

Disaster Preparedness of Public Elementary Schools in Aguilar Congressional District II

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Abstract

This study assessed the level of disaster preparedness of public elementary schools in Aguilar District I, Division of Pangasinan I, during the School Year 2024-2025. Utilizing a descriptive research design, data were gathered from 257 teachers and 17 school heads across 17 schools using a questionnaire. The findings indicate that, overall, the schools are moderately prepared for disasters. Specifically, preparedness was rated as moderate in terms of organization and facilities/equipment/materials/supplies. However, preparedness was rated as high in the area of training and education (e.g., first aid, disaster drills, evacuation training). The study found no significant difference between the perceptions of teachers and school heads

regarding the extent of preparedness. The problems encountered during disasters, such as inadequate supplies, transportation, and evacuation centers, were perceived as moderately serious, with no significant difference in perception between the two respondent groups. Based on the findings, a comprehensive action plan was proposed to enhance the schools' disaster preparedness across organization, facilities, and training. The plan includes strategies for forming volunteer groups, procuring necessary equipment, and conducting regular training and seminars in coordination with local government units and non-governmental organizations.

Keywords: *disaster preparedness, public elementary schools, organization, facilities and equipment, training and education, disaster risk reduction and management, Aguilar District*

INTRODUCTION

Almost everyday, newspapers, radio and television channels carry reports on disaster striking several parts of the world. The term disaster owes its origin to the French word “Desastre” which is a combination of two words “des” meaning bad and “aster” meaning star. Thus the term refers to “Bad or Evil star”. The United Nations defined Disasters as a serious disruption of the functioning of a community or a society causing widespread human, material, economic and environmental losses which exceed the ability of the affected community/society to cope using its own resources.

The disaster is a hazard, vulnerability and insufficient capacity or measures to reduce the potential chances of risk. A disaster happens when a hazard impacts on the vulnerable population and causes damage, casualties and disruption.

The events during typhoon “Yolanda”, the typhoon, “Busho” and the sudden flooding, earthquake, fire and the eruption of Bolosan volcano are examples of natural disasters that call for the preparedness of everyone to protect themselves and their properties. They need training and education. They must be aware



of the underlying causes, dynamic pressure, unsafe condition and the hazards of the triggered events (earthquake, tsunami, floods, cyclones, volcanic eruption, drought, landslide, technological accident, and environmental prevention). In this regard the people must be equipped or provided with the needed facilities and equipment for flood, typhoon, earthquake, fire and other forms of disasters.

Any hazard like flood, earthquake or cyclone which is a triggering event along with greater vulnerability (inadequate access to resources, sick and old people, lack of awareness etc.) would lead to disaster causing greater loss to life and property. Therefore, there is a need to understand the three major components namely hazard, vulnerability and capacity with suitable examples to have a basic understanding of disaster preparedness and management.

In the Philippines, the National Disaster Risk Reduction and Management Council (NDRRMC), through the Office of Civil Defense (OCD), takes the lead in the implementation of the ASEAN-US Cooperation on Disaster Management. Partner agencies are the Department of Local Government – Bureau of Fire Protection (DILG-BFP), Department of Health (DOH), Department of Social Welfare and Development (DSWD), Philippine National Police (PNP), Armed Forces of the Philippines (AFP), Philippine Red Cross (PRC), Metro Manila Development Authority (MMDA), Fire National Training Institute (FNTI), Subic Bay Metropolitan Authority (SBMA), the City Government of Olongapo, Davao City Rescue 911 and Amity Public Safety Academy (APSA).

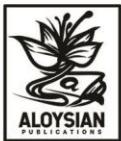
Moreover, RA 10121, s-2010, otherwise known as “An Act Strengthening the Philippine Disaster Reduction and Management System, Providing for the National Disaster Risk Reduction and Management Framework and Institutionalizing the National Disaster Risk Reduction and Management Plan, Appropriating Funds” has reposed on the Office of Civil Defense the primary mission “to administer a comprehensive national civil defense and disaster risk reduction and management program by providing leadership in the continuous development of strategic and systematic approaches as well as measures to reduce the vulnerabilities and risks to hazards and manage the consequences of disasters.” Section 9 of the said law provides the functions / operational directions that OCD shall effectively implement its mission. One of these functions is “to formulate standard operating procedures for the deployment of rapid assessment teams, information sharing among agencies and coordination before and after disaster at all levels.

Disaster Preparedness according to NDRRMC is the coordination and integration of all activities necessary to build, sustain, and improve the capability to prepare for, protect against, respond to and recover from threatening or actual natural or human – induced disasters. It is a multi-jurisdictional, multi-sectoral, multi-disciplinary and multi-resource initiative. It is vital that the Local Governments, Civil Society Organizations (CSOs) and the private sectors discharge their respective roles and responsibilities and complement each other in achieving shared goals of disaster management and preparedness.

Due to the ill effects of different disasters to man and nature, properties and environment, everyone should be prepared, aware and ready to face such disasters to minimize or avoid loss of life and destruction.

The involvement of different sectors and stakeholders in disaster management requires the existence of a coordination and collaboration mechanism. There is a profound need for training, education, information and skills and preparedness of everybody in disaster. This is the reason why the researcher was motivated to conduct this study to determine the level of disaster preparedness of public elementary schools in Bayambang District I and, on the findings, enable them to build, sustain and improve their capability to prepare for, protect against, respond to and recover from natural or human-induced disasters.

According to Disaster Mitigation and Disaster Preparedness Management Council (2019) emergency preparedness response shall be undertaken before a disaster (pre-disaster). Pre-disaster activities are those which are taken to reduce human and property losses caused by a potential hazard. For example, carrying out awareness campaigns, strengthening the existing weak structures, preparation of the disaster management plans at household and community level, etc. such risk reduction measures taken under this



stage are termed as mitigation and preparedness activities.

During a disaster (disaster occurrence). These include initiatives be taken to ensure that the needs and provisions of victims are met and suffering is minimized. Activities taken under this stage are called emergency response activities.

After a disaster (post-disaster) proper initiatives shall be undertaken in response to a disaster with a purpose to achieve early recovery and rehabilitation of affected communities, immediately after a disaster strikes. These are called as response and recovery activities.

According to Warfield (2018) disaster management and preparedness aims to reduce, or avoid the potential losses from hazards, assure prompt and appropriate assistance to victims of disaster, and achieve rapid and effective recovery. The disaster management observed a process by which governments, business, and civil society plan for and reduce the impact of disasters, react during and immediately following a disaster, and take steps to recover after a disaster has occurred. Appropriate actions at all points lead to greater preparedness, better warnings, reduced vulnerability or the prevention of disaster during the next iteration of the cycle.

According to Masing (2013), the topic “People’s Participation and Disaster Management Preparedness Activities” is most timely seen in the context of the vulnerability of countries such as the Philippines, to various kinds of disasters. It is especially more significant in the metropolitan areas for in recent years, it has been noted that there has been a continuous migration of people to urban areas in search of employment and a better way of life. Industrial development has been on the rise in urban areas and this serves as a magnet which attracts people to the cities. Aside from this attraction, are the opportunities of the rural population to avail of the services of the hospitals, schools, better housing, consumer goods, recreation, social services, work facilities, and salaries, and career prospect. The rapid growth of population and industrial development have, therefore, resulted inadequate infrastructural development – inadequate shelter, inadequate water system, lack of sewerage and drainage facilities, poor solid waste disposal as well as inadequate transport system. It has further led to environment problems such as pollution, and health and sanitation problems due to the unabated growth of slums and squatter areas, hence, their vulnerability to diseases and to a greater extent, disasters.

According to Talib (2015) “Preparedness is better than cure” is an adage which has guided the volunteer in his work in disaster management. The volunteer is deeply involved in the disaster preparedness, mitigation and prevention phase with the objective of providing measures which are aimed to minimize loss of life, damage and disruption of services.

The recruitment, organization and training of local communities in disaster management are the responsibility of the government at all levels in coordination with NGOs such as the Philippine National Red Cross (PNRC). These are in turn assisted by groups of trained volunteers. They initiate community organizing activities in places where there are diverse groups of people coming from different parts of the country. Community organizing activities are important. The volunteers go on a house-to-house campaign and/or call community assemblies to discuss relevant issues such as the importance of organizing for disaster preparedness to make them aware of the hazards/risk in the communities they have settled in and to prevent loss of lives and property. When people are convinced of the need for disaster preparedness, the volunteer then organizes them. Priority is given to the community or barangay leaders who are expected to continue with the training and organization for the rest of the community/barangay.

Barton Allen (2018) said that in a disaster situation, volunteers should be ready with skills which are of great help such as first aid and accident prevention, search and rescue skills and primary health care.

If fire strikes a thickly populated area, blocks of permanent and temporary structures are razed to the ground and thousand are rendered homeless. Or if flood-prone such as Metro Manila, even more people are affected. But the organized and trained disaster volunteers are immediately mobilized and the role of every trained members come to the fore according to the disaster plan. As mentioned earlier, they conduct

a myriad of activities as follows.

Warfield (2018) Disaster preparedness refers to measures taken to prepare for and reduce the effects of disasters. That is, to predict and – where possible – prevent them, mitigate their impact on vulnerable populations, and respond to and effectively cope with their consequences.

It is best viewed from a broad perspective and is more appropriately conceived of as a goal, rather than as a specialized programme or stage that immediately precedes disaster response.

Their training and education increase the efficiency, effectiveness and impact of disaster emergency response mechanisms at the community, national level to minimize potential loss of life and physical damage the education and training of officials and the population at risk the training of first-aid and emergency response teams the establishment of emergency response policies, standards, organizational arrangements and operational plans to be followed after a disaster.

Strengthen community-based disaster preparedness through National Society programmes for the community or through direct support of the community's own activity. This could include educating, preparing and supporting local populations and communities in their everyday efforts to reduce risk and prepare their own local response mechanism to address disaster emergency situations.

Develop activities that are useful for both addressing everyday risks that communities face and for responding to disaster situations for example, health, first aid or social welfare programmes that have components useful for disaster reduction and response.

Thomas Drabek (2018) has studied natural disaster and emergency management responses in the United States for more than four decades. Drabek's theory of disasters emphasises the behavioural, psychological and social aspects of disaster response: the sociological and behavioural underpinnings of such phenomena as emergency evacuation, disaster communication, victim behaviour and volunteering. His research emphasises the mismatch between the policies and procedures of government authorities and emergency management agencies, and the behaviour of the citizens they are supposed to protect.

Drabek's research findings directly concern the behaviour of citizens faced with the CFA's policy of 'Stay or Go' evacuation decisions (Kissane 2010: 29). Drabek notes that people in these situations commonly seek confirmation of the threat situation before evacuating, attempt to depart as a family unit, or, if they are not physically together at the time of warning, try and account for all family members before leaving (Drabek 2018: 79). The media and policy debate about Victoria's controversial 'Stay or Go' evacuation policy emphasised these behaviours.

Disaster preparedness describes a set of measures that minimizes the adverse affects of a hazard including loss of life and property and disruption of livelihoods. Disaster preparedness is achieved partially through readiness measures that expedite emergency response, rehabilitation and recovery and result in rapid, timely and targeted assistance. It is also achieved through community-based approaches and activities that build the capacities of people and communities to cope with and minimize the effects of a disaster on their lives.

A comprehensive disaster preparedness strategy would therefore include the following elements:

1. Hazard, risk and vulnerability assessments	2. Response mechanism and strategies	3. Preparedness plans
4. Coordination	5. Information management	6. Early warning system
7. Resource mobilisation	8. Public education, training, and rehearsals	9. Community-Based disaster preparedness

The ninth element, "Community based disaster preparedness" (CBDP), should not be seen as a measure distinct from the other elements. Rather, CBDP is a process that encompasses and incorporates the first eight elements into a locally appropriate and locally "owned" strategy for disaster preparedness and risk reduction. This section will discuss aspect of the first eight elements. Section 5 provides the rationale for and examples of community-based disaster preparedness.

Hazard, risk and vulnerability assessment

All planning and implementation of disaster preparedness measures should be based on an assessment and prioritization of the hazards and risks that people face, as well as their ability or inability to cope with and withstand the effects of those hazards. This assessment should:

- Identify the characteristics, frequency and potential severity of the hazards a community faces.
- Identify the particular geographical areas and communities that are most susceptible and vulnerable to those hazards.
- Identify the main sectors of a community (population, infrastructure, housing, services, etc.) that would be affected by a specific type of hazard and anticipate how they might be affected.
- Assess the ability of those sectors to withstand and cope with the effects of hazardous phenomena.

Response mechanisms and strategies

There are many preparedness mechanisms and strategies that will strengthen and increase the effectiveness of an emergency response. These include development or formation of:

- Evacuation procedures (including how to disseminate these procedures to the public)
- Search and rescue teams (including plans for training them)
- Assessment teams (including plans for training them)
- An assessment process and information priorities for an emergency response.
- Measures to activate special installations, such as emergency or mobile hospital facilities.
- Procedures for activating distribution systems
- Preparations for emergency reception centres and shelters
- Procedures for activating emergency programs for airports, harbours and land transport
- Preparations for storing or making arrangement for rapid acquisition of emergency relief supplies and equipment.

The module “Preparedness Planning” covers these measures and the following in more details.

Preparedness planning

The concept of preparedness planning is very important for those involved in disaster management. During an actual emergency, quick and effective action is required. This action often depends on having made and implemented preparedness plans. If appropriate action is not taken or if the response is delayed, lives may be needlessly lost. In a preliminary plan, even though the details of a disaster remain uncertain, you can identify emergency shelter sites, plan and publicize evacuation routes, identify emergency water sources, determine chains of command and communication procedures, train response personnel and educate people about what to do in case of an emergency. All of these measures will go a long way to improving the quality, timing and effectiveness of the response to a disaster.

Disaster preparedness planning involves identifying organizational resources, determining roles and responsibilities, developing policies and procedures and planning preparedness activities aimed at ensuring timely disaster preparation and effective emergency response. The actual planning process is preliminary in nature and is performed in a state of uncertainty until an actual emergency or disaster occurs. The aim of preparedness planning is to identify assignments and specific activities covering organizational and technical issues to ensure that response systems function successfully in the event of a disaster. The ultimate objective is not to write a plan but to stimulate on-going interaction between parties, which may result in written, usable agreements. The written plan is an instrument, but not the main goal of the planning process. Annex 2 provides a sample outline of a National Society disaster preparedness plan.

Coordination

National Society plans ideally should be coordinated with the plans and intentions of other agencies and organizations. Effective disaster response requires mutual trust and coordination of efforts and resources among the many agencies and people involved in emergency response – including the affected



local population and local community based organizations, Civil Defence and government emergency structures, fire brigades, health departments and clinics, Red Crescent / Red Cross Societies, international agencies, NGOs and others.

Information management

Disaster preparedness and response depend on gathering, analysing and acting on timely and accurate information before (hazard and early warning information), during (disaster needs assessment) and after disasters (progress of post-disaster recovery). This requires that National Societies pre-determine what information they need, how it will be collected, who will collect it, who will analyse it and how it will be integrated into a timely decision making process.

Early warning systems

The purpose of early warning system is to detect, forecast, and when necessary, issue alerts related to impending hazard events. In order to fulfil a risk reduction function, however, early warning needs to be supported by information about the actual and potential risks that a hazard poses, as well as the measures people can take to prepare for and mitigate its adverse impacts. Early warning information needs to be communicated in such a way that facilitates decision making and timely action of response organizations and vulnerable groups (Maskrey 2017). Early warning information comes from a number of sources: e.g. meteorological offices; Ministries of Health (for example, disease outbreaks) and Agriculture (for example, crop forecasts); local and indigenous sources; media sources and increasingly from Internet early warning services.

Resource mobilization

National Societies should develop strategies, agreements and procedures for mobilizing and acquiring emergency funds, supplies and equipment in the event of a disaster. A preparedness plan should spell out the policies for acquisition and disbursement of funds, use of outside equipment and services, and emergency funding strategies. Well before a disaster occurs, National Societies should establish procedures for activating the appeals process for requesting funding support from National Society headquarters, government and Federation funds. International relief appeals are made through the International Federation by the affected country's National Society to the Secretariat. This appeal should follow closely the terms in "The Federation Appeal Format," found in the section "Emergency Relief Appeals," of the International Federation's Handbook for Delegates.

Public education, training and rehearsals

Disaster preparedness must be supported by public education campaigns, training of response teams and rehearsals of emergency response scenarios. The aim of public awareness and education programmes is to promote an informed, alert and self-reliant community, capable of playing its full part in support of and in cooperation with government officials and others responsible for disaster management activities. An essential part of a disaster preparedness plan is the education of those who may be threatened by a disaster. Although television, radio and printed media will never replace the impact of direct instructional, sensitively designed and projected messages can provide a useful supplement to the overall process.

As the preparedness plan is being developed, and upon completion, it is important to rehearse its major elements. Rehearsals invariably expose gaps that otherwise remain overlooked. Rehearsals are most effective when they are system wide and engage as many of the disaster response players as possible. Rehearsals also keep the plans fresh, during extended periods of time when no disaster strikes. Rehearsals might simulate search and rescue operations, first aid provision, response or needs assessment, coordination meetings between major organizational players and population leaders, relief transport and logistics, and many other aspects of an emergency response.



Community-based disaster preparedness

Disaster preparedness and response are not solely the work of experts and emergency responders from National Societies and government disaster organizations. Local volunteers, citizens, organizations and business have an active and important role to play before, during and after major emergencies and disasters. Therefore, as stated earlier, Community-based disaster preparedness (CBDP) is a process that seeks to develop and implement a locally appropriate and locally “owned” strategy for disaster preparedness and risk reduction.

Local populations in disaster-stricken areas are the first to respond to a disaster. They are usually involved in search and rescue activities as well as in providing emergency treatment and relief to their families, friends and neighbours. National Societies, ideally in partnership with other community organizations and networks, can play an important role in improving the skills and knowledge of these “spontaneous” disaster responders by providing them with education and training in preparedness measures, basic rescue techniques, and first aid and emergency treatment.

Sendaydiego (2020) conducted a study on Student's involvement in disaster preparedness in the City of Dagupan. He used 300 teachers and 900 students randomly taken. He found out that the students are moderately involved in the disaster preparedness activities, moderately trained, and least informed in the value of the skills needed incidents. He recommends that teachers should integrate the importance of involving themselves in disaster activities and the implementation of the proposed action plan should be strictly imposed to enhance their involvement.

Theoretical Framework

This study is anchored on the theory of strategic management which is a combination of strategy in formulation, implementation and evaluation of policies and plans to achieve the objectives. The Strategic Management Theory has systems perspective, contingency approach and information technology approach. This theory can be applicable in managing disaster as it helps in the conceptualization of principles, plan, and management actions before, during, and after disaster. In this way it could be useful in minimizing casualties, avoiding destruction of properties and preventing the loss of lives.

Another theory is the survival-based theory which centers on the concept that an organization needs to continuously adapt to its environment in order to survive. It emphasizes the importance of the human elements in the strategic development of organizations. In addition, it stresses the underlying important relationship between the shareholders or people and the agents or leaders in ensuring the success of the organizations.

It delves on the idea that organizations or the different agencies of the government and non-government organizations should develop managerial strategies based on the situation and condition they are experiencing. In short, during the process of strategy formulation, implementation and evaluation, this theory is guided by the managerial decision particularly in dealing with disasters that destroy land, properties and lives of people.

Conceptual Framework

The schematic presentation of this study is illustrated in Input-Process-Output model. The input consists of the extent of preparedness of the public elementary schools in Aguilar District I along organizations, facilities and equipment, as well as the seriousness of the problems met by the public elementary school teachers, school heads and pupils along the three areas.

The second box is the process. It included the analysis of the findings on the extent of disaster preparedness and resilience, problems met by the teachers and school head along the three areas, and the formulation of the action plan.

The last box is the output. It consists of the proposed action plan.

Paradigm of the Study

Figure I illustrates the operational paradigm of this study. It contains the input, process and output.

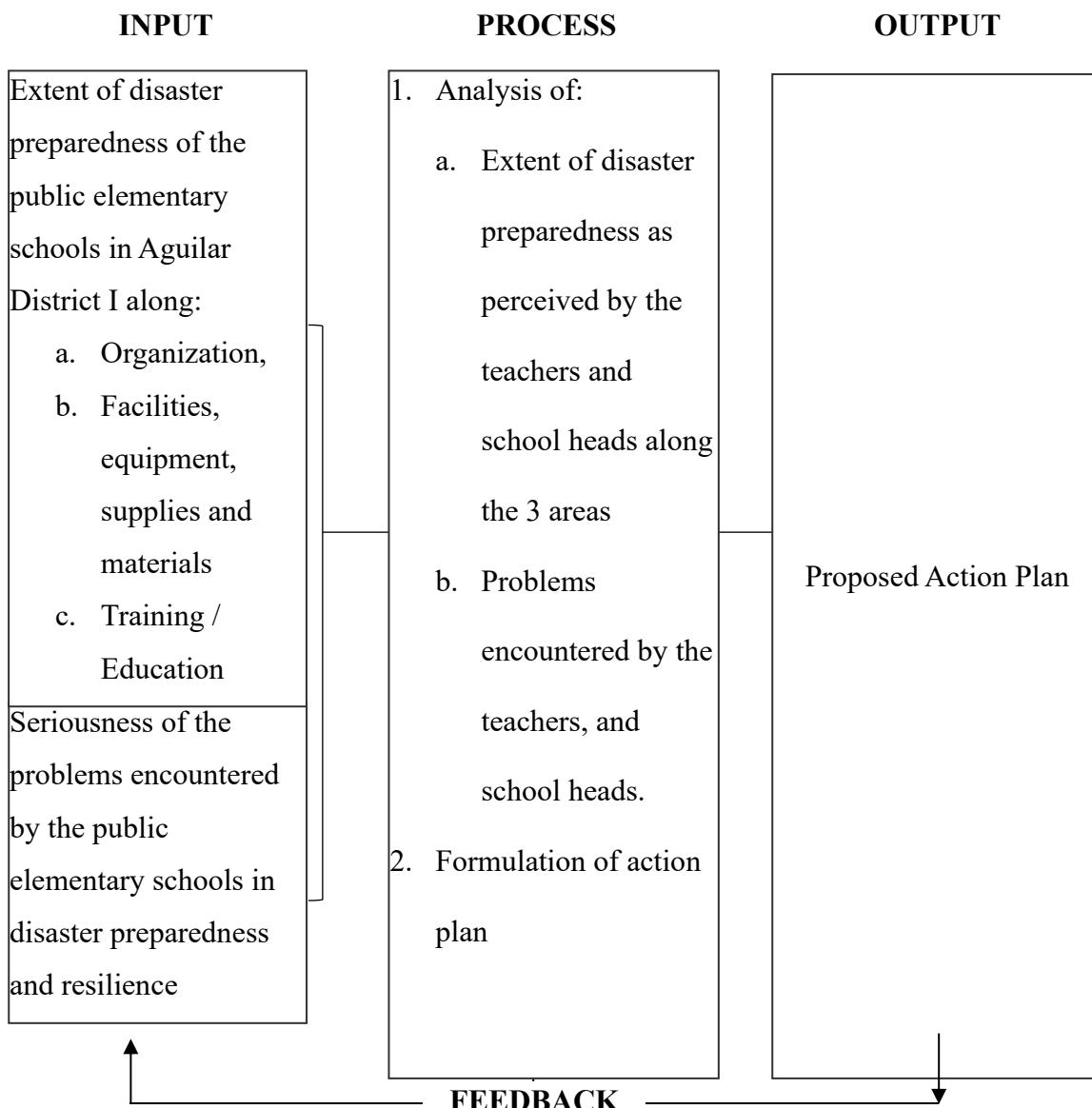


FIGURE 1. Paradigm of the Study

Statement of the Problem

This study was conducted to determine the level of disaster preparedness of public elementary schools in Aguilar District I Division I of Pangasinan during the school year 2024 – 2025.

Specifically it sought to answer the following questions:

1. What is the extent of disaster preparedness and resilience of the public elementary schools in Aguilar District I as perceived by the teachers and school heads along:
 - a. Organization,
 - b. Facilities, equipment, materials and supplies,
 - c. Training and education?
2. Are there significant differences in the perception of the teachers and school heads on the extent of disaster preparedness and resilience of the public elementary schools along the above mentioned areas?
3. What is the seriousness of the problems encountered by the public elementary schools in disaster preparedness as perceived by the teachers and the school heads?
4. Are there significant differences in the perception of the teachers and the school heads on the seriousness of problems?
5. What plan of action can be proposed to improve disaster preparedness of the schools?

Research Hypothesis

The following hypothesis were tested at .05 level of significance:

1. There are no significant differences on the perceptions of the teachers and school heads on the extent of disaster preparedness of the public elementary schools along the above mentioned areas.
2. There are no significant differences in the perception of the teachers and the school heads on the seriousness of the problems encountered.

METHODS

This chapter presents the research design, locale and population of the study, data gathering tool, data gathering procedures, treatment of the data and statistical tools used in the study.

Research Design

Descriptive method of research was used in this study. It is an organized attempt to report, analyze and interpret the present status of anything, group of persons, set of conditions, or any other phenomenon that a researcher wishes to study Servilla (2009)

It is deemed appropriate for the study because it simply tried to determine status of disaster preparedness of the elementary schools of Aguilar, District I and on the basis of the findings, propose an action plan to where the disaster preparedness of the school thereafter.

Locale and Population of the Study

The study was conducted in all the 17 public elementary schools in Aguilar Congressional District II, Division of Pangasinan I. The teacher-respondents and the school heads were taken in complete enumeration.

Table 1 presents the distribution of respondents by school.

Table 1
Distribution of Respondents by Schools

Schools	Number of Teachers	School Heads
1. Aguilar Integrated School	17	1
2. Anonang Elementary School	14	1

3. Baybay Elementary School	13	1
4. Bacacliw Elementary School	13	1
5. Bocboc East Elementary School	13	1
6. Bocboc West Elementary School	12	1
7. Buer-Bayaosas Elementary School	15	1
8. Calsib Elementary School	14	1
9. Casagatan Elementary School	12	1
10. Donia Catalina Elementary School	12	1
11. Manlocboc Elementary School	13	1
12. Mapita Elementary School	12	1
13. Ninoy Elementary School	13	1
14. Panacol Elementary School	13	1
15. Pogonsili Elementary School	13	1
16. Sipitan Elementary School	12	1
17. Tampac Integrated School	15	1
Total	256	17

Data Gathering Instrument

The questionnaire was the main instrument used in gathering the data from the respondents. It was adopted from the study of Catchalian in her study “Disaster preparedness of Grade 7 students in Dagupan City”. It is composed of the following parts:

Part I is on the extent of disaster preparedness of public elementary schools of Aguilar Congressional District II in terms of organization facilities and equipment, supplies and materials.

Part II is on the degree of seriousness of the problems encountered by the public elementary school teachers.

Data Gathering Procedures

The researcher first solicited the permission of the Division Schools Superintendent to conduct the study and administer the questionnaire to the schools covered in this study. Likewise letters of permission from the District Supervisor of Aguilar District I and the School heads covered in this study were prepared and secured.

After the permission was granted the researcher prepared copies of the questionnaire and administered them with the help of some teachers known to her from the 17 schools covered in the study.

The researcher took her three weeks to administer and retrieve the questionnaire due to the distances of the schools from one another and the availability of the respondents. A 100% retrieval of the questionnaire was attained.

Statistical Treatment of Data

Statistical Methods were employed to aid the researcher in the analysis and interpretation of data.

The weighted mean was used to determine the extent of preparedness of the public elementary schools. The sets of data were given their proper importance as shown by the following point values, statistical range and descriptive equivalent rating:

Point Value	Statistical Range	Descriptive Rating
3	2.34 – 3.00	Highly prepared (HP)
2	1.67 – 2.33	Moderately prepared (MP)
1	1.00 – 1.66	Least prepared (LP0)

The formula is getting the weighted mean is as follows:

$$WM = \frac{\sum fxV}{N}$$

Where:

WM	=	Weighted Mean
$\sum fx$	=	Sum of frequency per item
V	=	Point value
N	=	Total number of respondents

The t-test was used to determine the existence of significant difference in the perceptions of the respondents on the extent of disaster preparedness and seriousness of problems encountered.

To determine the degree of seriousness of the problems, weighted mean with the following values and scales were used.

Point Value	Percentage	Descriptive Equivalent
3	2.34 – 3.00	Very Serious (VS)
2	1.67 – 2.33	Moderately Serious (MS)
1	1.00 – 1.66	Least Serious (LS)

RESULTS AND DISCUSSION

This chapter presents analyses and interprets data gathered in the light of problems presented.

Extent of Preparedness of Public Elementary Schools as perceived by the respondents along the three (3) dimensions.

Organization

Table 2 presents the extent of preparedness of public elementary school as perceived by the respondents along organization.

Table 2 shows that out of the ten (10) indicators along organization, there were three (3) where the school were perceived to be “least prepared” and seven (7) where they were “moderately prepared”.

The areas where they were least prepared were: “there is a presence of organization of medical/first aid team (1.53) there is a well-organized volunteer group to extent support anytime needed (1.59); and “proper linkage with media, TV or radio (1.64). These findings indicated that the school did not have medical/first aid team which can cater to the needs of those who may be hurt, injured or wounded during disasters. Similarly, they also lack volunteer groups ready to render assistance to those who may be adversely affected. Finally, there was tie-up, connection, with media for purposes of providing updates and information when disaster occurs.

Table 2
Extent of preparedness of Public Elementary Schools as Perceived by the Respondents Along Organization

Organization	Teachers		School Administrators		Overall Average Weighted Mean	
	AWM	DE	AWM	DE	AWM	DE
1. The public elementary schools have volunteer group to respond during the disaster (flood, typhoon,	1.66	LP	1.67	MP	1.67	MH

earthquake, fire).						
2. The youth are organized and trained for any disaster to come.	1.63	LP	1.70	MP	1.67	MH
3. There is a presence of organization of medical team/first aid.	1.50	LP	1.59	LP	1.54	LP
4. Rescue brigade quickly responds to any disaster situation.	1.70	MP	1.72	MP	1.71	MP
5. There is a well organized volunteer relief group to extend support anytime needed.	1.62	LP	1.65	LP	1.64	LP
6. The different stakeholders are organized to assist schools for training and safety.	1.70	MP	1.73	MP	1.72	MP
7. There is a presence of information agency group.	1.61	LP	1.62	LP	1.62	MP
8. Proper group for linkages with media (radio and TV)	1.65	LP	1.67	MP	1.66	LP
9. Proper group for coordination with Red Cross for info/awareness etc.	1.71	MP	1.72	MP	1.72	MP
10. There is a system device for and with PAGASA and WASR Team.	1.75	MP	1.76	MP	1.76	MP
Overall Weighted Mean	1.65	LP	1.68	MP	1.67	MP

The seven (7) areas where they were “moderately prepared” were “Rescue brigades quickly respond to any disaster situation (1.71); “the different stakeholders are organized to assist schools for training and safety (1.89); the yours are organized and trained for any disaster to come (1.88); there is a pressure of information agency group (1.84); proper group coordination with Red Cross for info/answers, etc. (1.69); there is a system device for and with PAGASA and WASR team (1.76) and the public elementary schools have volunteer groups to respond during disasters (1.64).

Data gathered reveal that there are certain provision for volunteer groups to respond and render support and assistance to victims of disasters, and for coordination with information agencies, the Red Cross and with Pag-asa and WASR. However, it is noted that the permission are on a limited schools. As such, they may not be sufficient to meet the exigencies required in case disaster occur.

A final look on the table shows the overall extent of preparedness of the schools along organization is “moderate”. This is evidenced by an overall weighted mean of 1.67. This indicates that the elementary schools in Aguilar District I lack the needed organizational set up essential to disaster preparedness. As such, they may not be fully ready to meet the exigencies and provide essential services in case disasters occur.

Facilities, Equipment, Materials and Supplies

Table 3 presents the extent of preparedness of public elementary schools along facilities, equipment, materials and supplies.

Table 3 shows that there are 42 items listed with facilities, equipment, materials and supplies. Out of the 42 items, there are seven (7) items where the respondents indicates they are “least prepared; 29 items” where they are “moderately prepared” and six (6) items where they are “highly prepared”.

Table 3
Extent of preparedness of Public Elementary Schools Along Facilities, Equipment, Materials and Supplies

Facilities, Equipment, Materials and Supplies	Teachers		School Administrators		Overall Average Weighted Mean	
	AWM	DE	AWM	DE	AWM	DE
1. Disaster supply kit	1.69	MP	1.70	MP	1.83	MP
2. First aid supply tools/kit/materials	1.70	MP	1.70	MP	1.68	LP
3. Key documents	1.50	LP	1.55	LP	1.53	LP
4. Evacuation center/routes and exits	1.80	MP	1.82	MP	1.79	MP
5. Shelter / tent	1.68	MP	1.69	MP	1.72	MP
6. Protection system materials	1.65	LP	1.66	LP	1.69	LP
7. Emergency power generators	1.64	LP	1.65	LP	1.70	LP
8. Hazard warning communication	1.70	MP	1.72	MP	1.77	MP
9. Evacuation plan	1.70	MP	1.72	MP	2.04	MP
10. Transportation system	1.61	LP	1.63	LP	1.93	MP
11. Food supply	1.69	MP	1.70	MP	2.01	MP
12. Flashlight (lighting materials)	1.85	MP	1.84	MP	2.14	MP
13. Rubber Boat (Inflatable rubber boat)	1.70	MP	1.72	MP	2.03	MP
14. Rescue truck	1.90	MP	1.90	MP	1.85	MP
15. Fire truck	1.66	LP	1.67	LP	1.81	MP
16. Alarm device	1.71	MP	1.72	MP	1.86	MP
17. Ambulance	2.80	HP	2.82	HP	2.74	HP
18. Emergency medical center	1.90	MP	1.92	MP	1.72	MP
19. Oxygen tank	1.40	LP	1.45	LP	1.43	LP
20. Water supply	1.70	MP	1.88	MP	2.12	MP
21. Drum with water / sand (fire)	1.89	MP	1.52	LP	2.02	MP
22. Fire extinguisher	1.49	LP	1.53	LP	1.58	LP
23. Foam solution (fire)	1.48	LP	2.73	HP	1.88	MP
24. Helmet	2.70	HP	2.72	HP	2.50	MP
25. Hammer	2.69	HP	2.70	HP	2.51	MP
26. Insulator boots	2.70	HP	2.73	HP	2.22	MP
27. Collapsible ladder	1.75	MP	1.76	LP	1.88	MP
28. Shovel	1.30	LP	1.40	LP	1.81	MP
29. Battery operated radio	1.60	LP	1.62	LP	1.79	MP
30. Whistle	1.92	MP	1.95	MP	2.25	MP
31. Paddle	2.78	HP	2.80	HP	2.74	HP
32. Clear gun	1.65	LP	1.66	LP	1.58	LP
33. Traffic cones	1.52	LP	1.58	LP	1.56	LP
34. Life jacket	2.01	MP	2.03	HP	1.90	LP
35. Rope / cable wire	2.95	HP	2.96	HP	2.80	HP
36. Water alarm device	2.70	HP	2.72	HP	2.31	MP
37. Wheelchair	2.95	HP	2.89	HP	1.66	LP
38. Axe	1.95	MP	1.93	MP	1.93	MP

39. Telephone / cellphone	1.30	LP	1.40	LP	1.36	LP
40. Flashlight	1.78	MP	1.76	MP	1.76	MP
41. Training room	1.55	LP	1.58	LP	1.57	LP
42. Clinic	1.60	LP	1.61	LP	1.61	LP
Overall Weighted Mean	1.89	MP	1.93	MP	1.95	MP

The facilities, equipment, materials and supplies for which the schools are “least prepared” are: key documents (1.53), oxygen tank (1.43) clear green (1.58), traffic cons (1.56), telephone/cellphones (1.36), training room (1.57) and clinic (1.61). This means these equipment, facilities and materials are lacking in the different schools.

The facilities, equipment, materials and supplies for which the schools are “moderately prepared” are: disaster supply kit (1.83), food and supply tool kits/materials (1.68), evacuation center/routs/exits (1.79), shelter/tents (1.72), protection system materials (1.69), emergency power generator (1.70), hazard warning communication (1.77), evacuation plan (2.04) transportation system (1.93), food supply (2.01), flashlight (2.14), rubber boat (2.03), release truck (1.85), fire truck (1.81), alarm device (1.86), emerging medical center (1.72), water supply (2.12), drum with sand (2.02), foam solution (1.88), insular boots (2.22), collapsible ladder (1.81), shovel (1.81), insular boots (2.22), collapsible ladder (1.81), shovel (1.81), battery operated radio (1.79), whistle (2.21), water alarm device (2.31), axe (1.93), and flashlight (1.76).

The facilities, equipment, materials and supplies for which the schools, are “highly prepared” are: ambulance (2.34), helmet (2.50), hammer (2.51), paddle (2.74), rope/cable wire (2.88), and wheelchair (2.91).

Taken as a whole, the schools in Aguilar District I are only “moderately prepared” in terms of facilities, equipment, materials and supplies. This is evidence by a weighted mean of 1.95. This means that many of the facilities and equipment needed to meet the challenges, problems and concerns in case disasters occur are either not available or are available on a limited scale. Thus, they may not be sufficient to cater to the exercises of disaster which occur.

Training and Education

Table 4 presents the extent of preparedness of training and education.

Table 4
Extent of Preparedness of Public Elementary School
Along Training and Education

Training, Knowledge and Education	Teachers		School Administrators		Overall Average Weighted Mean	
	AWM	DE	AWM	DE	AWM	DE
1. Underwater search and rescue training	1.65	LP	1.66	LP	1.65	LP
2. Mobility of victims	2.50	HP	2.52	HP	2.73	HP
3. First aid training	2.60	HP	2.61	HP	2.56	HP
4. Relief operation and distribution	1.90	MP	1.92	MP	2.06	MP
5. Training on fire safety and preparedness	2.50	HP	2.52	HP	2.61	HP
6. Disaster drills (fire, earthquake, typhoon and flood)	2.60	HP	2.63	HP	2.69	HP
7. Training for flood evacuation	2.70	HP	2.73	HP	2.73	HP
8. Communication relay training	1.80	MP	1.85	MP	2.10	MP
9. Training on earthquake safety (before, during, after)	2.50	HP	2.55	HP	2.60	HP
10. Preparation of emergency plan	2.10	MP	2.15	MP	2.35	HP

organization						
Overall Weighted Mean	2.29	MP	2.31	HP	2.37	HP

It can be seen from the table that among the ten (10) indicators along training and education, there is one (1) where the respondents indicated that the schools are “less prepared”, two (2) where they are “moderately prepared” and seven (7) where they are “highly prepared”.

The area where they are “less prepared” is along: underwater search and rescue training (1.65). They are “moderately prepared” in relief operation and distribution (2.06) and “communication relay training (2.10). They are “highly prepared” in: training for flood evacuation (2.73), training on earthquake safety (2.60), disaster drills (2.69), first aid training (2.56), training on fire safety and preparedness (2.61), mobility of victims (2.37), and preparation of emergency plan organization.

From a total perspective, based on the perception of the respondents, the schools are “highly prepared” along training and education. This is shown by the overall weighted mean of 2.37.

While it is noted that they lack training in underwater search and rescue, and are not fully prepared when it comes to relief operation and distribution and communication relay training, they are equipped with sufficient knowledge and training along first aid, fire safety, disaster drills in fire, earthquake, typhoon and flood, and preparation of emergency plan organization. As such, they are deemed fully prepared in terms of knowing what they should do in case of disasters.

Summary of the Perceptions of the Respondents

Table 5 presents the summary of perceptions along the three (3) dimensions.

Table 5
Summary of Perception on Extent of Preparedness
Along Three (3) Dimension

Dimension	Teachers		School Administrators		Overall Average Weighted Mean	
	AWM	DE	AWM	DE	AWM	DE
1. Organization	1.65	LP	1.68	MP	1.74	MP
2. Facilities / Equipment Materials / Supplies	1.89	MP	1.93	MP	1.95	MP
3. Training / Education, Knowledge	2.29	MP	2.31	HP	2.37	HP
Total	1.94	MP	1.97	MP	2.02	MP

The table shows that the extent of disaster preparedness of the schools in Aguilar District I is “moderate” in all the three (3) dimensions. This is shown by the overall weighted mean of 1.96 by teachers 1.97 by heads and 2.15 by students. The total weighted mean of 2.02 by all the respondents implies that all the respondents believe that their schools are not fully prepared in terms of organization, facilities, equipment, materials and supplies and training and education to meet and cater for the problems and concerns that disasters may cause in their schools.

It may be inferred then that the schools in Aguilar Congressional District II, have style a lot of things to prepare and do if they want to be fully ready for any disaster that may happen.

Differences in the Perception of the Respondents on the Extent of Disaster Preparedness of the Schools

Table 6 shows the comparison in the perceptions of the respondents on the extent of disaster preparedness of the schools.

Table 6
Comparison in the Perceptions of the Respondents on the Extent of Disaster Preparedness of the Schools

Dimension	Teachers		School Administrators	
	AWM	DE	AWM	DE
1. Organization	1.65	LP	1.68	MP
2. Facilities / Equipment Materials / Supplies	1.89	MP	1.93	MP
3. Training / Education, Knowledge	2.29	MP	2.31	HP

tb @ df3 = 2.160 Result tc = 0.345

The findings show that the computed T is lesser than the tabular value at .05 level of significance. This means that the null hypothesis is accepted and thus it can be inferred that there are no significant differences in the perceptions of the three groups of respondents on the extent of disaster preparedness of schools in Aguilar District I.

This implies that the perception of the respondents are similar and agree with one another.

Seriousness of the Problems Encountered

Table 7 presents the seriousness of problems as perceived by the teachers and school heads.

Data in Table 7 reveals that there are six (6) out of the 14 problems perceived as "very serious" by the teacher and administrators. Foremost of them are: inadequate food, medical/water supply (2.90), inavailability of transportation (2.70), inadequate evacuation centers (2.70) and lack of support for the community/LGU; NGO (2.60), and poor communication facilities (2.59).

Table 7
Seriousness of the Problems Encountered as Perceived
by the Teachers and School Heads

Seriousness of the Problems Encountered	AWM	DE	RANK
1. Severity of disaster that prevents people to protect themselves.	2.40	VS	6
2. In accessible of support from the com. /LGU's, NGO's	2.60	VS	7
3. Poor communication facilities	2.59	VS	5
4. Inability of transportation	2.70	VS	2.5
5. Lack of support of all kinds	1.69	MS	9.5
6. Late or inadequate relief distribution from DSWD / or Government organization	1.68	MS	11
7. Inadequate evacuation centers	2.70	VS	2.5
8. Late response of the schools community etc. on disaster	1.80	MS	7
9. Lack of training / preparation on disaster response	1.69	MS	9.5
10. Unavailability of security forces in the school	1.70	MS	8
11. Inadequate food, medical / water supply	2.90	VS	1
12. Lack of education of teachers and student of all matters on disaster	1.65	LS	12.5
13. Stubbornness of students / delayed reaction	1.60	LS	14
14. Indifferent attitude of schools	1.65	LS	12.5
Overall Weighted Mean	2.09	MS	

The same table shows that there are five (5) moderately serious problems which include the following late response of the schools community etc., on disaster (1.80), lack of support for government agencies (1.69), lack or inadequate relief distribution (1.68); lack of training/preparedness on disaster response (1.69) and unavailability of security focus in the school.

While there are three (3) less serious problems, it is noted that the overall seriousness of problems encountered by teachers and school heads are “moderate”. This mean that there are conditions or situations that require attention if the school work to be fully preparedness for the occurrence of disasters.

Differences between the perception of the teachers/school heads and students on the seriousness of the problem.

Table 8 presents the comparison between the perception of teachers/school heads and pupils on the seriousness of the problems.

**Table 8
Comparison Between the Perception of the Teachers/School Heads on the Seriousness of the Problems**

Problems	Teachers		School Heads	
	AWM	DE	AWM	DE
1. Severity of disaster that prevents people to protect themselves.	2.40	VS	2.34	VS
2. In accessible of support from the com. /LGU's, NGO's	2.60	VS	2.30	MS
3. Poor communication facilities	2.59	VS	2.35	VS
4. Inability of transportation	2.70	VS	2.40	VS
5. Lack of support of all kinds	1.69	MS	2.30	MS
6. Late or inadequate relief distribution from DSWD / or Government organization	1.68	MS	2.33	MS
7. Inadequate evacuation centers	2.70	VS	2.36	VS
8. Late response of the schools community etc. on disaster	1.80	MS	2.32	MS
9. Lack of training / preparation on disaster response	1.69	MS	1.60	LS
10. Unavailability of security forces in the school	1.70	MS	2.35	VS
11. Inadequate food, medical / water supply	2.90	VS	2.45	VS
12. Lack of education of teachers and student of all matters on disaster	1.65	LS	1.80	MS
13. Stubbornness of students / delayed reaction	1.60	LS	1.70	MS
14. Indifferent attitude of schools	1.60	LS	1.45	LS
Overall Weighted Mean	2.10	MS	2.13	MS

tb @ df₁₃ = 2.160

Result tc = 0.345; tb @ 0.05, df₁₃ = 2.160

Findings tc < tb

Decision Accept the null hypothesis

Result: There is no significant difference

The table revealed that there is no significant difference between the perceptions of the teachers/school heads and pupils on the seriousness of the problems encountered by the public elementary schools in Aguilar District I in disaster preparedness because the computed t is lesser than the tabular value at .05 level of significance. The decision is to accept the null hypothesis. This means both the

teachers/school heads and pupils agree with each other on the level of seriousness of problems met during disasters.

Proposed Action Plan Along Disaster Preparedness

Based on the results of the analysis of the extent of disaster preparedness of the public elementary schools along organization, facilities and equipment, supplies and materials, as well as the problems met by the schools, the proposed plan of action is designed.

The proposed action plan has the following components.

1. Areas of Concern
2. Targets / Objectives
3. Activities / Strategies
4. Time Frame
5. Persons / Agencies Involved
6. Budget Estimate
7. Success Indicators

Thus, the proposed action is presented in tabular form in the following pages.

Proposed Action Plan on Disaster Preparedness of Public Elementary Schools in Aguilar Congressional District II Along Organization, Facilities, Equipment, Supplies and Materials, and Problems Encountered by the Schools

Areas of Concern	Targets	Activities / Strategies	Time Frame	Persons / Agencies Involved	Budget Estimate	Success Indicator
A. Disaster Preparedness along evacuation center 1. Organization	To organize themselves into volunteer groups or different disaster organizations.	1. Formation of volunteer groups for fire, earthquake, flood, typhoon, etc. 2. Organization medical group 3. Formation of relief volunteer group 4.	January to March Year round Year round as is occurs	RRMMC DSWD Fire department Medical Health Unit Municipal Council Barangay Council Teachers Organization Pupil Organization	P50,000	At least 75% of the schools shall have organized and from different group and organization.

		Organization of information agency group 5. Grouping / Organization of media / linkage group				
2. Facilities / Equipment, Materials / Supplies	<ol style="list-style-type: none"> 1. To prepare the necessary documents 2. Devise the necessary protection system, materials, and transportation system. 3. Acquire / use and maintain the necessary equipment , facilities, nature and supplies such as ladder, clear gun, water alarm, device clinic 	<ol style="list-style-type: none"> 1. Meeting with the teachers, parents / community to discuss the necessary plan. 2. Solicitation of protection system materials and devise transportation system. 3. Donation 4. Present ation of the plan to the different LGU's nad NGO's for assistance and procureme nt of the materials supplies needed and equipment like rescue truck, fire truck ready for fire 	June of the year onward	LGUs NGOs NDRMM C WASR Red Cross Fire Department Hospitals DSWD Alumni Public Highway	P100,000	At least 75% of the facilities, equipment , supplies and materials shall have been achieved a year.

		department				
3. Training education, Knowledge	To conduct train, educate the teachers, children, parents and community as disaster preparedness before, during and after the disaster.	Hold Seminar training, workdays on disaster preparedness in school, community levels Invite lecturer on disaster preparedness Demonstration on what to do before-during-after the disaster Holds symposium Read books, magazines in disaster View some CD's, listen to radio and watch in disaster / rescue	Year round particularly at the start of the year.	NDRMC Medical group for first aid etc. Fire department	P50,000	At least 80 percent of the schools have received disaster preparedness seminar, training and education.
B. Problems encountered 1. Severity or gravity of disaster 2. Inaccessibility of support from LGUs and GOs 3. Poor communication facilities 4. Inavailability of	To respond to the severity of disaster To establish constant linkage and relation with the LGUs and GOs Create specific communication zone and make it available to people	Holds conference lecture meetings and discuss on what to do in a critical situation Coordination with LGUs, NGOs, DSWD, BFP, PNP, AFP, PNRC, MDRRMC, Barangay Officials	Year round Year round Before-during-after the disaster Year round as it occurs			At least 80% of the problems shall have been solved.

5. Inadequate food, medical water supplies	Provide schools and barangay disaster transportation facilities	Coordinate with the different government agencies like barangay-municipal levels for transportation medical, food and water supplies and evacuation centers				
6. Inadequate evacuation center	Coordinate with the private and public sectors for ready, food, medical and water supplies Coordinate with the different disaster organization particularly on evacuation center.					

Summary

This study was conducted to determine the extent of disaster preparedness of the public elementary schools in Aguilar Congressional District II along organization, facilities, equipment, materials and supplies, and training and education. It also sought to discover the seriousness of the problems the schools encountered during disaster preparedness.

Findings

The following are the salient findings of the study.

1. The extent of disaster preparedness of the elementary school of Aguilar District I is moderate along organization, facilities, equipment, materials and supplies and high along education and training.
2. There is no significant difference in the perception of the teachers and school heads on the extent of disaster preparedness of the schools.
3. The degree of seriousness of problems encountered by the respondents in disaster preparedness is moderate.
4. There are no significant difference between perceptions of the teachers/school heads and people on the seriousness of problems encountered.
5. A plan of action to enhance disaster preparedness among the schools in Aguilar Congressional District II has been formulated.



Conclusion

Based from the findings of the study, the following conclusions were gathered:

1. The public elementary schools of Aguilar District I do not yet have the needed organizational setup, are not yet equipped with sufficient equipment, facilities, materials and supplies and are not yet fully educated and trained in the various aspects of disaster preparedness.
2. The teacher and school heads have the same perceptions of the extent of disaster preparedness of the schools.
3. The problems encountered by the teachers and school heads hinder and/prevent them from responding properly to disasters.
4. The teachers and school heads agree on the degree of seriousness of the problems encountered.
5. The action plan to enhance the disaster preparedness of the school in Aguilar Congressional District II was prepared.

Recommendation

1. The proposed plan of action to enhance disaster preparedness of schools be presented to the different school heads for consideration and adaption.
2. All schools in the District of Aguilar should work together on the organized set-up with well-equipped facilities materials.
3. All schools' personnel and community teacher heads, learners, barangay officials and folks should be involved in the different activities for disaster preparedness.
4. All schools and communities must show their outmost support for achieving high level for disaster preparedness of the schools.
5. Similar research can be conducted by any interested person to enhance the findings of the present study.

REFERENCES

Bazerman, Max (2014). Predictable Surprises During Disaster Management Problem. Journalist Organization. U.S.A.

Beck, Ulrich (2019). Risk Society. New York: Harper and Row Publisher, Inc.

Downie, N.M. and Health, R. W. (2014). Basic Statistical Methods. New York: Harper and Row Publisher, Inc.

Drabek, Thomas B. (2019). A framework for analysing capacities and vulnerabilities. Boulder, Colorado; Westview Press.

Joshi, Nathan B. (2018). Causes of Disaster and Prevention Measures. University Press USA.

Lindell and Perry (2015). Organizational Sociology and Emergency Management of Natural Disasters. University Press. U.S.A.

Perrow, John (2017). Communication and Critical Infrastructure During Disasters. Texas University. U.S.A.

Quarentelli (2018). Educational Measurements and Evaluations. Metro Manila: National Bookstore

Sevilla, Consuelo G., et.al. (2017). Research Methods, revised edition. Manila; Rex Bookstore.

Talib (2015). Global Disaster Management Preparedness. CFA Pennsylvania Press U.S.A.

Vaughan, Dianne (2016). Scientific Beaurecratic Approach to Problem Solving During Disaster. Vaughan Press.

Warfield, Jonathan C. Disaster Management Principle, Pennsylvania, University Press (2018)

Woodrow, Peter (2019). Rising from the ashes: Development Strategies in Times of Disaster. Paris, France: UNESCO Press.

Barton, Allen H. Social Organizations Under Stress. Disaster Study No. 17. Disaster Research Group, National Academy of Science, Washington, USA 2018.

Dube, S.C. Development Change and Communications in India. Communication and Change: The Last Ten Years and the Next. Schevasn and Lenver (eds.) University Press in Hawaii: Honolulu, USA 2016.

Gatchalian, Lorna A. (2016). Dagupan Disaster Preparedness of Public Elementary Schools.

Kitao, Abe. Panic No. Shinri. Psychological Study of Paris, Tokyo, Japan: Kodansha.

Onarentelli, E. L. Human Behavior in Disaster. Chicago: Illinois, Research Institute 2016.

Williams, Henry B. Some Function of Communication in Crisis Behavior. Human Organizations 16:2.



2016 Annual Report: Bureau of Fire Protection. CAR

Presidential Decree 2016.

Emergency Assistance Program of the Department of Social Welfare and Development. April 30, 2018.
Constitution Hill, Quezon City.

Excerpts from the Speech of Pres. Rodrigo Duterte during the 2nd National Disaster Management Workshop held at the International Institute for Rural Reconstruction. Silang Cavite on July 2-8, 2019.

Fire Services in Baguio City and Budget.

<http://www.naturaldisasterreduction.com>. United Nation, Disaster Management Preparedness (2016)

Interwork (2020) International Federation of Red Cross and Red Crescent Society Disaster Preparedness in Geneva.

National Disaster Coordinating Council as listed in National Statistics: Philippine Statistical Yearbook.

Pilar, Nestor. Crisis Disaster Management in the Philippines: An Assessment 2022.

Water: Resource and Hazard. Office of the United Nations Disaster Relief Coordination. Geneva, Switzerland. 2017.

Bowman, John F. (2020). Wildfire disaster in Australia.

Fahey, Albert B. (2023) Devastating Bushfires causing large number of fatalities.

Campbell, Johnson C. (2023). Extreme Weather Events in Australia

Banks (2015), Taleb (2017). Saturday Bushfires in Australia.

Baum and Groeling (2020). International Disaster on Event framing and Reportage.

Federal Emergency Management Agency, <http://www.ready.gov/home-fires>

<http://www.achievesolutions.net/acheivesolutions/en/Content.do?contentId=17621>

http://www.floodsmart.gov/floodsmart/pages/preparation_recovery/during_a_flood.jsp

<http://www.wayph.com/what-to-do-before-during-and-after-a-typhoon/>

<http://www.geo.mtu.edu/UPSeis/bda.html>