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ACHIEVEMENT IN NABTEB MATHEMATICS AS CORRELATE OF STUDENTS'ACHIEVEMENT IN BASIC ELECTRICITY EXAMINATION IN EBONYI STATE

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Abstract
The study investigated the relationship between students' achievement in NABTEB mathematics and NABTEB basic electricity examinations in Ebonyi State Nigeria. One research question guided the study with one null hypothesis tested at 0.05 level of significance. The study employed the ex- post facto and correlational research designs. The population of the study was 244 May/June NABTEB mathematics and basic electricity results of 244 SSIII candidates from the three government technical colleges of Ebonyi State that offered both mathematics and basic electricity in the May/June NABTEB examinations from 2011/2012 to 2016/2017. The whole population of 244 results was used as sample for the study. No instrument was used for data collection. Pearson product moment correlation statistic was used to analyse the data while IBM SPSS Version 20 with an inbuilt t- test feature was used to test the hypotheses. Findings revealed that there was significant relationship between students' academic achievements in mathematics and basic electricity subjects.
Keywords: Achievement; Mathematics; Achievement; Basic Electricity; Examination.

Introduction
The world of the contemporary time is regarded and accepted as the digital economy which is characterized by technological advancement and innovations. Consequently, any nation which does not speed up in consonance with the technological advancement of this era is bound to regret in the near future because it will experience little or no development. In conformity with this, many nations of the world are striving hard to dance to the tune of the technological advancement of the era through technology education.

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This basic electricity is fundamental to all the other electrical craft subjects and it belongs to the applied sciences. Basic electricity is the electrical trade subject that equips the students with the knowledge of the fundamental principles in electricity. It treats topics such as; basic electrical quantities that include: current, voltage, power and their characteristics in both series and parallel circuits. Other topics in basic electricity are: conductivity of electrical materials such as metals, Ohms and Kirchoff's laws of resistance, effect of current such as flux density and electromagnetism, inductance, capacitance and the instruments used in measuring these quantities (Atsuber, Raymond & Ajunwa, 2013).This basic electricity is studied in the senior sections of Nigerian technical colleges from where examination bodies determine the academic expertise or otherwise of the students at the completion of their senior secondary three (SSIII) class. The examination bodies charged with the responsibility of determining the academic expertise or otherwise of students after completion of their SSIII class include: the National Business and Technical Examination Board (NABTEB), the West African Examination Council (WAEC) and the National Examination Council (NECO).The study was restricted to May/June NABTEB examinations which involved only SSIII students.

In Ebonyi State, there are only three government technical colleges and few students enrol yearly for basic electricity subject. Even so, it has been observed that the few students that offer basic electricity in the NABTEB examination perform poorly in it. For instance, an analysis of the May/June results of the National Business and Technical Examination Board (NABTEB) from 2012 to 2017 by Isiugo-Abanihe, (the Registrar/Chief Executive) revealed that students performed poorly in basic electricity across the nation and Ebonyi State in particular with less than 50% credit pass in NABTEB basic electricity from 2012 to 2017. This poor performance in the basic electricity subject has been a subject of concern to the technical educators making them to relate the students' poor performance to their weakness and lack of competence in mathematics which is a pre-requisite subject for the applied science subjects.

Although the relationship between mathematics and the applied sciences, to which basic electricity belongs, is established by literature, no research work has been done on the topic in Ebonyi State. This study was

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therefore intended to make a contribution towards filling that gap. To this end, the current study examined the relationship between students' achievement in NABTEB mathematics and NABTEB basic electricity examinations in Ebonyi State.

Statement of the Problem

Poor performance of students in Basic electricity subject especially in NABTEB examination in Ebonyi State has been a veritable worry to technical educators and other stakeholders in education such as parents/guardians, government and students. An analysis of the results of students in the NABTEB Basic electricity examination from 2012 to 2017 by Ifeoma Mercy Isiugo-Abanihe (the Registrar/Chief Executive, 2018) revealed poor performance of students in both basic electricity and mathematics in the state. This analysis which revealed the number of students that registered for basic electricity in the NABTEB examination in Ebonyi State and their corresponding performances from 2012 to 2017 in the three technical colleges of the state shows that performance of students is unsatisfactory (see Appendix A page 80). This situation calls for search of an obvious cause of students' poor performance in the technical courses and how to control it, otherwise the students would continue to perform poorly academically. This could increase the production of incompetent and unemployable graduates that will not represent the public image of the technical education well.

This poor performance of students in NABTEB basic electricity examination could be attributed to their lack of competence in mathematics which is a pre-requisite subject for basic electricity trade subject. This could be so because the West African Examination Council (WAEC) Chief Examiner's Report (May/June, 2017) observed that students had serious problems when solving problems in R-L-C AC series circuit and how to determine impedance, total current and phase angle because they involve mathematical principles. The students equally had problems on how to calculate and get correct answers for terminal voltage, back e.m.f, armature resistance, armature current, and that they had problems in phasor angle representation.

The above observations try to indicate how the students' weakness in mathematics can be transferred to their study of basic electricity subject. The present study has the assumption that if the root cause of students' poor performance in the basic electricity is ascertained to be their poor performance

in mathematics, there will be feasible recommendations which when implemented will correct that ugly situation. It is therefore pertinent to correlate the students' achievement in mathematics with their achievement in basic electricity. Therefore, the problem of the study was to investigate the relationship between students' achievement in NABTEB mathematics and NABTEB basic electricity examinations in Ebonyi State.

Purpose of the Study

The main purpose of the study was to determine the relationship between students' achievement in mathematics and their achievement in basic electricity examinations in Ebonyi State.

Specifically, the study sought to find out:

1. The correlation between students' achievement scores in NABTEB mathematics and basic electricity examinations in Ebonyi State.

Scope of the Study

The study ascertained the relationship between students' achievement in NABTEB mathematics and their achievement in NABTEB basic electricity examinations in Ebonyi State. The study was restricted to May/June NABTEB examinations which involved only SSIII students of the three Government Technical Colleges in the state. The study did not cover WAEC and NECO Examinations.

Research Questions

The following research question guided the study:

1. What is the correlation between students' achievement scores in NABTEB mathematics and NABTEB basic electricity examinations in Ebonyi State?

Hypotheses

The following null hypothesis which were tested at 0.05 level of significance guided the study:

1. There is no significant relationship between students' achievement scores in NABTEB mathematics and basic electricity examinations in Ebonyi State.

Research Design

The researcher employed the ex-post facto and correlational research designs for this study. The study was conducted in Ebonyi State of Nigeria. Ebonyi.

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The population for this study consisted of 244results of 244 senior secondary three (SSIII) students from the three government technical colleges that offered both mathematics and basic electricity in the NABTEB examinations for the academic years of 2011/2012, 2012/2013, 2013/2014, 2014/2015, 2015/2016 and 2016/2017.

All the 244results of the 244 senior secondary three (SSIII) students from the three government technical colleges that offered both mathematics and basic electricity in the NABTEB examinations from 2011/2012 to 2016/2017 academic sessions were used for the study. The researcher did not use any instrument such as questionnaire, teacher-made-test or interview for the study. There was no validation of instrument since no instrument was used for the generation of data. The researcher did not test for reliability of instrument since no instrument was used for the research. The researcher visited the three government technical colleges of Ebonyi State that registered their students for the May/June NABTEB examinations

All the analysis was done by IBM SPSS Version 20 which uses an inbuilt t-test feature to determine the significance of Pearson correlation coefficient. This IBM SPSS calculates the probability value (p-value) against which the stipulated 0.05 level of significance are usually compared. Where a p-value was greater than or equal to 0.05, the null hypothesis was accepted and where it was less than 0.05, the null hypothesis was rejected. Also, the correlation was carried out on graphs year by year with comments.

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Result

Research Question 1

What is the correlation between students' achievement scores in NABTEB mathematics and basic electricity examinations in Ebonyi State?

Table 1

Pearson r on students' achievement scores in NABTEB mathematics and basic electricity in Ebonyi State between 2011/2012 and 2016/2017

Variables	N	$\bar{X}$	Total	R	Remark
Achievement Scores in NABTEB Mathematics	244	2.63	642	.744	High Positive Relationship
Achievement Scores in NABTEB Basic Electricity	244	4.23	1032	1.00	

The Pearson correlation of students' achievement scores in NABTEB Mathematic and Basic Electricity in Table 1 shows that the correlation coefficient is .744. This is an indication that there is a high positive correlation between the two variables. This suggests that an increase in students' achievement in mathematics leads to an increase in their achievement in basic electricity.

Test of Hypothesis

Hypothesis 1

There is no significant relationship between students' achievement scores in NABTEB mathematics and basic electricity examinations in Ebonyi State.

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Table 2
Significance of Pearson r on all students' achievement scores in NABTEB mathematics and basic electricity in Ebonyi State

Variables	N	$\bar{X}$	Df	R	*p*-value	Remark/Decision
Achievement Scores in NABTEB Mathematics	244	2.63	243	.744	.000	Significant Ho1rejected.
Achievement Scores in NABTEB Basic Electricity	244	4.33	243	1.00		

Table 2 shows that the Pearson's r (.744) *has p*-value of 0.00 which is less than the stipulated 0.05 level of significance. Therefore the null hypothesis was rejected. The relationship between students' achievement scores in NABTEB mathematics and basic electricity examinations was significant.

Summary of the Finding

From the analysis of data presented, the following major findings were made:

1. There is a high positive relationship between students' achievement scores in NEBTEB mathematics and NABTEB basic electricity examinations in Ebonyi State.

Discussion of Finding

The relationship between students' achievement scores in mathematics and basic electricity examinations.

A finding of the study showed that there is high positive relationship between students' achievement scores in mathematics and basic electricity. For the years when the students' achievement scores in mathematics went high, their corresponding achievement scores in basic electricity also went high (2014/2015 and 2015/2016). This shows that the students' knowledge of mathematics has a positive effect on their achievement in basic electricity examination.

This finding is in agreement with Charlse-Organ and Okey (2017) who found that mathematics knowledge has a positive effect on achievement of

students in secondary school physics. In the same vein, this finding tallies with the finding of Osama (2015) that there was a significant positive relationship between mathematics subjects (business mathematics, business statistics, quantitative method in management and principles of accounting) and the accumulative average of accounting students.

All these findings confirm the importance of mathematics and its relationships to the scientific and technology facets of our word.

Conclusion

The study showed that there is high positive relationship between students' academic achievement in NABTEB mathematics and basic electricity examinations. This indicates that mathematical skills serve as vital tools which enable students to achieve highly in basic electricity. It is therefore concluded that students should embrace mathematics as a vital tool for the sciences and to be competent in them. This could enhance their academic achievement in basic electricity.

Implications of the Study

The findings revealed some educational implications. For example, the findings revealed high positive relationship between the academic achievement in mathematics and the achievement in the applied science subject of basic electricity. The findings showed that students' level of competencies in mathematics determine their academic achievement in basic electricity.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. The Federal Ministry of Education of Nigeria should always employ qualified and competent mathematics teachers into the technical colleges and organize yearly trainings/workshops for them. This is because the need for mathematics skills to the technical college students is now more obvious as a result of the findings of this study. This could make the teachers effective in the teaching and learning process thereby transferring their competencies into the technical college students, and hence enhance the students' academic achievement in both mathematics and basic electricity.
2. The mathematics and basic electricity teachers in the technical colleges should embark on team teaching in order to effectively teach all the pre-requisite mathematical skills that pose

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difficulties to basic electricity students thereby getting the students prepared before their examinations for high academic achievement.

References

Atsuber, B.N. Raymond, E. &Ajunwa, J. (2013). Effects of animation on students' academic achievement and retention in basic electricity at technical college level in Benue State, Nigeria. *Multidisciplinary Journal of Research and Development, 8*(1), 22-30.

Charlse-Organ, I. & Okey, I. F. (2017). Effects of knowledge of mathematics on achievement of physics students' performance in electromagnetism in secondary schools in Lagos State. International Journal of Theoretical and Mathematical Physics, *7*(4), 61-67.

Osama, S. (2015). The relationship between mathematics grades and the academic performance of the accounting students' department. *European Proceedings of Social and Behaviourial Sciences.* May, 2015. Retrieved from www.futureAcademy.orguk.
Email: haban-osama@hotmail.com.

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