City in their locality.

Table 3
Compliance in the Implementation of School Disaster Preparedness Plan

Type of Disaster	Student	School Leaders
Fire	Some of them are not well-prepared and aware	Majority are well-prepared and aware
Earthquake	Majority are well-prepared and aware	Majority are well-prepared and aware
Flood	Some of them are not well-prepared and aware	Majority are well-prepared and aware
Typhoon	Some of them are not well-prepared and aware	Majority are well-prepared and aware
Volcanic Eruption	Some of them are not well prepared and aware	Some of them are not well prepared and aware

Result of the Hypothesis

The computed value is 10.58, which is greater than the critical value of 2.77. There was no significant difference in the responses of the student-respondents in the level of awareness among them. Likewise, the computed value of 2.03, which is less than the critical value of 2.77, lies in the non-rejection region. The computed values of 263.87 (disaster preparedness), 140.41 (disaster management), 188.32 (disaster mitigation), and 111.40 (response management) established that no significant differences in the responses of the student and school leader-respondents in the level of awareness in those areas mentioned.

4. Identified Constraints and Challenges in Disaster Preparedness

Table 4 depicts the identified constraints and challenges in the implementation of existing policies on disaster preparedness in the secondary schools of Caloocan City.

Table 4
Constraints and challenges in the implementation of existing policies on disaster preparedness

School Respondents	Involvement of the school leaders in School Disaster Preparedness Plan	Constraints and Challenges	Extent of preparation for any emergency situation
School Typhoon	a. School owners, Principals, Assistant Principal, the School Safety Coordinator, Year Level, and Subject Level Coordinators, and teachers handling Physical Education, National Service and Training Program in consultation with their barangay officials and student representatives. b. Constant communication with the local government particularly the barangay and in collaboration with the Philippine National Red Cross, Philippine National Police at Bureau of Fire Protection.	a. sustaining the learning that students and school personnel acquired in schools b. financial issues on the procurement in their schools c. lack of knowledge on using emergency equipment and tools such as the fire extinguishers	a. sought the assistance of the Philippine Red Cross to conduct activities and designated Fire Marshall and Earthquake Marshall among its teachers, school personnel, and employees. b. posted emergency numbers c. conduct earthquake, fire drill and inform the Schools Division Office as well as the barangays where they are located regarding the schedule for possibility of providing logistical support.

School Earthquake	<p>a. Disaster Preparedness plan crafted and executed with the participation of teachers, professors, security guards, janitorial, employees, and the management.</p> <p>b. There is also an evaluation of the fire or earthquake Drill every semester particularly with comments from the school officials together with other stakeholders plus inputs either from the barangay, Red Cross, police, and fire station personnel to assess the effectiveness.</p>	<p>a.confusion on where to go in case of an earthquake drill, this is because of a lack of proper coordination at communication protocols among the participants</p> <p>b.lack of discipline and seriousness of the situation among participants including the teachers much more than students</p>	<p>a. importance of learning Science to lessen impacts of disasters</p> <p>b. seminars-workshops regarding disaster preparedness</p> <p>c. build knowledge, skills and awareness regarding disaster preparedness not only in teachers and students but in the entire school community, in our homes, and in the entire society to take the right action when it ever comes.</p>
School Fire	<p>a. School Disaster Preparedness Plan is composed of the school management together with teachers and students with the guidance from the SDRRMO.</p> <p>b. They also tapped the BERT (Batang Emergency Response Team) and School Red Cross.</p> <p>c. Coordination with the Department of Education Division of City Schools also attend meetings to find out what can be done to make the schools disaster ready.</p>	<p>a.much-needed budget for the procurement of first aid kits like alcohol, cotton, bandages, and betadine.</p> <p>b.public schools are sometimes prone to corrupt practices of School Heads</p> <p>c.the need for a larger and safer space in the school facility to be utilized as evacuation areas</p>	<p>a. educating the students and teachers about disasters is the key to be more aware and prepared in case it happened.</p> <p>b. putting up emergency kits in classrooms</p> <p>c. continuity of conducting of drills for familiarization</p>
School Flood	<p>a. participation of the stakeholders – officials, teachers, students, parents and the barangay officials including SDO-Calooan.</p> <p>b. evaluation of their drills is very scientific, guided even by the video demonstration by comparing it to PAGASA (in case of flood and typhoon) and PHIVOLCS (for earthquake scenarios).</p>	<p>a.the problem of budget allocation</p> <p>b.Teachers do really feel overburden by different task assigned to them</p>	<p>a. giving seminars, orientations and training particularly participation in drills to let them aware and even going out to their communities to hand out flyers and education materials for information dissemination.</p> <p>b. more attention to DRRM-Disaster Risk Reduction and Management by teaching the entire school community to operate equipment and tools on how to use/handle it.</p>

Conclusion

Since the responses of the students and the school leaders were different in the measure of the level of awareness in the disaster preparedness plan in four areas, namely disaster preparedness, disaster management, disaster mitigation, and response mitigation, it was inferred that the disaster plans of the schools are perceived and appreciated

minimally but not extensively. It is further implied that the disaster plans are not well taught and practiced from the viewpoint of the respondent students. For the implementation in the different areas of the disaster plan, the varying responses of the students and school leaders were minimal in terms of the disaster plans for fire, earthquakes, floods, and typhoons but the variation of differences in responses is great on the disaster plan for a volcanic eruption.

More so, the school has their respective school-based disaster plans, diverse needs for emergency kits, drills, and evaluations, and varying levels of management capacity building to effectively respond to emergency situations. Gaps were also identified along educational facilities designed in areas for responsive disaster preparedness plans and activities, school stakeholder coordination and networking, and community involvement, as well as other activities responsive to disaster risk reduction and management. Thus, this study customized the DRRM capability of school-based public and private education institutions to address the findings and present the goals and activities through a designed framework model.

Recommendation

In as much as the geographical location is a factor in the potential experience of varied types of disasters, schools should integrate with their disaster plans the various threats of typhoons, earthquakes, floods, and fire. This must include but is not limited to considerable funding for the training of educators in disaster management and organizing workshops to empower all stakeholders with knowledge about disaster preparedness. Since the disaster plans of the schools were perceived and appreciated minimally but not extensively by the students, it is recommended that disaster preparedness, management, mitigation, and response be integrated in the school’s general curriculum not only as specific topics or subtopics in science subjects but a full curriculum on Crisis and Disaster Management.

It is also recommended that more schools and respondents be covered by the study since it was conducted during the COVID-19 pandemic wherein government restrictions and quarantine protocols hindered the researcher to travel and conduct actual observation and visitation. Consequently, in the absence of a standard in the formulation of a disaster plan for secondary schools, it is the primary intent of the study to provide a framework for all school-based disaster plans to achieve a level of quality in the implementation of the SBDP. The framework that is specifically designed for Disaster Preparedness is called **The ASAP Model** as shown in Figure 2.

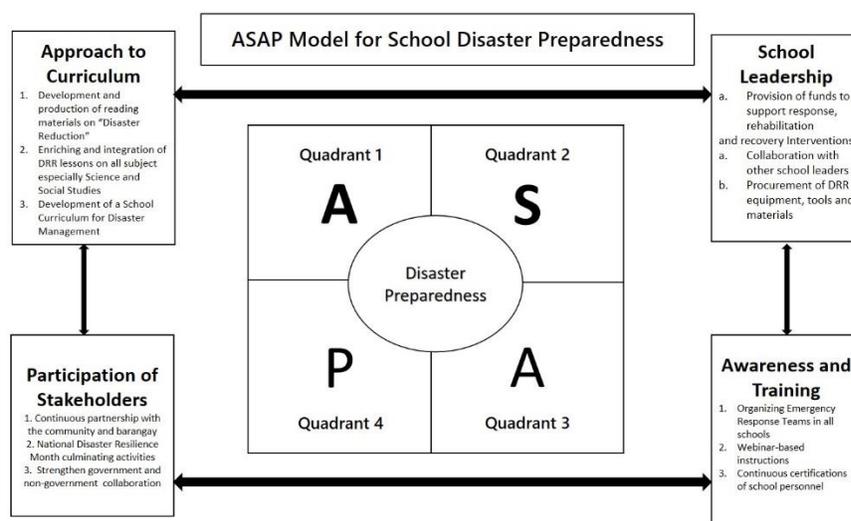


Figure 2. ASAP Model for School Disaster Preparedness

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