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Effectiveness of Enhanced Module in Teaching Electrical Installation and Maintenance Concepts for National Competency II

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Abstract:

The study was directed to evaluate the effectiveness of enhanced module as an instructional material for teaching specific concepts in Grade 10- TLE Electrical Installation and Maintenance (EIM). In particular, the aim of the study is to analyze the evaluation ratings of the enhanced module, the effect of its implementation and the perception of the respondents towards the enhanced module. Moreover, it also examines the significant difference between the respondents' academic performances when reinforced by the enhanced module. The primary instrument used in the evaluation of the enhance module is a standardized evaluation tool for printed materials from the Department of Education, Learning Resources Management and Development System (LRMDS) Office. Likewise, an adopted questionnaire was utilized in determining the perception of the respondents to the enhanced module. Results showed that the enhance module is recognized as appropriate and commendable by the evaluators. In terms of the academic performance of the respondents, a significant increase in their scores was noted when supplemented with the enhanced module compared to the old instructional material. Moreover, the respondents perceived the enhanced module as a good instructional material especially in facilitating retention, comprehension and technical process skills in learning concepts. In teaching Electrical Installation and Maintenance (EIM) concepts, the enhanced module is appropriate to use as an instructional material and greatly enriched the students' efficiency especially in preparation for their National Certificate II assessment.

Keywords: Enhanced module, instructional materials, Electrical Installation and Maintenance (EIM)

I. Introduction

The electrical installation and maintenance are a qualification that is composed of three competencies: basic competencies, common competencies, and core competencies. The core competency has also its units of competencies that is comprises with different elements or topics. One of the units of competency is Perform roughing-in activities, wiring and cabling works for single-phase distribution, power, lighting and auxiliary systems (TR-EIM NC II, TESDA Act 1994). It covers the knowledge, skills and attitudes on planning and preparing work, installing electrical protective devices, lightning fixture and auxiliary outlet and notifying completion of work for distribution, power, lighting, auxiliary, lightning protection and grounding systems. Puyate (2004) emphasized that effective vocational and technical teaching/training would not be possible without adequate arrangements for the provisions of required instructional materials and facilities. This indicated that the availability and effective utilization of facilities for training in any technical schools enhances the vital process of the skills to be acquired. These, somehow resulted to difficulty of teachers to provide students enough knowledge and information that is required to master the competency.

In order to meet the qualification standards of the competency, Vergara (2017) suggest that an individualized instruction through the use of modules must be used. He stated that modular instruction is a unique kind of individualized instruction which provides the basis for close interaction between the learners and subject matter. Modular instruction is an unconventional instructional strategy that uses developed instructional materials which are based on the needs of the students. Flores (2010) stressed that instructional materials in the classroom are most effective tools to catch up the interest and understanding of the students and help teachers to teach better. The quest to provide quality education is a never-ending encounter. Enhancing existing instructional materials is one among the effective strategies in updating trends and providing modernized technique and information. The researcher's exertion to bung up the gaps by promoting additional concept about enhanced module as a useful method to improve the performance of students in a particular concept in TLE 10 specifically in Electrical Installation and Maintenance (EIM) with the current situation and utilization of module theories as instructional tools. The study also provided an assessment of the effectiveness of the enhance module, its effect on the pretest and posttest performance of the students.

2. Methodology

The study utilized the "design and development" and quasi experimental approach. The "design and development" method were utilized aiming to enhance an existing instructional material; a module in particular based from a current model and get response from expert validators in the substantiating process of the enhanced module in Technology Livelihood Education (TLE) -10 Electrical Installation and Maintenance (EIM). Also, in quantifying the effectiveness of the enhance module, quasi experimental process was applied. Moreover, in determining the perception of the respondents towards the enhanced module, an adopted questionnaire checklist was utilized. Generally, the study has undergone three main Stages. Stage 1 focuses on the evaluation of the enhanced module by the expert-evaluators from the Department of Education using standardized evaluation tool for printable materials. Stage 2 was concentrated on measuring the effectiveness of the enhanced module through the respondents' pretest and posttest performance. Stage 3 gives emphasis on determining the perception of the respondents view as to its effect on the retention, comprehension and technical process skills in their leaning development.

3. Results

Area of Assessment	WM	Verbal Description
Factor 1: Content	3.96	Very Satisfactory
Factor 2: Format	4	Very Satisfactory
Factor 3: Presentation and Organization	3.8	Very Satisfactory
Factor 4: Accuracy and Up-to-datedness of Information	4	Very Satisfactory
Overall Mean	3.84	Very Satisfactory

Table 1: The Mean Score of the Enhanced Module Based on Deped Evaluation Rating Tool for Print Materials

Existing Module				Enhanced Module			
Pre-test		Post-test		Pre -test		Post test	
Mean	SD	Mean	SD	Mean	SD	Mean	SD
7.09	2.63	9.43	2.98	9.42	1.94	13.41	2.93

Table 2: Mean Scores of the Pre-test and Post-test

Academic Performance	F-value	p-value	Decision	Conclusion
Control Group (Existing Module)	0.410	0.02	Reject Null Hypothesis	Significant
Experimental Group (Enhance Module)				

Table 3: The Significant Difference in the Students' Means Scores

Indicator	Respondents' Perception	
	WM	Qualitative Description
A. Retention (RET)	3.54	Strongly Agree
B. Comprehension (COM)	3.68	Strongly Agree
C. Technical Process Skills (TPS)	3.52	Strongly Agree
Overall Mean	3.51	Strongly Agree

Table 4: Mean Scores of the Respondents Perception towards the Enhanced Module

4. Discussion

The enhanced module was evaluated by the different experts to measure its acceptability in terms of content, format, presentation and organization, and accuracy and up-to-datedness of information using the Dep-Ed evaluation rating sheet for printed materials provided by the Learner Resource Management and Development (LRMDS) office of the Division of Surigao del Sur. Based on the result of the evaluation as presented in Table 1, all items are rated very satisfactory by the experts with an average weighted mean of 3.84. Thus, it implies that the enhance module has the potential to arouse interest of target users likewise it is also suitable to the learners' level of development. Moreover, the designs layouts, and even sizes and paper binding of the module are also attractive and pleasing to look at, adequate illustration in relation to text, easy to handle and relatively light. Furthermore, the evaluators rated the enhanced module as accepted and can be utilized as an instructional material in the classroom.

Table 2 and 3 showed the pretest and posttest mean scores of the respondents. It indicates that there is a significant difference in the achievement of students in Electrical Installation and Maintenance under the Learning Competency: Install Electrical Metallic Tubing. It means that the enhanced module helped the students understand better the concept properly. The result showed that using enhanced module the students performed well compared to their performance using existing module that are commonly used in classroom setting. Enhanced module is designed to suit the level of understanding of the students, thus, making them easily understand the topic better compared to the existing module which is design for general use. Torralba (2000) opined that modules must be in-lined to level of understanding of the target reader to make him/her understand the concept better. Moreover, Ozdemir (2010) point out that instructional material like module as a teaching aid increases the cognitive, motivation and information processing of student.

Table 4 presents the respondents perception towards the use of enhanced module in retention; comprehension, and technical process skills. The respondents showed positive viewpoint towards the use of module as an instructional material. Having an over-all mean of 3.51 with a qualitative description of strongly agree, the respondents perceived that the enhanced module greatly helped them in learning concepts in Electrical Installation and Maintenance particularly in retention, comprehension and technical process skills. Mainly, instructional materials such modules are used by the teachers to facilitate effective teaching and better quality of learning among students. (Guskey, 2010) mentioned that modules are created to suit the different ways that students learn. Along with this, modules help maintain students' motivation in spite of their poor ability in grasping ideas and processes from a highly verbal lecture. The enhanced module helps the students to improve their memory, to easily connect previous to present topics, and to recall facts about the topic which provides opportunity to easily appreciate things about electrical concepts.

5. Conclusion

Based from findings, conclusions were drawn; experts rated the enhanced module with a very satisfactory rating and is accepted and recommended for use in the classroom setting. In the implementation phase, students perform better when taught using the enhanced module compared to the existing module. In addition, students perceived positive attitude towards the enhanced module. They agreed that module is very helpful in their learning process especially if it is designed properly that will suit to their leaning level. As a result, this study concludes that the enhanced module in Electrical Installation and Maintenance aided respondents in grasping the subject's concepts and improving their skills in preparation for their National Certificate II assessment.

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