

## Factors Affecting Students' Performance on Basic Technology Junior Secondary School Certificate Examination

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### Abstract

*This study was designed to identify factors affecting students' performance in basic technology Junior Secondary School Certificate Examination in. Four research questions were raised to guide the study. The population of the study consisted of three thousand one hundred and twenty six (3126) basic technology teachers and students. A sample of three hundred (300) was selected through random sampling. The instrument used for data collection was structured questionnaire. The data collected were analyzed using mean. Findings among others revealed that students has low interest in studying basic technology, teachers' methods of teaching also effect students' performance, insufficient number of qualified staff, poor training materials, poor administration and supervision of schools affects students' performance in basic technology. Based on the findings of the study, some practical recommendations were made.*

**Keywords:** Basic Technology, Technology Education, Students' Performances, Nigeria

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### Introduction

Education is the totality of life experience that people acquire and which enables them to cope with and drive satisfaction from living in the world. This is because it enables them to achieve social competence and optimum individual development. It is on this premise that it is believed that the quality of a nation's education is proportional to the level of its prosperity Aduwa and Unwameiye (2006). From the beginning of time, man has strived to improve his way and quality of life. The Caveman discovered how to make and use tools, developed logical sequence for activities and evolved processes that added to his life, the totality of the use and application of his knowledge, skills tools and materials constitute what we today describe as technology. Technology comes from Greek word, - Technologia; techne-an art, skill or craft and "logia"- the study of something or the branch of knowledge of discipline (Egbogah, 2007).

Basic technology is a phase of general education designed to introduce the learner to/and acquaint him/her with the basic process, material and product of the industries (National Policy on Education, 2004). The first National policy on Education in 1977 divided the existing five-year Secondary School into six – year Junior Secondary School system consisting of three – year Junior Secondary School and three year Senior Secondary School in the 6-3-3 year system of education. In the three-year of Junior Secondary School (JSS) in Nigeria, almost all technical subjects are integrated together and called Basic Technology. At the Junior Secondary School level, every student is expected to develop positive attitude toward the study of Basic Technology since it is the first time students are introduced to technical subjects.

However, there is no way every student in a group can have the same or similar performance towards a subject, 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, equipotent, teacher incentives etc. Ogwa (2002) in a study on the causes of poor performance of students in Basic Technology emphasized that some teachers did not major in Basic Technology yet, they teach the subject. He further observed that many teach the subject with secondary school qualification. It is based on this background that the researcher investigated the extent some of the aforementioned factors affects students' performance in Basic Technology.

Basic technology which is the only core subject among the per-vocational subjects of the junior secondary school Nigeria, involves the academic practical study of materials and sources of energy with the ultimate intention of applying study knowledge from the study to provide a comfortable environment for man (Uwameiye, 1999). The basic technology was planned or designed to reduce ignorance about technology education. To attain this, the subject has three main objectives as was stated by federal republic of Nigeria (NPE 2004);

- (i) To provide pre-vocational orientation for further training in technology
- (ii) To provide basic technological literacy for everyday living and
- (iii) To stimulate creativity.

In order to realize the objectives of technology, the curriculum content has been fully structured to accommodate the two major concepts of creativity and workmanship. Students are therefore trained to acquire the art of creativity in their basic technology lessons which will help them acquire their occupational skills (Achebe in Nwobasi 2010). It is also crucial that in the junior secondary classes, students should acquire a preliminary knowledge, skill and awareness in technology that could serve as eye opener for choosing a career in the world of work (Uzoagulu 1995). Uzoagulu also assert that Basic Technology is an exploratory and expository subject. In view of this, the organization of selected topics and contents into a teaching sequence were achieved by the technical committee on Basic Technology curriculum planning. He further stressed that the curriculum committee suggested that a periodic testing or continues assessment of students disposition to the subject be embarked upon.

### **Statement of the problem**

It is surprising that despite the efforts of government, individuals and non-government agencies in enhancing the educational development in Nigeria, the Imo State Post-primary School Management Board (PPSMB) report (2010) has shown that the general academic performance of students in Basic Technology has declined greatly. It was also observed that poor performance of students in basic technology has been so high in many Nigerian public schools in the recent years. If this is not checkmated, our Science and Technology related subjects graduates from the post-primary schools may not be employable and those who may further in their University Education may experience difficulties because of their background. Consequently, our educational system will not attain its objective of producing qualified and competent product in technology education; industries will lack technicians who would help in the maintenance and production process in our local industry.

### **Purpose of the Study**

The general purpose of the study was to identify factors affecting students' performance in Basic Technology Examination in Nigeria. Specifically, the study tends to:-

1. Identify students' interest in learning Basic Technology.
2. Identify teacher factors on students' performance in Basic Technology.
3. Ascertain the extent of availability of training materials, equipment, tools in teaching Basic Technology.
4. Identify management factors that affect the academic performance of students.

### **Research Questions**

1. To what extent does students interest in learning Basic Technology affects their performance?
2. What are the teacher's factors on students, performance in Basic Technology?
3. What is the extent availability of training materials, equipment; tools in teaching Basic Technology affect students' performance?
4. To what extent do the School management attitudes affect the academic performance of students?

### Research Method

The research design used for the study was quantitative research design. It was used in investigating the performance of students in Basic Technology School Certificate Examinations in Nigerian public schools. The study was carried out in selected Government Secondary Schools in Orsu Local Government Area of Imo State.

### Sample

The total population of the study was three thousand one hundred and twenty six (3126) comprising of Junior Secondary School Three (III) students and Basic Technology teachers. The researcher selected three hundred and sixty (300) respondents out of the 3126 (students and teachers). Simple random sampling technique in which all the teachers and students in the sampled schools have the possibility of being selected was used for the study. The sample size was determined using Yaro Yamane formula and the study data was collected using questionnaire.

### Procedure /Measures

The questionnaire terms were made of 20 structured questions items to rate terms on a 4-point scale of degree of agreement and disagreement having these options. Strongly agree (SA) = 4, Agree (A) = 3, Disagree (D) = 2 and strongly Disagree (SD) = 1. The instrument for data collection was validated by three experts in Basic Technology fields of Study and corrections were effected where necessary. The researcher through the help of research assistants administered the questions to the respondents in their respective schools

### Analysis

A total of three hundred questionnaires were randomly accepted and assembled for data analysis, which was done using mean. Response with a mean of 2.50 and above was regarded as agreed. While responses with mean below 2.5 were regarded as disagree in the study analysis.

### Findings/Discussion

This provided answers to the research questions that backed up the study. It also discussed the findings of the study and also supported the findings with other existing results of previous findings in the same field of study.

**Research Question 1:** To what extent does students' interest in learning Basic Technology affect their performance?

Table1

*Responses on the extent students' interest in learning Basic Technology affect their performance.*

Items	SA	A	D	SD	X	Remark
Students have the notion that Basic Technology is difficult and this leads to poor performance.	80	122	74	24	2.86	Agree

Students prefer theory to practical method of teaching.	102	68	71	59	2.74	Agree
Peer groups perceptions about basic technology also affect the students' interests; most of the students want to study other easy subjects to enable then pass their school examinations.	95	83	63	59	2.74	Agree
The students' interests are positive and usually very high when necessary instructional materials and equipment are available and adequate	77	89	90	44	2.66	Agree

Findings as presented in Table 1 proved that all respondents agreed that students have the notion that Basic Technology is difficult and this notion they sometimes have leads to poor performance. Also, the study revealed that students prefer theory to practical method of teaching. This finding is in line with the works of Eya and Neboh, (1999) that most students are too lazy and they do not have much interest in the practical aspect of learning, which is also due to their way wards attitude. Eya and Neboh (1999) opined that students are less interested in practical more than in the theoretical aspects particularly in the science oriented subjects. To stimulate an interest in learning, there are several techniques that an instructor may be able to use. Students typically enrol in a course because it is required as a core or as an elective in their academic programme. Some enrol because of self interest, but find it uninteresting towards the end of the term. As an instructor, the teacher wants the students to successfully complete a course by stimulating their interest in learning and at the same time to be successful in their life and career.

The study also revealed that Peer groups' perceptions about basic technology affect the students' interests and most of the students want to study other easy subjects to enable then pass their school examinations. Most of the students want to make quick money due to pressures from friends at school; this type of attitude affects their performance. Students who combine their academics with other activities like hawking, playing truancy in school, taking delight in missing lesson to attend to their hawking or other activities, students who check such as cultism, drugs addiction, prostitution and other social vices perform poorly in examination because little attention in being giving to their studies. Those students who engage themselves in clubbing, picnic, games, music and other forms of leisure have little interest in their studies especially when it involves practical subjects like Basic Technology. Eze and Obeta (2006), noted that a child gets his rudimentary education from the parents before he or she is matured enough to go to school and the type of disciple inculcated affects the child academic performance. The child whose parents are traders grow up with the family business knowing the rudiments involved in the business. One seeing the outcome of the business may share his interest in schooling with that of the family trade. Also students that come from a family where the authoritarian system of government is practices have more chances of being serous and fearful.

The study found out that students' interests are positive and usually very high when necessary instructional materials and equipment are available and adequate. Inyiagu (2005) stressed that inadequacy in teaching and workshop facilities have contributed to the diminution of the quality of technical education graduates in Nigeria; the available facilities are inadequate quantitatively and qualitatively and besides most of them are obsolete. Availability of facilities in Basic Technology workshops will eventually lead to improvement in teaching and learning of Basic Technology especially in the aspect of acquisition of practical skills by Junior Secondary School Students wishing to stop their education at that level.

**Research Question 2:** What are the teachers' factors on student's performance in introductory technology?

Table 2

*Responses on the teacher factors on students' performance in Basic Technology Examination*

<b>Items</b>	<b>SA</b>	<b>A</b>	<b>D</b>	<b>SD</b>	<b>X</b>	<b>Remark</b>
Most a times, Basic Technology Teachers teach without using teaching aids	94	91	70	45	2.78	Agree
Varieties of teaching methods are not often employed by Basic Technology Teachers	102	85	62	51	2.80	Agree
Most Basic Technology Teachers are not professionally trained to teach the subject and this is always seen in Private Secondary Schools.	99	87	50	56	2.78	Agree
There are few Basic Technology Teachers; sometimes one teacher is allowed to teach class 1-3 and this affects the teacher's teaching strength.	130	98	62	10	3.16	Agree

Table 2 indicated that the respondents agreed with all the items. From the data analysis, the study revealed that most a times, Basic Technology Teachers teach without using teaching aids and varieties of teaching methods are not often employed by Basic Technology Teachers. This is in line with Ogwa, (2002) that sometimes, teachers are responsible for students' poor performance in examination. The need for qualitative teacher education is as valid as this present time, more than even before because the task of educating the citizenry is one of the most important tasks confronting modern society. Ogwa (2002) states that teaching methods are vehicle used to convey the objectives of lessons such that learners can best acquire the required knowledge and skills at the end of the lesson. No instructional methods can be successful if it fails to hold the students interest or attention. He further remarked that poor method of teaching tends to defects the objectives and skills motivation's open ended experimentation and individual ingenuity of students. Method of teaching Basic Technology is very important in order to achieve its objective. In most of our secondary schools, the approach used in teaching the subject in classes is the traditional method, which is the method whereby teachers teach by coping notes on the blackboard, drawing on chalk boards without demonstration of full explanation of fundamental principles.

The study also revealed that most Basic Technology teachers are not professionally trained to teach the subject and this is always seen in Private Secondary Schools. The study agreed that there are few Basic Technology teachers and sometimes one teacher is allowed to teach class 1-3; this affects the teacher's teaching strength as well as teaching methods. Most a times, the teacher handling all these classes are not encouraged by the school management as this will enable the teacher make extra efforts towards imparting knowledge and skills in the students. Encouragement is one of the major factors that affect the academic performance of students in our secondary schools. Eresimadu (1998) opined that in every formal organization, for the goal to be achieved, the members must be motivated. It is an integral part in the schools system if students should perform well. Sometimes, governments neglect the physiological and physical needs of the students in the school system which will make the productivity of teachers to be low. Teachers may exempt themselves from work and even when they are present, the spent most time in the staffroom chatting and discussing other than what they are employed to do.

Ukeje (2001) went further to say that teacher chances for advancement either in rank or salary are limited and usually required him to leave the classroom, where he is badly needed to enter administration which has a shortage of qualified men. Olomoliya (2010) in his study, stated that poor

and irregular payment of salary, housing, no hope of owning a car, no other sources of income and low prestige in society are some of the major factors that affects teachers, he is denied of his entitlement for instance the withdrawal of teachers allowance and other incentives. He is deprived of opportunity to further training and education and is expected to lobby before he is selected to attend training, workshop, conference and seminar. Therefore, the opinion of the researchers is that teachers of Basic Technology should use modern teaching aids, varieties of methods in teaching and make their textbooks available for student. The government/school proprietors should also employ more qualified teachers to teach Basic Technology.

**Research Question 3:** What is the extent of availability of training materials, equipment and tool in teaching of Basic Technology affects students' performance.

Table 3

*Responses on the extent of availability of training materials, equipment and tools in teaching Basic Technology affect students' performance.*

Items	SA	A	D	SD	X	Remark
Most school libraries have little or no Basic Technology books and where the books are available, they are sometimes obsolete	125	90	43	42	2.99	Agree
The laboratories are not well equipped with necessary teaching aids like retort stand, conical flask, beaker, test tube rack etc.	88	112	32	68	2.73	Agree
Where the equipment and tools are available, students are not always exposed to practical due to lack of qualified teachers to handle such practical.	116	100	50	34	3.33	Agree
Lack of adequate workshop/laboratory affects students performance in Basic Technology in our schools	91	87	62	60	2.69	Agree

Table 3 proved that most school libraries have little or no Basic Technology books and where the books are available, they are sometimes obsolete. Also, the laboratories are not well equipped with necessary teaching aids like conical flask, beaker, test tube, rack etc. The findings of the study also revealed that where the equipment and tools are available, students are not always exposed to practical due to lack of qualified teachers to handle such practical. The results proved that lack of adequate workshop/laboratory affects students' performance in Basic Technology in our schools.

These findings are in line with Ezenwa, (2003) that the major problem of many teachers in their lesson delivery is unavailability of sufficient instructional materials, workshop for practical tools and equipment for labour; hence the subject is taught without teaching aid. Ezenwa (2003) defined instructional materials as those items that are used to pass, store and retrieve information for teaching and learning activities. They include tools, equipment and consumable. Examples of these instructional materials are as follows, juice from unripe fruit for acid, raffia palm for cork clay, grass, nails, sawdust, leaves, flowers, calabash for world globe. He further stressed that instructional materials are inevitable in the teaching of sciences and technological subjects. It makes teaching and learning more interesting and facilitating for students. They also contribute to development of attitude and behaviour change. They challenge student creative acumen.

Ogwa (2002) is of the view that a teacher who uses teaching aid to deliver his/her lesson will convey more facts to the students at short intervals than one who use only oral speeches for lesson delivery. He also stated in seven ways the importance of instrumental materials during lesson presentation as follows:-

1. The teacher saves efforts.
2. The learner is active.
3. Clarification of concepts.
4. Retention of learned material.
5. Time is saved.
6. Interest is captured.
7. Reality in learn presentation.

A library is a treasure of valuable textbooks for the students to use and gain from it (Bundy, 2006). Libraries are thus a source of entertainment and education for young stars as well as adults. A library not only helps to inculcated a thirst for knowledge which makes a person humble and open to new ideas throughout his/her life Bundy also opined that school libraries and public libraries should be pivoted to the 21<sup>st</sup> century educational experience, and the base for a positive attitude by young people towards information skills development, lifelong learning and enhancing their life chances. Therefore, the implication is that the availability of training materials, equipment tools in teaching introductory technology affects students' performance in examination.

**Research Question 4:** To what extent do the School management attitudes affect the academic performance of students?

Table 4

*Responses on the extent the school management attitudes affect the academic performance of students.*

Items	SA	A	D	SD	X	Remark
Students are not motivated to learn through awarding of scholarship to some of them.	134	89	70	7	3.17	Agree
Inadequate funding of school by Government and mismanagement of school funds and properties can hinder learning.	101	90	60	49	2.81	Agree
Poor constructions of Workshop/Laboratory and few classroom accommodation hidens learning.	83	88	62	67	2.62	Agree
Discouragement of in-service training programme for teachers in order to upgrade their knowledge.	120	92	56	32	3.18	Agree

Table 4 proved that school managements of many schools in Imo State Nigeria do not motivate their students to learn through awarding of scholarship, inadequate funding of school by Government and mismanagement of school funds and properties can hinder learning. The study also proves that Poor constructions of Workshop/Laboratory and few classroom accommodation hidens learning. It revealed

that discouragement of in-service training programme for teachers in order to upgrade their knowledge affect students' academic performance. John (2007) stated that the management factors are those factors arising from the government school supervisors, administrators, principal and all those involved in the management of schools. Some of these factors include; the school environment, the problems of large classes, school principals factors.

Many people hold that, the school environment is one of the factors because environment influence learning in schools. Ezenwa, (2003) emphasized the hygiene of the school environment; He showed the correlation between learning and sound health and explain how health of an individual can deteriorate under unhygienic conditions. He added by saying that if a child lives in healthy environment, he remains sound and he does the work expected of a healthy students. Therefore, a rich environment improves learning. A school with a beautiful environment acts as an attraction to all students alike and for students who came from poor home, begin in such an environment gives a sense of relief and a pleasant change. A school with respective facilities will enhance students' academic performance. A school that feels like a prison can lead to students feeling like prisoners, which will typically not be most preferable environment for learning. School attendance; diminish as a result of students negatively impacted. When the school environment does not feel safe and secure to the students, the attitude of students are negatively impacted (John, 2007). It can have a negative impact on the test scores of students. Schools that promote a controlled and safe feeling are more conducive to learning. Students who feel as though they are in a safe environment will be more inclined to participate in class, take an interest in their studies and feel a responsibility for their grades assignments. Schools that have an aura of security will also promote feelings of social acceptance. Unsafe schools are more likely to have social cliques and likewise conflicts, while schools that have high standard for safety infer feelings of social comfort and security. When students do not feel a risk of violence, retaliation and bullying from their peers, they will be more induced to grow socially and express themselves more openly.

It has been suggested that large classes contributes to poor performance of students and school management is responsible for this. The problems arises where there are no increase in the number of classrooms, qualified staff and facilities. In fact overcrowding the classrooms is a hindrance to effective learning and this leads to poor performance of students. John (2007) opined that class configuration affect teaching methods to adopt and requisite learning methods to employ. He further added by saying that, employing a particular method depend on teacher inclination, the size of class, available learning materials and lesson objectives. Increased students' numbers in secondary schools coupled with reduced resources have often resulted in larger class sizes, thus encouraging a reversion of the traditional style of delivery and a reduction in small group and tutorial contract teaching and learning (Ezenwa, 2003). Undoubtedly, this increasing diverse student enrolment has presented challenges in the classroom. Since there is no single instructional method that can be wholly effective in a large multicultural classroom (Ivowi, 1988), teachers are criticized for failing to promote the development of transferable skills in their students. It is also stated that large classes are perceived by teachers as troublesome, difficult and problematic which then indicates that teachers face special problems in dealing with large classes.

For promotion of effective quality teaching of Basic Technology in our Secondary Schools, the principal and school management board should make the school plant facilities such as the halls libraries, workshop and other similar ones available for the student. The school principals and management boards should as well perform roles of organizations through supervision of instruction, planning, budgeting, evaluation of staff and students to ensure the smooth running of the school. In institutions of learning, supervision entails a process of guiding, directing and stimulating growth with the overall aim of improving teaching and learning (Eze, 2006). Supervision of instruction as noted in Nwagwu (2000) is concerned with making adequate provisions for all the conditions that are essential for effective learning through effective teaching. The nature of supervision given by school principal can be seen so far, in such that it includes all the activities that are primarily and directly aimed at studying and improving the conditions that surround the learning and growth of pupils, and teachers.



These findings were in line with those of Idowu (2006), Chima (2007), Arisi (2008). Idowu (2006), in his studies on factors affecting students' performance in Junior Secondary School found out that

1. Inadequate provision of qualified teachers affects students' performance.
2. Lack of provision of incentives to teachers affects their performance in classroom which is also transferred to students.
3. Non-availability of instructional materials; workshop equipment and facilities also have effect on students.

Chima (2007) in his study on factors affecting the academic achievement of student in secondary schools found that

1. Most of the school teachers are not motivated in term of incentives rather what they receive is just their meagre salaries which discourage them from teaching.
2. Environment is another factor influencing the academic performance of students.
3. Inadequate qualified number of teachers remains a factor influencing the academic performance of students.

Arisi (2008) studied the causes of poor performances of students in secondary schools in Edo state and revealed that lack of adequate instructional materials as well as ill-equipped nature of our school libraries is another cause of students' poor performance.

### **Conclusion**

The poor performance of students in Basic Technology has been a very big to the society and Nation at large. The factors affecting students' performance has been identified such as interest of students to leaning, teachers attitude and methods of teaching, inadequate instructional materials, equipment and facilities, and management poor funding and supervision of schools. Therefore, efforts should be made by the school administrators/ proprietors, teachers and government at all level to improve students' poor performance in Basic Technology.

It is hoped that the findings of this study will be of importance to curriculum planners, teachers, students, society and parents. The curriculum planners will make use of these findings during innovation. It will help them understand how their set objectives have been achieved in Basic Technology and seek for improvement where necessary. The findings from the study would also help teachers of Basic Technology to teach more effectively. It will equally save parents the waste of paying school fees for repeat of examination. Students offering Basic Technology will benefit from the study because human material resources may be adequately provided as suggested by the study. This will make them have good education and also help them to learn better skill. Furthermore, the nation/society will benefit from the study if they pay more attention to Basic Technology, improvement in technological subjects, and courses in Secondary and Tertiary Institution respectively will boast of country's technology. Finally, the study will also provide vital information with regards to the qualification of Basic Technology teachers and indicate their training and retraining needs.

In spite of the importance of the study to the individuals as well as to government and corporate bodies, the researcher made the following recommendations based on the findings of the study, personal experiences, and observation.

1. The Government/school proprietor should provide modern teaching facilities for effective teaching and learning of Basic Technology in Secondary Schools.
2. Provide incentives to Basic Technology teachers and students.
3. The size of secondary school classes should be reduced from 50 to 35.
4. Selections of candidates into all the programmes of secondary school should be based primarily on the result of entrance examination conducted to test the candidate's attitudes towards learning and their intellectual capacities.
5. Provide sufficient classrooms and instructional materials for students.

6. Proper funding and timely release of fund for educational activities by government should be encouraged.

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