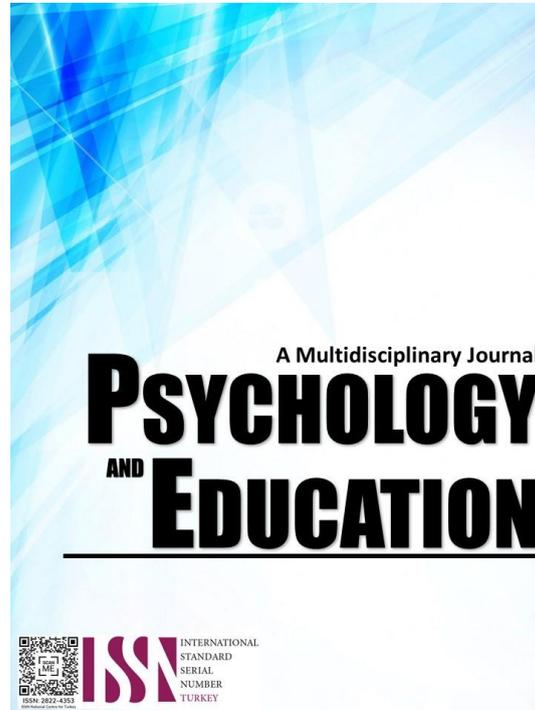


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MANAGEMENT NEEDS OF TEACHERS**



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## Multi-Hazard Preparedness Digitized Toolkit: Addressing the Disaster Management Needs of Teachers

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### Abstract

This action research aimed to determine the level of awareness of the teachers on multi-hazard preparedness to address their disaster management needs using a multi-hazard digitized toolkit. Specifically, it aimed to determine the level of awareness of the teachers before and after the implementation and use of the multi-hazard preparedness digitized toolkit, the difference in the level of awareness of teachers before and after the implementation of the intervention and its effect size, and their insightful experiences while using the multi-hazard preparedness digitized toolkit. A descriptive research design was used in the study which included 102 teachers of Dilangalen National High School as respondents. The data were gathered using a researchers-made, content-validated survey questionnaire and semi-structured interview schedule and were analyzed using weighted means, t-test, and thematic analysis. Major findings revealed that the teachers have a moderate level of awareness on risk reduction disaster management on all types of hazards before the use of the multi-hazard digitized toolkit as an intervention tool and they became very aware on all types of hazards and on how to respond to the different types of disasters after the intervention period. Furthermore, the teachers' level of awareness on the different types of hazards and on how to respond to them had significantly increased after the use of multi-hazard digitized toolkit and the use of this intervention had a large effect on the increase of teachers' awareness on disaster risk reduction management. Finally, the teachers had various experiences in using the digital toolkit but they considered the intervention tool as more advantageous in learning and responding to disasters. The study concluded that the using the multi-hazard digitized toolkit was very effective and has largely affected the increase in teachers' level of awareness and has been regarded by the teachers as easy, accessible, comprehensive, and informative materials that can be effectively used for teachers' risk reduction efforts.

**Keywords:** *multi-hazard, digitized toolkit, awareness, disaster management*

### Introduction

The safety of schools is important, and Disaster Risk Reduction aims at reducing the vulnerability to, and impact of disasters on schools. It prepares both teachers and students for potential disasters, thereby reducing the impact of said disaster. If the students can then transfer the knowledge to members of their families, it becomes general knowledge, and the community can prepare as well (ERMA, 2021).

Safety of the school children is basic right of children. Teachers must be aware of disaster management in schools and gain knowledge and implement safety practices in school environment (Ganpatrao, 2014). Hence, the researchers will assess the knowledge and practices of teachers regarding disaster management. A study to assess the knowledge and self-expressed practices among secondary school teachers regarding disaster management in Dilangalen National High School.

The researchers have observed that not all teachers were aware, involved, had known and had understood the standard operating procedures and practices in terms of disaster risk prevention and mitigation in Dilangalen National High School. In an informal

conversation, one teacher remarked; "wala man gud ta trainings and workshops about DRRM." Other teacher said that; "ang nabal-an ko is what to do with my students kapag nay earthquake drill pero ambot lang ug naa nay calamity." "Kulang jud akong knowledge about DRRM!" Kanang naay mga bata nga abusive, naay mosulod lasing nga bata usahay. Unsaon man nako na karon bi?

Grant (2012) stressed that the disaster awareness in schools, can be incorporated in institution through strategically posting safety rules, installing firefighting equipment, evacuation exits, maintain buildings, organizing seminars on disaster awareness and involving peer education, electronic and print media, action learning and using science education as a means to introduce studies of disaster risk.

Disasters strongly affect risk perception. Teachers, who play a key role in the education of children and teenagers and in shaping the personalities of students, are no exception: disasters can trigger feelings of fear, vulnerability, and a lack of safety in teachers. Such feelings affect human behavior and their compliance with preventive measure (Papavasileiou, 2021). As teachers, one of our responsibilities is to make our school conducive for teaching and learning and keep our learners safe from any harm and danger whether

they are in school or at home. It is our duty to educate them about disaster risk reduction management. We cannot halt natural calamities, but we can empower ourselves with knowledge: if disaster preparedness was adequate, fewer lives would be lost. Republic Act (R.A.) 10121 also known as the Philippine Disaster Reduction and Management Act promotes the development capacities of the individual, organization, and institution levels on disaster management. The Department of Education (DepEd) issued an order on disaster risk reduction and management coordination and information management protocol pursuant to the aforementioned Republic Act for schools, schools' divisions offices (SDOs) and regional offices (ROs) and coordinators to establish the system of coordination and information management and provide guidance to DepEd field offices, schools and DRRM coordinators on their respective roles and functions relative to DRRM implementation.

In recent years, the incidence and impact of natural disasters have drastically increased. Schools are responsible for not only teaching disaster management knowledge but also serve as evacuation shelters. Occurrences of disasters are highly unpredictable. If a disaster happens during school hours, schools must consider the risks that students are exposed to and respond early to such an event. Moreover, if schools can implement an all-hazards management approach by comprehensively organizing practical environmental preparedness, software plans, and disaster drills, then injuries, deaths, and property damages can be effectively reduced and school resilience to disasters can be successfully enhanced (Wang, 2016). To address the disaster management needs of the teachers of Dilangalen National High School, there is a need to evaluate and determine factors and practices on disaster management. After evaluating the management needs of the teachers, there is a need to make a digitized toolkit to address those needs.

### Research Questions

This action research aims to address the disaster management needs of teachers of Dilangalen National High School through digitized toolkit. Specifically, this study was conducted in search of answers to these research questions:

1. What is the level of awareness of the teachers of Dilangalen National High School in Disaster Risk Reduction Management before the implementation and use of Multi-hazard Preparedness Digitized Toolkit?
2. What is the level of awareness of the teachers of

Dilangalen National High School in Disaster Risk Reduction Management after the implementation and use of the Multi-hazard Preparedness Digitized Toolkit?

3. Is there a significant difference in the level of awareness of the teachers of Dilangalen National High School in Disaster Risk Reduction Management after the implementation of Multi-hazard Preparedness Digitized Toolkit?
4. What is the effect size of the multi-hazard preparedness digitized toolkit to the Disaster Risk Reduction Management skills of teachers?
5. What are the insightful experiences of teachers while using the multi-hazard preparedness digitized toolkit?

### Literature Review

It is a general knowledge and an obvious fact that the teachers lack awareness on disaster risk reduction and management. Given the multi-faceted task of teachers, it is timely and relevant to introduce an intervention that will address this need.

This study introduces the utilization of a multi-hazard preparedness digitized toolkit in increasing the awareness of teachers on disaster risk reduction management. The Multi-hazard Preparedness Digitized Toolkit was compiled and modified by the researchers. This material is composed of a collection of videos related to the different disasters or hazards that are packaged into one resource material for use by the teachers. The content was designed to be school-based, and was made easy, comprehensive and accessible. Further innovations will be done through the production of booklets to be used in the classroom, specifically in the DRRM Corner to further promote disaster and risk reduction management.

### Methodology

#### Description of the Action and Implementation Plans

This study used a descriptive design in identifying the awareness, understanding, involvement and the standard operating procedures, knowledge and practices using the responses of the teachers as the primary source of data utilizing the researchers-made questionnaire which validity and reliability underwent



a thorough evaluation by the experts.

The Multi-hazard Preparedness Digitized Toolkit was compiled and modified by the researchers. This intervention was also validated by the experts in Disaster Risk Reduction Management (DRRM) whose expertise conforms with the indicators. Revisions were made incorporating all the suggestions and recommendations gathered from the validators.

The intervention was implemented by the researchers to the teacher- respondents of Dilangalen National High School after it was validated and approved for utilization. After gathering the results of the survey on teacher’s level of awareness after the implementation of the intervention, the researchers conducted a focused-group discussion to the teacher-respondents through virtual platform to further assess the impact and usefulness of the digitalized toolkit to their ability to be prepared during emergency situations. The data gathered were treated using statistical tool.

**Study Participants and Selection**

In this study, the teachers of Dilangalen NHS were utilized as the respondents. The Slovin’s Formula was employed in selecting the number of respondents. The respondents answered the researchers- made questionnaire through a google form. The same group was utilized for the series of Focus Group Discussions.

**Research Instruments and Data Collection**

In order to answer the questions posed in the beginning of the study, the selected respondents answered the questionnaire sent to them through a google form. The researchers- made survey questionnaire was used as the main instrument for this study. The survey questionnaire has two main parts. Part 1 deals with level of awareness of teachers in terms of the possible hazards in school. Part 2 is composed of statements about how aware are the respondents in preventing the hazards to happen in school.

The researchers then gathered the data from the teachers and conducted a Focus Group Discussion after the gathering of data. The Focus Group Discussion questions were composed of main questions and the probe questions in order to elicit relevant responses from the participants. The participants of the focus group discussion were selected purposively based on the luxury of internet connection since the FGD was conducted virtually. The results gathered from the Focus Group Discussion were used to confirm and validate the quantitative

results of the study. These qualitative data from the FGD were analyzed using thematic analysis based on the framework of Braun and Clarke (2006).

**Results and Discussion**

Table 1. Level of Disaster Risk Reduction Awareness of Teachers on the different hazards in school before the Use of the Multi-hazard Digitized Toolkit.

Indicators	Mean	SD	Description
<b>Laboratory and Workshop Accidents</b>			
1. chemical burns	2.35	0.95	Moderately Aware
2. inhalation of dust and noxious fumes	2.37	0.92	Moderately Aware
3. wounds from broken materials, tools and equipment	2.44	0.98	Moderately Aware
4. explosion	2.40	0.95	Moderately Aware
5. electrocution	2.34	0.96	Moderately Aware
6. suffocation	2.35	0.92	Moderately Aware
7. poisoning	2.43	0.92	Moderately Aware
<b>TOTAL MEAN</b>	<b>2.39</b>	<b>0.89</b>	<b>Moderately Aware</b>
<b>Weather-Related Hazards</b>			
8. heavy rains	2.43	0.90	Moderately Aware
9. extreme temperatures	2.35	0.92	Moderately Aware
10. natural disasters (earthquakes, lightning)	2.52	0.83	Aware
11. severe storms	2.45	0.84	Moderately Aware
12. floods	2.51	0.89	Aware
<b>TOTAL MEAN</b>	<b>2.45</b>	<b>0.84</b>	<b>Moderately Aware</b>
<b>Fire Hazards</b>			
13. overloaded power strips or outlets:	2.40	0.93	Moderately Aware
14. excessive clutter blocks exit routes	2.42	0.92	Moderately Aware
15. kitchen fires	2.43	0.92	Moderately Aware
16. problems with fire exits	2.38	0.88	Moderately Aware
17. problems with alarm or fire suppression systems	2.38	0.83	Moderately Aware
<b>TOTAL MEAN</b>	<b>2.40</b>	<b>0.86</b>	<b>Moderately Aware</b>
<b>Infectious Diseases</b>			
18. flu and cough	2.49	0.89	Moderately Aware
19. colds, stomach virus and other illnesses	2.41	0.87	Moderately Aware
20. blood-borne illnesses	2.33	0.82	Moderately Aware
21. tuberculosis	2.36	0.90	Moderately Aware
22. COVID-19	2.58	0.85	Aware
23. mumps	2.41	0.92	Moderately Aware
24. measles	2.44	0.87	Moderately Aware
<b>TOTAL MEAN</b>	<b>2.43</b>	<b>0.83</b>	<b>Moderately Aware</b>
<b>Human- Related Hazards</b>			
25. physical assault to school authorities	2.40	0.85	Moderately Aware
26. presence of drunk people in school	2.41	0.89	Moderately Aware
27. possible entry of terrorists	2.38	0.89	Moderately Aware
28. presence of prohibit drug users	2.37	0.89	Moderately Aware
29. physical harassment among students	2.44	0.83	Moderately Aware
30. psychological/emotional harassment among students	2.43	0.85	Moderately Aware
31. bullying of all types	2.49	0.83	Moderately Aware
32. acts of lasciviousness	2.38	0.88	Moderately Aware
33. sexual assault	2.35	0.89	Moderately Aware
<b>TOTAL MEAN</b>	<b>2.41</b>	<b>0.81</b>	<b>Moderately Aware</b>
<b>OVER-ALL TOTAL MEAN</b>	<b>2.42</b>	<b>0.82</b>	<b>Moderately Aware</b>

The table shows the means and the standard deviations of the level of disaster Risk reduction awareness of teachers for each kind of hazard in school before the use of the multi-hazard digitized toolkit. The overall result shows that teachers have a moderate level of awareness ( $x=2.42$ ,  $SD=0.82$ ). This result is quite alarming since the teachers are supposed to be fully aware on risk reduction of the different hazards. This



implies that under a certain circumstance where students are faced with hazards, teachers could not fully respond to the needs of the students due to their moderate level of awareness. Descriptively, the respondents are moderately aware on risk reduction on the different types of hazards that need risk reduction awareness among the stakeholders, especially the teachers; however, the weighted means have slight differences. The teachers' mean awareness on the different types of hazards based on decreasing order of magnitude are: weather-related hazards ( $x=2.45$ ), infectious diseases ( $x=2.4$ ), human-related hazards ( $x=2.41$ ), fire hazards ( $x=2.40$ ), and laboratory and workshops accidents ( $x=2.39$ ). In addition, the standard deviation measures of less than 1 in all item indicators mean that the respondents' level of agreement in their responses are homogeneous, hence, they all have almost the same moderate level of awareness.

From these results, it can be deduced that the introduction and utilization of multi-hazard digitized toolkit is very timely and relevant to help increase the teachers' level of awareness on risk reduction so that when faced with hazards, teachers are aware, knowledgeable, and competent to deal with the situation. Thus, the digitized toolkit has enhanced teachers' awareness on risk reduction which would consequently enhance their disaster management skills.

Table 2. Level of teacher's awareness on the things to be done to reduce risks at school before the Use of the Multi-hazard Digitized Toolkit.

As a teacher, I...	Mean	SD	Description
1. conduct room walk-throughs each semester to spot hazards	2.42	0.94	Moderately Aware
2. provide information on fire prevention in school welcome packets	2.41	0.94	Moderately Aware
3. check to make sure the required number of fire exit signs are installed, and the exits are in working order	2.36	0.91	Moderately Aware
4. provide fire extinguishers in school kitchens and installing smoke alarms	2.38	1.0	Moderately Aware
5. install more or better lighting on pathways, in stairwells, in parking lots and in hallways	2.34	0.90	Moderately Aware
6. encourage teachers and staff to participate in the information dissemination using posters and slogans	2.48	0.93	Moderately Aware
7. hang posters encouraging healthy habits (e.g. hand-washing, how to cough and sneeze properly)	2.56	0.96	Aware
8. don't allow students to work alone	2.50	0.89	Moderately Aware
9. provide training on tools, equipment and materials before they start projects	2.43	0.88	Moderately Aware
10. require students to wear personal protective equipment such as gloves, lab coats or aprons, safety glasses and ear protection when appropriate	2.45	0.91	Moderately Aware
11. equip labs and workshops with emergency supplies (e.g. first aid kit, eye wash station)	2.51	0.96	Aware
12. the school needs to secure the entry into the school for possible entry of terrorists	2.40	0.94	Moderately Aware
13. install Closed Circuit Television systems in all main parts of the school	2.50	0.92	Aware
14. organize a School- Community Violence Prevention Forum regularly	2.30	0.94	Moderately Aware
15. prepare to identify and avert potential problems and to know what to do when a crisis happens	2.41	0.93	Moderately Aware
TOTAL MEAN	2.43	0.87	Moderately Aware

The table shows the mean and the standard deviation of the level of teacher's awareness on the things to be done to reduce risks at school. Overall, the teachers were moderately aware of the things they need to do to reduce the risk of possible hazards. Of the fifteen item indicators, teachers were only aware in three items, namely: hanging posters that encourage healthy habits (e.g. hand-washing, how to cough and sneeze properly) ( $x=2.56$ ); equipping labs and workshops with emergency supplies (e.g. first aid kit, eye wash station) ( $x=2.51$ ); and not allowing students to work alone ( $x=2.50$ ). The standard deviation values that are at most 1 point indicates how the responses of the teachers vary from each other, hence, the values show that the respondents have generally almost the same level of agreement on each item showing almost the same awareness levels. This indicates a seemingly not good disaster management because most often they are not fully aware what to do during disasters.

This result shows that there are more items in which teachers do not have full awareness of than items that they are aware of. This means that if disasters strike, most of the teachers are not knowledgeable on what to do or how to respond to them. Thus, there is really a need to use an intervention in order to assess the teachers to improve their skills in risk reduction especially that they are the ones who are supposed to be in control of the situations inside and outside their classrooms.

Table 3. Level of Disaster Risk Reduction Awareness of Teachers After the Use of the Multi-hazard Digitized Toolkit.

Indicators	Mean	SD	Interpretation
<b>Laboratory and Workshop Accidents</b>			
1. chemical burns	3.73	0.53	Very Aware
2. inhalation of dust and noxious fumes	3.63	0.58	Very Aware
3. wounds from broken materials, tools and equipment	3.37	0.56	Very Aware
4. explosion	3.53	0.50	Very Aware
5. electrocution	3.79	0.41	Very Aware
6. suffocation	3.81	0.39	Very Aware
7. poisoning	3.86	0.35	Very Aware
TOTAL MEAN	3.68	0.25	Very Aware
<b>Weather-Related Hazards</b>			
8. heavy rain	3.87	0.34	Very Aware
9. extreme temperatures	3.87	0.36	Very Aware
10. natural disasters (earthquakes, lightning)	3.89	0.34	Very Aware
11. severe storms	3.89	0.34	Very Aware
12. floods	3.90	0.33	Very Aware
TOTAL MEAN	3.89	0.32	Very Aware
<b>Fire Hazards</b>			
13. overloaded power strips or outlets:	3.89	0.34	Very Aware
14. excessive clutter blocks exit routes	3.90	0.33	Very Aware
15. kitchen fires	3.90	0.33	Very Aware
16. problems with fire exits	3.88	0.35	Very Aware
17. problems with alarm or fire suppression systems	3.87	0.36	Very Aware
TOTAL MEAN	3.89	0.33	Very Aware



Table 4. Level of teacher’s awareness on the things to be done to reduce risks at school after the Use of the Multi-hazard Digitized Toolkit.

Infectious Diseases			
18. flu and cough	3.87	0.36	Very Aware
19. colds, stomach virus and other illnesses	3.87	0.34	Very Aware
20. blood-borne illnesses	3.06	0.24	Aware
21. tuberculosis	3.84	0.37	Very Aware
22. COVID-19	3.77	0.44	Very Aware
23. mumps	3.88	0.32	Very Aware
24. measles	3.89	0.31	Very Aware
<b>TOTAL MEAN</b>	<b>3.74</b>	<b>0.26</b>	<b>Very Aware</b>
Human- Related Hazards			
25. physical assault to school authorities	3.76	0.43	Very Aware
26. presence of drunk people in school	3.77	0.44	Very Aware
27. possible entry of terrorists	3.51	0.50	Very Aware
28. presence of prohibit drug users	3.76	0.45	Very Aware
29. physical harassment among students	3.76	0.45	Very Aware
30. psychological/emotional harassment among students	3.76	0.45	Very Aware
31. bullying of all types	3.76	0.45	Very Aware
32. acts of lasciviousness	3.75	0.45	Very Aware
33. sexual assault	3.75	0.45	Very Aware
<b>TOTAL MEAN</b>	<b>3.73</b>	<b>0.38</b>	<b>Very Aware</b>
<b>OVER-ALL TOTAL MEAN</b>	<b>3.79</b>	<b>0.18</b>	<b>Very Aware</b>

After the use of multi-hazard digitized toolkit, the level of awareness of teachers on risk reduction was measured. The results are presented in Table 3 above. Scrutiny of the data revealed that the teachers are now very aware on risk reduction of the different types of hazards ( $x=3.79$ ,  $SD=0.18$ ). This result estimates around 1.37 increase in the mean index compared to the level of their awareness before the toolkit was introduced. Also, the descriptive equivalent of the data has increased from moderately aware to very aware after teachers were introduced with the intervention, which was the multi-hazard digitized toolkit. This result connotes that the intervention used has helped increase the teacher’s level of awareness on risk reduction of the different types of hazards.

All the mean level of awareness of the teachers in all five (5) hazards have increased. Specifically, they were very aware on reducing risks of weather-related hazards ( $x=3.89$ ), fire hazards ( $x=3.89$ ), human-related hazards ( $x=3.79$ ), infectious diseases ( $x=3.74$ ), and laboratory and work accidents ( $x=3.68$ ). The increase can be attributed to the effective use of the intervention that helped increased their level of awareness, hence, the digitized toolkits are very useful and meaningful tools that might have helped teachers to be very aware on how to reduce the risks when hazards strike in the school premises.

Indicators	Mean	SD	Interpretation
1. conduct room walk-throughs each semester to spot hazards	3.81	.44075	Very Aware
2. provide information on fire prevention in school welcome packets	3.80	.46755	Very Aware
3. check to make sure the required number of fire exit signs are installed, and the exits are in working order	3.77	.54331	Very Aware
4. provide fire extinguishers in school kitchens and installing smoke alarms	3.82	.49576	Very Aware
5. install more or better lighting on pathways, in stairwells, in parking lots and in hallways	3.11	.36982	Aware
6. encourage teachers and staff to participate in the information dissemination using posters and slogans	3.46	.57457	Aware
7. hang posters encouraging healthy habits (e.g. hand-washing, how to cough and sneeze properly)	3.90	.29884	Very Aware
8. don't allow students to work alone	3.83	.37452	Very Aware
9. provide training on tools, equipment and materials before they start projects	3.32	.47013	Aware
10. require students to wear personal protective equipment such as gloves, lab coats or aprons, safety glasses and ear protection when appropriate	3.49	.50237	Aware
11. equip labs and workshops with emergency supplies (e.g. first aid kit, eye wash station)	3.85	.40777	Very Aware
12. the school needs to secure the entry into the school for possible entry of terrorists	3.81	.43895	Very Aware
13. install Closed Circuit Television systems in all main parts of the school	3.69	.48707	Very Aware
14. organize a School- Community Violence Prevention Forum regularly	3.36	.54116	Aware
15. prepare to identify and avert potential problems and to know what to do when a crisis happens	3.38	.52735	Aware
<b>TOTAL MEAN</b>	<b>3.63</b>	<b>.28253</b>	<b>Very Aware</b>

With an overall weighted mean of 3.63, the teacher-respondents’ level of awareness on the things they need to do when disasters strike has increased to the highest level of very aware. The minimal value of standard deviation also indicates that the respondents’ rating to each item are almost the same. Of the 15 indicators, the respondents responded that they were very aware in 60% of the number of items (9 out of 15). In the remaining 6 items, they displayed awareness on what to do during disasters. This means that after the teachers have watched or read the toolkits as intervention used to improve disaster management, their awareness had increased based on their awareness mean indexes. These data are summarized and presented in Table 4 above.

Table 5. The differences on DRRM awareness level of teachers before and after the use of digitized toolkit on the disaster risk deduction management of teachers.

Variables	Mean	St. Dev.	Mean Difference	Sig.	Decision
Level of Awareness on Laboratory and workshop Accidents Before the Intervention	2.39	0.89	-1.29	.000**	Reject H <sub>0</sub>
Level of Awareness on Laboratory and workshop Accidents After the Intervention	3.68	0.25			
Level of Awareness on Weather-Related Hazards Before the Intervention	2.45	0.84	-1.44	.000**	Reject H <sub>0</sub>
Level of Awareness on Weather-Related Hazards After the Intervention	3.89	0.32			
Level of Awareness on Fire Hazards Before the Intervention	2.40	0.86	-1.49	.000**	Reject H <sub>0</sub>
Level of Awareness on Fire Hazards After the Intervention	3.89	0.33			
Level of Awareness on Infectious Diseases Before the Intervention	2.43	.83067	-1.30952	.000**	Reject H <sub>0</sub>
Level of Awareness on Infectious Diseases After the Intervention	3.74	.26368			
Level of Awareness on Human-Related Hazards Before the Intervention	2.41	.81385	-1.32649	.000**	Reject H <sub>0</sub>
Level of Awareness on Human-Related Hazards After the Intervention	3.73	.37972			
Level of Awareness on Disaster Risk Reduction Before the Intervention	2.42	82349	-1.36960	.000**	Reject H <sub>0</sub>
Level of Awareness on Disaster Risk Reduction After the Intervention	3.79	.18072			



Variables	Mean	St. Dev.	Mean Difference		Decision
			Mean Difference	Sig.	
Level of Awareness on Laboratory and workshop Accidents Before the Intervention	2.39	0.89	-1.29	.000**	Reject H <sub>0</sub>
Level of Awareness on Laboratory and workshop Accidents After the Intervention	3.68	0.25			
Level of Awareness on Weather-Related Hazards Before the Intervention	2.45	0.84	-1.44	.000**	Reject H <sub>0</sub>
Level of Awareness on Weather-Related Hazards After the Intervention	3.89	0.32			
Level of Awareness on Fire Hazards Before the Intervention	2.40	0.86	-1.49	.000**	Reject H <sub>0</sub>
Level of Awareness on Fire Hazards After the Intervention	3.89	0.33			
Level of Awareness on Infectious Diseases Before the Intervention	2.43	.83067	-1.30952	.000**	Reject H <sub>0</sub>
Level of Awareness on Infectious Diseases After the Intervention	3.74	.26368			
Level of Awareness on Human-Related Hazards Before the Intervention	2.41	.81385	-1.32649	.000**	Reject H <sub>0</sub>
Level of Awareness on Human-Related Hazards After the Intervention	3.73	.37972			
Level of Awareness on Disaster Risk Reduction Before the Intervention	2.42	.82349	-1.36960	.000**	Reject H <sub>0</sub>
Level of Awareness on Disaster Risk Reduction After the Intervention	3.79	.18072			

\*\* - the difference is significant at  $\alpha=0.01$ .

The mean values showed that the teachers' level of awareness on disaster risk reduction have increased after they were presented with the multi-hazard digitized toolkit. This increase was further tested using paired t-test. The results are summarized and presented in Table 5. Based on the results, the overall level of awareness on disaster risk reduction have significantly increased after the intervention [Sig. = 0.000, df=101]. This result leads to the rejection of the null hypothesis and it is concluded that the use of multi-hazard digitized toolkit was effective in increasing the teachers' level of awareness on disaster risk reduction. This means that the intervention is effective in addressing the needs of the teachers in disaster management. It was revealed that prior to the utilization of the digitized toolkits, teachers had only moderate level of awareness. After they used the intervention, they became very aware and the test of difference was significant at  $\alpha=0.01$ . More specifically, the teachers have significantly increased level of awareness in all types of hazards which indicates that the toolkits were really effective in educating the teachers about disaster risk management even for the hazards that they were not familiar of before the start of intervention.

Table 6. *The difference on Level of teacher's awareness on the things to be done to reduce risks at school before and after the use of multi-hazards preparedness digitized toolkit.*

Variables	Mean	St. Dev.	Mean Difference		Decision
			Mean Difference	Sig.	
Level of Awareness on the Things to be Done on Risk Reduction Before the Intervention	2.43	.86658	-1.20	.000**	Reject H <sub>0</sub>
Level of Awareness on the Things to be Done on Risk Reduction After the Intervention	3.63	.28253			

In table 6, the test of difference on the level of awareness of teachers on the things to be done on risk reduction was shown. The data revealed that from a moderate level of awareness before the intervention, teachers became very aware after they used the intervention. Further, this difference was statistically significant at  $\alpha=0.01$  [Sig. = 0.000, df=101] leading to the rejection of the null hypothesis, hence, there is a significant increase on teachers' awareness level on disaster risk reduction after the intervention. This means that the digitized toolkits were effective in educating the teachers about disaster risk management.

Table 7. *The effect size of the multi-hazard preparedness digitized toolkit to the disaster risk management of teachers*

Variables	Mean	SD	Mean Difference		Effect Size	Interpretation
			Mean Difference	t		
Level of Awareness on the Things to be Done on Risk Reduction Before the Intervention	2.42	0.82	-.37	-16.47	0.62	Large Effect
Level of Awareness on the Things to be Done on Risk Reduction After the Intervention	3.79	0.18				

The previous tables revealed that the increase in the teachers' level of awareness was statistically significant. However, the result does not reveal how large was the effect of increase. In table 7 above, the effect size of the increase in the levels of awareness of teachers on disaster risk reduction was determined using the formula effect size =  $t^2/Nr^2$ . The result revealed an effect size of 0.62 which shows a large effect. Therefore, the use of intervention, which is the digitized toolkit has largely affected the increase in awareness of the teachers at Dilangalen National High School. It means that aside from the statistical significance of the intervention, it has provided a very good practical significance, thus, recommending the use of the multi-hazard digital toolkit in order to address the needs of the teachers on disaster risk management. This would enable teachers to respond positively and appropriately to any disasters. Through this, the safety and welfare of the students are secured if teachers are aware and knowledgeable of basic disaster management.

### The Insightful Experiences of Teachers on the use of the digitized toolkit for teachers' DRRM awareness

To address the research question on the insightful experiences of the teachers on the use of digitized toolkit for teachers' DRRM awareness, a series of Focused Group Discussions (FGD) were conducted. In sum, four groups composed of 10 teachers in each

group were subjected to an FGD where they narrated their experiences in using the intervention. Their answers were transcribed, collated and tabulated based on the themes that emerged. Based on thematic analysis, the researchers came up with two major themes, namely: advantages or comforts of using the digitized toolkit and the disadvantages or discomforts of using the toolkit.

### Advantages

Results of the FGD revealed that the majority of the teachers considered the use of digitized toolkit as an advantage to enhance their level of awareness on DRRM. According to them, the following are the reasons why they see it as an advantage than a burden:

**Easy to understand.** The majority of the participants shared the same sentiments that the material used as an intervention was easy to understand. The instructions contained steps and procedures that are easy to follow. In addition, the graphics and videos included added to the element of the material that was easy to understand for the participants. The following excerpts taken from the interview show that teachers can easily understand the material.

“The material is easy to understand. It is self-explanatory and words used are simple and clear” [P1:G1]

“I can easily follow and understand the material. You simply have to listen and you will know what to do” [P4:G3]

“Even if I just listened to the instructions, I got a lot of information and I understand them immediately.” [P2:G4]

“I find the toolkit somehow very understandable. It can be used as an informative material to promote disaster management” [P7:G2]

**Accessible.** Aside from the ease that the material brings, the respondents also mentioned that the digitized toolkit was accessible. Especially that the videos were saved in their mobile phones and other computer devices for viewing offline, they appreciated it much. The following statements are proofs how happy they are to access the material easily.

“I did not worry about internet connectivity because the material is very accessible” [P4:G2]

“In terms of access, I can say that there is no problem on it. You can open your laptop or cellular phone

anytime and you can access the material.” [P10:G3]

**Comprehensive.** Having a comprehensive content is one of the features of the toolkit that is noticeable among the participants of the FGD. According to them, there is no need to look for other sources of information because the toolkit “has it all”. Their statements were captured and presented in the following excerpts:

“For me, the toolkit is a total package. You can read everything that you need to know. There is no need to read other sources” [P8:G1]

“I enjoyed watching the videos because they are very comprehensive. It contains complete information about disaster preparedness and management” [P10:G3]

“Compared to other infographics, the toolkit has a better content. It is so comprehensive” [P6:G4]

**School-based Approach.** An element of localized, indigenized and contextualized material makes the toolkit appreciated by the respondents. When asked about their insightful experience, some participants pointed out that they had the opportunity to read a material that is global in content with a touch of local culture. So, they considered the content and presentation to be a school-based approach. While some of the materials used to promote disaster preparedness may be general on content, what is good with the intervention tool used was that it was really crafted to fit to the school setting. Therefore, everything is understandable and relatable. Here are some excerpts from the FGD:

“It is really good that the proponents simplified their version to fit to the school content” [P3:G3]

“If I were to compare it to a research output, this material is like an SBAR. Its focus is really on school setting so it is easy to teach to students” [P9:G2]

“The approach used is really school-based. You can sense its setting is really situated in a school environment” [P10:G3]

“I like how the material was packaged. It is really in school context.” [P5:G1]

**Can be used as learning materials for students.** One of the very good observations of teachers on the material that was used as intervention was that it is not only meant to raise teachers’ awareness on DRRM but it can be used as a learning material for students

especially on subjects that integrate disaster risk management. Some teachers commented:

“I can use it to teach disaster preparedness and management to my students” [P7:G4]

“The material is really good. I like how it was made. It can be used as a reference material for students especially on disaster risk management classes.” [P1:G4]

“I can even say it is suitable for use as a training material. It is a good learning resource material not just for teachers but for the general public” [P6:G2]

From the above statements, teachers had really a wonderful experience on the use of digitized toolkit. This is a good support to the result of the quantitative data that revealed a significantly and practically significant increase in the awareness levels of the teachers on disaster risk management.

On the contrary, some teachers had also experienced discomfort as disadvantage of the developed intervention material. The majority of the problems were gadget-related especially for those whose devices had low storage capacities and had incompatibility problems. Also, it is a common problem that internet connectivity had negatively affected their experiences in the use of digitized toolkit. Following excerpts were taken from the responses of the teachers during the FGD:

“I had troubles watching the videos because of the low internet connectivity” [P3:G1]

“There is difficulty watching the videos especially if the device has low storage” [P7:G2]

“The videos cannot be watched continuously because I experienced having my files corrupted” [P1:G3]

“I have some problems watching some videos because my file had viruses” [P4:G4]

At the outset, it was noted that the discomforts experienced by the minority of the participants were all technology-related. This problem is definitely minor. Given time and experience, the teachers who had troubles with the use of technology will fix these troubles and maximize their learning experience. Overall, the use of digitized toolkit was both beneficial in increasing the awareness levels of the teachers on DRMM and at the same time had provided them with relevant and meaningful learning experience.

## Conclusion

Based on the results, the researchers concluded that using the multi-hazard digitized toolkit was very effective in increasing the teachers' level of awareness on risk reduction. In addition, the intervention has largely affected the increase in teachers' level of awareness and has been regarded by the teachers as easy, accessible, comprehensive, and informative materials that can be effectively used for teachers' risk reduction efforts.

1. The Multi-hazard Digitized Toolkit shall be uploaded and posted in the different group chats of each class so that students may benchmark from it and learn some skills when disasters strike.
2. The Multi-hazard Digitized Toolkit shall be used as a learning resource material in integrating the teaching of disaster risk and reduction management in selected subjects.
3. The Multi-hazard Preparedness Toolkit booklet can be a reading material in the DRRM corner in every classroom.
4. The Multi-hazard Digitalized Toolkit shall be introduced to other teachers in different schools through their DRRM Coordinators.

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