

FACTORS INFLUENCING PERFORMANCE IN BASIC TECHNOLOGY AMONG SECONDARY SCHOOL STUDENTS OF DELTA SOUTH SENATORIAL DISTRICT IN DELTA STATE, NIGERIA

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ABSTRACT

Similar to other science subjects, basic technology recorded poor secondary school students' performance both in national and international examination. Furthermore, there are large variations in performances of Nigerian students that raise concerns. These differences in performance may be caused by multiple factors that need to be identified. The aim of this study is to identify the factors that influence students' performance in basic technology. Four research questions guided the study and four hypotheses were tested at the .05 level of significance. The study used the survey research design method with 218 principals of secondary schools in Delta South Senatorial District in Delta State of Nigeria as the target population. The stratified random sampling technique was used to select 65 principals (32 from public and 33 from private secondary schools) as sample of the study. The instrument for data collection was a questionnaire which was content and face validated by three lecturers. The test-retest method was used to ascertain the reliability based on 20 principals who were not part of the population under study. The estimated reliability $r = 0.73$. Data was collected personally by the researcher and was analysed using ANOVA (Analysis of variance). The result revealed that multiple factors; schools', students', government, and parents' factors influenced students' performance in basic technology with lack of resources underlying these factors. Hence, it was recommended among others that Delta State Ministry of Basic Education should adequately provide the required resources for the teaching and learning of basic technology in secondary schools in Delta State.

Keywords: *Factors, Students, Performance, Basic Technology, Secondary School, & Delta State.*

1. INTRODUCTION

Vocational education is designed to develop skills, abilities, understanding, attitudes, work habits and appreciation that confer knowledge needed to enter and make progress in employment on a useful and productive basis (Udo, 2004). Pre-vocational subjects offered at the post-primary level include: Introductory Technology now Basic Technology, Practical Agriculture, Home Economics and Business Studies (Federal Government of Nigeria FRN, 2004). Basic technology is a pre-vocational subject offered at junior section of post primary education (FRN, 2004). Basic technology is a pre-vocational subject offered at junior section of post primary education (FRN, 2004). According to Uwameiye and Ojikutu (2008), basic technology exposes students at the junior secondary school (JSS) level to technology through exploratory activities.

According to Ohikhema (1994), Basic Technology provides knowledge in woodwork, metalwork, technical drawing, auto-mechanics and electricity and electronics at the introductory level and hence exposes students to Technical Education. Obomanu (2001) had observed that Basic Technology is an aspect of general education curriculum which attempts to provide learning experiences that would assist students in understanding the industrial and technological aspects of life by offering instructions in selected areas of metalwork, woodwork, electricity, plastics, ceramics, textiles and technical drawing.

Reports from different states in Nigeria indicated poor performance of students in their Junior Secondary School Examination in Basic Technology (Nwoji, 2000; Lenda, 2001). Akpan, Usoro, Akpan, & Ekpo (2010) citing Ekefre (2003) opined that many students cannot interpret simple machine drawings. The teaching of Basic Technology does not provide appropriate job training and experience in any specific trade or industrial area. No student on completion of the subject can carry out simple daily maintenance of motor vehicle in terms of checking oil level and water level in the radiator. Ekefre further ascribed poor performance of students in Basic Technology to insufficient tools, equipment, materials and teachers.

Performance of students differ, some may have high performance while others have low. These differences in performance may be caused by various factors. Some of the factors that may affect student's performance in examination include: interest, training materials, influence of qualified teachers, management and parental attitude, teaching method, availability of laboratory and workshops, tools, equipment, and teacher incentives. Basic technology, like other science subjects, recorded poor students' performance both in national and international examination (Adejoh, 2006). Many factors contributed to the poor performance of students in basic technology examination (Alele, 1986; Okebukola and Jegede, 1986 in Adejoh 2006). These factors include:

- i) Inability of the teachers to put across the concepts to the students
- ii) Lack of skills and competence required for teaching
- iii) Shortage of qualified basic technology teachers
- iv) Lack of teaching materials and necessary equipment

Similarly, Onweh (1991) in Adejoh (2006) reported that, there was scarcity of teachers for the basic technology programme. In a nationwide survey on the teaching of basic technology conducted by the NERDC (1992) in Adejoh (2006), more than 90% of the JSS students registered for the subject but less than 60% of the teachers were qualified to teach the subject. In same vein, Ogwa (2002) emphasized that some teachers did not major in Basic

Technology yet, they teach the subject. Ogwa further observed that many teach the subject with secondary school qualification. Also, the poor performance are as a result of the interest of students in basic technology, shortage of qualified basic technology teachers, poor facilities, equipment and instructional materials for effective teaching (Odogwu, 1994), and the use of traditional chalk and talk methods, (Edwards and Knight, 1994).

Nwodo (1997) stated that the poor performance of our students may be due to the use of inappropriate teaching methods. In the same vein, Jati (2003) together with Adah; Omalle and Okedi (2008) attributed students' poor performance of students to lack of qualified teachers and infrastructural facilities. In addition, Okeke and Nwachukwu (1997) stressed that teachers' quality constraints constitute a crucial problem towards the successful implementation of the basic technology. Also, United States studies such as that conducted by Rivkin, Hanushek, and Kain (2005), suggest that teacher quality is a significant factor in predicting student achievement.

Studies by Dermie, Lewis, and MacLean (2006) attributed the poor performance of Somali pupils in United Kingdom to overcrowded accommodation. In addition, , lack of parental support among the Somali students in the United Kingdom contributed to their poor performance. The above research was supported by studies in Kenya by Jagero (1999), Oloo (2003), which showed that a major problem affecting academic achievement was the home environment that was not conducive to reading. A study by Desarrollo (2007) in Latin America outlined that secondary student with the responsibility of earning money for their families on a regular basis performed poorly in their national examinations. Grantham et al (1998), while studying school performance of Jamaican girls declared that better achievement levels were associated with possession of school materials and access to reading materials outside of (the) school. Similarly, a study by Hinnum and Park (2004) determined that there was a positive correlation between the presence of reading materials at home and performance in rural China. The above studies by Grantham et al, and Hinnum and Park were extended by a research of Jegero (1999) in Kisumy district that substantiated the finding that lack of reading materials at home was a major factor affecting the performance of secondary school students. It is against this background that the researcher investigated the factors influencing students' performance in Basic Technology in secondary schools in Delta South Senatorial District of Delta State.

Despite Delta State government efforts, to improve the standard of education by providing the required human and material resources for the implementation of education at all levels, students' performance in basic technology in internal and external examination is very poor in recent years. This situation makes one to wonder what could be the causes of this persistent failure of students in basic technology examination. Some scholars attributed this high failure rate in science and basic technology to various factors which could be institutional and non- institutional. In support, Adeyegbe (1992) posited that science education has been facing a lot of difficulties which include poor performance of students in science subjects. Also, Okolie, Elom and Inyiagu (2014), observed that poor performance of students in basic technology has been so high in many Nigerian public schools in the recent years.

It is against these backdrops that this study intends to find out the factors that influence students' performance in basic technology examination in secondary schools in Delta South Senatorial District of Delta State. Specifically, the study sought to find out the:

1. School factors that influence students' performance in basic technology in secondary schools in Delta South Senatorial District of Delta State.
2. Students' factors that influence students' performance in basic technology in secondary schools in Delta South Senatorial District of Delta State.
3. Government factors that influence students' performance in basic technology in secondary schools in Delta South Senatorial District of Delta State.
4. Parent factors that influence students' performance in basic technology in secondary schools in Delta South Senatorial District of Delta State.

Consequently, this study will be significant to principals, teachers, parents, students, Delta State Ministry of Basic Education, and future researchers. Since the results of the study will expose the various factors influencing students' performance in Basic technology examination in Basic education certificate examination in secondary schools in Delta South Senatorial District of Delta State.

2. RESEARCH QUESTIONS

The following research questions guided the study:

1. What are the school factors that influence students' performance in basic technology in secondary schools in Delta South Senatorial District of Delta State?
2. What are the students' factors that influence students' performance in basic technology in secondary schools in Delta South Senatorial District of Delta State?
3. What are the government factors that influence students' performance in basic technology in secondary schools in Delta South Senatorial District of Delta State?
4. What are the parent factors that influence students' performance in basic technology in secondary schools in Delta South Senatorial District of Delta State?

2.1 HYPOTHESES

The following hypotheses were tested at 0.05 level of significance:

1. There is no significant difference in the mean response of public and private school principals on the school factors that influence students' performance in basic technology in secondary schools in Delta South Senatorial District of Delta State.
2. There is no significant difference in the mean response of public and private school principals on the students' factors that influence students' performance in basic technology in secondary schools in Delta South Senatorial District of Delta State.
3. There is no significant difference in the mean response of public and private school principals on the government factors that influence students' performance in basic technology in secondary schools in Delta South Senatorial District of Delta State.
4. There is no significant difference in the mean response of public and private school principals on the parent factors that influence students' performance in basic technology in secondary schools in Delta South Senatorial District of Delta State.

3. METHODS AND PROCEDURE

The survey research design was used in this study. This design was appropriate because no variable was manipulated in this study. The study was limited to principals in secondary schools in Delta South Senatorial District of Delta State. The population of this study was all the 219 principals from the 108 public and 111 private secondary schools in Delta South Senatorial District of Delta State. The stratified random sampling technique was used to select 30% of the entire population from both public and private secondary schools in Delta South Senatorial District of Delta State. Thus, 65 principals (32 from public and 33 from private secondary schools) were selected as sample of the study. The instrument for data collection was a 20 item questionnaire titled “Factors Influencing Students’ Performance in Basic Technology Examination” It was made up of 4 sections (Section 1-4). Section 1 is on School Factors; Section 2 is on Students’ Factors; Section 3 is on Government Factors; and Section 4 is on Parent Factors. All the sections have 5 items each, and the questionnaire is on 5-point Likert scale of Strongly Agree (SA), Agree (A), Un Decided (UD), Disagree (D), and Strongly Disagree (SD) with a corresponding weight of 5,4,3,2, and 1 respectively. The questionnaire was content and face validated by three lecturers from the Delta State University, Abraka and all suggested correction were done. The questionnaire was administered to 20 principals from secondary schools in Delta Central Senatorial District of Delta State who are not part of the sample under study. Using test retest method, the Pearson Product Moment Correlation Technique was used to ascertain the reliability of the instrument which yields 0.73 coefficients. This result implies that the instrument was reliable. The researcher administered the questionnaire on the 65 principals that was selected for the study. Also, the researcher collected the completed questionnaire on the spot which yields a hundred percent return rate. The mean was used to analyse the research questions, while analysis of variance was used to test the hypotheses. The decision point was 3.00; this implies that any mean response of 3.00 and above was regarded as ‘Agreed’ while mean response below 3.00 was regarded as ‘Disagreed’. Furthermore, it was decided that where the f-calculated value was equal or greater than the table f-value, it indicates significant difference; the null hypothesis will be rejected but if otherwise, the null hypothesis will be accepted. All statistical analyses were performed with statistical package for social sciences (SPSS) software.

4. RESULTS, DATA ANALYSIS, AND DISCUSSION

The results of this study were presented according to the research questions and hypotheses.

Research Question 1: What are the school factors that influence students’ performance in basic technology in secondary schools in Delta South Senatorial District?

Table 1: Shows the mean response of principals on the school factors that influence students’ performance in basic technology in secondary schools in Delta South Senatorial District

S/N	School Factors Influencing Students’ Performance in Basic Technology Examination	Public Principals (N=32) Mean	School Remark	Private Principals (N=33) Mean	School Remark
1.	Shortage of qualified teachers	3.45	Agreed	3.23	Agreed
2.	Inadequate facilities, equipment, and instructional materials	3.35	Agreed	3.23	Agreed
3.	Un conducive classroom	3.12	Agreed	3.00	Agreed
4.	School location	3.05	Agreed	3.43	Agreed
5.	Teaching methods used by teachers	3.56	Agreed	3.76	Agreed
Grand Mean		3.31		3.33	

*Respondents agreed with all the item statement in Table 1 above.

Table 1 revealed that school factors such as shortage of qualified basic technology teachers; inadequate facilities, equipment, and instructional materials; un conducive classroom; school location; and teaching methods used by teachers are the school factors influencing students' performance in basic technology examination in secondary schools in Delta South Senatorial District of Delta State. These findings are in line with previous researches. The poor performance are as a result of the shortage of qualified basic technology teachers, (Ohuche 1978; Ale, 1989), poor facilities, equipment and instructional materials (Odogwu, 1994), use of traditional methods, (Edwards and Knight, 1994; Nwodo, 1997), and large pupils to teacher ratio (Alele-Williams, 1988). In the same vein, Jati (2003) together with Adah; Omalle and Okedi (2008) attributed students' poor performance of students to lack of qualified teachers and infrastructural facilities.

Research Question 2: What are the students' factors that influence students' performance in basic technology in secondary schools in Delta South Senatorial District?

Table 2: Shows the mean response of principals on the students' factors that influence students' performance in basic technology in secondary schools in Delta South Senatorial District

S/N	Students' Factors Influencing Students' Performance in Basic Technology Examination	Public School Principals (N=32) Mean	Private School Principals (N=33) Mean
6.	The interest of students	3.34	3.20
7.	Students' reading habit	3.28	3.13
8.	Lateness to school	3.04	3.00
9.	Peer group influence	3.12	3.33
10.	Poor concentration in basic technology class	3.59	3.66
Grand Mean		3.27	3.26

*Respondents agreed with all the item statement in Table 2 above.

Table 2 revealed that students' factors such as the interest of students; students' reading habit; lateness to school; peer group influence; and poor concentration in basic technology class are the students' factors influencing students' performance in basic technology examination in secondary schools in Delta South Senatorial District of Delta State. These findings are in line with previous researches. The poor performance of students is as a result of the interest of students in basic technology, (Ohuche 1978; Ale, 1989).

Research Question 3: What are the government factors that influence students' performance in basic technology in secondary schools in Delta South Senatorial District?

Table 3: Shows the mean response of principals on the government factors that influence students' performance in basic technology in secondary schools in Delta South Senatorial District

S/N	Government Factors Influencing Students' Performance in Basic Technology Examination	Public School Principals (N=32)		Private School Principals (N=33)	
		Mean	Remark	Mean	Remark
11.	Poor provision of qualified basic technology teachers and instructors	3.39	Agreed	3.29	Agreed
12.	Poor provision of adequate facilities, equipment, and instructional materials for teaching basic technology	3.46	Agreed	3.33	Agreed
13.	In adequate infrastructural facilities for teaching basic technology	3.22	Agreed	3.10	Agreed
14.	Poor training and re-training programme for basic technology teachers	3.15	Agreed	3.26	Agreed
15.	Poor attitude of government towards the implementation of basic technology	3.66	Agreed	3.46	Agreed
Grand Mean		3.38		3.29	

*Respondents agreed with all the item statement in Table 3 above.

Table 3 revealed that government factors such as poor provision of qualified basic technology teachers and instructors; poor provision of adequate facilities, equipment, and instructional materials for teaching basic technology; in adequate infrastructural facilities for teaching basic technology; poor training and re-training programme for basic technology teachers; poor attitude of government towards the implementation of basic technology are the government factors influencing students' performance in basic technology examination in secondary schools in Delta South Senatorial District of Delta State. These findings are in line with other researches.

Research Question 4: What are the parent factors that influence students' performance in basic technology in secondary schools in Delta South Senatorial District?

Table 4: Shows the mean response of principals on the parent factors that influence students' performance in basic technology in secondary schools in Delta South Senatorial District

S/N	Parent Factors Influencing Students' Performance in Basic Technology Examination	Public School Principals (N=32)		Private School Principals (N=33)	
		Mean	Remark	Mean	Remark
16.	Parent educational background	3.55	Agreed	3.27	Agreed
17.	Family size	3.37	Agreed	3.21	Agreed
18.	Inability to provide reading materials at home	3.16	Agreed	3.20	Agreed
19.	Occupation of parent	3.45	Agreed	3.53	Agreed
20.	Lack of parental support	3.49	Agreed	3.36	Agreed
Grand Mean		3.40		3.31	

*Respondents agreed with all the item statement in Table 4 above.

Table 4 revealed that parent factors such as parent educational background; family size; inability to provide reading materials at home; occupation of parent; and lack of parental support are the parent factors influencing students' performance in basic technology examination in secondary schools in Delta South Senatorial District of Delta State. These findings are in line with other researches. Dermie et al (2006) reported that, lack of parental support among the Somali students in the United Kingdom contributed to their poor performance. This is so because many of the Somali parents were unable to offer help to their

children because of lack of prior education or ability to use English. The above research was supported by studies in Kenya by Jagero (1999), and Oloo (2003), which showed that a major problem affecting academic achievement was a home environment of students that was not conducive to reading. A study by Desarrollo (2007) in Latin America outlined that secondary student with the responsibility of earning money for their families on a regular basis performed poorly in their national examinations. Grantham et al (1998), while studying school performance of Jamaican girls declared that better achievement levels were associated with possession of school materials and access to reading materials outside of (the) school. Similarly, a study by Hinum and Park (2004) determined that there was a positive correlation between the presence of reading materials at home and performance in rural china.

Hypothesis 1: There is no significant difference in the mean response of public and private school principals on the school factors that influence students’ performance in basic technology in secondary schools in Delta South Senatorial District.

Table 5: Shows the analysis of variance of mean response of principals on the school factors that influence students’ performance in basic technology in secondary schools in Delta South Senatorial District

ANOVA Table				
	Sum of Squares	Df	Mean Square	F
Between Groups	0.0015	1	0.0015	0.0235
Within Groups	0.5111	8	0.0639	
Total	0.5126	9		

**df= 9, fcrit= 5.12*

In Table 5, the f calculated was 0.0235 and the f critical under df 9 was 5.12. Since the f calculated was less than f critical, the hypothesis1 which stated that there is no significant difference between the mean response of public and private school principals on the school factors that influence students’ performance in basic technology examination in secondary schools in Delta South Senatorial District of Delta State was accepted.

Hypothesis 2: There is no significant difference in the mean response of public and private school principals on the students’ factors that influence students’ performance in basic technology in secondary schools in Delta South Senatorial District.

Table 6: Shows the analysis of variance of mean response of principals on the students’ factors that influence students’ performance in basic technology in secondary schools in Delta South Senatorial District

ANOVA Table				
	Sum of Squares	Df	Mean Square	F
Between Groups	0.0003	1	0.0003	0.0055
Within Groups	0.4356	8	0.0545	
Total	0.4359	9		

**df= 9, fcrit= 5.12*

In Table 6, the f calculated was 0.0055 and the f critical under df 9 was 5.12. Since the f calculated was less than f critical, the hypothesis2 which stated that there is no significant difference between the mean response of public and private school principals on

the students' factors that influence students' performance in basic technology examination in secondary schools in Delta South Senatorial District of Delta State was accepted.

Hypothesis 3: There is no significant difference in the mean response of public and private school principals on the government factors that influence students' performance in basic technology in secondary schools in Delta South Senatorial District.

Table 7: Shows the analysis of variance of mean response of principals on the government factors that influence students' performance in basic technology in secondary schools in Delta South Senatorial District

ANOVA Table				
	Sum of Squares	Df	Mean Square	F
Between Groups	0.0194	1	0.0194	0.6713
Within Groups	0.2308	8	0.0289	
Total	0.2502	9		

**df= 9, fcrit= 5.12*

In Table 7, the f calculated was 0.6713 and the f critical under df 9 was 5.12. Since the f calculated was less than f critical, the hypothesis3 which stated that there is no significant difference between the mean response of public and private school principals on the government factors that influence students' performance in basic technology examination in secondary schools in Delta South Senatorial District of Delta State was accepted.

Hypotheses 4: There is no significant difference in the mean response of public and private school principals on the parent factors that influence students' performance in basic technology in secondary schools in Delta South Senatorial District.

Table 8: Shows the analysis of variance of mean response of principals on the parent factors that influence students' performance in basic technology in secondary schools in Delta South Senatorial District

ANOVA Table				
	Sum of Squares	Df	Mean Square	F
Between Groups	0.0203	1	0.0203	0.9760
Within Groups	0.1660	8	0.0208	
Total	0.1863	9		

**df= 9, fcrit= 5.12*

In Table 8, the f calculated was 0.9760 and the f critical under df 9 was 5.12. Since the f calculated was less than f critical, the hypothesis4 which stated that there is no significant difference between the mean response of public and private school principals on the parent factors that influence students' performance in basic technology examination in secondary schools in Delta South Senatorial District of Delta State was accepted.

5. CONCLUSION

Based on the findings of this study, it was concluded that the factors influencing students' performance in basic technology examination in secondary schools in Delta South Senatorial District are numerous. These factors include school factors, students' factors, government factors, and parent factors. This is so because the school, students, government, and parents are the major stakeholders of any educational institutions.

6. RECOMMENDATIONS

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

1. Delta State Ministry of Basic Education should adequately provide the required resources for the teaching and learning of basic technology in secondary schools in Delta State.
2. Delta State Ministry of Basic Education should provide training and re-training scheme for basic technology teachers.
3. Seminars should be organized for school administrators, basic technology teachers, students, and parents on the causes of poor performance of students in basic technology examination and how to address the issue of students' poor performance in basic technology examination.

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