Faculty Training Program for Pangasinan State University

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Abstract. This is a comprehensive analysis that evaluated the teaching of Electrical Technology at Pangasinan State University – Lingayen Campus (PSU-LC), during the first semester of the academic year 2020-2021 as a foundation for the implementation of a proposed program to enhance the University's teaching of Electrical Technology. The research included a total of 34 students enrolled on ET-5 AC/DC Machines for the first semester of the 2020-2021 academic year at PSU-LC. The key data collection instrument for this analysis was a questionnaire checklist, which was used by the researcher. To calculate and qualify the results, frequency counts, ranking, and weighted mean averages were used. Based on the findings of an investigation, a proposed training program to improve the teaching of Electrical Technology at PSU-LC was created. The Microstat computer software was used for all computations. The following were the study's key findings: on the Level of Attainment of Electrical Technology Objectives, students in Electrical Technology at PSU-LC generally believed that the objectives of Electrical Technology were "especially attained," On the Level of Development of Competencies in Electrical Technology, especially in Direct Current Motors, Students generally believed that the competencies were "highly developed," while in Alternating Current Motors, Students generally claimed that the competencies in Electrical Technology were "highly developed". When it comes to Poly Phase Motors, it is widely believed that Electrical Technology competencies are "highly evolved." In terms of the level of effectiveness of the methods and strategies used in teaching electrical technology, students, in general, believed that the methods and strategies used in teaching electrical technology were "highly efficient." Students, on average, reported that they experienced moderately serious problems in the teaching of electrical technology, with unconducive teaching-learning atmosphere, weak study patterns of students, and poor motivating technique of instructors as the top item among the problem ranked. The following conclusions were drawn based on the study's findings: the goals of the electrical technology program were effectively carried out in the Technology Department at PSU-LC, Electrical Technology students usually possessed the basic skills or competencies in electrical technology along with direct current motors, Alternating current motors, and polyphase motors, hands-on, demonstration and lecture methods are time-tested strategies used in teaching skills lessons in electrical technology, and, the teaching-learning environment is not conducive for the teaching of electrical technology subjects. Based on the findings, the following recommendations were made: the suggested training program for electrical technology instructors should be implemented to enhance electrical technology teaching at PSU-LC, Electrical Technology teachers should offer appropriate practice exercises/exposures and mastery learning opportunities to students for them to master the least learned skills or competencies in electrical technology. Finally, extremely serious problems faced by students when studying Electrical Technology should be solved by teachers for more successful and productive teaching of the subject, resulting in improved learning outcomes.

ISSN 2651-8414 (Print) www.psurj.org/mrj ISSN 2651-8406 (Online)

Keywords: Faculty Training Program, Electrical Technology, AC/DC Machines, Pangasinan State University.

INTRODUCTION

Pangasinan State University is one of the region's Higher Education Institutions (HEIs) that provides technical classes, including Electrical Technology. An issue in which faced by the institution is the sustainability of the latest equipment, facilities, and other teaching devices which are supportive to optimum learning, the budgetary cuts in terms of subsidies by the national government, the soaring prices of commodities, and world economic slowdown have adversely affected the acquisition and maintenance of equipment essential to students' maximum training. In a study conducted by Soriano [1] found out that one of the serious problems in technology education is the lack of instructional equipment, particularly in the different hard technology areas. This is attributed to the fact that this equipment is very expensive, hence there is not much available paraphernalia to be used by the students. With this instance, the learners have limited opportunity to experience the operation of such an instructional gadget. The instructor, with this scenario, is challenged to make use of readymade charts, substitute equipment or resort to the chalkboard method. Given these scenarios, the researcher was inspired to conduct a study on the teaching of electrical technology. His experiences in class as an electrical technology instructor further pushed him to inquire and investigate this dimension. The purpose of which is to design a training program for Electrical Technology instructors to improve that would address teachers' competence in instruction to improve the teaching of Electrical Technology at PSU-LC.

STATEMENT OF THE PROBLEM

This report evaluated the teaching of Electrical Technology at Pangasinan State University's Lingayen Campus during the academic year 2020-2021 as a foundation for the implementation of a training program to enhance the university's teaching of Electrical Technology.

This research specifically pursued answers to the following questions:

1. What is the students' perception of the extent of achievement of the Electrical Technology objectives?
2. What is the level of advancement of electrical technology students' competencies in (a) direct current motors, (b) alternating current motors, and (c) polyphase motors?
3. What is the extent of success of the instructors' approaches and techniques for teaching Electrical Technology as viewed by the students?
4. What is the students' perception of the adequacy of learning content, supplies, and services used in teaching Electrical Technology?
5. How severe are the difficulties faced in the teaching of Electrical Technology, according to the students?
6. What training program can be established based on the study's findings to enhance the teaching of Electrical Technology at Pangasinan State University?

SCOPE AND DELIMITATION OF THE STUDY

During the academic year 2020-2021, this research was carried out at PSU-Department LC's of Technology. The research was limited to evaluating the teaching of Electrical Technology at Pangasinan State University. It evaluated the degree of achievement of the Electrical Technology goals. It also calculated the level of advancement of Electrical Technology competencies in (a) direct current motors, (b) alternating current motors, and (c) polyphase motors. The research evaluated the efficacy of the instructors' approaches and techniques for teaching Electrical Technology, as well as the adequacy of educational content, supplies, and services used in the teaching of Electrical Technology. Finally, the report evaluated the severity of the issues faced in the teaching of Electrical Technology.

Based on the findings of the report, a training curriculum was created to enhance the teaching of Electrical Technology at PSU-LC. The thesis included a total of 34 respondents who were enrolled in ET 5 (AC/DC Machines) for the first semester of the academic year 2020-2021.

METHODOLOGY

The descriptive research method was used in this report [2] [3] [8] [9]. It is descriptive since it describes the status of Electrical Technology teaching at PSU-LC. It represented the extent of achievement of Electrical Technology's objectives. It also calculated and defined the level of advancement of Electrical Technology competencies along the lines of (a) direct current motors, (b) alternating current motors, and (c) polyphase motors. The study

ISSN 2651-8414 (Print) www.psurj.org/mrj ISSN 2651-8406 (Online)

identified the level of efficacy of the instructors' methods and techniques for teaching Electrical Technology, as well as the level of adequacy of instructional materials, equipment, and facilities for teaching Electrical Technology. Finally, the report outlined the severity of the issues faced in the teaching of Electrical Technology. Based on the findings of the report, a training curriculum was created to enhance the teaching of Electrical Technology at PSU-LC.

Data Gathering Tool

The researcher used a built questionnaire as the primary data collection method for this analysis [4]. The questionnaire is divided into five (5) parts. Part I collected data on the extent of achievement of Electrical Technology goals. Part II gathered data on the level of growth of Electrical Technology competencies along (a) direct current motors, (b) alternating current motors, and (c) polyphase motors. Part III concentrated on the usefulness of the instructors' approaches and techniques for teaching Electrical Technology. Part IV examined the adequacy of educational materials, supplies, and services used in the teaching of Electrical Technology. Part V collected information on the severity of the difficulties faced in the teaching of Electrical Technology.

Items in the questionnaire were taken from Petruzella's [5] book on Electric Motors and Control Systems, namely the competencies or skills in Electrical Technology along a) direct current motors, b) alternating current motors, and c) polyphase motors. Baluyut's [6] research was used to develop the things on teaching methods and techniques in Electrical Technology. Other questionnaire elements were culled from the researcher's readings in drawing books, journals, theses, and dissertations.

Validation of the Questionnaire

The questionnaire was pre-tested on ten (10) first-year Bachelor of Industrial Technology (BIT) students who were not research participants. The pretest was carried out to determine the validity of the questionnaire in terms of material, vocabulary, and structure. The pretest results were used to restructure the sections where pretest respondents had trouble responding.

Statistical Treatment of Data

To maintain consistency and order, and for a detailed review of the processed results, the data was ordered, tallied, and displayed in tables. The descriptive statistics of the analysis were presented using frequency counts, weighted means, and rankings.

RESULTS AND DISCUSSIONS

This analysis evaluated the status of Electrical Technology teaching at PSU-LC during the first semester of the academic year 2020-2021 as a foundation for the advancement of the planned training program to enhance Electrical Technology teaching at the university. The following is the study's main findings:

Level of Attainment of the Objectives of Electrical Technology

Electrical Technology students at PSU-LC commonly believed the goals of Electrical Technology were “highly attained” with “equipping students with the ability to perform electrical connections, installations, repairs, and other related electrical jobs”, “developing students’ knowledge and skills in electrical machine operations” and “exposing students on the actual work situations along with electrical related jobs or activities” as top items among the objectives rated. However, “providing students’ knowledge and skills on the industrial machine control system” and “training students on industrial machines control” were the lowest items rated by the respondents.

Level of Development of Competencies in Electrical Technology

A. Direct Current Motors

Students in Electrical Technology at PSU-LC usually claimed that the competencies in Electrical Technology along Direct Current Motors were “highly developed” such as “clean the stator and armature with gasoline and brush”, “check armature coil diagram and connection” and “disassemble the stator and armature winding”. However, “test and troubleshoot the stator and armature” and “replace the stator and armature with the same gauge, number and size of wire” as the lowest among the competencies rated by the students.

B. Alternating Current Motors

Students in Electrical Technology at PSU-LC commonly claimed that the competencies in Electrical Technology along Alternating Current Motors were “highly developed” such as “identify the classification of alternating current motors”, “apply/perform the operating current principles” and “check the terminal winding circuit connection diagram. However, “troubleshoot and repair

ISSN 2651-8414 (Print) www.psurj.org/mrj ISSN 2651-8406 (Online)

alternating current windings or connections" and "check the overload and motors protective devices" as the lowest items rated by the respondent students.

C. Poly Phase Motors

Students in Electrical Technology at PSU-LC generally claimed that the competencies in Electrical Technology along Poly Phase Motors were "highly developed" such as "identify the characteristics of a three-phase motor ", "check the three-phase concentric windings" and "test the dual voltage". However, "troubleshoot and repair polyphase motors" and "change concentric winding into lap winding" were the lowest items rated by the respondent students.

Degree of Effectiveness of the Methods and Strategies Employed

Electrical Technology students at PSU-LC usually believed that the methods and techniques used in teaching Electrical Technology were "highly effective" with "hands-on approach", "demonstration method" and "lecture method" as top items among the methods and strategies rated. However, "problem-solving approach" and "individualized instruction" were the lowest items among the strategies rated by the students.

Level of Adequacy of Instructional Materials, Tools and Equipment and Facilities

A. Instructional Materials

Students in Electrical Technology at PSU-LC normally claimed that instructional materials used in teaching Electrical technology were "highly adequate" such as "textbooks", "pictures", "Board of Common Splices and Joints" and "models of electrical connections/ wirings. However, "samples of motors", "pop sheets" and "modules" were found to be "moderately adequate" as claimed by the students.

B. Tools and Equipment

Students in Electrical Technology at PSU-LC mostly claimed that tools and equipment used in teaching Electrical technology were "highly adequate" such as "pliers", "knives", "electrical tape" and screwdrivers". However, "electrical machines", "voltmeters" and "AC-DC Testers" were found to be "moderately adequate" as claimed by the respondents.

C. School Facilities

Students in Electrical Technology at PSU-LC generally claimed that school facilities used in teaching Electrical Technology were "highly adequate" such as "blackboards", "chairs" and "working benches". However, "display area" and "working tables" were found to be "moderately adequate" as claimed by the respondents.

The Severity of the Problems Faced in the Teaching of Electrical Technology

Students of Electrical Technology at PSU-LC stated that the teaching of Electrical Technology was "moderately serious" in general with "unconducive teaching-learning environment", "poor study habits of students" and "poor motivational technique of instructors" as top items among the problems rated. However, "strict and arrogant instructor" and "lack of student's interest towards the Electrical Technology subject" were the lowest items rated by the respondents.

CONCLUSIONS

Based on the study's results, the following conclusions were reached:

1. The Electrical Technology program's goals were met with success in PSU- LC's College of Technology.
2. Electrical Technology students generally possessed the basic skills or competencies in Electrical Technology along with Direct Current Motors, Alternating Current Motors, and Poly Phase Motors.
3. Hands-on, demonstration, and lecture methods are time-tested strategies used in teaching skill lessons in Electrical Technology.
4. Instructional materials, tools and equipment, and school facilities are generally sufficient in teaching Electrical Technology.
5. The teaching-learning environment is not conducive for the teaching of Electrical Technology subjects.

RECOMMENDATIONS

Following the findings reached, the following recommendations were made:

1. The existing training curriculum for Electrical Technology teachers should be implemented to enhance Electrical Technology instruction at PSU-LC.
2. Electrical Technology teachers should offer appropriate practice exercises/exposures and mastery learning opportunities to students for them to master the least learned skills or competencies in Electrical Technology.
3. School administrations should budget for the purchase of new teaching materials, supplies, and equipment, as well as the

ISSN 2651-8414 (Print) www.psurj.org/mrj ISSN 2651-8406 (Online)

maintenance and renovation of school buildings/classrooms and other services.

4. Professors should resolve extremely severe issues faced by students during the instruction of Electrical Technology to improve the subject's effectiveness and performance, resulting in improved learning outcomes.
5. A related analysis should be performed using a different set of variables that were not used in this study.

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ISSN 2651-8414 (Print) www.psurj.org/mrj ISSN 2651-8406 (Online)