

Level Of Disaster Readiness of a Local College: A Basis for Improvement

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Abstract

This study aimed to determine Baliwag Polytechnic College's disaster readiness level (BTECH) regarding an enabling environment, safe learning facilities, and school disaster risk management. Hence, the study sought to improve the school's disaster readiness. A total of 44 non-teaching and 77 teaching personnel of BTECH were respondents to the study. The researcher adapted and modified the questionnaire of the Gawad KALASAG – Schools Category Project questionnaire by National Disaster Risk Reduction and Management Council (NDRRMC) to assess the local college's disaster readiness level. Findings revealed that the institution had designated a DRRM focal person and team; however, many non-teaching and teaching personnel are unaware of their presence. Allocating funds to various DRRM programs, projects, and activities in the annual budget plan; student participation in the school-based DRRM planning process; conducting student-led school watching and hazard mapping; fostering relevant stakeholders and partnerships relative to the DRRM programs, projects, and activities; regular repair and retrofitting of damaged properties and facilities; school participatory monitoring and evaluation, executing the roles and responsibilities for maintenance, development, and documentation of the DRRM plan are all areas that need improvement. The institution also needs to improve its supply of accessible and adequate first aid kits in every instructional classroom, and establish school personnel and learners tracking system/protocol in the event of a disaster.

Keywords: *disaster, disaster readiness, enabling environment, safe learning facilities, school disaster risk management*

Introduction

Disaster can strike any time or place, and its unpredictability adds to its risk. Schools are students' second homes, and if a disaster happens during school hours, administrators must consider the safety of everyone, especially the students. This occurrence cannot be completely avoided, but being prepared for it will help reduce injuries, fatalities, and property damage.

The 1990 July 16 magnitude 7.8 Luzon earthquake, which occurred during school hours, was one of the most damaging earthquakes in the Philippines, causing a six-story concrete school building housing the Christian College of the Philippines (CCP) in Cabanatuan City to collapse. At the CCP building, about 154 people were killed. Some of the victims who did not die in the collapse died later from dehydration due to not being rescued in time (Inquirer Northern Luzon, 2020).

While earthquakes of such magnitude are a rarity in the Philippines, they will definitely happen again, perhaps even at stronger magnitudes. Only time will tell when the next “big one” will strike. Consequently, the catastrophe also taught everyone to be better prepared for future disasters (Fabonan III, 2016). There are no countries or communities that are currently immune to the impact

of natural disasters. It is, however, possible to reduce the effects of these events through management strategies focused on risk reduction (Bronfman et al., 2019).

First hand experiences especially regarding natural calamities inspire some people to investigate on how to avoid or at least be saved from catastrophic events like earthquakes. On April 22, 2019, one of the researcher's students told him that the ground was shaking and then heavy footsteps were heard on the upper floor of the building. Later in the news, it was reported that a four-storey supermarket collapsed in the municipality of Porac in Pampanga which is near Bulacan and a magnitude 6.1 earthquake rocked Zambales and Pampanga and was felt in other adjacent provinces (Del Rosario, 2019). This made the researcher realized that everyone should be properly prepared whenever natural calamities occur.

The purpose of the study was to assess the level of disaster readiness of the local college. Specifically, the study aimed to answer the following:

1. Determine the level of disaster readiness of the local college in terms of enabling environment, safe learning facilities, and school disaster risk management.
2. Based on the results of the study, what recommendations can be proposed to improve the disaster readiness of the subject local college?

This study aimed to determine the level of disaster readiness of a local college. Specifically, it answers the following questions:

1. What was the level of the disaster readiness of the local college in terms of:
 - 1.1 Enabling environment;
 - 1.2 Safe learning facilities; and
 - 1.3 School disaster risk management?
2. Based on the results of the study, what recommendations can be proposed to improve the disaster readiness of the subject local college?

Operational Framework

Figure 1 depicts the paradigm of the study and the variables involved as part of the study; the input is the level of disaster readiness in terms of an enabling environment, safe learning facilities, and school disaster risk management. The process includes distributing a questionnaire through Google Forms, collating, and tabulating results, analyzing and interpreting data, and presenting data. Finally, the output will be recommendations for improving the subject local college's disaster readiness.

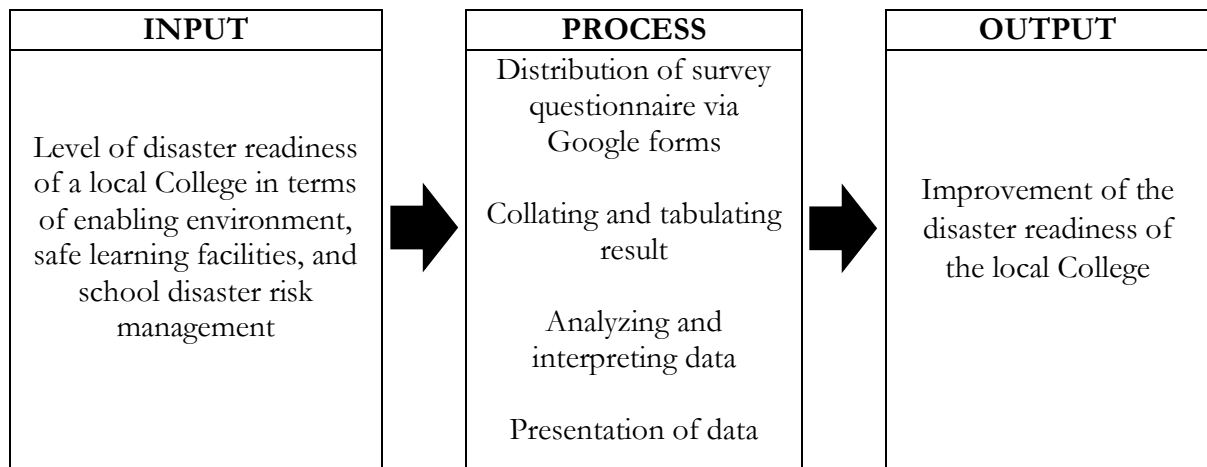


Figure 1. Paradigm of the Study

Methods

Research Design

This study utilized descriptive quantitative analytical method of research which according to Cooper and Schindler (2011) is a study that attempts to describe or define a subject, often by creating a profile of a group of problems, people, or events, through the collection of data and the tabulation of the frequencies on research variables or their interaction.

Sampling and Sampling technique

The respondents of this study were the local college employees for the first-semester academic year 2021-2022. The study sought to determine the profile of the respondents as to age, gender, position (non-teaching or teaching personnel), and length of service. The number of respondents was determined through Slovin's formula. The researcher then used probability type of sampling, specifically stratified sampling. Stratified sampling is when research respondents involve dividing the population into subgroups (called strata) based on the relevant characteristic (e.g., gender, age range, income bracket, job role) (McCombes, 2021). Table 1 shows the distribution of the respondents.

Table 1. Respondents of the Study

College Employees	Population	Sample
Non-Teaching Personnel	63	44
Teaching Personnel	111	77
Total	174	121

Research Instrument

The researcher adapted and modified the questionnaire of the Gawad KALASAG – Schools Category Project by National Disaster Risk Reduction and Management Council (NDRRMC) for the NDRRMC memorandum circular No. 11 series of 2017 (DRRM knowledge center) and the Comprehensive School Safety Checklist (Schools Checklist.pdf - Office of Civil Defense). It is divided into two (2) parts. The first part covers the respondents' demographics. The second part addresses the school's level of disaster readiness in terms of: (a) enabling environment, (b) safe learning facilities, and (c) school disaster risk management all composed of seven (7) items for a total of twenty-one (21) items. The rating scale or Likert five-point scale used in the questionnaire composed of 5 – strongly agree, 4 – agree, 3 – neutral, 2 – disagree, and 1 – strongly disagree.

Table 2. Degree of the Agreement of Respondents

Rating Scale	Range of Mean Value	Verbal Interpretation
5	4.21 – 5.00	Strongly agree
4	3.41 – 4.20	Agree
3	2.61 – 3.40	Neutral
2	1.81 – 2.60	Disagree
1	1.00 – 1.80	Strongly disagree

Data Gathering Procedure

To begin this study, the researcher asked the permission of the college President to conduct a survey about the level of disaster readiness of the college and allow non-teaching personnel and teaching personnel to be the respondents. The researcher discussed the study's objectives with the college President and assured the school of its value.

The distribution of questionnaires was done via Google Forms right after the approval of the permission letter. After the respondents answered the survey, analysis and interpretation of data were then made.

Statistical Tests

The data gathered was analyzed and interpreted using the following statistical tools:

1. Percentage

Percentage is a part of a whole expressed in hundredths. This was used to analyze the respondents' profile terms of their age, gender, position, and length of service. The formula to determine the percentage is $P = F/N \times 100$, where P = percentage, F = frequency, and N = respondent.

2. Ranking

Ranking shows the relationship of a set of items wherein any two items or more, one is either ranked higher, lower or equal to one or more items. This tool was used to rank the level disaster readiness of the local college.

3. Weighted Mean

A weighted mean is a kind of average. Instead of each data point contributing equally to the final mean, some data points contribute more “weight” than others (Glen, nd). This was used to calculate the average responses of the Likert five-point scale in the second part of the questionnaire to analyze the data to the respondents’ degree of agreement. The researcher established a weighted mean of 3.84 or below as a threshold to qualify for improvement. The formula is Weighted mean = $\Sigma wx / \Sigma w$, Where: Σ = summation, w = the weights, and x = the value

4. Standard Deviation

Standard deviation is a measure of dispersion in statistics. “Dispersion” tells you how much your data is spread out. Specifically, it shows you how much your data is spread out around the mean or average (Glen, nd). This was used in the second part of the questionnaire. The formula is

$$s = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}}$$

Where:

S = Standard deviation

n = the number of data points

\bar{x} = sample mean

x = each of the values of the data

Results, Discussion and Conclusion

Table 3. BTECH’s Level of Disaster Readiness as to Enabling Environment

Enabling Environment	Weighted Mean	Std. Dev.	Verbal Interpretation	Rank
1. The institution has designated Disaster Risk Reduction Management (DRRM) Focal Person.	3.84	0.785	Agree	2
2. The institution has formed functional DRRM Team, consisting of personnel from different offices; with definite membership and roles and responsibilities.	3.83	0.830	Agree	3
3. The institution sets direction, implementation and coordination of DRRM programs including but not limited to covering risk assessment, climate change adaption, risk reduction, and rehabilitation and recovery.	3.86	0.767	Agree	1
4. The institution allocates budget to various DRRM programs, projects, and activities in the annual budget plan.	3.62	0.977	Agree	7
5. The institution conducts student-led school watching and hazard mapping (DO 23 s 2015).	3.72	0.829	Agree	5
6. The students participate in the planning process of the school-based DRRM.	3.70	0.843	Agree	6
7. The institution fosters relevant stakeholders and partnerships relative to the DRRM programs, projects, and activities.	3.77	0.938	Agree	4
Overall	3.76	0.853	Agree	

From the table above, the level of disaster readiness of BTECH in terms of enabling environment shows that the institution sets direction, implementation, and coordination of DRRM programs, including but not limited to covering risk assessment, climate change adaption, risk reduction, rehabilitation, and recovery ranked first which have a weighted mean of 3.86 with a verbal interpretation of agree. The results also showed that the institution has designated DRRM focal person and has formed a functional DRRM team consisting of personnel from different offices with definite membership and roles and responsibilities ranking second and third with weighted means of 3.84 and 3.83, respectively, with both verbal interpretations of agree. Republic Act 10121, or “The Philippine Disaster Risk Reduction and Management (PDRRM) Act of 2010”, seeks the reduction and better management of disaster risk. Under this Act, one of its policy is to develop, promote, and implement a comprehensive National Disaster Risk Reduction and Management Plan (NDRRMP) that aims to strengthen the capacity of the national government and the local government units (LGUs), together with partner stakeholders, to build the disaster resilience of communities, and to institutionalize arrangements and measures for reducing disaster risks, including projected climate risks, and enhancing disaster preparedness and response capabilities at all levels (Serapio, 2016). However, allocating budget to various DRRM programs, projects, and activities in the annual budget plan ranked

the last. The study of Tolentino (2021) revealed that the most common issue encountered by school administrators in the implementation of School Disaster Risk Reduction and Management (SDRRM) is a lack of funds/resources for DRRM (10 or Rank 1). Students' participation in the planning process of the school-based DRRM, conducting student-led school watching and hazard mapping, and if institution fosters relevant stakeholders and partnerships relative to the DRRM programs, projects, and activities were ranked sixth, fifth, and fourth, respectively. Rodríguez-Giralt et al. (2020) state that children and young people are not only an important population group (around 20–50% of the population, depending on the country); they are also a group particularly exposed to disaster risk. It is calculated, for example, that annually around 175 million girls and boys are affected by disasters (see Webster et al, 2009), which undoubtedly encourages research, plans and policies for and with this group. All of these are within the threshold of 3.84, which qualifies for improvement. In general, the overall mean of BTECH's level of disaster readiness as to enabling environment was 3.76, with a verbal interpretation of agree and standard deviation of 0.853.

Table 4. BTECH's Level of Disaster Readiness as to Safe Learning Facilities

Safe Learning Facilities	Weighted Mean	Std. Dev.	Verbal Interpretation	Rank
1. School building/classroom adheres to the standard design and specifications of the National Building Code.	3.63	0.941	Agree	7
2. School conducts risk assessments of buildings, in coordination with the Education Facilities Division, and with support of other agencies and partners.	3.97	0.774	Agree	1
3. School has taken appropriate action with respect to unsafe school buildings (e.g., upgraded/ retrofitted, non-usage, etc.).	3.85	0.771	Agree	3
4. School has undertaken regular inspections of classrooms and offices (including facilities).	3.88	0.791	Agree	2
5. School has undertaken regular repair and retrofitting of damaged public properties/infrastructures, facilities, social services.	3.75	0.878	Agree	6
6. School executes the roles and responsibilities for maintenance, development, and documentation of DRRM plan.	3.84	0.764	Agree	4
7. School participatory monitoring and evaluation are identified.	3.83	0.727	Agree	5
Overall	3.82	0.807	Agree	

From the table above, the school conducts risk assessments of buildings, in coordination with the Education Facilities Division and with support of other agencies and partners, has undertaken regular inspections of classrooms and offices, and has taken appropriate action with respect to unsafe school buildings, which are ranked 1, 2, and 3 with weighted means of 3.97, 3.88, and 3.85, respectively, all verbal interpretations of agree. However, school building/classroom adheres to the standard design and specifications of the National Building Code, has undertaken regular repair and retrofitting of damaged public properties/infrastructures, facilities, social services, school participatory monitoring, and evaluation are identified, and executing the roles and responsibilities for maintenance,

development, and documentation of DRRM plan were ranked 7, 6, 5, and 4 with weighted means of 3.63, 3.75, 3.83, and 3.84, respectively. The protection of the lives of building occupants in the event of an earthquake is the main goal of the retrofit, referred as “life safety” performance in building codes. In many cases the life safety level prescribed by building codes cannot be achieved without major structural intervention and investment. Thus, retrofitting is considered to be unfeasible when the required capital investment exceeds the initial building cost, or when a building is in an advanced degradation state or in pre-ruin. Costs associated with demolition, debris disposal and reconstruction determine the feasibility of each retrofit project. Moreover, legal issues arise when the safety of a building is dependent on adjacent housing units like row buildings where several owners share a building and housing units with different owners have a common wall. Retrofitting a single house in row housing has low benefits when adjacent units are seismically deficient (Bothara & Brzev, 2011; Ferreira et al., 2016). Many preparedness actions are specific to particular hazards, such as securing furniture and appliances in areas at risk of earthquakes, reinforcing windows and doors at risk of hurricanes, or maintaining adequate defensible space around homes at risk of wildfires (Howe, 2018). Risk reduction tools include passing stricter building codes, instituting hazard warning systems, creating redundant infrastructure, strengthening or retrofitting structures and infrastructure, and establishing emergency facilities for vulnerable populations before and after a disaster (Tam et al., 2020). A weighted mean of 3.84 or below indicates that this area need improvement. The general results revealed that the overall mean of BTECH’s level of disaster readiness as to safe learning facilities was 3.82, with a verbal interpretation of agree and standard deviation of 0.807.

Table 5. BTECH’s Level of Disaster Readiness as to School Disaster Risk Management

School Disaster Risk Management	Weighted Mean	Std. Dev.	Verbal Interpretation	Rank
1. School has established school personnel and learners tracking system/protocol in the event of a disaster.	3.82	0.816	Agree	6
2. Hazard and evacuation maps are located in conspicuous places in the school.	3.85	0.946	Agree	5
3. School has available, accessible and adequate first aid kit in every instructional classroom.	3.20	1.152	Neutral	7
4. School has at least two necessary and functioning equipment, in case of a disaster (e.g., fire extinguisher, handheld/base radio, generator, etc.)	3.97	0.826	Agree	2
5. School conducts regular hazard-specific drill with participation of stakeholders (Bureau of Fire Protection, LGUs, and others)	3.88	0.842	Agree	3.5
6. School has established functional early warning system to inform students and personnel of hazards and emergencies (protocol, warning signs, devices, IEC*) *Information, Education, and Communication	3.88	0.868	Agree	3.5
7. School has an evacuation plan and procedures.	3.98	0.741	Agree	1
Overall	3.80	0.884	Agree	

The table above shows that the school has an evacuation plan and procedures ranked first with a weighted mean of 3.98 and verbal interpretation of agree. The school followed it has at least two necessary and functioning pieces of equipment in case of a disaster, conducts regular hazard-specific drills with the participation of stakeholders, and has established a functional early warning system to inform students and personnel of hazards and emergencies ranked 2 and 3.5 with weighted means of 3.97 and 3.88, respectively. In contrast, hazard and evacuation maps are located in conspicuous places in the school, ranked number 5 with a weighted mean of 3.85, and all have a verbal interpretation of the agreement. It is generally recognized in most developed economies that responsibility for all aspects of disaster management— across the spectrum of prevention, preparation, response and recovery (PPRR)—is shared among government, individuals, the business and non-government sectors, and communities (Eburn, 2017). Actions taken to prepare for disasters before they happen can enhance household and community resilience by reducing the immediate impact of the disaster and increasing the ability to cope with and recover from the disaster (Paton, 2019). For instance, the presence of adequate supplies in the immediate aftermath of an event can sustain individuals during the critical period before external aid arrives. In addition to material resources such as food, water, medical supplies, battery-operated radios, or a generator, preparedness can also include precautionary actions such as developing a household emergency plan, gathering information about local hazards, and participating in training exercises. However, having a readily available, accessible, and adequate first aid kit in every instructional classroom rated lowest, with a weighted mean of 3.20 and a verbal interpretation of neutral. In the case of a disaster, the school has established school personnel and learner tracking system/protocol, with verbal interpretation, agree, and ranked 6 with a weighted mean of 3.82, both of which are within the 3.84 criteria that qualifies for improvement. In Serbia, citizens' awareness of the necessity of owning the first aid disaster kit is still at a low level, having in mind the obtained results of the research. In that sense, it is necessary to further improve programs and awareness-raising campaigns, but also their training to respond in such situations. Accordingly, it is advisable to organize certain training of citizens in providing the first aid, as well as in using the first aid disaster kit in the conditions of disasters. Although a certain number of citizens have such a set, it has been found that a good part of them is not even familiar with its content, as well as with the ways of its use (Cvetković, 2019). The general results revealed that the overall mean of BTECH's level of disaster readiness as to school disaster risk management was 3.80, with a verbal interpretation of agree and standard deviation of 0.884.

Conclusion

Based on the findings of the study, the following conclusions were revealed

1. Respondents agreed that BTECH directs, implements, and coordinates DRRM activities, has designated a DRRM focal person, and has formed a functioning DRRM team comprised of personnel from different offices, with definite membership and roles and responsibilities; however, many non-teaching and teaching personnel are unaware of their presence. Furthermore, based on the findings, the following areas need to be improved: allocating funds to various DRRM programs, projects, and activities in the annual budget plan, student participation in the school-based DRRM

planning process, conducting student-led school watching and hazard mapping, and fostering relevant stakeholders and partnerships relative to the DRRM programs, projects, and activities.

2. According to statistical data, BTECH conducts risk assessments of buildings in coordination with the Education Facilities Division and with the support of other agencies and partners, conducts regular inspections of classrooms and offices, and takes appropriate action in the case of unsafe school buildings. However, based on the findings, the school building/classroom that adheres to the standard design and specifications of the National Building Code scored the lowest; in line with this, a proposed new campus/building for BTECH is already located at Brgy. Pagala, Baliwag, Bulacan. Regular repair and retrofitting of damaged properties and facilities, school participatory monitoring and evaluation, and executing the roles and responsibilities for maintenance, development, and documentation of the DRRM plan are all areas that need improvement.
3. According to statistics, BTECH has an evacuation plan and procedures in place. It has at least two necessary and functioning equipment in case of a disaster, it conducts regular hazard-specific drill with the participation of stakeholders, it has established a functional early warning system to inform students and personnel of hazards and emergencies, and hazard and evacuation maps are located in conspicuous places in the school. The institution also needs to improve its supply of accessible and adequate first aid kit in every instructional classroom, and established school personnel and learners tracking system/protocol in the event of a disaster.

Recommendations

The following recommendations are made based on the results and conclusions of the study:

SOP 1.1 BTECH's Level of Disaster Readiness as to Enabling Environment

1. Identify clearly the DRRM focal person in the organizational structure. Every school year, the focal person and the team should be introduced to faculty and students at orientation. The organizational structure should be made available on the school website.
2. Allocate funds to various DRRM programs, projects, and activities in the annual budget plan. Create an action plan for the different DRRM activities, such as the acquisition of equipment, first aid kit, training, and seminars on disaster risk reduction.
3. Empower students in the school-based DRRM planning process, as well as school watching and hazard mapping. Strengthen the school's DRRM activities by including different year levels to raise DRRM awareness.
4. Strengthen relevant stakeholders and partnerships relative to the DRRM programs, projects, and activities.

SOP 1.2 BTECH's Level of Disaster Readiness as to Safe Learning Facilities

1. The institution may repair and retrofit damaged properties and facilities on a regular basis.
2. The roles and responsibilities for maintenance, development, and documentation of the DRRM plan can be carried out. The DRRM focal person and the team may perform periodic reviews of its objectives, program, project, activities, and plans, which may be posted on a regular basis.

3. The institution may have regular participatory, monitoring, and evaluation of funds to ensure that its DRRM programs, activities, and projects are being implemented.

SOP 1.3 BTECH's Level of Disaster Readiness as to School Disaster Risk Management

1. The institution may improve its supply of accessible and adequate first aid kit in every instructional classroom.
2. The institution may design a school personnel and learners tracking system/protocol in the event of a disaster.

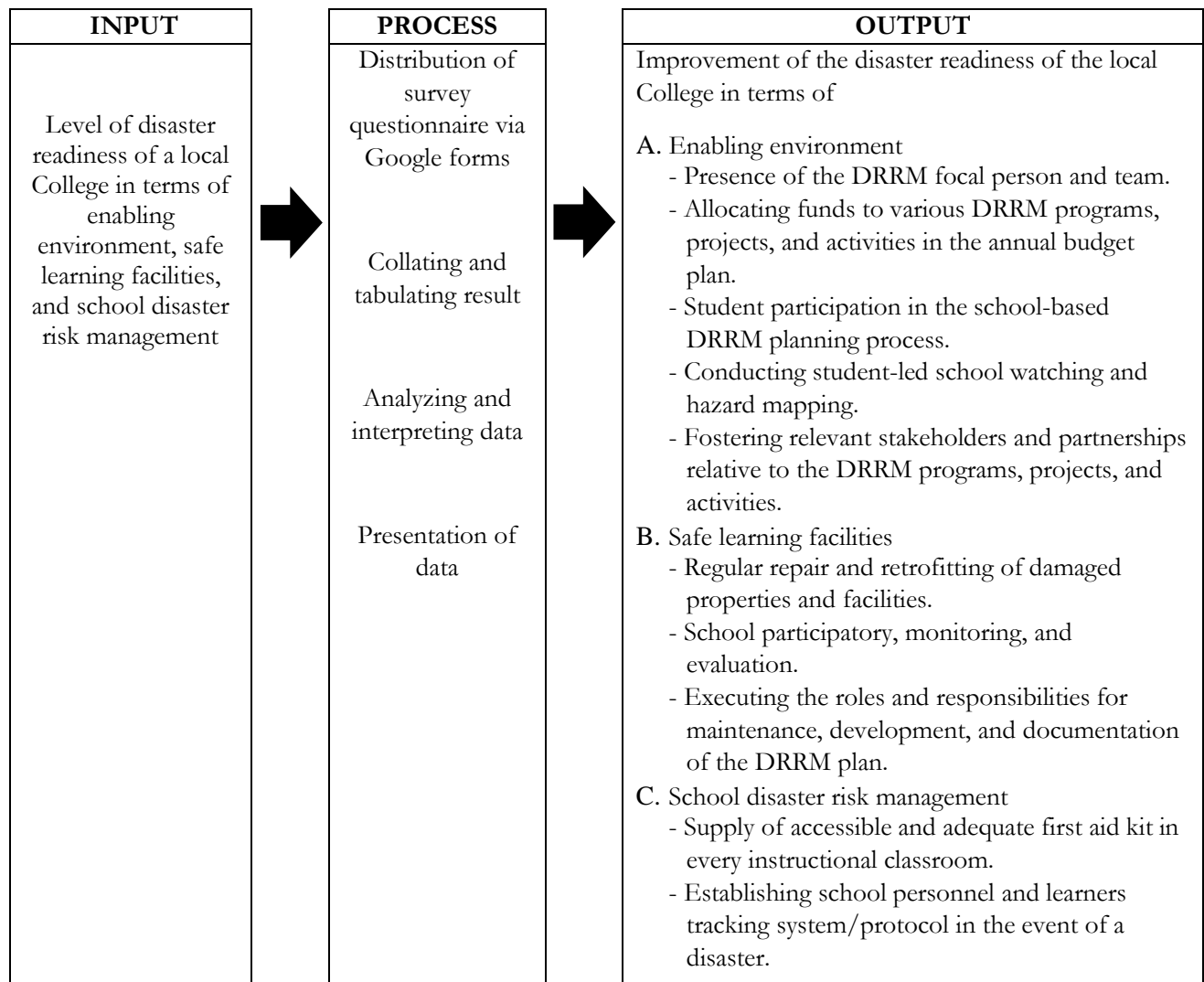


Figure 2. Proposed Disaster Readiness Plan

References

- Asio, J. M. R. (2020). Disaster management program compliance and problems encountered in two provinces in Central Luzon, Philippines. *Interdisciplinary Research Review*, 15(5), 24 - 31. Retrieved from <https://ph02.tci-thaijo.org/index.php/jtir/article/view/240805>
- Barnes, P. (Ed.). (2020). *A Pacific disaster prevention review* (pp. 6-8, Rep.). Australian Strategic Policy Institute. Retrieved August 28, 2021, from <http://www.jstor.org/stable/resrep25128.4>
- Bronfman, N. C., Cisternas, P. C., Repetto, P. B., & Castañeda, J. V. (2019). Natural disaster preparedness in a multi-hazard environment: Characterizing the sociodemographic profile of those better (worse) prepared. *PLoS ONE*, 14(4), 1–18. <https://doi.org/10.1371/journal.pone.0214249>
- Cooper, D. and Schindler, P. (2011). *Business Research Methods International Edition*. New York: McGraw-Hill.
- Cvetković, V. (2019). First aid disaster kit for a family: A case study of Serbia - Porodični komplet prve pomoći za katastrofu: studija slučaja Srbije.
- Dariagan, J.D., Atando, R.B. & Asis, J.L.B. (2021). Disaster preparedness of local governments in Panay Island, Philippines. *Nat Hazards* 105, 1923–1944. <https://doi.org/10.1007/s11069-020-04383-0>
- Del Rosario, M. (2019). Clearing ops start at collapsed supermarket in Pampanga. Retrieved from <https://www.pna.gov.ph/articles/1068164>
- Eburn, M. (2017). (Rep.). Australian Strategic Policy Institute. Retrieved August 28, 2021, from <http://www.jstor.org/stable/resrep04119>
- Fabonan III, E. (2016). #Journeyto30 Earthquake! Retrieved from <https://www.philstar.com/headlines/2016/07/17/1603676/journeyto30-earthquake>
- Ferreira, T. M., Maio, R., Vicente, R., & Costa, A. (2016). Earthquake risk mitigation: the impact of seismic retrofitting strategies on urban resilience. *International Journal of Strategic Property Management*, 20(3), 291–304. <https://doi.org/10.3846/1648715X.2016.1187682>
- Glen, S. (nd). "Weighted Mean: Formula: How to Find Weighted Mean" From StatisticsHowTo.com: Elementary Statistics for the rest of us! <https://www.statisticshowto.com/weighted-mean/>

https://drrmkc.oecd.gov.ph/pages/knowledge_resources
https://oecd.gov.ph/attachments/article/521/Schools_Checklist.pdf

Howe, P. D. (2018). Modeling Geographic Variation in Household Disaster Preparedness across U.S. States and Metropolitan Areas. *Professional Geographer*, 70(3), 491–503. <https://doi.org/10.1080/00330124.2017.1416301>

Inquirer Northern Luzon. (2020). Lessons from 1990 Luzon quake. Retrieved from <https://newsinfo.inquirer.net/1307403/lessons-from-1990-luzon-quake>

Kuno, S., Flournoy, M., Cronin, P., & Fukami, M. (2016). (Rep.). Center for a New American Security. Retrieved August 28, 2021, from <http://www.jstor.org/stable/resrep06432>

Lanada, M.I., Melegrito, M.L. and Mendoza, D. (2016). Building resilient communities: Disaster readiness and risk reduction. Quezon City: Phoenix Publishing House, Inc.

McCombes, S. (2021). An introduction to sampling methods. Retrieved from <https://www.scribbr.com/methodology/sampling-methods/>

Paton, D. (2019). Disaster risk reduction: Psychological perspectives on preparedness. *Australian Journal of Psychology*, 71(4), 327–341. <https://doi.org/10.1111/ajpy.12237>

Rodríguez-Giralt, I., Arenas, M., & Gómez, D. (2020). Children, participation and disasters in Europe: A poor record. In Rodríguez-Giralt I., Mort M., & Delicado A. (Eds.), *Children and Young People's Participation in Disaster Risk Reduction: Agency and Resilience* (pp. 15-36). Bristol: Bristol University Press. Retrieved August 28, 2021, from <http://www.jstor.org/stable/j.ctv1b9f5c1.8>

Serapio, M.P. (2016). Disaster readiness and risk reduction. Manila: Mindshapers Co., Inc.

Tam, L., Johnson, L., Exon-Smith, K., & Metwalli, J. (2020). *Safety First: Improving Hazard Resilience in the Bay Area* (pp. 20-27, Rep.) (Steen K., Ed.). SPUR (San Francisco Bay Area Planning and Urban Research Association). Retrieved August 29, 2021, from <http://www.jstor.org/stable/resrep26073.6>

Tolentino, K. (2021). Education in Emergency-The School Managers' Practices on Risk Reduction and Management of Disaster. *Journal of Education, Management and Development Studies*, 1(1), 10–23. <https://doi.org/10.52631/jemds.v1i1.5>