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Environmental awareness of grade schoolers in the municipality of Zamboanga del Sur, Philippines

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Abstract
The awareness on environmental condition and problems are necessary to render environmental actions. This study serves as a useful undertaking in determining the environmental awareness level of grade schoolers emphasizing the level of vulnerability, adaptation measures, and coping mechanisms. Respondents were the randomly chosen elementary pupils in the five selected schools representing a municipality of Zamboanga del Sur. Standardized checklist was used as the main method to generate data and appropriate statistical tools for the analysis. The study revealed that most of the respondents (62%) were significantly aware on environmental issues like flooding, storm surges, and the changes of temperature during day and night time. Respondents (78-88%) were highly vulnerable to flooding events and variation of temperatures. They considered some coping and adaptation strategies such as to sale livestock (66-93%), get loans from lending institutions, cooperative, and private individuals (68-92%), receive support from family, relatives, friends, and government (54-81%), and engage in small and alternative business (55-87%) when exposed to environmental crisis. The school authorities and teachers should provide timely information about the current environmental condition in the locality to reduce the risks and vulnerabilities of the elementary grade pupils to natural calamities and disasters.

Keywords: Adaptation measures, coping mechanisms, environmental awareness, grade schoolers, vulnerability

1. Introduction
Environmental threats and hazards have contributed alarming risks to humans over many years. It calls for public attention in which Agenda 21 was rooted with emphasis on formal education, public awareness, and training as a process by which human being and societies can reach their fullest potential in the prevention of such risks. Climate change also triggers the issue and becomes prevalent due to abused anthropogenic activities and nature itself. Negative effects, future potentialities of destruction, risks, and vulnerabilities are evident in nature and society and that these existing environmental problems are being widely acknowledged through media, conferences, campaigns, reports, and policies to sort long term solutions (Nagra & Kaur, 2014).

Environmental awareness is a broad connotation which indisputably emphasizes the recognition of environmental problems to mitigate solutions. A study of Oguz *et al.* (2010) [20] revealed respondents' high awareness on environmental problems but argued not an assurance to increase pro-environmental behavior. This says education must be critical for promoting environmental protection and conservation (Nagra, 2010; Nagra & Kaur, 2013) [18, 19] and improving the capacity of people to positive environmental management (Littledyke, 2008) [12] necessary for the development of knowledge, understanding, awareness, skills, attitudes, values, and commitment in the attainment of a better quality of environment and higher quality of life (Sola, 2014) [25]. Academic subjects such as science, life science, geography, agriculture, etc. should be considered because researches claimed their significance in the development of foster environmental awareness (Goldman *et al.*, 2007) [6]. Thus, teachers need to be exposed to real environment situations to bring about change in attitude and behavior of the young individuals and the general public as well (Murdoch, 2012) [17].

Accordingly, a recent 2014 annual report from Intergovernmental Panel on Climate Change (IPCC) found out that global temperatures will hit a staggering 4.8 degrees Celsius above pre-industrial levels by the end of the century with potentially negative consequences for

humanity, ecosystems and sustainable development until such extent that environmental problems constitute further degradation (Nagra & Kaur, 2013) [10]. While alarmed by these threats, environmental awareness prevailed on research as to substantially recognize attitude, values, and necessary skills on the environmental conditions to outline solutions. This meanly affirms that environmental awareness leads to responsible citizenship behavior (Sengupta *et al.*, 2010) [24] and that environmentally aware persons perceive information about the state of environment and reasons for the situation. As a result, environmental awareness leads to the achievement of environmental literacy (Madumere, 2012) [13]. Individuals who are well-educated in environmental views behave responsibly regarding the environment (Mobley *et al.*, 2010) [15]. This is mostly observed when they are exposed to an emerging crisis where the extent of adaptation and coping is closely related to resources and assets, thus encourages the government, both public and private sectors to support and prioritize the people's coping mechanisms and to collaboratively do the task with ease and confidence in improving coping strategies and adaptation measures and increasing young person's sense of belonging to continually help themselves and the community as well (Saful Hadi, 2010) [22]. This can be all feasibly happened because environment has become the concern of all academicians, intellectuals, scientists, and policymakers across the continents (Kant & Sharma, 2013) [9].

Considering all lingering risks and threats, it could positively say that environmental awareness and understanding among the young people are consequences of environmental education influenced by the environmental education process. This study was conducted to determine the environmental awareness level of grade schoolers in the municipality of Zamboanga del Sur emphasizing the level of vulnerability and extents of coping mechanisms and adaptation measures. Thus, it is important to educate the children on how human activities affect the environment because the solutions still lie on our attitudes, values, actions, and the extent of our awareness on the immediate environment we live.

2. Methodology

The study employed the descriptive research design. Two-hundred twenty-five (225) elementary pupils who were officially enrolled in SY 2014-2015 in five selected schools in Zamboanga del Sur were considered randomly as respondents. The researcher presented clear pictures provided with some realistic situations for the respondents to understand more on each concept to arrive at honest responses. Statistical tools were used to determine the level of environmental awareness of the pupils to each factor. Extents of adaptation measures and common coping mechanisms were determined and significance differences on the levels of awareness and vulnerability using SPSS.

3. Results and Discussion

Table 1: Level of environmental awareness of elementary pupils.

Variable	School 1	School 2	School 3	School 4	School 5	P-value
Flooding	2.66	3.00	2.94	2.16	2.84	0.05
Coastal erosion	2.68	2.64	2.31	1.88	2.21	0.09
Storm surges	2.68	2.11	2.89	1.82	3.00	0.04
Sea level rise	2.58	2.32	2.92	2.01	2.11	0.10
Increased temperature (day)	2.47	3.00	2.56	2.73	3.00	0.04
Decreased temperature (night)	2.50	2.23	2.31	2.15	2.79	0.05
Climate change phenomenon	2.37	2.91	2.86	2.67	2.42	0.07
Risks and threats from natural disasters	2.66	2.91	2.94	2.06	2.68	0.05
Aggregated mean	2.57	2.64	2.72	2.18	2.63	
Standard deviation	0.12	0.37	0.28	0.34	0.34	
Adjectival equivalent	A	A	A	NA	A	

Legend: Significant at $P < 0.05$

Numerical Rating	Adjectival Equivalent
3 – (2.33-3.00)	3 – Aware (A)
2 – (1.67-2.33)	2 – Not Aware (NA)
1 – (1.00-1.66)	1 – Don't Care (DC)

Table 1 shows that the five schools were environmentally aware on some of the existing ecological and weather issues like flooding events, storm surges, and rising and declining of temperature during day and night time in the locality while sea related events and climate change phenomenon were least recognized.

The high recognition of environmental issues implies that respondents (62%) learned lessons from the calamities they directly or vicariously experienced. They were aware on the emergence of environmental problems in which they put important consideration on the state of environment. This implies the necessary application of knowledge from different disciplines to manage the environment (Arunkumar, 2012) [2]. Knowledge on the issue is the only thing that determines environmentally aware individuals and that environmental awareness guarantee motivation on pupils to adopt new behavior (Saful Hadi, 2010) [22]. Therefore, environmental awareness should be deeply rooted in the education system at all levels of school education (Khan, 2013) [11] especially more focus attention to elementary pupils (Cetin & Nicanci, 2010) in order to protect and conserve the environment (Sundaravalli, 2012) [29]. This suggests teachers who are active and potential change agents to properly guide pupils' awareness so they can outline and perform pro-active mitigation measures whenever possible calamities or risks occur in the locality.

Table 2: Level of vulnerability of elementary pupils.

Variable	School 1	School 2	School 3	School 4	School 5	P-value
Flooding	*2.03*	2.52	2.22	2.08	2.58	0.03
Coastal erosion	1.29	2.09	2.19	1.82	2.26	0.06
Storm surges	2.29	2.27	2.67	1.81	2.89	0.04
Sea level rise	2.18	2.23	2.00	2.16	2.37	0.08
Increased temperature (day)	2.47	2.61	2.64	2.42	2.95	0.04
Decreased temperature (night)	2.11	2.84	2.83	2.43	3.00	0.04
Aggregated mean	2.06	2.43	2.42	2.12	2.67	
Standard deviation	0.41	0.28	0.33	0.27	0.32	
Adjectival equivalent	NA	A	A	NA	A	

Legend: Significant at P < 0.05

Numerical Rating	**Adjectival Equivalent**
3 – (2.33-3.00)	3 – Aware (A)
2 – (1.67-2.33)	2 – Not Aware (NA)
1 – (1.00-1.66)	1 – Don't Care (DC)

Table 2 shows five schools were highly vulnerable to the lingering environmental issues. Among the issues significantly considered by the respondents were flooding problems, rising and declining of temperatures, and storm surges while least consideration on sea related issues. This stresses that there is a significant possible potential vulnerability brought by natural disasters as experienced by the elementary pupils in one of the municipalities of Zamboanga del Sur. Thus, assessing children's exposures and their risks are needed they can have a significant impact on children's health and well-being (Children's Environment Health Network, 2010). Adults must ensure that children are protected from the environmental threats (World Health Organization, 2008) and that every elementary teacher, being the potential change agent, should provide information to their pupils on the effects of natural calamity or disaster for them to outline relevant preparation and remedies at any instances leading to vulnerability or risk reduction.

Table 3: Frequency distribution on coping mechanisms of elementary pupils.

	Frequency (%)					
Variable	**School 1**	**School 2**	**School 3**	**School 4**	**School 5**	**P-value**
Pawned land	11	30	22	31	0	0.02
Sold land	8	27	0	17	0	0.04
Sold livestock	79	93	94	66	84	7.35E-06
Support from family, relatives, etc.	76	91	0	66	68	8.42E-06
Own initiative	87	87	81	55	68	5.03E-06
Got a loan from a money lender	*37*	45	64	42	26	0.00
Received support from government	61	24	83	50	79	2.12E-05
Got a loan from friends, etc.	82	68	92	84	68	6.45E-06
Used family savings	21	67	31	47	11	0.00

Significant (P > 0.05)

Table 3 shows that the coping mechanisms significantly applied by the pupils when exposed to a certain crisis were selling livestock, receiving assistance from family, relatives, and government, engaging own small and alternative business, and having a loan from lending institutions. However, they considered livestock as the most important property which could be utilized when crisis emerged due to environmental hazards. This is very well-documented by the 2010 report of Moyo and Swanepoel (2010) [16, 26] that livestock, at every scale from local to global, provides food security (Stroebel *et al.*, 2010; Ndlau, 2010; World Bank, 2009; FAO, 2009) [21, 26-28, 31] risk buffer or reduction (Vandamme *et al.*, 2010), and alternative income generation (Peel *et al.*, 2010) to overcome unpredictable worsening situations. It implies that their adaptation measures rely on harvesting, selling, bargaining, and pawning available resources. Thus, it is important to increase the understanding of livestock's effect on the environment and undertake the management needed to achieve sustainable use and development of resources (Herrero *et al.*, 2010) [7, 14].

Close kinship and community ties were also of significant consideration by the pupils in alleviating local crisis. This says that adults need to be aware of a child's risk factors in order to recognize potential problems and provide the necessary supports. Therefore, teachers should educate pupils the clear understanding of environmental procedures and sustainable development practices, proper and judicious utilization of resources, and display of good values for them to support their own and as well as the society as a whole.

Table 4: Differences on the levels of environmental awareness and vulnerability.

School	Environmental awareness	Vulnerability
School 1	2.58a	2.06b
School 2	2.64a	2.43b
School 3	2.72a	2.42ab
School 4	2.18b	2.12ab
School 5	2.63a	2.67a

Note: All grand means followed by the same letter are not significantly different at 0.01 level (DMRT)

As presented in Table 4, only School 4 revealed significant difference on environmental awareness among other schools while Schools 1, 2, and 5 for vulnerability factor. This means that a huge number of elementary pupils (62%) in the said school were still aware while seventy-nine percent (78-88%) of them were highly vulnerable to environmental hazards. Feedback from teachers must be observed so that all pupils

have the equal chance to increase awareness in order to realize their substantial connection to the conservation of environment and outline mitigation measures whenever necessary. Direct exposure can be initiated to the pupils for them to be dexterously and emotionally involved in an environmental action since many researches showed experiential learning is effective in raising environmental awareness (Alexandar and Poyyamoli, 2014) [1]. This imbues Environmental Education (EE) as the recognition of appropriate and meaningful strategies to help students discover more about natural world, assemble information and facts to solve environmental related problems, and increase their resistance to vulnerability (Satapathy, 2010). Elementary teachers should provide necessary assessment strategies regarding awareness and vulnerability in order to mainstream their pupils on how to behave, react, and cope in the disastrous events leading to the intervention of causal factors (Kaur, 2013) [10]. Moreover, the finding suggests additional factors or variables that contribute the necessary variation on the levels of awareness and vulnerability of the respondents.

4. Conclusions and Recommendations

The knowledge of grade schoolers on the present environmental conditions is empirically evident based on the results of the current study. Respondents (62%) were environmentally aware based on the environmental conditions specified while majority (78–88%) of them was highly vulnerable which implies that they were contingent to the environmental conditions that they exposed or experienced. The common coping mechanisms to the occurring environmental problems were to sell livestock, borrow money from relatives, friends, and other lending agencies, engage in own small business, and receive support or assistance from family, relatives and from government. These were among the coping mechanisms adapted which they think could provide remediation to unpredictable worsening situations or when no enough resources could supply their necessity.

Intense encouragement must be considered for the respondents to be more responsive on the current environmental issues in a wider perspective. Also, the education sector and other stakeholders in the locality should improve the elementary science pedagogical aspects which highlight the importance of the outcome-based education focusing on the environment so that the youth would be more aware on the status of environment and equipped with the knowledge and skills on how to take care the Mother Earth. Further research is recommended for a greater promotion of environmental awareness on factors or variables that contribute significant variation of knowledge among the pupils as well as the sound intervention of notable risks.

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