# EARTHQUAKE AWARENESS AND PREPAREDNESS OF SCHOOL PERSONNEL: AN INPUT FOR CONTINGENCY PLAN

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## ABSTRACT

The West Valley Fault extends to 129.47 kilometers from Bulacan, passing through the cities in Metro Manila. After which, it also traverses to Cavite and Laguna provinces, namely: San Pedro, Biñan, Carmona, General Mariano Alvarez, Silang, and Calamba (Malicdem, 2017). This connotes the imminent danger among these provinces and nearby regions. As to the City of Biñan, the barangays which are traversed by the West Valley Fault include Malamig and San Francisco.

The National Disaster Risk Reduction and Management Plan serves as the national guide on how sustainable development can be achieved through inclusive growth while building the adaptive capacities of communities; increasing the resilience of vulnerable sectors; and optimizing disaster mitigation opportunities with the end in view of promoting people's welfare and security towards gender-responsive and rights-based sustainable development. The NDRRMP outlines the activities aimed at strengthening the capacity of the national government and the local government units 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 (NDRRMC).

This research focuses on determining the relationship between the school personnel's earthquake awareness and preparedness and how these variables could be an input for their school community's contingency plan. The said research aims to assess the earthquake awareness and preparedness of the school personnel of Biñan Integrated National High School that could provide solution to their present opportunities.

The study utilized descriptive-correlational research design. The researcher collected data from 152 school personnel of Biñan Integrated National High School using closed questionnaire. The questionnaire was divided into three parts: Scale 1 covered the profile of the respondent, Scale 2 covered the earthquake awareness level which was adapted on 2018 Development of Disaster Awareness Scale of Review of International Geographical Education Online (RIGEO), and Scale 3 covered the earthquake preparedness level which was adapted on National Disaster Risk Reduction and Management Plan (NDRRMP).

Findings revealed that the respondents are highly aware about earthquake especially on Earthquake Education, Pre-earthquake and After Earthquake concepts with exception to False Earthquake Awareness where the respondents are less aware of. As to their level of earthquake preparedness in school community, the respondents are highly prepared on the risks of earthquake hazards. Hence, it was recommended that misconceptions about earthquake and some opportunities to school's earthquake awareness be resolved and annexed to the school's contingency plan in order to raise their awareness on the false belief about earthquake hazard and improve their preparedness.

**Keywords:** *earthquake, awareness, preparedness, contingency plan*

## INTRODUCTION

Disasters are damaging and destructive events that cause serious losses, destructions, and hardships in society and the environment (Samantela et.al., 2016). According to Rosenberg (2017), most natural disasters such as earthquakes and volcanic eruptions, were associated to the intense volcanic and seismic belt known as the Pacific Ring of Fire. It is a 40000-km stretch in the Pacific Ocean that constitutes seismically active faults and volcanoes. This region is accountable for 81% of all recorded major earthquakes and 75% of all volcanic eruptions (Conners, 2016).

Earthquake is sudden shaking of the ground caused by the unanticipated release of energy from the lithosphere. It could generate a tsunami which is the displacement of a large volume of water due to the movement of the earth's crust (Ammon, 2016).

Amidst of all natural incidents, earthquakes was recorded as the second most deadly and damaging calamity in the Philippines. Over the past four decades, earthquakes have spawned an accumulated value of 20,701 casualties, 1,808,889 persons affected and 69.74 million pesos worth of damage in properties (Orallo, 2011). Due to the massive number of casualties and damages brought by earthquakes for the past forty years, Philippine Institute of Volcanology and Seismology (PHIVOLCS) gave early precautionary measures to prepare Filipino citizens for the "Big One" (Flores, 2017). According to a study conducted by Japan International Cooperation Agency (2004), a 7.2-magnitude earthquake in the West Valley Fault, which is ripe for movement, could kill up to 34,000 people and injure 100,000 others due to collapsed buildings. This 100-km seismically active fault moves roughly every 400 years. The last major earthquake generated by this fault was in 1658 or 357 years ago. It transects along Bulacan, Rizal, Metro Manila, Cavite, and Laguna. All in all, 82 barangays would be severely affected when this fault makes a sudden movement (Solidum, 2015). Due to this feared earthquake, Department of Education through DepEd Order No. 21 series of 2015 – Disaster Risk Reduction and Management Coordination and Management Protocol was made to provide contingency planning for possible earthquakes in the future as mandated by Republic Act No. 10121 or also known as Philippine Disaster Risk Reduction and Management Act of 2010.

According to the study of Malicdem (2017), the West Valley fault extends to 129.47 kilometers from Doña Remedios Trinidad in Bulacan, passing through San Jose del Monte City, and Norzagaray, also in Bulacan. Then traverses to cities in Metro Manila including Quezon City, Marikina, Pasig, Makati, Taguig, and Muntinlupa. After which, it also traverses to Cavite and Laguna provinces in south Luzon, namely: San Pedro, Biñan, Carmona, General Mariano Alvarez, Silang, and Calamba. This connotes the imminent danger among these provinces and nearby regions. As to the City of Biñan, the barangays which are traversed by the West Valley Fault include Malamig and San Francisco. In the study of Ogania (2020), the respondents from public schools in Biñan City have no definite plan in the occurrence of the "Big One".

Acknowledging the massive number of casualties brought by the major earthquake occurrences in the Philippines and being included the locality of Biñan in the West Valley Fault, the researcher is impelled to conduct an assessment on the earthquake awareness and preparedness of the school personnel at Biñan Integrated National High School and to provide a research-based needs analysis to their present opportunities.

## METHODOLOGY

The study utilized descriptive-correlational research design. The researcher collected data using closed questionnaire. from 152 school personnel of Biñan Integrated National High School. The number of respondents was computed using Raosoft Sample Size Calculator with a confidence level set to 95%. The respondents were selected using random sampling technique. This is a probability sampling technique wherein each element in the population has an equal and independent chance of selection in the sample.

The questionnaire was divided into three parts: Scale 1 covered the profile of the respondent, Scale 2 covered the earthquake awareness level which was adapted on 2018 Development of Disaster Awareness Scale of Review of International Geographical Education Online (RIGEO), and Scale 3 covered the earthquake preparedness level which was adapted on National Disaster Risk Reduction and Management Plan (NDRRMP).

The researcher's instrument was presented to the BINHS-SHS Research

Coordinator for initial checking. For further validation, the researcher consulted experts who provided comments and possible recommendations. Reliability test was also conducted using Cronbach's Alpha in which the instrument resulted to the value of 0.91 which can be interpreted as "Excellent".

After validating the tools for data collection, the researcher requested permission to the School Principal for approval. Subsequently, the researcher also explained the purpose of the study.

The researcher chose to survey through Google Form. Google Form was utilized to make the data gathering procedure efficient and easy since it allows the respondents to answer the survey in their convenience. During the gathering data, instructions of the survey and the procedure of filling the scale were discuss clearly in the direction.

After the questionnaire was completed by the respondents, the quantitative data was tabulated and subjected to the following statistical tools: frequency and percentage distribution to describe the respondents' profile, weighted mean and rank will be used to determine the earthquake awareness and preparedness, T-test and ANOVA to determine if there is a significant difference in the earthquake awareness and preparedness when grouped according to their profile variables, and Pearson-r to determine the relationship between the earthquake awareness and earthquake preparedness.

## RESULTS

The study assessed the earthquake awareness and preparedness of 152 school personnel of Biñan Integrated National High School for School Year 2021-2022. The profile distribution revealed 46.71% of the respondents are 30-39 years old. Meanwhile, the gender of the respondents shows that majority were female with 58.55 % while the male represents 41.45% of the respondents. As to the years in service, less than a year obtained 16.45%; 1 year got the highest portion 19.08%; 2-3 years consisted of 14.47%; 4-5 years obtained 16.45%; 6-10 years have 15.79% and 11 and above obtained 17.76%. In terms of educational attainment, most of the respondents have Master's degree holder which represented 45.39%, second, College Graduate represented 44.08% of the respondents, third is Doctorate degree holder where it got 6.58% of the respondents. Lastly are High School graduate which comprised 3.95% of the respondents.

Based on the data collected in earthquake awareness, the variables Pre-earthquake awareness, Earthquake Education Awareness, and After Earthquake Awareness obtained high weighted mean of 3.80, 3.72, and 3.29 with the verbal interpretation "Outstanding". On the other hand, False Earthquake Awareness obtained the lowest weighted mean of 2.49 with the verbal interpretation, "Fair". The respondents' overall summative mean in earthquake awareness is 3.33 with the verbal interpretation of "Outstanding".

In earthquake preparedness, the Threats and Impacts obtained the highest weighted mean of 3.66, School Plans obtained a weighted mean of 3.66, Coping with the Negative Effects obtained a weighted mean of 3.59, Capacity of Institution obtained a weighted mean of 3.58, Partnership among stakeholders obtained a weighted mean of 3. The respondents' overall summative mean in earthquake preparedness is 3.59 with the verbal interpretation of "Outstanding".

The study tested the significant difference on the respondents' level of earthquake awareness when grouped according to their profile variables. Across age groups, there is no significant difference in the level of awareness of the respondents. This suggests that the respondents have relatively the same level of awareness, regardless of age, in terms of earthquake education, pre-earthquake, and false earthquake. However, a significant difference in the level of after earthquake awareness was established across age groups. Furthermore, significant differences were also established across years of service in terms of level of pre-earthquake and after earthquake awareness. Across gender and educational attainment, no significant difference was established in the level of awareness of the respondents. This suggests that the respondents have relatively the same level of earthquake awareness, regardless of gender and educational attainment.

As to their significant difference when grouped according to profile variables, there is no significant difference in the level of preparedness a cross age, years of service, and educational attainment of the respondents. This suggests that the respondents have relatively the same level of earthquake preparedness, regardless of age, years of service, and educational attainment. A significant difference, however, was established in the level of after earthquake preparedness

across gender.

The study tested the significant relationship between earthquake awareness and preparedness of the respondents. Earthquake education awareness indicated a highly significantly low negative correlation with threats and impact preparedness, and a significantly very low negative correlation with school plans preparedness. After earthquake awareness indicated a significantly low positive correlation with capacity of institution preparedness, a highly significantly low correlation with school plans preparedness, and a significantly very low correlation with partnership with stakeholders' preparedness. False earthquake preparedness indicated a significantly very low correlation with coping with negative impacts preparedness.

## DISCUSSION

Findings revealed that the school personnel of Biñan Integrated National High School have an outstanding awareness about earthquake hazard with an exception to the myths and misconceptions. The school personnel are very much aware on the general ideas, planning and safety about, before and after earthquake. However, they score low to their awareness about misconception about earthquake where it shows that they believe on not worrying about earthquake because they can do nothing about it, shutting down utilities such as electricity, water, and gas at the time of evacuation are time consuming and others.

As to level of earthquake preparedness, the respondents' school community is highly prepared on the risks of earthquake hazards. The school frequently advocates disaster awareness by holding seminars and trainings, develops materials, creates plans, conducts risk assessment, simulates earthquake drills, updates inventory and directory, coordinates partnerships with public and private sectors, maintains survival kits and functional DRRM office. These practices contribute to the high level of preparedness of the school. On the implementation of their programs for earthquake hazard, it shows that the school is consistently following the quarterly earthquake drills and also it appears that the school is highly implementing their preparedness risk management plan. The DRRM Office is highly active also in monitoring and maintaining DRRM resources such as fire extinguishers, PPE, emergency kits, etc. On the other hand, there are facilities that the school does need to evaluate and repair such as structural soundness of school buildings, broken windows, fragile tables, and alarm system. are also facilities that the school need to produce more and these facilities include more survival kits containing battery-powered radio, flashlight, first-aid kit, potable water, ready-to-eat food, whistle, and dust mask to cater all school personnel.

Based on the findings laid out, the following future directions are hereby offered by the researcher; on the earthquake awareness of the respondents, it is recommended that school personnel should be given intervention on the misconceptions about earthquake hazard for more prepared action to reduce its risks. School personnel could be given a more detailed explanation through seminar or any other awareness programs to eliminate these misconceptions.

As to earthquake preparedness, it is recommended that the school community be given attention on their facilities. The school has still a room for improvement in their earthquake preparedness such as the need for evaluation and repair of structure of school buildings, broken windows, fragile tables, and alarm system. It is also recommended that the school be given more survival kits containing battery-powered radio, flashlight, first-aid kit, potable water, ready-to-eat food, whistle, and dust mask to cater all school personnel.

For future researchers, a comprehensive and practical assessment that covers a wide array of physical vulnerabilities could be researched to explore the possible risks that earthquake can inflict in the study locale.

## ACKNOWLEDGEMENT

The completion of this research study endeavor will not reach the realms of possibility without the divine guidance and provision of Heavenly Father, the fountainhead of knowledge and wisdom, to Him the researchers wishes to return all the glory. Also, gratitude is extended to the following persons whose invaluable contributions are implanted on the pages of this research.

To Senior Education Program Specialist in Planning and Research, Mr. Edward Manuel for the prosperous recommendations;

To BINHS School Principal, Ms. Julie Ann Natividad, for signing and supporting this study;

To BINHS SHS-DRRM Coordinator, Ms. Roselyn Simon for the significant information;

To BINHS-SHS Research Coordinator, Mr. Freddie Calumno, for mentoring and inspiring the

researcher;

To Statistician, Ms. April Rose Biglete, for statistical support;

To Content Validators, Mr. Keddie Obidos, Mr. Garry Bayran, and Ms. Catherine Salazar, for providing constructive criticism in instrument of this study; and

To the respondents, for their time and cooperation.

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