Students' Proficiency in English Language Relationship with Academic Performance in Science and Technical Education

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Abstract This is a descriptive research of a correlation type where 120 students were sampled from a college of education to find out the relationship between proficiency in English language and academic performance among students of science and technical education. Findings revealed that there is correlation between proficiency in English language and academic performance of students in science and technical education; students in technical education performed better than their counterpart in science education; students who passed English language performed better than those who failed both in science and technical education. Some recommendations were suggested at the end of the study.

Keywords: science education, technical education, English proficiency, correlation, academic performance

1. Introduction

The importance of English language for enhancing educational attainment through improved communication ability can never be over emphasized. Students who have so much difficulties with their communication skill in English language may not function effectively, not only in English language but in their academic and this is no reason than the fact that English language in Nigeria today is the language of text-books and the language of instruction in schools. When Students' Proficiency in English Language is high, it will definitely affect and improve the academic performance of such students. Nevertheless, where the proficiency in English is lacking in any academic setting, it will definitely lower the academic performance of such students. [2] vehemently, revealed that lack of proficiency in English language is one of the factors contributing to poor performance in Mathematics. In his research, he observed that the performance of students in Mathematics' examination at Senior Secondary School Certificate Examination (SSCE) is poor but further stated that the performance in English is more than that of Mathematics and this he linked to poor reading ability .He then suggests that there is need to improve the teaching of English language to improve Mathematics' education.

[17] in his work proved that competency in English significantly determines performances in intelligence or academic tests. The revelation above seem to suggest that mastery of English language is very importance even in students' academic performances in intelligence tests, especially when it comes to the issues of Science and Technical education that involves a lot of laboratory and workshop practical in the acquisition of skills. Technical Education is an aspect of education, which leads to the acquisition of practical, basic scientific knowledge which involves special manipulative skills, creative minds, and attitudes relating to occupations in various sectors of the economic and social life [12,19,26]. The mind set is that the individual is trained to be self reliant, and well productive.

The [12] views technical education to be further understood as (a) an integral part of general education, (b) a means of preparing for occupational fields and for effective participation in the world of work; (c) an aspect of lifelong learning and a preparation for responsible citizenship; (d) an instrument for promoting environmentally sound sustainable development; (e) a method of alleviating poverty. (pg29). However, this cannot be achieved without properly understanding the language of communication and instruction in school. Students trained in both science and technical education programme require English language to properly understand the contents of the programme, which in turn will improve the academic understanding of the student.

Science education is the study of biology, chemistry or physics in conjunction with the principle and method of education to be able to share scientific processes and

content with those who are not traditionally in scientific community [4]. Science education should be concern with teaching of science concepts and also address learners' misconceptions about these science concepts.

To this effect, good language competence in English language may be a positive predictive validity variable on the performance of students on intelligence test. This [7] and [25] asserted when it was discovered that the measurements of intelligence tend to reflect the learner's mastery of language and in this sense English language. It was on this note that [1] while lamenting on the poor performance of students in West African Examination Council (WAEC) said that the matter is serious because of the influence English has on all the other subjects of the curriculum which invariably pointed at the notion that students' success in English language could influence the overall performance of students in other disciplines.

[10] while investigating reading problem among the master students in the Arab world keenly revealed that most of them suffered from linguistic handicap which is the dominant reason for their reading comprehension problem which invariably leads to academic failure. Ultimately, he unfolded that the difficulties with masters' students in reading comprehension are compounded by their linguistic shortcomings. Thus, language inefficiency invariably leads to poor academic performance [8,11]. No wonder why today according to [16] much emphasis is placed on passing of English language at credit or distinction level in addition to other subjects to enable any candidates gain admission into any Nigeria Higher Institution of learning.

[18] averred that low proficiency in English language has been considered a barrier to learning and academic success at the post-secondary level and this is because English learners often lack the language proficiency necessary to understand the test content and academic work. [13] also revealed that high English language proficiency could also aid academic reading which is in a view to aptly indicate the influence of English language on students' academic performance in other disciplines.

English language is very important to any course in Nigeria educational system especially Science and Technical Education courses. [14] confirmed this when he said English language is a powerful factor in the study of science in Nigerian Universities and Polytechnics.

One could thus inferred from the fore-going that anyone who can read English can keep in touch with the whole world without leaving his own house [5] which no doubt have positive impact on academic performance of students in all fields. No wonder why [6] firmly stated that if under sentimental urge, we give up English; we will cut ourselves off from knowledge.

This study employed descriptive method of correlation type where students' results were collected from general studies department, school of science and technical education for analysis. This is a correlation type because correlation is very important in educational studies as argued by [3]. Correlation is used to find relationship between variables [9] aside this [22] believed correlation can be used to determine the degree of relationships and variability between students' performance in examination.

The research instrument for this study was a pro forma for collecting students' results in science and technical courses from year one to year three in College of Education.

For easy analysis the data was divided into five groups which are:

1. General group for both science and technical education
2. Science education group who failed English language
3. Science education group who passed English language
4. Technical education group who failed English language
5. Technical education group who passed English language

With the exception of group 1 that has 60 students; all other groups contains 15 students each in the group.

Permission was sought from the heads of various concerned departments in the College to collect student scores in science and technical courses from the College examination units.

Statistical analysis found suitable for this study are Pearson Product Moment Correlation Coefficient and t-test because Pearson Product Moment Correlation Coefficient is used to determine the degree of relationship between two sets of variables [21]; this could also be supported by [24] that, correlation coefficient method is used to compute the strength of association between variables.

In view of the importance of English language to learning in Nigeria as the only general medium of expression in all level of educational system; this study is aimed at finding out its correlation to students' performance in Science and Technical Education courses.

Specifically, the following research questions will guide the study:

1. Does students' performance in English language have any relationship with Science Education courses?
2. Does students' performance in English language have any relationship with Technical Education courses?
3. Is there any difference between students' performance in English language base on Science and Technical Education courses?

2. Research Hypotheses

Two null hypotheses that will be tested are:

H01: There is no significant difference in performance of students who failed English language and those who passed in science subject

H02: There is no significant difference in performance of students who failed English language and those who passed in technical subject

3. Findings

Table 1. Correlation between English language and Science

	Eng. Language	Science
Eng. Language	1	0.553
N	30	30
Science	0.553	1
N	30	30

Table 2. Correlation between English language and Technical

	Eng. Language	Technical
Eng. Language	1	0.643
N	30	30
Technical	0.643	1
N	30	30

Table 3. Means score of English Language in Technical and Science education

	N	Min.	Max.	Mean	Std
Eng. Tech	30	41	56	46.5000	5.77599
Eng. Sci	30	41	53	45.7000	2.98444

Table 4. mean scores of students' performance in English in science education

	mean	N	Std. Deviation	Std. error mean
Eng. failed	30.9333	15	11.02249	2.84599
Eng. passed	41.9333	15	6.01743	1.55370

Table 5. t-test analysis of performance in science education based on performance in English

	mean	Std. deviation	Std error mean	t_{cal}	t_{tab}	df
Eng. Failed and Eng. passed	1.100	12.81740	3.30944	3.324	1.761	14

Significant at 0.05

Table 6. mean scores of students' performance in English technical education

	mean	N	Std. Deviation	Std. error mean
Eng. failed	38.4000	15	7.79927	2.01376
Eng. passed	46.4667	15	4.99809	1.29050

Table 7. t-test analysis of performance in technical subject based on performance in English

	mean	Std. deviation	Std error mean	t_{cal}	t_{tab}	df
Eng. Failed and Eng. passed	0.06667	10.89867	2.81402	2.867	1.761	14

Significant at 0.05

Findings from Table 1 above shows that there is a strong correlation between English Language proficiency and students' academic performance in science course with correlation coefficient of 0.553; thus answered research question 1.This means good English language proficiency determines good academic performance of students in science courses.

Table 2 above shows that there is strong relationship between English Language proficiency and students' academic performance in technical course as correlation coefficient between them is 0.643; research question 2 is hereby answered. The implication of this is that proficiency in English Language determines students' performance in technical courses. Any student who is not good in English language may not as well be good in Technical Education courses.

Table 3 above reveals that students in technical education performed better in English language than their counterpart in science education as mean score of technical students is higher than that of science students. In the light of this, research question 3 is answered.

From Table 5 calculated value of *t* is greater than table value ($t_{cal} > t_{tab}$) therefore hypothesis 1 is rejected. This implies that there is difference in the performance of students who failed English language and those who passed in science education.

Table 4 reveals that those who passed English language performed better in science than those who failed English language since mean scores of those who passed is higher those who failed.

Table 7 shows that calculated value of *t* is higher than the table value ($t_{cal} > t_{tab}$) thus; hypothesis 2 is hereby rejected; meaning that difference exists between student that failed English language and those that passed in technical education.

Table 6 shows that mean scores of students who passed English language is higher than those who failed indicating that, those who passed English language performed better than those who failed.

4. Discussion

It could thus be inferred from the above findings that proficiency in English language is required for all students in Science and Technical education. The findings in this research therefore agreed with the findings of [17] who proved in his work that competency in English significantly determines performances in intelligence or academic tests. [2], succinctly, revealed when he opined that lack of proficiency in English language is one of the factors contributing to poor performance in Mathematics.

The findings further confirms the positions of [23] and [15] who separately asserted that a lack of adequate mastery of English language (language of instruction) is a major problems relating to inadequate understanding of the teacher's speech (listening problem) that results from poor vocabulary and syntactic knowledge (note-taking problem), deficient language background and compromise in qualifying entry examination into current stratum of the schools' ladder among students as source of understanding constraint.

[15] traces this poor language of instruction challenge to attitudinal problem among students and between students and lecturers of other disciplines. He found that many students regard proficient knowledge of English language as only subordinate to the mastery of their main course of study. So these students erroneously assume English is a problem of the English major students. He further stresses on the instances of lecturers of other courses discouraging and underrating the usefulness of the use of English lecturers' attendance and competence in English as not very important for the students' success.

Vehemently, English language proficiency could go a long way in affecting students' academic performance in both science and technical education courses for English language is the gateway to educational advancement. The more reason [20] referred to English language as the language of achievers and that the language counts as far as rising up and being a member of the elite class is concerned. Students who understand this do strives to do well in English language as this invariably affect their performance in other subjects.

5. Conclusion

In view of the findings of this study it is enough to conclude that proficiency in English language is strongly related to students' academic performance in science and

technical education. It is therefore very important to always ensure that students who are admitted into these courses have good English language proficiency.

It was also observed that students in technical education performed better than students in science education; however, it might be difficult to generalize this finding unless further study is carried out on it. Students in technical education are better than those in science education because their mean scores are higher than those of science education in the same English language examinations.

6. Recommendations

The following recommendations are suggested based on the findings of this study:

1. Admission into any course in science and technical education should be based on credit pass in English language.
2. English language should be central to what students will learn in general studies upon their admission into Science or Technical Education.
3. All students in secondary school should be counseled to take English language very seriously irrespective of their courses.
4. Colleges should encourage students to improve on their communication skills in any academic setting.
5. Most of the government own tertiary institutions are without language laboratory and qualified teachers to handled English language. Government and others concerned stakeholders should ensure that more and qualified teachers are employed and language laboratory should be built where necessary.

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