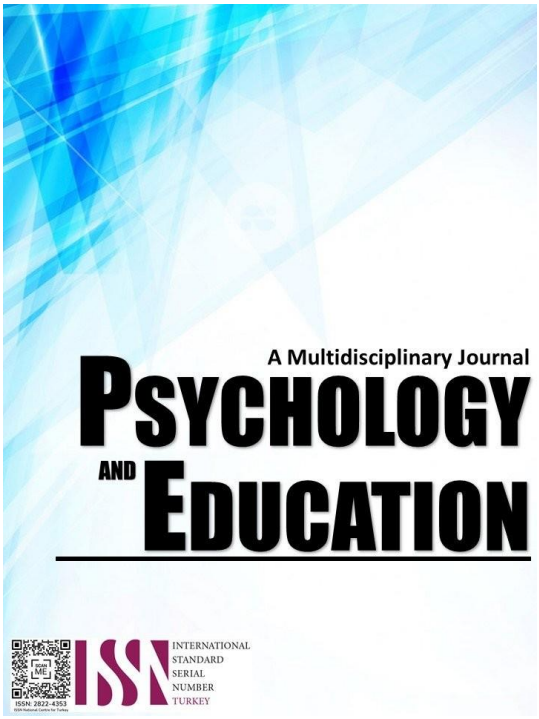
LEARNING E-BOOK: A SUPPLEMENTARY LEARNING MATERIAL IN ENHANCING THE LEARNERS' SKILLS IN ELECTRICAL INSTALLATION AND MAINTENANCE (EIM)



PSYCHOLOGY AND EDUCATION: A MULTIDISCIPLINARY JOURNAL

Volume: 22
Issue 4
Pages: 472-480
Document ID: 2024PEMJ2070
DOI: 10.5281/zenodo.12786621
Manuscript Accepted: 06-14-2024

Psych Educ, 2024, **22**(4): 472-480, Document ID:2024PEMJ2070, doi:10.5281/zenodo.12786621, ISSN 2822-4353

Research Article

Learning E-Book: A Supplementary Learning Material in Enhancing the Learners' Skills in Electrical Installation and Maintenance (EIM)

Marvin M. Medrano,* Edilberto Z. Andal
For affiliations and correspondence, see the last page.

Abstract

This study sought to determine whether ebook would enhance learners skills in Electrical Installation and Maintenance. In this study, the researcher employed descriptive experimental design. The researcher used one section with fifty Grade 8 learners as the respondents of the study who were in Sta. Catalina National High School. In this study, the researcher gathered data of the respondents in terms of their profile, learners' experiences and perception in using E-BOOK in EIM. The findings demonstrated that the experiences and perception of the respondents in terms of SLE in EIM were always observed, learners' performance in written and hands on activities has a verbal interpretation of excellent and very good while, the result entails that there is a increased of scores and grades of the respondents after the utilization of ebook. The study also revealed that there is a significant difference between the pretest and posttest scores of the respondents in written and hands- on performance. The study suggested the continuous use of SLE in EIM in enhancing the skills of learners.

Keywords: *e-book, EIM, TLE, hands-on activities, written performance*

Introduction

Quality education is a product of quality teaching delivery accompanied by effective teaching strategies. This was affected when COVID-19 pandemic hit the entire system of education. There was a massive shift of teaching delivery of instruction and assessing students' knowledge and life skills during the past two years. But, in the light of the ongoing pandemic, the Department of Education made a bold decision to gradually make teaching and learning back to normal. DEPED memo no. 17 s.2022, which discuss the gradual comeback of learners in school setting. With that being said, the face to face interaction between teachers and learners would be exercised. This step would gradually address the gaps of teaching and learning in the last two years of modular distance learning. With that being said, what would be the teachers' preparation to address the gaps in teaching and learning? How would teachers address the comeback of learners in a school setting?

The problem would be addressed through the utilization of electronic book. Mulholland and Bates (2014) define an e-book as an e-copy of books or it is born electronically. Furthermore, Ebook is defined as container that is transformed into electronic copy," according to Auradha and Usha (2014). Through the utilization of this innovative supplementary materials, learners would experience a new way of grasping the knowledge in every competency of TLE-8 Electrical Installation and Maintenance.

This particular area of specialization focuses on Home Economics, Information Communications and Technology, and Industrial Arts. This entire school year, the learners need to learn the concepts of Nail Care Services, Dressmaking, Contact Center Services and Electrical Installation and Maintenance. With these areas, learners would not just learn the basic concepts of each and every area, but also the life skills they would be needing in their life that they can apply in every day. Also, with these life skills, learners can use this as their career. Students should know how to use the technology and how they can apply it in doing hands- on activities to improve learning. (Tamaro 2018). Furthermore, Tomaro (2018) highlighted that life in 21st century has been accompanied by technologies.

In connection to this, life skills is all about transforming knowledge into outputs (Millia, 2009). Technology and Livelihood Education (TLE) learning areas focus on life skill learners need to acquire in every quarter. These life skills are beneficial to help them to be not just locally ready but globally competitive if they would pursue a career in any learning areas in TLE. Through the utilization of E-book, learners would be guided on how to do and accomplish specific tasks. Video demonstrations would help the learners, from the preparation of materials needed up to the steps on how to do the activity would be seen in the E-book. If that is so, E-book would help teachers in delivering the instruction and lead learners on the objectives and goals needed to achieve.

This is the innovative way of the researcher on how to transform knowledge into different perspectives. It is about being creative to meet the demands of today's learners.

Research Questions

This research aimed to quantify students' electronic book in EIM and its parts to the level of life skills of learners. Specifically, the researcher sought to answer the following questions.

1. What is the profile of the respondents in terms of:
    1.1. age;
    1.2. sex;
    1.3. parents educational attainment

1.4. parents occupation; and
1.5. family income?

2. What is the learners perception on the features of Learning E-book in EIM as to:
   2.1. availability;
   2.2. portability;
   2.3. space saving;
   2.4. interactivity;
   2.5. convenience; and
   2.6. accessibility?
3. What is the learners perception on the parts of Learning E-book in EIM in terms of:
   3.1. general Instructions;
   3.2. lesson subject topic;
   3.3. lesson videos;
   3.4. video demonstration; and
   3.5. educational assessment?
4. What is the performance of the students in EIM before and after the utilization of Learning E-book as to:
   4.1. Written Performance
      4.1.1. Splicing of wires;
      4.1.2. Extension cord making;
      4.1.3. Types of Circuit, and
      4.1.4. Electrical floor plan making?
   4.2. Hands on Performance
      4.2.1. Splicing of wires;
      4.2.2. Extension cord making;
      4.2.3. Types of Circuit, and
      4.2.4. Electrical floor plan making?
5. Is there a significant difference between the performance of the learners before and after the utilization of Ebook as to:
   5.1. written performance, and
   5.2. hands on performance?

Literature Review

Perspective on Gays

A book stored in electronic format on a microchip, disk, or computer is referred to as an electronic book, or E-book, according to the Cambridge Dictionary. Users can easily alter and use this user-friendly e-book at their own convenience. Accordingly, an e-book can be anything more than a digital copy of a physical book, or it can be "born digital" (Mulholland and Bates, 2014: 493), with extra capabilities like sophisticated search and linkages to other websites that make it more useful.

Methodology

Participants

Purposive sampling technique was applied in this study since only students from one (1) section would be the respondents of the study which was composed of fifty (50) heterogeneous learners from the chosen section handled by the researcher.

Instruments

To gather relevant data for this study, the researcher utilized various techniques which were validated by experts in the field. The following instruments were used to enhance the skills Electrical Installation and Maintenance (EIM) of the respondents.

Survey questionnaire was used to identify the learning experiences and perception in E-book in EIM of the respondents of the study. The survey questionnaire composed of the profile of the respondents, five statements/questions in learners' perception on the features in using E-book and five questions on the perception on the parts of E-book in EIM in enhancing the life skills in TLE 8. The questionnaire was utilized through google form and printed copies to collect information on the learning experiences and perception on the use of E-book in EIM.

The second instrument the researcher utilized was the E-book that helped to determine what is lacking in the printed learning materials. This learner friendly E-book was easy to navigate. This innovative supplementary material helped learners to better understand the lesson, and how to do life skills assessment.

Furthermore, the E-book contained the lessons about Electrical Installation and Maintenance, one learning area in TLE. The lessons were aligned to the Most Essential Learning Competencies (MELCS). It contained general instructions to inform about the learning

area to be taught and also topics and life skills assessment to be done. The general instructions was a video demonstration on how to properly use the E-book in EIM. The subject lesson topics are the following: a. Select Measuring Tools and Equipment, b. Carry out Measurements and Calculations and c. Analyze Electrical Signs and Symbols. These topics had a video lesson. Video demonstration on how to accomplish the life skills was also present in E-book in EIM. The video demonstrations were the following: a. Splicing of wires, b. Extension cord making, c. Floor plan making.

Furthermore, E-book was validated by the ICT coordinator of the school and master teachers of different areas of specialization. After validation, the researcher's ebook underwent copyright and patent that adhere to the Republic Act no. 8293, The Intellectual Property of the Philippines.

The third instrument was the validated pretest and posttest in Written Works and in Skills Performance in EIM. It was composed of five questions per variable. The fourth instrument would be the rubric. This was the measuring tool that the research used to assess learners' skills performance. This rubric was adopted on the K to 12 Learning Module: Electrical installation and Maintenance.

Procedure

To facilitate the study, the researcher first asked permission from the Dean of the Graduate School to conduct the study. Afterward, the researcher sent a letter of permission to the Schools Division Superintendent of Schools Division Office of Cotabato to administer the research study at Dado High School.

To get significant information for the study, the researcher oriented the conversational partners and reminded them about the importance of their responses. Afterward, the researcher conducted a face-to-face interview with the full cooperation of the selected CPs using data collection procedures such as observations, interviews, and personal data forms. First, the researcher presented the consent form to the participants and let them freely sign the agreement. Second, the guide questions were given to the participants a few minutes before the recorded interview so they could prepare their responses during the actual interview. Third, the CPs' consent for the interview was recorded and asked. Lastly, the researcher conducted the actual interview with some translations in the local language so that the CPs could express their point of view profoundly and with follow-up probe questions to explore their answers further.

Completing the transcription of the interviews, the researcher incorporated some notes from the participant's body language, tone of voice, expressions, and gestures following a particular question. The interview timing was based on the CPs' available time so as not to disturb their regular daily work. The CPs were interviewed at their most convenient time and place.

Therefore, the study presented the phenomenon since the CPs were free to express and share their personal experiences and beliefs without hindrances. To ensure that the transcriptions were correct, valid, and reliable, the researcher individually met with the CPs again so that they could verify the interview transcription. The researcher informed the participants that they could freely improve and delete some errors in the interview transcriptions and requested them to affix their signatures in the comforme section if they agreed.

Ethical Considerations

Before the conduct of the study, the respondents would be ensured that the data to be gathered from them will be used for research purposes only and will not be reflected in their actual class performance. Also, the data gathered would be treated with utmost confidentiality. The researcher ask permission first to all parents of the respondents by signing the parents' consent given by the respondents.

Results and Discussion

This section provides a thorough examination and explanation of the data collected, which are presented in tabular form and statistically evaluated to address the study's problem.

Table 1. *Distribution of the Respondents in terms of Age*

Age	*Frequency*	*Percent*
13 and below	40	80.0
14	10	20.0
Total	50	100.0

The table 2 shows the respondents' distribution in terms of age. It shows that the majority of the respondents are of ages 13 and below garnering a frequency of 40 and a total percentage of 80. On the other hand, there are ten respondents with the age 14 and got 10%. Also, there were no respondents who were aged 12,15 and 16. The result entails that the researcher's respondents were dominated by respondents with ages 13.

Table 2 *Distribution of the Respondents in terms of Sex*

Sex	*Frequency*	*Percent*
Male	32	64
Female	18	36
Total	50	100

Table 3 describes the educational attainment of the respondents' father. There are six indicators that respondents' chose based on the educational attainment of their father from elementary undergraduate to college graduate. Based on the table above, elementary undergraduates got a frequency of 1 and a percentage of 2. Elementary graduates of respondents' fathers got the second highest, which was 22 and 44%, while on the other hand, respondents' mothers got 16 and 32%. It is followed by the highest frequency result which is high school undergraduates which is 25 and is 50%, while high school undergraduates also got the highest frequency of 34 and has 68%.

Table 3. *Distribution of the Respondents in terms of Parent's Educational Attainment*

	Frequency	*Percent*	*Frequency*	*Percent*
	Father		*Mother*	
Elementary Undergraduate	1	2.0	0	0
Elementary Graduate	22	44.0	16	32.0
Highschool Undergraduate	25	50.0	34	68.0
Highschool Graduate	2	4.0	0	0
Total	50	100.0	50	100.0

Furthermore, high school undergraduates got a frequency of 2 and had 4%. The respondents' fathers did not go to college or even finish college. Respondents' father and mother did not go to college or even college. Since the school in in the rural area of Candelaria, Quezon, many of the learners' parents did not finish their respective schooling because of the poverty-stricken life.

Table 4. *Distribution of the Respondents in terms of Parent's Occupation*

Occupation	*Frequency*	*Percent*	*Frequency*	*Percentage*
	Father		*Mother*	
Employed	44	88.0	41	82.0
Unemployed	6	12.0	9	18.0
Total	50	100.0	50	100.0

Table 4 shows the breakdown of the respondents' profile in terms of occupation. This has two options, employed and unemployed. Forty-four (44) out of fifty respondents answered that their fathers were unemployed with 88%, while respondents' unemployed mothers got a frequency of 41 with 82%. Only six employed respondents' fathers or 12% were employed while there were 9 out of fifty employed mothers.

Table 5. *Distribution of the Respondents in terms of Family Monthly Income*

Family income	*Frequency*	*Percent*
Php.1000- Php.10,000	17	34.0
Php. 10,001- Php.20,000	31	62.0
Php. 20,001- Php. 30,000	2	4.0
Total	50	100.0

Table 5 shows the result of respondents' answers in terms of family income. There are six options given, from Php. 1000 to 50,001 and above. The breakdown shows that the majority of the respondents' family income falls into 10,001-20,000, which has a frequency of 31 and has 62%. Php.1000-1000 got 17 with 34% and the lowest got a frequency of 2 and 4% which is Php.20,001-30,000. There was no income that was higher than 30,001.

Leraners' Perception on the Features of Ebook in EIM

The second part of the discussion was all about Learners' Perception on the Feature of Ebook in EIM. This consists of six table and a summary table for all indicators.

Table 6. *Summary of the Learners' Perception on the features of Ebook in EIM*

Indicator	*Mean*	*SD*	*Verbal Description*
Availability	3.48	0.24	Always observed
Portability	3.58	0.26	Always observed
Space saving	3.54	0.30	Always observed
Interactivity	3.54	0.30	Always observed
Convenience	3.73	0.20	Always observed
Accessibility	3.62	0.24	Always observed
Overall	3.58	0.25	Always observed

Legend: 3.26-4.0- (Always Observed), 2.51-3.25 (Sometimes Observed), 1.76-2.50 (Rarely Observed), 1.0-1.75 (Not Observed)

The table shows the overall result of learners' perception on the features of e-books. The table presented the six indicators with its overall mean and SD. Indicator convenience got the highest mean of 3.73 with an SD of 0.20 and always observed as verbal description. In contrast, availability got the lowest mean of 3.48, SD of 0.26 and a verbal description of always observed. The over-all mean of SOP

1 is 3.58, an SD of 0.25 and always observed as verbal description.

The indicator convenience got the highest primarily because learners got to access the ebook easily and got to explore what it would offer to better enhance the learnings of the learners. Also, it is easy to access the essential topics that the teacher would discuss. Additionally, it has educational videos that would enhance learners' skills in doing and accomplishing the activities. In connection to this, there was limited access to ebook as it revealed that it has the lowest average mean. In public school, the use of e-books and online platforms was introduced when the pandemic struck to continue the delivery of teaching and learning. Still, the result of SOP 1 was proof that the use of e-books in teaching the subject was a success.

Students have a desire to read electronic books because they find them to be a new and unique medium that is multimodal and multisensory (Larson, 2013). Through interactive aspects and ease of use, ebook in EIM helps the respondents understand the lesson while enjoying the usage of ebook.

The next set of tables presents the Learners' Perception on the Parts of Learning Ebook in EIM. This part discussed the analysis and interpretation of data of each indicator.

Table 7. *Summary of the learners' perception in Ebook in EIM*

Indicator	*Mean*	*SD*	*Verbal Description*
General Instructions	3.57	0.31	Always observed
Lessons	3.48	0.28	Always observed
Lesson Videos	3.62	0.24	Always observed
Video Demonstration	3.59	0.22	Always observed
Educational Assessment	3.67	0.20	Always observed
Overall	3.58	0.22	Always observed

Legend: 3.26-4.0- (Always Observed), 2.51-3.25 (Sometimes Observed), 1.76-2.50 (Rarely Observed), 1.0-1.75 (Not Observed)

Table 7 discuss the summary of Learners' Perception in Ebook in EIM. Educational Assessment got the highest mean of 3.67 with an SD of 0.20 with a verbal description of always observed. This means that learners' got to enjoy how assessments in each lesson was interactive. Also, this result entails that the score respondents got was not dispersed. On the contrary, Indicator Lessons got the lowest mean which is 3.48 with an SD of 0.28 and a verbal description of always observed. Although lessons got the lowest mean, learners' got to enjoy how they can navigate the content of an ebook. They can control the content and go to other lessons with no hassle and problem.

Through the insertion of interactive aspects of the ebook, it helps the respondents to use the ebook, understand the lesson, improve their learning, and successfully accomplish the hands-on activities. In this manner, it reflects the effect of using ebook as a supplementary learning material in improving the written and hands- on performance of the respondents or the learners who accessed the ebook. E-books can be used as a primary tool, integrated with effective learning strategies that make a child literate in the 21st century (Ciampa, 2016).

The table below shows the discussion about the learners performance before and after the utilization of Ebook in EIM. Also, this would reveal if there is significant difference between the pretest and post scores and grades of learners.

Table 8. *Students' Written Performance in EIM Before and After the Utilization of Ebook*

Score	*PRETEST*								*POSTTEST*								*Interpretation*
	Splicing		*Extension cord*		*Types of Circuit*		*E. Floor Plan*		*Splicing*		*Extension cord*		*Types of Circuit*		*E. Floor Plan*		
	F	*%*	*F*	*%*	*f*	*%*	*f*	*%*	*F*	*%*	*F*	*%*	*F*	*%*	*F*	*%*	
90-above	0	0	0	0	0	0	0	0	5	10	7	14	7	14	9	18	Excellent
85-89	5	10	3	6	2	4	1	2	17	34	13	26	18	36	15	30	Very Good
80-84	12	24	20	40	15	30	15	30	18	36	20	40	16	32	18	36	Good
75-79	18	36	15	30	21	42	23	46	7	14	8	16	6	12	6	12	Fair
70-74	15	30	12	24	12	24	11	22	3	6	2	4	3	6	2	4	Poor

Legend: 70-74 (Poor), 75-79 (Fair), 80-84 (Good), 85-89 (Very Good), 90-above (Excellent)

Table 8 shows the pretest and posttest scores of learners in written performance. This consists of the following: Splicing of wires, extension cord making, Types of circuit, and Electrical floor plan. The table shows the summary of respondents' scores in each hands on activity. Each activity has a ten (10) item test to measure respondents' knowledge on the topic. Before the conduct of the study, the researcher gave a forty (40) item pretest to the respondents. After giving a pretest, the researcher determined respondents' scores in each hands-on activity. The pretest scores of the respondents were as follows; five got 85-89 score in splicing of wire and has 10% and interpreted as very good, 12 got a score of 80-84 with 24% and good as an interpretation. It was then followed by the 18 respondents who got a score of 75-79 with a 36% and interpreted as fair.

Lastly, 15 learners got 70-74 with a 30% and poor interpretation. In terms of respondents scores in extension cord making, 3 had a score of 85-89 with a 6% and very good as a verbal description, 20 learners got a score of 80-84 with 40% and an interpretation of

good, 15 out of 50 got 75-79 with a 30% and fair as an interpretation, and lastly, 12 learners got 70-74 scores with 24% and poor as a verbal interpretation. In connection to this, in terms of types of circuit, 2 out of 50 got 85-89 scores with 4% and an interpretation of very good, while on other hand, 15 respondents got a score ranging from 80-84 with 30% and good as interpretation. 21 respondents got a score of 75-79 with 42% and a fair interpretation and lastly 12 respondents got 70-74 with a 24% and an interpretation of poor.

Furthermore, in the electrical floor plan, 1 out of 50 respondents got a score of 85-89 with 2% and very good as an interpretation. On the other hand, 15 respondents got a score of 80-84 with an equivalent 30% and an interpretation of good, it was then followed by the 23 respondents who got a score of 75-79 and fair interpretation. Also, 11 learners got 70-74 scores with a 22% and poor interpretation.

In connection with this, here are the results of respondents' answers in the post-test. In splicing of wires, there are five respondents who got a score of 90-above with a 10% and excellent as interpretation. Seventeen respondents got a score of 85-89 with a 34% and very good interpretation. On the other hand, there were eighteen respondents who got a score of 80-84 with 36% and good interpretation. Only seven respondents got a score of 75-79 with a 14% and fair as interpretation, while on the other hand, three out of fifty got a score of 70-74 with 6% and poor as an interpretation. In terms of posttest splicing of wires, seven got a score of 90-above with 14% and an interpretation of excellent. Thirteen out of fifty got a score of 85-89 with 26% and very good as an interpretation. Twenty out of fifty respondents got a score of 80-84 with 40% and good as an interpretation. In relation to this, only eight respondents' got a score of 75-79 with a 16% and fair as an interpretation and lastly, only two got a score of 70-74 with 4% and poor as interpretation. One of the written works was the type of circuit. Seven respondents' got a score of 90-above with 14% and an interpretation of excellent. In relation to this, eighteen respondents got a score of 85-89 with 36% and an interpretation of very good. Sixteen got a score of 80-84 with a 32% and good interpretation. Only six respondents got a score of 75-79 with a 12% and fair as an interpretation. Lastly, two got a score of 70-74 with a 4% and poor interpretation. In the electrical floor plan, nine got a score of 90-above with a 18% and excellent interpretation. Fifteen out of fifty respondents got a score of 85-89 with 30% and very good interpretation. On the other hand, eighteen respondents got a score of 80-84 with a 34% and good interpretation. Only six respondents got a score of 75-79 with a 12% and fair as interpretation, and lastly, only two respondents got a score of 70-74 with 4% and poor as interpretation.

The study shows the positive effect of integrating the use of gadget in teaching the subject. The study revealed a significant increase in respondents written work scores. What teacher need to be careful is the monitoring on the use of gadget as it was subject to negative connotation towards learning. The teacher should create a monitoring system on how and when would learners use the gadget and how long would it last. Also, teacher need to check time to time if learners truly accessed the ebook or doing something that is not connected to the lesson. In addition, it has been shown in several reliable studies that E-books can contribute to closing the learning achievement gap and promote learning (Shamir & Korat, 2015).

Table 9. *Students' Hands-on Performance in EIM Before and After the Utilization of Ebook*

Grade	*PRETEST*										*POSTTEST*						*Interpretation*
	Splicing		*Extension cord*		*Types of Circuit*		*E. Floor Plan*		*Splicing*		*Extension cord*		*Types of Circuit*		*E. Floor Plan*		
	F	*%*	*f*	*%*	*F*	*%*	*f*	*%*	*F*	*%*	*f*	*%*	*F*	*%*	*F*	*%*	
93-100	3	6			5	10	1	2	11	22	8	16	12	24	7	14	Excellent
86-92	8	16	13	26	9	18	9	18	11	22	18	36	19	38	22	44	Good
79-85	26	52	25	50	21	42	27	54	18	36	19	38	11	22	15	30	Fair
78-below	13	26	12	24	15	30	13	26	10	20	5	10	8	16	6	12	Poor

Table 9 shows the breakdown of learners' scores in hands-on performance. It includes the scores in splicing of wires, extension cord making, types of circuit, and electrical floor plan. The scores of learners were from 75-100. In splicing of wires, the pretest scores were as follows; three got a Grade of 93-100 with 6% and an interpretation of excellent. Eight learners got a score of 86-92 with a 16% and good interpretation. On the other hand, twenty-six learners got a Grade of 79-85 with 52% and fair as an interpretation. Lastly, thirteen respondents got 78-below with 26% and poor interpretation. In extension cord making, 13 got a score of 86-92 with 26% and very good interpretation. Twenty-five respondents got a score of 79-85 with 50%, fair as interpretation. Lastly, there were twelve who got 78-below Grades with 24% and poor interpretation. To continue, five learners got a Grade of 93-100 with 10% and very good as interpretation, nine got a score of 86-92 with 18% and good as interpretation. Twenty-five respondents got a Grade of 79-85 with 50% and fair interpretation. Lastly, twelve learners got 78-below Grades with 24% and poor interpretation.

To continue, five learners got a Grade of 93-100 with 10% and were very good as interpretation. Nine out of fifty got a Grade of 86-92 with 18% and good interpretation. On the other hand, twenty-one respondents got a Grade of 79-85 with 42% and fair interpretation. Lastly, fifteen got a score of 78-below ith 30% and poor interpretation. In the electrical floor plan, there was one who got a Grade of 93-1—with 2% and very good as interpretation. Nine out of fifty got a score of 86-92 with 18% and good as interpretation. To continue, twenty-seven got a Grade 79-85 with 42% and fair as interpretation and last was the respondents who got a Grade between 78-below and had a 30% and poor as interpretation.

In relation to the result of pretest grade of respondents in every hands-on activities, in splicing of wires, eleven got a Grade of 93-100 with a 22% and very good as interpretation. Also, eleven got a score of 86-92 with 22% and good interpretation. On the other hand,

eighteen got a score of 79-85 with a 36% and fair interpretation. Only ten out of fifty respondents got a score of 78-below with 20% and poor interpretation. In splicing of wires, eight got a score of 93-100 with 16% and very good as interpretation. Eighteen got a score of 86-92 with 36% and good interpretation. In connection with this, nineteen got a score of 79-85 with 38% and fair as interpretation and lastly, only five got a score of 78-below and 10% with an interpretation of poor.

In relation with this, in types of circuit, twelve got a score of 93-100 with a 22% and very good interpretation. Nineteen got a score of 86-92 with 38% and good interpretation. Only eleven respondents got a score of 79-85 with 22% and fair as interpretation and lastly, eight learners got a score of 78-below with 16% and poor as interpretation. The last hands-on activity was electrical floor plan, seven got a score of 93-100 with 14% and very good as interpretation. Twenty-two got a Grade of 86-92 with 44% and good interpretation. Fifteen got a Grade of 79-85 with 30% and fair as interpretation and lastly, only six got a score of 78 and below with 12% and poor as interpretation.

According to Moses et al. (2017), the weighted categories in the scale were designed to accommodate students' individual differences and inform teachers of their level of competency. Through the use of e-books, it addresses the multiple intelligences like visual/ spatial intelligence and music/rhythmic intelligence. Through the visuals Ebook in EIM have, it would boost learning to learners that falls in this intelligences. They can focus more and understand more the lesson. There were recorded instructions and lessons that were fit to music intelligence learners. With this being said, the performance of the learners would increase as it was reflected on the scores they got on each hands on activities conducted in the study. Learners understand how to make and accomplish the activity with the use of video demonstration that explains the step by step process on how to do the activity. Through the utilization of ebook, it enhances learners' performance. Learners got to enjoy the use of ebook while doing the activity.

Table 10. *Significant Difference between the Performance of the Learners' Before and After the Utilization of Ebook as to Written Performance*

Written works	*Pretest*		*Posttest*		*T*	*Df*	*Sig. (2-tailed)*
	Mean	*Std. Deviation*	*Mean*	*Std. Deviation*			
Splicing	82.80	4.54	85.66	6.03	8.228	49	0.000
Extension cord	83.80	3.68	87.54	4.90	9.260	49	0.000
Types of Circuit	83.34	5.39	87.26	5.42	9.494	49	0.000
E. Floor Plan	82.48	4.47	87.88	5.18	16.513	49	0.000

Table 10 shows the significant difference between the pretest and posttest scores of respondents in terms of written performance. The written performance consists of splicing of wires, extension cord making, types of circuit and electrical floor plan making. This is where the questions revolve around. Each activity consists of ten questions and overall it has forty items.

In terms of pretest, in splicing of wires students got a mean score of 82.80 with an SD of 4.54. In extension cord making students got a mean score of 83.80 with an SD of 3.56. In types of circuit they got a mean score of 83.34 with an SD of 5.39. Lastly, in the electrical floor plan students got a mean score of 82.48 with an SD of 4.47.

Concerning this, the posttest written result of the four activities were as follows; in splicing of wires, the students got a mean score 87.54 and an SD of 4.90. In extension cord making they got a mean score of 87.54 with an SD of 4.90. In types of circuit they got a mean score of 87.26 with an SD of 5.42. Lastly, in electrical floor plan they got a mean score of 87.88 with an SD of 5.18

In relation to the pretest and posttest results of written performance on each hands-on activity, it shows an increase of the written scores of the respondents as it was reflected on the mean score. In splicing of wires, there was an increase of about 2.34 while on extension cord making it has 4. 0 same with types of circuit and electrical floor plan making. This entails that the ebook was effective in increasing the written performance of the respondents.

The table also reveals the significant difference of pretest and posttest written performance of the respondents. In splicing of wires it has a t-value of 8.228, while the type of circuit has a t-value of 9.260. The type of circuit has a t-value of -9.494, and lastly, the electrical floor plan has a t-value of 16.513. All written performance got a 0.00 which is less than 0.05 significance level which means that the null hypothesis was rejected and the results imply a significant difference between the pretest and posttest performance of the respondents in terms of written performance.

Ohanu (2021) also notes that the use of relevant instructional equipment, materials, and tools in teaching Electrical Installation and Maintenance Work trade can facilitate learning and improve students' academic performance. This implies the success of ebook integration in enhancing the life skills of Grade 8 learners.

Table 11 shows the significant difference between the pretest and posttest scores of respondents in terms of hands- on performance. The hands- on performance consists of splicing of wires, extension cord making, types of circuit and electrical floor plan making.

In terms of pretest, in splicing of wires they got a mean score of 3.62 with an SD of 2.26. In extension cord making they got a mean score of 3.92 with an SD of 1.88. Types of circuit they got the mean score is 4.04 with an SD of 1.84. Lastly, in the electrical floor plan they got the mean score of 3.78 with an SD of 1.54.

Table 11. *Significant Difference between the Performance of the Learners' Before and After the Utilization of Ebook as to Hands- on Performance*

Hands-on Performance	*Pretest*		*Posttest*		*t*	*Df*	*Sig. (2-tailed)*
	Mean	*Std. Deviation*	*Mean*	*Std. Deviation*			
Splicing	3.62	2.26	6.00	2.12	13.027	49	0.000
Extension cord	3.92	1.88	6.24	1.87	7.110	49	0.000
Types of Circuit	4.04	1.84	6.42	2.03	7.309	49	0.000
E. Floor Plan	3.78	1.54	6.42	2.10	15.903	49	0.000

Furthermore, the posttest written result of the four activities were as follows; in splicing of wires, they got a mean score 6.00 and an SD of 2.12. Extension cord making they got a mean score of 6.24 with an SD of 1.87 In Types of circuit they got a mean score of 6.42 with an SD of 2.03. Lastly, in electrical floor plan they got a mean score of 6.42 with an SD of 2.10

In relation to the pretest and posttest result of written performance of each hands-on activity, it shows an increase of the written scores of the respondents as it was reflected on the mean score. It revealed that there was an increase of about 2.0-3.5 in every activity taken by the respondents. This entails that the ebook was effective in increasing the hands- on performance of the respondents.

The table also reveals the significant difference of pretest and posttest hands- on performance of the respondents. In splicing of wires, the t-value is 13.027, while extension cord making the t-value is 7.110. The type of circuit has a t-value of 7.309, and lastly, the electrical floor plan has a t-value of 15.903. All hands-on performance got a 0.00 which is less than a 0.05 significance level which means that the null hypothesis was rejected and the results imply a significant difference between the pretest and posttest performance of the respondents in terms of hands-on performance.

Azuma (2017) reported the effectiveness of the diversity of interface e-book interaction on academic achievement and skill performance for educational technology students and their attitudes towards it. This proves that through the use of ebook in EIM, there was an increase in the written and hands- on performance of the respondents.

Conclusions

The researcher assessed the utilization of electric books in Electrical Installation and Maintenance to enhance learners' skills among Grade 8. Specifically, the study sought to find respondents' perceptions and experiences on the use of e-books in EIM. The study sought to measure respondents' experience on the use of e-books as to; availability, portability, space- saving, interactivity, convenience and accessibility and respondents perception on the use of e-books as to; general instructions, topic, lesson videos, video demonstration, and educational assessment. Furthermore, the researcher wants to measure learners' knowledge on the area by comparing pretest and posttest score of written and performance tasks.

To continue, the researcher used one section as the respondents of the study. The researcher utilized descriptive experimental design to describe and interpret the result of the study. To gather relevant data on the study, the researcher used a survey questionnaire to gather data needed. The questions addressed the respondents' experiences and perception on the use of ebook. Each indicator has five statements that are anchored on how the researcher developed the ebook in EIM. After drafting the questionnaire, it was administered in Sta. Catalina National High School where the researcher is currently teaching. Using Mean and SD, the data was analyzed. ANNOVA was used to measure significant difference of the variables.

It was revealed that in the summary of learners' experiences on the use of e-books, they got an overall mean average score of 3.52 and an SD of 0.25 with a verbal description of always observed. On the other hand, the level of perception in terms of using e-books got an overall mean of 3.51 with and SD of 0.25 and is always observed as verbal description. In level of significance in terms of learners' performance in written in pretest and posttest after the utilization of ebook in EIM, it revealed that there is a significant difference having the significant t-value of 0.00 that is lower to the level of significance which is 0.05. In learners' performance in pretest and post after the utilization of ebook in terms of hands- on performance, it is also entails that there is a significant difference between the performance of learners havinga t- value of 0.00 that is lower in the level of significance 0.05 which means that the null hypothesis is rejected. It signifies that the use of ebook in EIM helped the learners in understanding the lesson adnd accomplishing the performances in TLE 8.

References

Aishath Nasheeda, Haslinda Binti Abdullah, Steven Eric Krauss & Nobaya Binti Ahmed (2019) A narrative systematic review of life skills education: effectiveness, research gaps and priorities, International Journal of Adolescence and Youth, 24:3, 362-379, DOI: 10.1080/02673843.2018.1479278

Assessment of life-skills of adolescents in relation to selected variables Rajni Dhingraa*, Kirti Singh Chauhanb. (n.d.). International Journal of Scientific and Research Publications, Volume 7, Issue 8, August 2017 201 ISSN 2250-3153.

BCCE ONOH, Ph.D, Enugu State University of Science and Technology (ESUT), Enugu , Enugu State, Nigeria Published: 2018-07-19 Vol. 3 No. 3 (2015)

Biranvand, A., Khasseh, A. A. (2014). E-book Reading and its Impact on Academic Status of Students at Payame Noor University,Ira Library Philosophy and Practice (e-journal). 1170

Casselden B., Pears R. (2019)Higher education student pathways to E-book usage and engagement, and understanding: Highways and cul de sacs, Librarianship and Information Science, 52(2), https://doi.org/10.1177/0961000619841429

Dawasa, I. M., & Ibrahim, A. Z. (2020). Assessment of Level of Utilizations of Resources for Effective Skills Acquisition in Electrical Installation and Maintenance Work Trade In Science And Technical Colleges Of Yobe State.

DepEd School Learning Modalities for SY: 2021-2022 https://www.teacherph.com/deped-learning-delivery-modalities/

Gerami, S., Ahmadi, S., Safat, M., & Farsi, F. (2015). Life Skills Training and Its Effectiveness: A Systematic Review. Mediterranean Journal Of Social Sciences, 6(2 S1), 385.

Haug, S., Paz Castro, R., Wenger, A. et al. Efficacy of a mobile phone-based life-skills training program for substance use prevention among adolescents: study protocol of a cluster-randomised controlled trial. BMC Public Health 18, 1102 (2018). https://doi.org/10.1186/s12889-018-5969-5

Influence of the link between resources and behavioural factors on the entrepreneurial intentions of electrical installation and maintenance work students Ifeanyi Benedict Ohanu* and Taiwo Olabanji Shodipe. (n.d.). Ohanu and Shodipe Journal of Innovation and Entrepreneurship (2021) 10:13 Https://Doi.Org/10.1186/S13731-021-00154-8.

IvyPanda. (2023, April 11). Improving Electrical Drawings for Buildings: Lean Six Sigma Implementation. https://ivypanda.com/essays/improving-electrical-drawings-for-buildings-lean-six-sigma-implementation/

Macapagal M.J., (2018) Status report of Philippine public libraries and librarianship: a research report by National Libraries of the Philippines, ISBBN 978-971-556-051

Manabete, S. S., and A. A. Makinde. "Availability and utilization of facilities of electrical installation and maintenance works programme of technical colleges in North-East Geo Political Zone of Nigeria." International Journal of Vocational and Technical Education Research 2.1 (2016): 11-31.

Mohammed M., Ahmed E. (2015) The effect of interactive e-book on students' achievement at Najran University in computer in education course, Education and Practic, 6(19)

Moses, D. et al., International Journal of Research in Engineering and Social Sciences, ISSN 2249-9482, Impact Factor: 6.301, Volume 07 Issue 07, July 2017, Page 17-23. (n.d.).

Prajapati, R., Sharma, B., & Sharma, D. (2016). Significance Of Life Skills Education. Contemporary Issues in Education Research (CIER), 10(1), 1–6. https://doi.org/10.19030/cier.v10i1.9875

Safety precautions in the usage of extension cords by students in halls and hostels. (n.d.). Researchgate. https://doi.org/10.12928/telkomnika.v21i2.24743

Santoso,T.N.B., , Si swandari , Sawiji,H.(2018). The effectiveness of E-book versus printed books in the rural schools in indonesia at the modern learning era. International Journal of Educational Research Review, 3(4),785-894

Smeda, A. (2017) Factors influencing the acceptance of E-book among mathematics and statistics students at universities in Libya. PhD thesis, Murdoch University.

Affiliations and Corresponding Information

Marvin M. Medrano
Laguna State Polytechnic University – Philippines

Edilberto Z. Andal
Laguna State Polytechnic University – Philippines