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RELATIONSHIP BETWEEN MATHEMATICS I-A AND BASIC ELECTRICITY PERFORMANCE AMONG T.L.E 20 STUDENTS

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In Partial Fulfillment of the Requirements for the Degree
of Bachelor of Secondary Education
Major in Technology and
Livelihood Education

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APPROVAL SHEET

This Thesis entitled, **"RELATIONSHIP BETWEEN MATH 1-A AND BASIC ELECTRICITY PERFORMANCE AMONG T.L.E 20 STUDENTS"** prepared by EDILBERTO A. FUENTES JR, SITTI NORIE P. BANADOS, LISLEE D. CADUNGOG, JHON LYOD M. TABAR and SHEKINAH GLORY T. MAGCANTARA in partial fulfillment of requirements for the Degree, Bachelor of Science in Secondary Education, Major in Technology and Livelihood Education (T.L.E), has been examined and hereby recommended for oral examination, approval and acceptance.

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ABSTRACT

The purpose of the study was to determine the Relationship between Mathematics 1-A and Basic electricity performance among TLE 20 students and to determine further its relationship to the academic performance in T.L.E 20 (Basic Electricity). The variables under consideration were the academic performance of students in Basic Principle and Circuitry in T.L.E 20 as a dependent variable and the Statistical skills, Numeracy skills, Problem-solving skills in Math I-A were independent variables. The respondents of this study were the Sixty-four (64) third year college students of which thirty-one (31) were males and thirty-three (33) were females. To determine the performance level of students, the data were collected from 64 students through separate structured validated questionnaire of Math I-A and Basic Electricity (T.L.E 20) of third year BSED students of Kolehiyo Ng Pantukan using the simple random sampling technique. For analysis, Multiple linear regression model, correlation analysis, and descriptive analysis were used. The findings revealed Math I-A in Statistical skills is significantly contribute the academic performance of Basic Electricity (T.L.E 20). of students. The future researcher may continue quantitative research on how mathematics performance affects in the T.L.E 20 students' academic performance.

Keywords: Academic Performance, Basic Principle, Third-Year Students, Statistical Skills, Quantitative-Descriptive Correlation Education, Circuitry, Philippines.

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THE PROBLEM AND ITS SETTING

Background of the study

Mathematics as a subject affects all aspects of human life at different levels. Mathematics is seen by society as the foundation of scientific technological knowledge that is vital in social economic development of a nation. It is in realization of the vast applications of mathematics that made to posit that a disciplined and ordered pattern of life can only be achieved through the culture of mathematics.

Thus, when thinking about what mathematics might mean for individuals, one must consider both the extent to which they possess mathematical knowledge and understanding, and the extent to which they can activate their mathematical competencies to solve problems they encounter in life PISA (2000).

According to Brumbach (1988, cited in Armstrong, 2000):'Performance in Mathematics can be actions as well as their consequences. Behaviors in performing mathematics originate from a performer and convert performance from a concept to an act. Not just the instruments for results, behaviors of mathematics performance are also outcomes in their own right - the product of mental and physical effort applied to tasks - and can be judged apart from results. the above definition considers performance to be involving both the actions in correlation to performance, in other word behaviors in mathematics performance is taken during

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the process in attempting to achieve goals and outputs obtained as a result from the effort in mathematical competency and performance.

Although, Mathematics performance was correlated moderately with mathematics self-efficacy, behavior and performance. No support was found hypothetically that women's mathematics self-efficacy and performance expectations are unrealistically low compared to men. Both mathematics performance and mathematics self-efficacy were significantly and positively correlated with attitudes toward mathematics, masculine sex-role orientation, and a mathematics-related major. Hackett and Betz's (1981).

Lastly, Current mathematics education researchers conceptualize this issue of complexity of cognitive processes as a question of item demand and the depth of knowledge required to solve a problem. (Webb (1999).

In the other side, Basic Electricity skills and performance is a fundamental driving force of our modern society. Unfortunately gaining understanding on electricity seems to be very challenging and difficult for students in various school levels. Numbers of studies conducted worldwide indicate that students still have many difficulties and misunderstandings after systematic instruction (Fredette & Lockhead, 1980).

While, most typical difficulties are inabilities to relate theoretical models of electricity to real circuits, incomplete understanding of basic concepts of electricity, and incapacity to reason about the behavior of electrics (McDermott & Shaffer,

1992). These difficulties and misconceptions seem to be very resistant to change (Shipstone, 1988).

As Psillos (1998) argues, the emerging picture worldwide is not promising given that an adequate knowledge of electricity has rarely been acquired by students by the end of secondary education.

However, most student's performance in Basic Electricity there have been several attempts to overcome the difficulties in electricity learning. Traditional electricity teaching using textual learning material, concrete application tasks or hands-on laboratory work has been quite ineffective. After series of instruction learners have been still found to hold many misconceptions about electricity. However, text materials and laboratory exercises can have also some benefits. Text particularly developed for facilitating conceptual change has found to be effective for correcting some of the student's misconceptions and improving their conceptual understanding on simple and basic electrical understanding (Wang & Andre, 1991; Carlsen & Andre, 1992).

Moreover, the effects in basic electricity performance were significant for males and students with moderate interest, but not always for females and students with high and low interest. Research also indicates that laboratory-based hands-on activities can offer special benefits for understanding of concepts and correcting misconceptions (McDermott & Shaffer, 1992).

STATEMENT OF THE PROBLEM

The purpose of the study is to determine the relationship between the student's performance in Mathematics I-A and Basic Electricity among the T.L. E 20 Students at KNP**.** More specifically this study will answer the following questions.

1. What is the level of performance of the students in Math I-A in terms of;

    1.1 Statistical skills

    1.2 Numeracy skills

    1.3 Problem solving skills

2. What is the level of performance of the students in Basic Electricity in terms of;

    2.1 Basic Principles

    2.2 Circuitry

3. What is the significant relationship between the performance in Math I-A and performance in T.L.E 20?

4. Which domain in Math I-A significantly influence the performance in T.L.E 20?

Hypotheses

The following hypotheses were tested at level significance a=0.05:

There is no significant relationship between the student's performance in Math I-A and Basic Electricity among the T.L.E 20 Students at KNP.

There is no domain in Math I-A can significantly influence the performance in T.L.E 20

Review of Related Literature

Presented in this section are the topics and readings to support the present investigation so that the readers will be given a clear picture of what the present study is all about.

Statistical Skills. Statistical skills deal with the collection, analysis, interpretation, and presentation of masses of numerical data. Many online resources are available though no systematic review of their use or reliability has been conducted Over one third of students stated that they struggled with the statistical content of their degree program, coupled with feelings of anxiety and lack of confidence (Field, 2014). Some students have been found to avoid quantitative statistics and express fear towards them (Slootmaeker, 2012).

According to (Bandura, 1997; Bussey & Bandura, 1999) Competency in mathematics performance and statistical skills and beliefs are important because of their profound effect on individuals' selection of activities and environment where they can perform.

On the other hand, according to an earlier meta-analysis, girls report lower mathematics competency in statistical skills than boys do, although the difference is not large in recent studies, elementary-school boys still report significantly higher mathematics competency beliefs than girls do (Lindberg, Hyde, & Hirsch, 2008).

Problem Solving Skills. The core and essence of a problem-solving approach to learn mathematics is summarized in the following quotation: Problem solving is a lifetime activity. Experiences in problem solving are always at hand. All other activities are subordinate. Thus, the teaching of problem solving should be continuous. Discussion of problems, proposed solutions, methods of attacking problems, etc. should be considered always (Krulik and Rudnick 1993).

According to Smith (1997) problem solving characterized the math performance and problem-solving skills anxiety in many ways, including: (a) uneasiness when asked to perform mathematically (b) avoidance of math classes (c) feelings of physical illness, faintness, dread or panic (d) inability to perform on a test and (e) utilization of tutoring sessions that provide very little success.

On the other hand, Richardson and Suinn (1972) have defined mathematics anxiety and problem-solving skills as feeling of tension and anxiety that interfere with the performance and manipulation of mathematical problems in varied situations in ordinary as well as academic life. It can also be explained as a sense of discomfort observed while working on mathematical problems and is associated with fear and apprehension to specific math related situations.

These problem-solving skills are of concern for several reasons. First, in the language of cognitive and mathematical learning theory, stereotypes can influence competency beliefs or self-efficacy (Bouchey & Harter 2005).

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Numeracy Skills. Numeracy skills as the ability, confidence and willingness to engage with quantitative and spatial information to make informed decisions in all aspects of daily living. A numerate individual has the confidence and awareness to know when and how to apply quantitative and spatial understandings home, at school, at work or in the community (Benn, R. (1997). Dreger and Aiken introduced math anxiety in relation to numeracy skills and performance as a new term to describe student's attitudinal difficulties with math. They define it as the presence of syndrome of emotional reactions to arithmetic and mathematics. Notwithstanding difficulties in defining and measuring math anxiety with numerical skills and performance. Several attempts have been made to assess (Wood, 1988).

Basic Principle. In discussing repair and maintenance of electronic equipment one has to deal with circuits incorporating electronic devices. A circuit is a closed network of electric and electronic devices carrying electric current through them and performing a specific function. A distinction should be made between the terms electric and electronic. The term electric is generally used when the flow of current takes place through a solid conductor, while the term electronic is used when the current flow takes place within a semi-conductor or a plasma containing free electrons. An electronic circuit may include both electric devices such as resistors, capacitors or transformers, and electronic devices such as vacuum tubes, transistors, thyristors etc. The latter types are also referred to as active devices. (Dr.F:'.A.J. Rat nasi ri Ceylon Institute o-f Scientific & Industrial Research Sri Lanka. 7 Regional 2008.)

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Circuitry. An electronic circuit is composed of individual electronic components, such as resistors, capacitor, inductors and diodes, connected by conductive wires or trace through which electric current can flow. To be referred to as electronic, rather than electrical, generally at least one active component must be present the combination of components wires allows various simple and complex operations to be performed, and data can be moved from one place to another.

Circuits can be constructed of discrete components connected by individual pieces of wire, but today it is much more common to create interconnections to create a finished circuit. (Hackett, 2008). An electronic circuit is a complete course of conductors through which current can travel. Circuits provide a path for current to flow. To be a circuit, this path must start and end at the same point. In other words, a circuit must form a loop. An electronic circuit and an electrical circuit has the same definition, but electronic circuits tend to be low voltage circuits. For example, a simple circuit may include two components: a battery and a lamp. The circuit allows current to flow from the battery to the lamp, through the lamp, then back to the battery. Thus, the circuit forms a complete loop (Doug Lowe, 2003).

Significance of the Study

The finding of the study will be the beneficial to the following.

Teacher. The finding of the study may provide awareness to the teachers on the influence of the Mathematics performance and Basic Electricity academic performance of the student and they are trying to help student improve their performance. Also, they could develop teaching strategies that help students to improve their performance for both mathematics and basic electricity. Hence, this will be also the avenue of the teacher in foreseeing the progress of the students whether they learned or they get difficulty in learning the subject area. The teacher could monitor the development of the student as the primary learner of the subject.

Students. The findings of the study may serve as information drive on the students to determine their Mathematics performance that influenced their performance in Basic Electricity. By determining such level of performance, they would be able to perform well in the class. This will also manifest that the students must exert more and extra ordinary effort and most especially time to learn and better absorbed the learnings in mathematics and basic electricity.

Other Researchers. The findings of the study may provide more avenues for those who may conduct similar investigation as it serves as a reference and valuable means of information for them. This will serve also as a great avenue to study further beyond what is done by the recent and previous researchers that similarly investigating the same fields or areas of research. Lastly, the new researchers may find also information that are useful for the continuous study.

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Figure 1 shows the conceptual paradigm of the study. The independent variable of the study is the Mathematics I-A performance with the following indicators namely; Problem solving skills, statistical skills, and numeracy skills. The dependent variable of the study is the Basic Electricity performance with the indicators; Basic principle, and circuitry.

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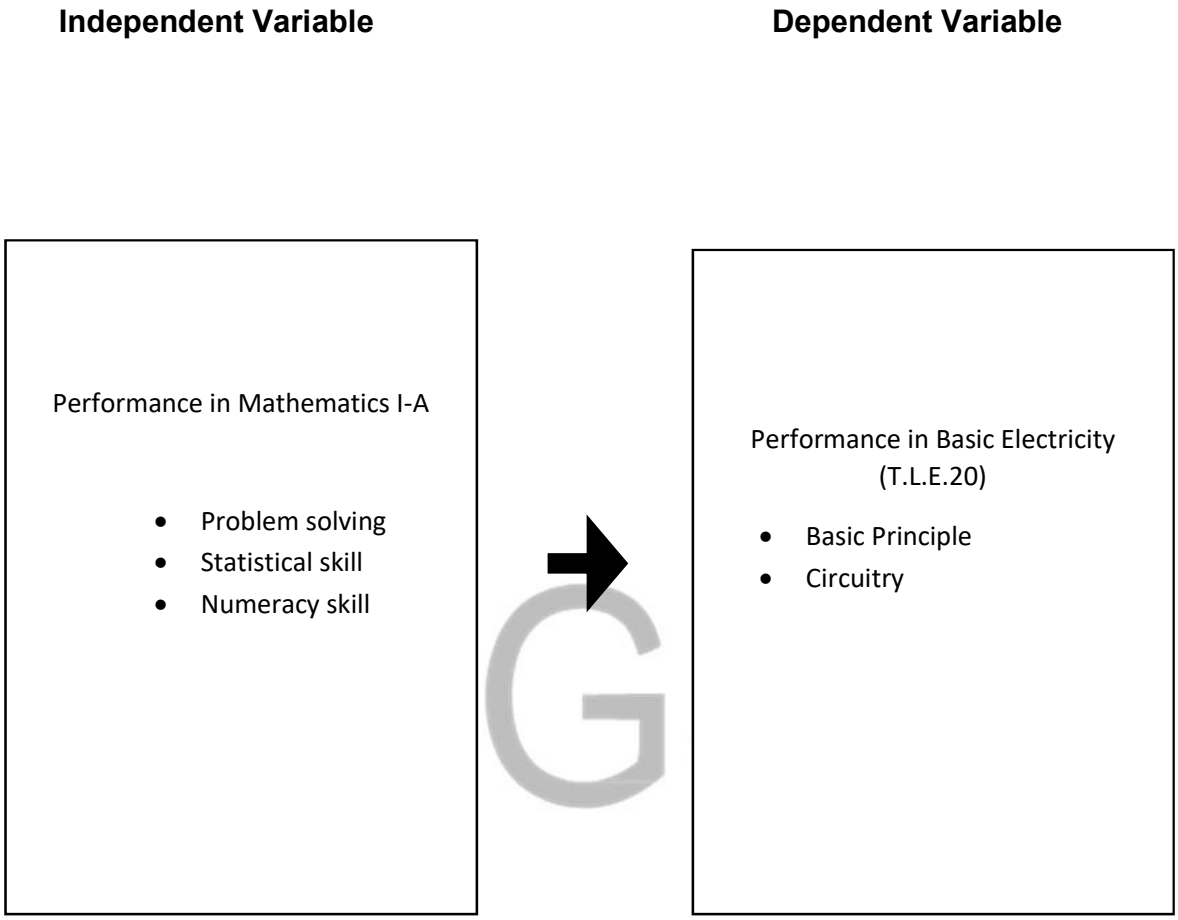

Figure 1. Conceptual framework of the Variable

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Definition of Terms

The following terms were conceptually and operationally defined in the context of the study.

Problem Solving Skills. Is the ability to cope up mathematical difficulty in problem-solving approach to learn mathematics is summarized in the following quotation: Problem solving is a lifetime activity? Experiences in problem solving are always at hand. All other activities are subordinate. Thus, the teaching of problem solving should be continuous. Discussion of problems, proposed solutions, methods of attacking problems, etc. should be considered always (Krulik and Rudnick 1993). .). In this study it refers to the student's engagement in mathematical solving problem operation in the study of Math I-A.

Statistical Skills. Deals with the collection, analysis, interpretation, and presentation of masses of numerical data (Bandura, 1997; Bussey & Bandura, 1999.). In this study it refers to the students quantitative statistics in the study of Math I-A.

Numeracy Skills. Complements literacy and is sometimes called 'mathematical literacy'. Both skills are needed to function fully in modern life. Being numerated means being able to reason with numbers and other mathematical concepts and to apply these in a range of contexts and to solve a variety of problems. It is also the ability, confidence and willingness to engage with quantitative and spatial information to make informed decisions in all aspects of daily living (Wood, 1988). In this study this refers to the individual students who

has the confidence and awareness to know when and how to apply quantitative and spatial understandings home, at school, at work or in the community.

Basic Principle. A fundamental foundation in the study of basic electricity and circuit s a closed network of electric and electronic devices carrying electric current through them, and performing a specific function (Dr.F:'.A.J. 2008). In this study it refers to the students comprehensive understanding of the basic principles governed in the study of Basic Electricity.

Circuitry. A system or group of electric circuit. (Merriam Webster Dictionary, 2012). Circuits can be constructed of discrete components connected by individual pieces of wire, but today it is much more common to create interconnections by photolithographic techniques on a laminated substrate and solder the components to these interconnections to create a finished circuit (Robert Hackett 1998). In this study this refers to the students understanding on circuitry to be referred to as electronic, rather than electrical, generally at least one active component must be present the combination of components wires allows various simple and complex operations to be performed, and data can be moved from one place to another in study of Basic Electricity.

Chapter 2

METHOD

Presented in this chapter are research design, research subject, research instrument, data gathering procedure and statistical treatment of data.

Research Design

The research design used in this study was a quantitative employing descriptive correlation method. This a method that goes beyond mere descriptions of status or things or events. It investigates relationship among variables and determines single and a combination of independent variables.

According to Aliaga and Gunderson (2002), quantitative research said to be an inquiry into social problem, explain phenomena by gathering numerical data that are analyzed using mathematically based methods.

Respondent Subject

The respondents of this study were the third year BSED Students of Kolehiyo Ng Pantukan enrolled in T.L.E 20 during the first Semester, Academic year 2016. The researchers used random sampling technique to get the target participants.

The focus of this study was the correlation of the mathematics I-A and Basic Electricity performance among T.L.E 20 Students of Kolehiyo Ng Pantukan. The respondents of this study were the (64) third year BSED block-II students of Kolehiyo Ng Pantukan of which of thirty-three (33) were females and thirty-one (31) males.

Table 1

Distribution of Respondents

Respondents	Population		Sample	
	Total	Percentage	Total	Percentage
Block I	34	51.51%	31	48.43%
Block II	32	48.48%	33	51.56%
Total	66	99.99	64	99.99%

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Research Instruments

This study employed researchers-made- questionnaire gathering the needed data. The development of this instrument was based on the available sources in such a way that questions were constructed in a concise and simple manner suited to answer the problem. Validation by experts was also done prior to the conduct of the questionnaire to ensure the validity and reliability.

The questionnaire consisted of two main parts: first was intended for the performance in general mathematics and the second for basic electricity consists of problem solving, numerical skills, statistical skills, basic principle of electricity and circuitry. It was composed of sixty items which was carefully constructed in such a way that the response pointed to the subject understudy employed the following parameter limits.

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Score Intervals	Description	Interpretation
95-10	Outstanding	This means that the level of performance is Advanced
90-90.49	Very Satisfactory	This means that the level of performance is Proficient
85-89.99	Satisfactory	This means that the level of performance is Approaching proficiency
80.84.99	Fair	This means that the level of performance is Developing
75-79.99	Poor	This means that the level of performance is Not Good
< 75	Failed	This means that the level of performance is Needs Interventions

Data Gathering Procedure

In the gathering of data, the researchers observed the following steps:

Seeking Permission to Conduct the Study. After the approval of the research proposal and validation of the questionnaire, the researchers sought permission from the College President for the approval of the request to conduct the study.

Administration and Retrieval of the Questionnaire. Upon approval, the researchers personally administered the questionnaire to the respondents and retrieved thereafter. Proper and specific instruction on how to answer the items in the questionnaire were given first.

Checking, Collating and Processing of Data. Responses to the items of the questionnaire were checked, collated and tabulated through the guidance of the statistician. Strict confidentially was established during the collation and after the tabulation of the data. The result was analyzed and interpreted based on the purpose of the study. Safe keeping of the corrected questionnaire was then. after the researcher personally administer and retrieve the questionnaires, checking, collating and tallying of data.

Statistical Treatment of the Data. For more comprehensive computation and analysis of data, the following statistical tools were used:

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Mean. This is also called arithmetic average defined as the sum of the values in the group divided by the numbers of values. This tool was used to determine extent of learning style and the level performance of the respondents.

Correlation. A statistical technique that can show whether and how strongly pairs of variables are related.

Multiple Linear Regression. As a predictive analysis, the multiple linear regressions are used to explain the relationship between one continuous dependent variable from two or more Independent Variable.

Chapter 3

RESULTS AND DISCUSSION

This chapter presents the analysis of the gathered data in both tabular and textual form.

Level of Performance in Math I-A in Terms of Statistical Skills

Table 2 shows the level of Math I-A performance in terms of Statistical skills which has a general mean score of 76.68 with a description of poor. There are only 5 (five) students who got the satisfactory with the parameter grades of 85-89.99 with the percentage of 7.81% while, 15 (fifteen) of them got the description of fair with an average grade of 80-84.99 and a percentage of 23.44% and 28 (twenty-Eight) got poor level with an average grade of 75-79.99 with the percentage of 43.75% Lastly, 16 of them got a description of failed level with an average grade of 75 (less than seventy-five) and percentage of 25.00%. The total of 64 takers with the equivalent percentage of 100.00%.

This was supported by Herbert (1978) who widely explained the use of mathematics and statistical skills as a result to predict students' success in the beginning of college. The finding of this study implied that students who experienced difficulty in statistics have a greater chance to be failed in their subjects, but has confirmed that competence in mathematics and statistical ability is crucial to the study.

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Table 2

The Level of Performance in Math I-A in Terms of Statistical Skills

Score Intervals	Frequency	Percentage	Interpretation
95-100	0	0.00%	Outstanding
90-90.49	0	0.00%	Very Satisfactory
85-89.99	5	7.81%	Satisfactory
80-84.99	15	23.44%	Fair
75-79.99	28	43.75%	Poor
<75	16	25.00%	Failed
TOTAL	64	100.00%	
MEAN		76.68%	Poor

Level of Performance in Mathematics I-A in Terms of Numeracy Skills

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Table 3 shows the level of Math I-A performance in terms of Numeracy Skills which has a general mean score of 76.60 it indicates that the performance is poor. There are only 5 (five) who got the satisfactory level with an average grade of 85-89.99 and equivalent percentage of 7.81%; 14 (fourteen) of them got the fair level with an average grade of 80-84.99 and a percentage of 21.88% while, 30 (thirty) of them got the poor level with an average grade of 75-79.99 and a percentage of 46.88 and 15 (fifteen) of them got the failed level with an average grade of 75 (less than seventy-five) with an average of 23.44, a total of 64 takers and an overall percentage of 100.00%. Over all this will only have explained that the performance level of the students when it comes to Numeracy skills in relation to Math I- A is divided with many weak points.

This is widely defined by Richardson and Suinn (1972) that mathematics numeracy skills are the capacity for quantitative thought and expression that have a great impact in studying and understanding mathematics operation, wherein there is a feeling of tension and anxiety that interfere with the manipulation of mathematical problems in varied situations in ordinary as well as academic life. Failure to learn numerical operation can also be explained as a sense of discomfort observed while working on mathematical problems, and is associated with fear and apprehension to specific math related situations.

Table 3

The level of performance in Mathematics I-A in Terms of Numeracy Skills

Score Intervals	Frequency	Percentage	Description
95-100	0	0.00%	Outstanding
90-90.49	0	0.00%	Very Satisfactory
85-89.99	5	7.81%	Satisfactory
80-84.99	14	21.88%	Fair
75-79.99	30	46.88%	Poor
<75	15	23.44%	Failed
TOTAL	64	100.00%	
MEAN		76.60%	Poor

The Level of performance in Math I-A in Terms of Problem Solving Skills

Table 4 shows the level of Math I-A performance in terms of Problem solving skills which has a general mean score of 76.48 which is poor. Presents the

statistical results which indicates, that there are 6 (six) got the satisfactory level with an average grade of 85-89.99 and percentage of 9.38%; 11 (eleven) of them got the fair level with an average grade of 80-84.99 and a percentage of 17.19% while, 30 (thirty) 0f them got poor level with an average grade of 75-79.99 and a percentage of 46.88%; 17 of them got the failed level with the grade of 75 (less than seventy-five) with a percentage of 26.56%. The overall total is 64 (sixty-four) with the equivalent percentage of 100.00%. The results showed that in statistical skills performance dominantly got the poor level in which it indicates that only few of the takers got highest possible levels for their performance.

This is thoroughly supported by Smith (1997) that problem solving is characterized with math anxiety in a number of ways, including: (a) uneasiness when asked to perform mathematically (b) avoidance of math classes (c) feelings of physical illness, faintness, dread or panic (d) inability to perform on a test and (e) utilization of tutoring sessions that provide very little success. Failure to perform problem solving competency will be a new factor or term to describe student's attitudinal difficulties with math.

Table 4

The Level of performance in Math I-A in Terms of Problem Solving Skills

Score Intervals	Frequency	Percentage	Description

95-100	0	0.00%	Outstanding
90-90.49	0	0.00%	Very Satisfactory
85-89.99	6	9.38%	Satisfactory
80-84.99	11	17.19%	Fair
75-79.99	30	46.88%	Poor
<75	17	26.56%	Failed
TOTAL	64	100.00%	
MEAN		76.48%	Poor

Summary Table of the Performance in Math I-A

Table 5 shows the summary performance of Math I-A with the overall mean of 76.59 which indicates that the performance is not good. The summary also indicates that in statistical skills the general mean average is 76.68 that would mean that the performance in statistical skills in Math I-A is poor while, in numeracy skills got an overall average mean grade of 76.60 which significantly indicates that

the performance in Numeracy skills is also poor and problem-solving skills got with an average grade of 76.48 which means that the performance in problem-solving skills is also poor. Overall the general mean average grade is 76.59 which significantly explained that the level of performance in the three skills indicators is also poor.

Steele, (2003) widely explained that Mathematics performance skills and performance must be interrelated to one another. Performance may vary on their level of ability in performing the problem solving and understanding in numerical operations and statistical manipulation that are being important as key in learning and enhancing mathematics performance. Students' failure to perform will be the cause of their low performance in mathematics performance in school. Although students may view boys and girls as being equal in mathematical ability, they nonetheless view adult men as being better at mathematics than adult women. Implicit attitudes that link males and mathematics have been demonstrated repeatedly in studies of college students.

Table 5

Summary Table of the Performance in Math I-A

Indicators	Mean	Description

Statistical skills	76.68	Poor
Numeracy Skills	76.60	Poor
Problem Solving skills	76.48	Poor
Overall	76.59	Poor

The level of Performance in T.L.E 20 in
Terms of Basic Principles

Table 6 shows the level of Basic Electricity performance in terms of Basic Principles it has a general mean score of 77.27 which indicates that the performance is not good. Based on the statistical results there is only one who got an outstanding level with an average grade of 95-100 and an equivalent

percentage of 1.56%; 4 (four) of them got the satisfactory level with an average grade of 85-89.99 and an equivalent percentage of 6.25%. While, 16 (sixteen) of them got the fair level with an average grade of 80-84.99 and a percentage of 25.00%; 31 (thirty-one) of them got the poor level with an average grade of 75-79.99 and equivalent percentage of 48.44%. Lastly, 12 (twelve) of them got the failed level with an average grade of <75 (less than seventy-five) with an equivalent percentage of 18.75%. An overall result of 64 takers with an equivalent percentage 100.00% is 77.27% which is poor. This means that the performance in Basic Electricity in terms of Basic principle is not good.

This is supported by Ronen and Eliah (2000). They believe that electricity is a fundamental driving force of our modern society. Unfortunately gaining understanding to its basic principle on electricity seems to be very challenging and difficult for the students who haven't yet background or understand to its contextual used in real application. Deficiency of students to understand what electricity is would be a factor in gaining low performance and understanding what it implies. Numbers of studies conducted worldwide indicate that students still have many difficulties and misunderstandings after systematic instruction.

Table 6

The Level of Performance in T.L.E 20 in Terms of Basic Principle

Score Intervals	Frequency	Percentage	Description
95-100	1	1.56%	Outstanding
90-90.49	0	0.00%	Very Satisfactory
85-89.99	4	6.25%	Satisfactory
80-84.99	16	25.00%	Fair
75-79.99	31	48.44%	Poor
<75	12	18.75%	Failed
TOTAL	64	100.00%	
MEAN		77.27%	Poor

Level of Performance in T.L.E 20 in Terms of Circuitry

Table 7 shows the level of Basic Electricity performance in terms of Circuitry which has a general mean score of 65.44 which indicates that the performance in circuitry is failed. Based on the statistical results. There are only 3 (three) who got the fair level with an average grade of 80-84.99 and an equivalent percentage of

4.69%; 4 (four) of them got the poor level with an average grade of 75-79.99 and a percentage of 6.25% while, 57 (fifty-seven) of them got the failed level with an average grade of <75 (less than seventy-five) with an equivalent percentage of 89.06%. This result indicates that the performance in Basic Electricity in Circuitry has description of failed failed.

This is supported by Carlsen and Andre (1992). They expound that there have been several attempts to overcome the difficulties in electricity learning. Traditional electricity teaching using textual learning material, concrete application tasks or hands-on laboratory work has been quite ineffective. After series of instruction learners have been still found to hold many misconceptions about electricity. Most typical difficulties are inabilities to relate theoretical models of electricity to real circuits, incomplete understanding of basic concepts of electricity, and incapacity to reason about the behavior of electrics. These difficulties and misconceptions seem to be very resistant to change. On the other hand, the emerging picture worldwide is not promising given that an adequate knowledge of electricity has rarely been acquired by students by the end of secondary education.

Table 7

The Level of Performance in T.L.E 20 in Terms of Circuitry

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Score Intervals	Frequency	Percentage	Interpretation
95-100	0	0.00%	Outstanding
90-90.49	0	0.00%	Very Satisfactory
85-89.99	0	0.00%	Satisfactory
80-84.99	3	4.69%	Fair
75-79.99	4	6.25%	Poor
<75	57	89.06%	Failed
TOTAL	64	100.00%	
MEAN		65.44%	Failed

Summary Table on the Level of Performance in Basic Electricity (T.L.E 20)

Table 8 shows the summary table on the level of performance on Basic Electricity. Based on the results of the two indicators. It manifests that the level of

performance in Basic principle has is at poor level. While, the performance in circuitry with an average mean score of 65.44 indicates a failed level performance. The overall, mean score is 71.35 which manifests a failed level performance.

According to Wang and Andre, (1991) The use of application questions and tasks has reported to be partially useful for developing understanding of electricity concepts. The effects were significant for males and students with moderate interest, but not always for females and students with high and low interest, but inconsistent learning in electricity may lead to difficulty of understanding. Research also indicates that laboratory-based hands-on activities can offer special benefits for understanding of concepts and correcting misconceptions and real application. However, some of the misconceptions are so strong and resistant that even direct experience with the real phenomena may not always be effective for changing student's opinions. As a one alternative, there have also been attempts to replace hands-on laboratory work with electricity simulations. Results of these studies provide rather inconsistent picture about the effectiveness of simulations compared to other methods (e.g. laboratory exercises.

Table 8

Summary Table of the Level of Performance in T.L.E 20

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Indicators	Mean	Description
Basic Principle	77.27	Poor
Circuitry	65.44	Failed
Overall	71.35	Failed

Relationship between the Performance in Math I-A and Performance in Basic Electricity (T.L.E 20)

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Table 09 shows the relationship between the performance in Math I-A and Basic Electricity. Based on the statistical results, there is only one indicator associated with the basic electricity performance. Statistical skills have general mean of 76.68 and R-Value of 0.36 while, R-2 is 0.13 with the coefficient variations of 13% and the interpretation on the relationship value resulted to a weak positive correlation and the P-Value got 0.004, thus decision is rejected, but the implication is significant. This only mean that among the three indicators of Math I-A, one of them which is the statistical skills has a strong influence and associated with the performance in basic electricity.

As widely explained by Eccles-Parsons, et al (1982) That the relationship between the mathematics and electricity can be integrated as one, since both subjects are anchored as an applied science. This discipline has Cultural shifts occurred since the 1980s that call for the reexamination of gender differences in mathematics. In the 1980s, a prominent explanation of male superiority in complex problem-solving beginning in high school was gender differences in course choice. However, performance of students both in mathematics and basic principles of electricity can be explained as a result of the emergence of subjects in school that slightly have relationship in the field of teaching. Subjects now can be integrated into the field of disciplines and then, performance may vary also how subjects are linked and closely related.

Table 09

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Significant Relationship between the Performance in Math I-A and Performance in T.L.E 20?

Indicators	R-Value	P-Value	Decision Ho	Conclusion
Statistical Skills	0.36	0.004	Rejected	Significant
Numeracy Skills	0.14	0.259	Accepted	Not Significant
Problem Solving skills	0.13	0.290	Accepted	Not Significant
Over-all	0.30	0.017	Rejected	Significant
Dependent Variable: Academic Performance in T.L.E 20				

Regression Analysis on Performance in Math I-A as a Predictor of performance in T.L.E 20

Table 10 shows the regression analysis performance in Math I-A as a predictor of performance in T.L.E 20. The table presents that statistical skills got Beta 0f 0.41 while the probability level got the 0.007 and the decision is rejected, but the implication is significant. In this case, it manifests that statistical skills are

associated with the performance of basic electricity. While, the numeracy skills and problem-solving skills have no significant relationship with the performance in basic electricity.

This is supported by Hackett and Betz's (1981) They widely explained that relationship between Mathematics performance was correlated moderately with basic electricity self-efficacy. No support was found for hypothesis that every increase of the performance of mathematics has a great impact to the performance of basic electricity as math as the predictors of the performance. But in some cases, there were instances that the performance of basic electricity can be predicted and explained by other factors outside with the considerations of the performance of mathematics. Study in mathematics and basic electricity in relation to self-efficacy expectations are unrealistically low compared to men's. Both mathematics performance and electricity self-efficacy were significantly and positively correlated with attitudes toward mathematics, masculine sex-role orientation, and a mathematics-related major. Students' importance ratings continued to decline across in tertiary education.

Table 10

Regression Analysis on Performance in Math I-A as a Predictor of Performance in T.L.E 20

Independent variable	Beta	Probability Level	Decision at a=0.05	Conclusion

Statistical Skills	0.41	0.007	rejected	Significant
Numeracy Skills	0.11	0.381	accepted	Not significant
Problem Solving skills	-0.11	0.448	accepted	Not significant
Dependent Variable: Academic Performance in T.L.E 20				

Chapter 4

SUMMARY, CONCLUSION AND RECOMMENDATION

This chapter represents the summary of findings, the drawn conclusions, and recommendations based on the result of this study.

Summary of Findings

The following are the salient finding of the study right after the thorough investigation:

1. The level of performance in Math I-A had an overall mean of 76.59. Specifically, statistical skills got a mean of 76.68, numeracy skills got 76.60 and problem solving skills got 76.48. All got a description of poor.
2. The Level of performance in basic electricity had an overall mean of 71.35 described as failed. For its indicator, basic principle got a mean of 77.27 described as poor while circuitry had a mean of 65.44 described as failed.

3. The null hypothesis is rejected thus there is significant relationship between the level of performance in Math I-A and Basic Electricity.

4.The Level of Regression analysis is significant in statistical skills with a probability level of 0.007. The numeracy skills and problem-solving skills are no significant. The performance in numerical and problem-solving skills have no significant influence as predictors of Basic Electricity Performance T.L.E 20.

Conclusion

Considering the finding, following conclusion will be drawn.

1. The level of student's performance in math I-A is in not good.
2. The performance of Second Year BSED students in basic electricity needs intervention.
3. There is significant relationship between Mathematics I-A and Basic electricity performance of third year BSED students of T.L.E 20.

4. No numerical and problem solving skills of Math I-A significantly influence the performance of Basic Electricity.

Recommendation

Based on the foregoing conclusions, the researchers arrived with the following recommendations:

1. Teacher may increase their knowledge of various instruction strategies to keep the students engage and be motivated throughout the learning process. The teacher should also ensure the performance of the students through activities such as, problem solving and application to enhance their capacity of thinking

2. The students may engage and participate in different activities that may enhance their textual and mathematical skills.

3. Other study is recommended using different variables and samples to correlate with the performance of the students.

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