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E-Learning Module Using Filipino Language in Teaching Disaster Readiness and Risk Reduction

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A B S T R A C T

The focused of the study was on the development, validation, and evaluation of E-learning Module Using Filipino language in Teaching Disaster Readiness and Risk Reduction conducted at Siena College of Taytay during the second quarter of the School Year 2021-2022. Forty (40) Grade 11 STEM learners were selected using simple random sampling method through fishbowl technique that served as the single experimental group. The study employed developmental, evaluative, and experimental research designs. The E-learning module was developed using various Google applications and educational technology tools. It went through face and content validation by different experts from Disaster Readiness and Risk Reduction and Science, Filipino, and Information Technology. Then, revisions and modifications were done based on the suggestions of the validators.

An adapted questionnaire-checklist was utilized to evaluate the E-learning module by different set of experts from the areas of specialization in terms of objectives, content, learning activities, presentation, language used, learning environment, user interface, course content, portability, and usability or usefulness. It went through face and content validation of different sets of experts such as DRRR or Science teachers, Filipino teachers, and TLE teachers handling computer subject. A 60-item pretest and posttest were also utilized to determine the level of performance of the Grade 11 learners before and after exposure to the instructional material. It went through face and content validation of various experts in test construction and language. It was then administered to the Grade 12 STEM learners and submitted for validity and reliability testing.

 The pretest was administered to the learners at the beginning of each lesson. They were given 10 recitation days to accomplish the learning activities before they answer the posttest. The E-learning module was sent to a total of 70 respondents/experts in the fields of DRRM, Filipino language, and ICT. Based on the overall mean of the ratings given by the different set of experts, the different descriptors of the criteria previously mentioned to evaluate the e-learning module in Disaster Readiness and Risk Reduction were all perceived as highly evident.

In addition, based on the analysis of the mean of their pretest and posttest scores and using dependent t-test, the level of performance of the Grade 11 learners improved particularly in lessons about Earthquake, Flood, Storm Surge, and Fire Hazards. Hence, the researcher recommends the use of the e-learning Module Using Filipino Language in Teaching Disaster Readiness and Risk Reduction. On the other hand, revision and modification must be done particularly on lessons about Landside and Typhoon to better suit the needs, abilities, and interests of the learners.

Keywords: E-Learning Module, Filipino Language, Disaster Readiness and Risk Reduction

1. Introduction

The COVID-19 pandemic has forced a lot of sectors including education to adapt in order to continue to thrive while maintaining and following health safety protocols. The education sector was obligated to step out of our comfort zones, the traditional face-to-face learning and shift to multiple learning delivery modalities including modular and online distance learning as stipulated in DepEd Oder No. 012, s. 2020. Private universities and institutions have likewise adapted to the limitations imposed by the pandemic and are poised to go either fully online, blended learning, or scheduled in-person classes in case the government lifts quarantine measures.

Regardless of the learning modality, the choice of the language of instruction is crucial and it is considered as a recurrent challenge in the development of quality education. As mandated by United Nations Educational, Scientific and Cultural Organization on its three basic principles on language and education, mother tongue instruction must be used as a means of improving educational quality by building upon the knowledge and experience of the learners and the teachers. Former UNESCO Director General Irina Bokova said it is essential to encourage full respect for the use of mother language in teaching and learning and to promote linguistic diversity given a global education agenda that prioritizes quality, equity, and life-long learning for all.

In addition, according to Nyika (2014) proficiency in the language of instruction can affect comprehension of content and hence the performance of students in various subjects such as Mathematics and Science. Thus, students whose mother tongue is used as the language of instruction at their universities have an advantage over students whose mother tongue is not the language of instruction at their universities.

Moreover, building proficiency through language, particularly, Mother Tongue-Based Multilingual Education is one of the salient features of the K to 12 curriculum. Pasa (2015) cited what is stipulated in Department of Education (DepEd) Order No. 74, s. 2009, that lessons and findings of various local initiatives and international studies in basic education have validated the superiority of the use of the learner's mother tongue or first language in improving learning outcomes and promoting Education for All (EFA). In an article, "Mother Tongue as primary medium of instruction published in Malaya" (July 22, 2009 p B6), Ateneo de Davao University and Palanca awardee, Macario Tiu stated that the new policy should cover all students all the way up to college because all the advanced countries teach their students in their own language.

The researcher recognized the importance of the medium of instruction towards efficient teaching-learning process. The dilemma for educators does not end with what to teach but how to teach as well. The researcher also recognizes the significance of employing a student-centered approach. Hence, efficient utilization of instructional materials that will promote active participation of the students who belong to a generation who have always had technology integrated into their lives is crucial.

Moreover, utilization of teaching methods like modularized instruction that promotes students' active participation which will in turn enhance their higher order thinking skills is also beneficial for the teachers as well as the learners. As stated by Loquillano et al. (2021) some of the unique features of the modules are the following: it can be self-learning and self-regulated instructional materials; each module can stand by itself if what is desired by the readers; it addresses the problems encountered by the teachers in integrating DRRR because of the lack of skills, competence, and training; and the structure of the module allows flexibility in undertaking future training opportunities since each module contains its supporting information with the appropriate assessment.

In addition to curriculum-related problems and issues, the Education sector is facing yet another challenge. In an article written by Baccay (2015), it was mentioned that according to Department of the Interior and Local Government's disaster action officer, Enrico Tambis, it is given that schools are prone and expose to various types of natural disasters, thus, the need to integrate disaster management courses and other disaster-related programs in school curriculum in order to strengthen the student's capacity for disaster risk reduction and management. As a key line agency of the National Disaster Risk Reduction and Management Council, the Department of Education is tasked with the dissemination of information on disaster management through its schools. Section 14 of Republic Act 10121 or The Philippine Disaster Risk Reduction and Management Act of 2010 mandates Department of Education (DepEd), Commission on Higher Education (CHED), and Technical Education and Skills Development Authority (TESDA) to integrate reduction management education in the school curricula for all levels and in all types of schools.

With the assigned role of dissemination of information and integration of disaster management education in school curricula for all, perceived importance of an effective medium of instruction and efficient instructional materials which must also adapt to the circumstances brought about by the pandemic, the researcher aimed to develop, validate and evaluate an instructional material in Disaster Readiness and Risk Reduction utilizing a method of instruction, modular approach that will promote student-centered learning, using Filipino language which learners are most familiar with to promote and maximize students' active involvement in the teaching-learning process.

1.1 Background of the Study

In the Manila Bulletin article of Hernando-Malipot entitled, "Year-end Report: DepEd in 2019: The quest for quality education continues", it was mentioned that Education Secretary Leonor Briones said that the performance of Filipino students in National Achievement Test (NAT) for Grades 6, 10, and 12 learners gravitates towards the low proficiency levels especially in Science, Mathematics and English. DepEd also revealed the result of the 2018 Programme for International Student Assessment (PISA) of the Organisation for Economic Co-operation and Development (OECD) which was administered to a representative sample of 15-year-old students, where the Filipino learners placed last among 79 participating countries and near last in science and mathematics respectively.

Vela (2015) stated that in Science education, comprehension skills and other Science skills depend on language, which involves using audio, visual or verbal symbols in order to maximize the learning of students. National Artist Virgilio Almario (2019) stated that explaining Science and Mathematics in Filipino will help improve classroom interaction, and schools need not attempt to translate scientific and technical terms. The problem in translation was exemplified by the study of Prianes (2013) which revealed that translating the terms in Mathematics is one of the problems encountered by most of the teachers. However, the learners easily understand the lesson when Filipino is used as a medium of instruction in teaching Mathematics. Moreover, as concluded in the study of Figura (2016), learners improved their conceptual understanding and mastery of the subject matter after their exposure to the developed Filipino-language based instructional materials in Physics.

On the other hand, there are also various studies aimed to evaluate the effectiveness of modular instruction or module as an instructional material. The study of Loquillano (2021) revealed that the use of modules could help teachers instruct the basic concepts and principles of Disaster Risk Reduction and Management. Learning module offer opportunities for learners to grasp fundamental principles of disaster preparation. Furthermore, the study of Navarro and Catajan (2020) showed that the e-learning modules can be used to enhance the success of the students in the acquisition of material awareness. The study result may encourage teachers in higher education institutions to develop teacher-made educational software packages, foster better learning, cater for the needs of millennial leaners.

Based from the above cited studies and articles, which in general emphasized the effects of using Filipino language as a medium of instruction and modular approach through the utilization of technology, there are some issues which have not given much attention. One of which is the extent of the effects of using Filipino language as a medium of instruction in teaching Disaster Readiness and Risk Reduction to senior high school students. The researcher was encouraged to use Filipino language when he noticed that several students express themselves more freely, participate more actively, and performed better when the medium of instruction used is Filipino. These factors prompted the researcher to develop, validate and evaluate an E-learning Module using Filipino Language in Disaster Readiness and Risk Reduction for Grade 11 Learners, hence, the conduct of the study.

2. Literature Review

E-learning Module

According to Sinecen (2018), E-learning is a computer-based educational tool or system that enables you to learn anywhere and anytime. In addition, Oxford Dictionary of Education written by Wallace (2015) defines E-learning as a type of learning facilitated by the use of computers, using the Internet, an institution's intranet, or material on disks. The study, "Effects of E-learning on Students' Motivation" of Harandi (2015) highlighted the significant relationship between E-learning and students' motivation wherein it was found out students are more likely to be more motivated when applying E-learning. If students are more motivated to learn, then they are more likely to be engaged; and if they are engaged and engaged successfully, they are more likely to achieve the learning objectives. In addition, Lubiano (2018) in the study, "Interactive E-learning Portal for Enrichment of Conceptual Understanding of Grade 8 Learners in Physics" showed that the interactive E-learning portal as a supplement to Grade 8 Learners' Material activities can enrich the conceptual understanding of the students in Grade 8 Physics. It can also aid learners with the abstract concepts in Physics since it is informative, understandable, attractive, and unique. In addition, the results indicate that the portal promotes student-centered learning since it is innovative, interactive, and engaging. Lastly, according to Saltman (2012) research findings, as well as newly adopted curriculum standards, continues to send a message to educators that the work of learning must be shifted from teachers to the ones doing the learning. That is because research and anecdotal evidence suggest that when students manage their own learning, they become more invested in their own academic success. Self-directed students also deploy critical-thinking skills more readily when confronted with challenging schoolwork. Research shows that children are naturally active learners who, from infancy, make choices and set goals to solve problems.

Disaster Readiness and Risk Reduction

United Nations International Strategy for Disaster Reduction (UNISDR) defines disaster as a serious disruption of the functioning of the community or a society involving widespread human, material, economic, or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources. Rushford and Thomas (2015) stated that disasters are classified in terms of hazards of natural origin (e.g., geological, hydrometeorological, and biological- such as earthquakes, floods, and epidemics respectively.) or those induced by human processes (e.g., environmental degradation, technological hazards such as nuclear accidents, and armed conflict). The Republic Act 10121 or the Philippine Disaster Risk Reduction and Management Act of 2010 defines Disaster Risk Reduction and Management as "the systematic process of using administrative directives, organizations, and operational skills and capacities to implement strategies and policies and improve coping capacities in order to lessen the adverse impacts of hazards and their possibility of disaster." It has four phases: Disaster Prevention and Mitigation, Disaster Preparedness, Disaster Response, and Disaster Rehabilitation and Recovery. The findings of the study, "Effectiveness of Self-Learning Kit in Science with Integration of Disaster Risk Reduction and Climate Change Adaptation" conducted by Brugada (2016) showed that the students' performance in the experimental group improved in the lessons Typhoons in the Philippines and Evacuation and Malnutrition after they were exposed to the developed instructional material. However, the study "Validation and Utilization of the Contextualized Disaster Readiness and Risk Reduction Modules" of Loquillano et al. (2021) revealed that the predominant themes to improve the modules included the visual considerations; accessibility of the materials, and enhancement of the concepts and topics. Moreover, Dedomo (2015) found out that disaster risk reduction was not integrated in Science subjects in Grade 7 for 3rd and 4th Grading Period, Grade 8 for 1st Grading Period, Third Year Chemistry for 2nd Grading Period and Fourth Year Physics as well as to Araling Panlipunan subjects in Grade 7 for Unang Markahan, Grade 8 for Unang Markahan. Only in Grade 8 Science for 2nd Grading period has slight integration with DRR education. On the positive note, the groups of respondents are much aware on the implementation of Disaster Risk Reduction Education with respect to Preparedness/Mitigation, Response and Rehabilitation. Information dissemination and advocacy campaign on Disaster Risk Reduction Education of the respondent schools in the Division of Rizal is greatly sufficient. In addition, teaching personnel and learners are knowledgeable enough about school's disaster risk reduction activities before, during, and after emergency. Third Year AP for Ikaapat na Markahan topics help elevating knowledge on preventing or minimizing adverse effects of disaster before its occurrence while Disaster Risk Reduction Campaigns raised teachers' and students' awareness against disaster risk and its adverse impact.

Filipino Language

In an article written by Adora (2017), it was mentioned that the groups, Save Our Schools Network and ACT Teachers partylist, together with Lumad students joined in calling the Department of Education (DepEd) to make the Filipino language as the main medium of instruction in schools. They noted it is wrong to just make the national language a single subject in schools and to make English the medium of instruction for complex subjects like math and science. According to Aquino (2015) in elementary schools located in Metro Manila, the discussions in Math and Science subjects are predominantly made in English. This is because most of the textbooks, and other academic literature are written in the language. Although this may not be bothersome to international or some private schools, this may cause students in public and other private schools difficulty in comprehending such information. A language barrier may risk the youth's ability to understand and learn technical concepts in these subjects, causing low assessment scores in math and

science. Moreover, Bernardino (2019) argued that using English as a medium of instruction deteriorates the education system, and puts the poorer students at a disadvantage. It also alienates the students from their cultural heritage and results in inferiority complex among lower class students who are stigmatized for using the native tongue. In addition, a number of studies confirmed that learning is faster using the Filipino language. Hence, Filipino must be used as the medium of instruction in the educational system because students learn best in this language. In the study of Valdez (2020) students who took Filipino version Science test obtained higher mean score and showed homogeneity in answering the test, indicating that there is uniformity in their understanding of the concept being tested. The findings of this study inferred that when the language of the test is the common language where the learners are exposed to, they performed better in the test. Moreover, Figura (2016) conducted a study which aimed to determine the effectiveness of Filipino-Language- Based Instructional Materials in Physics revealed that the students in experimental group improved their performance significantly after they were exposed to the developed Filipino Language-based instructional materials. On the other hand, the control group although improved as well, did not performed better than the experimental group after they were exposed to learning activities from different books and reference materials in Physics with English as the medium of instruction used. Hence, the developed Filipino Language-Based instructional materials enhanced the performance of the students in Physics.

3. Research Methodology

The study used several research designs, one of which is developmental research. It is the systematic study of designing, developing, and evaluating instructional programs, processes, and products that must meet the criteria of internal consistency and effectiveness. The study also utilized experimental method utilizing one-group pretest-posttest design, where in a single group is measured or observed not only after being exposed to a treatment of some sort, but also before. Lastly, the study also utilized evaluation research in which as explained by Johnson and Christensen (2014) involves determining the worth, merit, or quality of an evaluation object, such as educational programs. An evaluation object is the thing being evaluated: a program, a person, or a product.

The subject of the study was the developed E-learning Module Using Filipino Language in Teaching Disaster Readiness and Risk Reduction which covers the topics: Earthquake, Landslide, Typhoon, Flood, Storm Surge, and Fire Hazards. These topics were chosen based on the most common and destructive natural extreme events and human induced incidents our country experienced as revealed by the 2010-2019 and 2006-2015 Philippine Statistics Authority data respectively.

The study which was conducted during the first semester of Academic year 2021-2022 involved 40 Grade 11 STEM learners which were selected through simple random sampling method using fishbowl technique. The pretest/posttest was face and content validated by chosen 10 expert teachers in Filipino and DRRR. It was then administered to incoming Grade 12 STEM students who have taken DRRR and went through reliability test to determine the questions that will serve its desired purpose. The pretest was administered to the respondents and then was exposed to the developed and validated E-learning module in teaching Disaster Readiness and Risk Reduction where the researcher used Filipino (Tagalog) as the medium of instruction.

To further determine the level of acceptability of the developed E-learning module using Filipino language in teaching Disaster Readiness and Risk Reduction, a group of experts were asked to serve as respondents using the adapted questionnaire-checklist. The group was composed of: 20 Information Technology experts comprising of 5 ICT practitioners from private schools and 15 School ICT coordinators from different public schools in the Division of Rizal; 30 Filipino language experts comprising of Filipino teachers in JHS and SHS from various private and public schools in the province of Rizal; and 20 Disaster Risk Reduction and Management experts comprising of 15 School Disaster Risk Reduction and Management Coordinators from different public schools in Rizal and 5 Municipal Disaster Risk Reduction and Management officers from the Local Government unit of Tanay.

4. Results and Discussion

This study was guided by five research questions:

Problem 1: How do the DRRM experts evaluate the E-learning Module Using Filipino Language in teaching Disaster Readiness and Risk Reduction?

Table 1 - DRRM Experts' Evaluation on the E-learning Module Using Filipino Language in Teaching Disaster Readiness and Risk Reduction

Criteria	Mean	Verbal Interpretation
Objectives	4.69	Highly Evident
Content	4.67	Highly Evident
Learning Activities	4.69	Highly Evident
Presentation	4.71	Highly Evident
Usability or Usefulness	4.67	Highly Evident
Grand Mean	**4.69**	**Highly Evident**

It can be inferred from the summary how the DRRM experts deemed the E-learning module as an acceptable instructional material as supported by a 4.71 mean in terms of presentation. This contributes to the grand mean of 4.69 which can be verbally interpreted that all the criteria used in the evaluation are

highly evident. The data implies that the instructional material contains well-written learning objectives, carefully considered contents and varying learning activities presented in an orderly sequence favorable to the learners, making it a useful tool for learners with different learning styles, interests, and abilities.

These findings exemplify what Figura (2016) stated that objectives must be parallel to the lesson and the content of a learning material must fit the level of understanding of students for the material to be effective and must be applicable to the needs of the teachers and students in the teaching-learning process. In addition, this supports what Figura (2016) revealed that well-coordinated and well-presented content and learning activities are crucial to obtain the objectives and sustain the learner's interest and variety of learning activities offered to the students will determine the usability of learning materials. Moreover, this affirms the claims of de Vera (2014) that objectives must be stated clearly to concretize the learning outcomes and that effective teaching calls for the intelligent choice and skillful use of different instructional materials in accomplishing the desirable outcomes of instructions. De Vera (2014) added that teaching through the use of appropriate instructional materials satisfy the learning style of students in acquiring knowledge and skills development.

Problem 2: How do the Filipino Language experts evaluate the E-learning Module Using Filipino Language in teaching Disaster Readiness and Risk Reduction?

Table 2 – Filipino Language Experts' Evaluation on the E-learning Module Using Filipino Language in Teaching Disaster Readiness and Risk Reduction

Criteria	Mean	Verbal Interpretation
Presentation	4.49	Highly Evident
Usability or Usefulness	4.40	Highly Evident
Language Used	4.49	Highly Evident
Grand Mean	**4.46**	**Highly Evident**

A summary of the data collected from the evaluation of the Filipino experts indicate a mean of 4.49 for both presentation and language used. These numbers contribute to a grand mean of 4.46 which can be verbally interpreted that the descriptors for the criteria used are highly evident. This implies that it is highly evident that the organization of content of the instructional material and the components of the medium of instruction utilized is acceptable and appropriate for the target users. This will contribute in ensuring that the E-learning module is applicable to learners with different abilities and attitudes, which must be considered to attain effective teaching and positive learning outcomes.

This reflects the findings of Ramirez (2018) that the acceptability of instructional materials in terms of organization and presentation will be determined by clear and well-presented topic headings, clearly stated directions that encourages students' problem-solving skills, and properly arranged sequence of topics. Moreover, this supports the similar findings of the studies of Figura (2016) and Gonzaga (2017) which revealed that an acceptable instructional material utilizes simple, easy to understanding, appropriate to the level of learner's comprehension but provides opportunity for learning new meaning.

Problem 3: How do the IT experts evaluate the E-learning Module Using Filipino Language in teaching Disaster Readiness and Risk Reduction?

Table 3 – IT Experts' Evaluation on the E-learning Module Using Filipino Language in Teaching Disaster Readiness and Risk Reduction

Criteria	Mean	Verbal Interpretation
Learning Environment	4.52	Highly Evident
User Interface	4.65	Highly Evident
Course Content	4.62	Highly Evident
Portability	4.75	Highly Evident
Usability or Usefulness	4.63	Highly Evident
Grand Mean	**4.63**	**Highly Evident**

As summarized by the table above, the developed in E-learning module passed the judgment of the experts particularly in portability as supported by a mean of 4.75 which can be verbally interpreted as highly evident ability to be transferred from one computer system to another. The data also shows a grand mean of 4.63 which reflects that the different criteria related to the technological aspects of the instructional material are highly evident. This reflects that the instructional material supports multiple functions, the course contents of E-learning module are utilized accordingly, the components of the material can easily be learned and used by the students, it can be used in different gadgets of varying operating systems, and it helps in meeting the needs of the target users.

This can be supported by the claims of Hamdi and Hamtini (2016) that in E-learning, a combination of text, audio, still and motion visuals can be used to communicate the presented material. In addition, it is necessary to follow some essential principles to design an effective user interface in an e-learning system to create an environment for the learner to successfully navigate through the learning material and gain understanding of the presented content. Moreover, Madero (2016) explained that a material which is self-contained, independent from other systems, and can be transferred from one computer to another can be considered as portable. Lastly, Alcayde and Malaluan (2016) stated that usefulness require that instructional materials be developed on the basis of the interests, knowledge, understanding, abilities, needs and experiences of the students.

Problem 4: What is the level of performance of Grade 11 learners before and after exposure to the developed E-learning Module Using Filipino Language in Teaching Disaster Readiness and Risk Reduction?

Table 4 - Level of Performance of Grade 11 Learners Before and After Exposure to the Developed E-learning Module Using Filipino Language in Teaching Disaster Readiness and Risk Reduction

	Before			After		
	Mean	**Sd.**	**VI**	**Mean**	**Sd.**	**VI**
Geological Hazard						
Earthquake	6.93	1.97	VS	8.05	1.54	O
Landslide	6.42	1.65	VS	7.43	1.45	VS
Total	13.35	3.05	VS	15.48	2.39	VS
Hydro Meteorological Hazard						
Typhoon	6.00	1.45	VS	6.88	1.29	VS
Flashflood	7.35	1.83	VS	8.08	1.19	O
Storm Surge	7.93	2.02	VS	9.07	1.12	O
Total	21.28	4.07	VS	24.03	2.60	O
Fire Hazard	6.90	1.74	VS	8.12	1.32	O
Grand Total	41.53	6.58	VS	47.63	4.80	VS

The data also reveals standard deviations ranging from 1.45 to 2.05 which are relatively lower or closer to the means. Moreover, it can be derived from the data an increase from 6.93 to 8.05, from 7.35 to 8.08, from 7.93 to 9.07, and from 6.90 to 8.12 which all can be verbally interpreted as an improvement from very satisfactory to outstanding in terms of the lessons in Earthquake, Flashflood, Storm Surge, and Fire Hazards respectively. These findings imply that the Grade 11 learners have a good foundation or prior understanding of the lessons. In addition, since the language used in the test is Filipino, which they can easily understand, it helps them to answer the questions even before the exposure to the instructional material. Furthermore, the level of performance of the learners are homogenous as revealed by the standard deviations of their scores before exposure to the E-learning module. In addition, the improvement in the academic performance of the learners suggests that the E-learning module using Filipino language in Teaching Disaster Readiness and Risk Reduction enables the learners to further widen their knowledge and understanding and enhance their skills in order to attain the learning competencies and learning objectives.

A similar result was yielded in the study of Caliguia (2014) where the experimental group obtained average performances in Physics for Grade 8. After their exposure to the instructional material, the experimental group improved their performances to very high. This suggested that the computer-based lesson is a good enrichment material to improve learners' academic performance in these topics.

This also supports the findings of Legion-Luna (2018) where the experimental group which has satisfactory performance in their pretest has improved to outstanding after using the computer-aided activities in Biology. This means that the computer aided activities in Biology can be a good instructional material in improving learners' academic performance.

Problem 5: Is there a significant difference on the level of performance of Grade 11 learners before and after exposure to the developed E-learning Module Using Filipino Language in Teaching Disaster Readiness and Risk Reduction?

Table 5 - Significant Difference on the Level of Performance of Grade 11 Learners Before and After Exposure to the Developed E-learning Module Using Filipino Language in Teaching Disaster Readiness and Risk Reduction

Lessons		Mean	Sd.	Mean Diff	t	Df	p-value	H_O	VI
Earthquake	Before	6.93	1.97	1.125	4.896	39	.000	R	S
	After	8.05	1.54						
Landslide	Before	6.43	1.65	1.000	4.118	39	.000	R	S
	After	7.43	1.45						
Typhoon	Before	6.00	1.45	.875	4.062	39	.000	R	S
	After	6.88	1.29						
Flashflood	Before	7.35	1.83	.725	3.125	39	.003	R	S
	After	8.08	1.19						
Storm Surge	Before	7.93	2.02	1.150	3.535	39	.001	R	S
	After	9.07	1.12						
Fire Hazard	Before	6.90	1.74	1.225	4.863	39	.000	R	S
	After	8.12	1.32						
Total	Before	41.53	6.58	6.100	8.574	39	.000	R	S
	After	47.63	4.80						

As summarized in the table, the mean difference of the scores before and after exposure to the developed E-learning module ranges from 0.725 to 1.225. These numbers contribute to the total mean difference of 6.100. Moreover, in all the lessons the computed p-value ranges from 0.000 to 0.003 which are all less than the level of significance of 0.05. This suggests that there is significant difference on the level of performance of the grade 11 learners as revealed by their scores, before and after exposure to the E-learning module, hence, the null hypothesis is rejected. This confirms that the academic performance of the learners improved noticeably after completing the learning activities of the developed E-learning module Using Filipino Language in Disaster Readiness and Risk Reduction using Filipino language. This implies that the instructional material could be used as an efficient tool in learning this course.

It can be supported by what was statistically found out in the study of Legion-Luna (2018) that there was a significant difference on the level of performance of the experimental group as revealed by the results of the pretest and posttest with respect to the different topics in DNA and RNA and Mutation. Furthermore, based on the results of the study of Lubiano (2018), both the control and experimental groups are of the same level before the start of the experimentation. During the posttest, statistical analysis indicate that the experimental group attained a higher success after exposure to the Interactive E-Learning Portal in Physics for Grade 8 Learners as compared to the control group.

5. Conclusion

Based on the summary of findings, the following conclusions are drawn:

1. The Filipino language-based E-learning module can be utilized in teaching Disaster Readiness and Risk Reduction for Grade 11 learners.

2. The level of performance of the Grade 11 learners improved after accomplishing the E-learning Module Using Filipino Language in Teaching Disaster Readiness and Risk Reduction particularly in Earthquake, Flood, Storm Surge, and Fire Hazards.

6. Recommendations

In light of the conclusions, the following are recommended:

1. Revision and modification of the E-learning modules in Landslide and Typhoon must be done to further suit the need and abilities of the learners.

2. The effectiveness of the developed E-learning module must be established.

3. The E-learning Module Using Filipino Language in Teaching Disaster Readiness and Risk Reduction can be converted into offline-based instructional materials so more students can use it even without or poor internet connection.

4. Parallel study with English as the language of instruction must be done, if possible, to validate the findings and results of the study.

5. Parallel study may be conducted using community-based disaster risk reduction and management organizations to widen the subject or setting of the study.

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