Students' Performance in Introductory Technology at the Junior Secondary School Certificate Examinations in Ankpa Local Government Area of Kogi State, Nigeria

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Abstract

The study investigated the level of students' performance in introductory technology at the junior secondary school certificate examination (JSSCE) in Ankpa Local Government Area of Kogi State, Nigeria. Five (5) research questions based on the five purposes formulated guided the study. Using random sampling technique six (6) secondary schools with two (2) each from the three districts were sampled and used for the study. Records of students' performance in JSSCE and structured questionnaire were the two major instruments used for the data collection. The data collected were analyzed using frequency counts and simple percentage. From the analyzed data, it was discovered that students' performance were not encouraging; male students performed better than their female counterparts; there exist inadequate skilled teachers and facilities and the learning environment were not quite conducive. Based on the findings of the study, it was suggested that the governments should make adequate budgetary allocation to cater for the effective teaching and learning of skilled inclined subjects in which introductory technology is inclusive; introductory technology teachers should be sponsored by their employers to attend refresher courses, workshops, seminars and conferences as a way of updating their knowledge and skills in the subject.

Keywords: Students' Performance, Introductory Technology and School Certificate Examination

Introduction

Introductory technology is one of the pre-vocational subjects offered at the junior secondary schools in Nigeria. It is a preparatory core subject of vocational and technical education. It comprises of areas such as carpentary, joinery, masonry, machine fitting, metal fabrication, motor mechanics, automobile and general works e. t. c

According to the Federal Ministry of Education, Science and Technology (FMST) (1985), the objectives of introductory technology as one of the pre-vocational subjects are;

- To provide pre-vocational orientation for further training in technology
- To provide basic technological literacy for everyday living
- To stimulate creativity

Introductory technology being one of the skill oriented subjects bearing in mind the above objectives, enables the individual to acquire appropriate skills, abilities and competence to live in and contribute effectively to the development of his society (Olaitan, 1996). It is very important to note that without the knowledge of introductory technology, Nigeria as a nation might be left behind in the scientific and technological race. This then means that there is the need for adequate commitment in the teaching and training of introductory technology in our junior secondary schools. The thoroughness in the teaching of introductory technology will lead to the accomplishment of the objectives of vocational and technical education programmes at the higher level of our educational system which is the major plight of Nigeria as a nation. Furtherance of our youths in the skills and other engineering oriented courses at our tertiary level of education is highly dependent on their earlier knowledge and skills acquired at the secondary school level.

Looking at the alarming rate of unemployment in the country, the need for the nation to embrace the teaching and learning of vocational and technical courses in our schools in order to turn our graduates who can be self

employed should be given priority as the technological development of any nation rest on the competence and capability of her manpower.

In order to achieve the acquisition of these technical and practical skills at the lower craft level, the contributions of the teacher of introductory technology in our junior secondary schools is very paramount. The question is whether there are enough skilled and trained teachers in this field and whether they are actually teaching this course in order that the goals of vocational and technical education can be achieved at the junior secondary school level.

Another pressing issue of concern worthy of mentioning here, is Nigeria's attempts to belong to the twenty (20) economies countries of the world which can only be acquired via solid and sound acquisition of scientific and technological knowledge and skills. This then led to the issue of vision 20:2020 which is designed to inculcate self sustenance in our national life (National Association of Teachers of Technology, 1996). The above vision called for the compulsory inclusion of introductory technology as a core subject at junior secondary school level in all schools in the country.

Over the years, students' performance in introductory technology has not been encouraging. The poor performance is very evident in the number of students that enroll for science including vocational and technical related subjects at the senior secondary school level which also goes further to affect their enrolment at the tertiary institution level. The resultant effect of this, is that most graduates produced lack technical and manipulative skills which makes them job seekers instead of job providers.

It is on the above background that the study is out to assess students' performance in introductory technology at the junior secondary school certificate examinations in Ankpa Local Government Area of Kogi State, Nigeria.

Purpose of the study

The main purpose of the study is to assess students' performance in introductory technology at the junior secondary school certificate examinations. Specifically, the study sought to:

1. examine the performance of students in introductory technology at the junior secondary school certificate examinations in the study area.
2. determine whether they are qualified and skilled teachers to teach introductory technology in the junior secondary schools in the study area.
3. determine the enrolment of male and female students in introductory technology in the junior secondary school within the study area.
4. determine whether disparity exist between the performance of male and female students in introductory technology in junior secondary school certificate examination in the study area.
5. determine the possible factors responsible for students' performance in introductory technology in the study area.

Research questions

Based on the purpose of the study, the following research questions were formulated to guide the study:

1. What is the state of students' performance in introductory technology in the junior secondary school certificate examinations between 2006-2011?
2. Are there qualified and skilled teachers to teach introductory technology in the junior secondary schools in the study area?
3. What is the enrolment figure of male and female students in introductory technology in the junior secondary schools in the study area?
4. Do disparity exist between the performance of male and female students in introductory technology in junior secondary schools certificate examinations n the study area?
5. What is the likely factors responsible for the performance of students in introductory technology in junior secondary school certificate examinations in the study area?

Research Method

The study employed a survey research design. The study population comprised of all the junior secondary school three (JSS III) students and teachers of introductory technology in Ankpa Local Government Area of Kogi State. Random sampling technique was used to select a total number of six (6) secondary schools of which two (2) each were taken from the three (3) districts that make up the study area. Six (6) vice principals academics were selected from the six (6) sampled schools and used for the study. The instruments for data collection included records of students results in junior secondary school certificate examinations between 2006-2011 and A 10 – item structured questionnaire of Agree and Disagree options. The questionnaire was divided into sections A and B where section A was used to collect personal data of the respondents and section B was used to address the real task. The structured questionnaire items drafted by the researcher was subjected to face and content validation by two (2) experts in vocational and technical education related courses. The two (2) experts were drawn from University of Nigeria, Nsukka. The items of the questionnaire were scrutinized for clarity purposes. The corrected version of the questionnaire were administered by the researchers themselves and collection of the completed questionnaire from the respondents was done via the same procedure. One hundred percent return was recorded. The data collected were analysed by frequency counts and simple percentage.

Results

The results of the study was presented in the tables as follows based on the research questions

Research Question 1

What is the rate of students' performance in introductory technology in the junior secondary school certificate examinations between 2006-2011?

Table 1:   **Students' Performance rate in Introductory Technology in Junior Secondary School Certificate Examinations between 2006-2007 – 2010 – 2011.**

S/No	Names of School	Total Enrolment of Students	Total No. of Passes	Percentage of Students that passed	Total No. of Students that failed	Percentage of Students that failed.
1	Government Technical College, Ankpa	369	304	82.38	65	17.62
2	Saint Charles' College, Ankpa	1246	888	71.27	358	28.73
3	Community Secondary School, Ojoku	937	759	81.00	178	19.00
4	College of Islamic Studies, Ojoku	317	235	89.90	32	10.10
5	Enjema Community Secondary School, Ofugo	1236	1078	87.22	158	12.78
6	Community Secondary School, Inye	834	761	91.25	73	8.75

Source: Kogi State Ministry of Education (KSMOE), Lokoja (2011).

Table 1 shows the total enrolment, total number of passes and failures in introductory technology between 2006/2007 – 2010/2011. Community secondary schools, Inye recorded the highest percentage passes of 91.25 followed by College of Islamic Studies, Ojoku with 89.90%, Enjema Community Secondary School, Ofugo with 87.22%; Government Technical College, Ankpa with 82.38%; Community Secondary School, Ojoku with 81.0% and least Saint Charles' College, Ankpa with 71.27%.

Research Question 2

Are there qualified and skilled teachers to teach introductory technology in Junior Secondary School in The study area?

Table 2: **Data showing qualifications possessed by teachers of introductory technology in the study area.**

S/No	Name of School	Number of Teachers	Qualifications
1	Government Technical College, Ankpa	2	i) B. Ed. (Technical Education) ii) NCE (Technical Education)
2	Saint Charles' College, Ankpa	1	i) HND (Mechanical Engineering)
3	Community Secondary School, Ojoku	2	i) NCE (Technical Education) ii) NCE (Technical Education)
4	College of Islamic Studies, Ojoku	1	ii) NCE (Physics/Mathematics)
5	Enjema Community Secondary School, Ofugo	2	i) B. Sc (Physics) ii) NCE (Technical Education)
6	Community Secondary School, Inye	2	i) HND (Agricultural Mechanization) ii) NCE (Technical Education)

Source: Record, 2011

Table 2 above shows that most of the introductory technology teachers were predominantly holders of Nigeria Certificate in Education (NCE) in Technical Education. Most qualified teachers are found in Government Technical College, Ankpa with least qualified ones in College of Islamic Studies, Ojoku.

Research Question 3

What is the enrollment figure of male and female students in introductory technology in the junior secondary schools in the study area?

Table 3: Enrolment rate of male and female students in introductory technology in the study area

S/No	Name of School	Enrolment on yearly Basis					Sex		Total
		2006/07	2007/08	2008/09	2009/10	2010/11	Male	Female	
1	Government Technical College, Ankpa	82	77	51	63	96	241	126	369
2	Saint Charles' College, Ankpa	302	291	191	201	261	801	445	1246
3	Community Secondary School, Ojoku	223	245	217	170	82	619	318	937
4	College of Islamic Studies, Ojoku	63	62	59	72	61	170	147	317
5	Enjema Community Secondary School, Ofugo	246	224	304	253	209	852	384	1236
6	Community Secondary School, Inye	203	169	152	161	149	609	231	834
	Total	**1119**	**1068**	**974**	**920**	**858**	**3286**	**1653**	**4939**

Source: Kogi State Ministry of Education (KSMOE), 2011

Table 3 shows that the total number of students that offered introductory technology in the six (6) sampled schools for five (5) years were 4939. This total number was made up of 3286 males and 1653 females. Saint Charles College, Ankpa recorded the highest students enrolment of 1246 students while College of Islamic Studies, Ojoku recorded the least figure of 317 students.

Research Question 4

Do disparity exist between the performance of male and female students in introductory technology in Junior Secondary Schools in the study area?

Table 4:   **Percentage Performance rate of male and female students in introductory technology in JSSCE between 2006/07 – 2010/2011**

S/No	Name of School	Total Enrolment of Students	No. of male students	No. of males students that passed	% No. of males that failed	No. of female students	No. of females students that passed	% No. of females that failed
1	Government Technical College, Ankpa	369	241	203 84.23%	38 15.77%	128	101 78.91%	27 21.09%
2	Saint Charles' College, Ankpa	1246	801	686 85.64%	115 14.36%	445	202 45.39%	243 54.61%
3	Community Secondary School, Ojoku	937	619	508 82.07%	111 17.93%	318	251 78.93%	67 21.07%
4	College of Islamic Studies, Ojoku	1236	852	711 83.45%	141 16.55%	384	368 95.83%	16 4.17%
5	Enjema Community Secondary School, Ofugo	317	170	160 94.12%	10 5.88%	147	125 85.03%	22 14.97%
6	Community Secondary School, Inye	834	603	560 92.87%	43 7.13%	231	201 87.01%	30 12.99%
	Total	**4939**	**3286**			**1653**		
						4939		

Table 4 above shows that there are altogether 3286 males and 1653 females. Out of the 3286 males, 2828 (86.06%) passed while 458 (13.93%) failed. There are 1653 females of which 1248 (75.50%) passed while 405 (24.50) failed. Male students on the whole recorded the highest percentage pass when all the sampled schools are brought together compared to their female counterparts. Community Secondary school, Inye has the highest number of percentage passes of both males and females students.

Research Question 5

What is the likely factor(s) that would be responsible for the performance of students in introductory technology in Junior Secondary Schools in the study area?

Table 5:   **Responses from respondents on factors influencing students' performance in introductory technology**

S/No	Description of items	Agree	%	Disagree	%
1	There are adequate and skilled introductory technology teachers.	2	33.33	4	66.67
2	There are adequate instructional facilities/equipment for the teaching of introductory technology.	1	16.67	5	83.33
3	Introductory technology teachers are exposed to workshops, conferences or refresher courses.	1	16.67	5	83.33
4	There are more boys than girls in the schools based on records	6	100.0	-	0
5	Enough time is allocated for the teaching of introductory technology.	2	33.33	4	66.67
6	We are satisfied with the funding of introductory technology in our schools	-	0.00	6	100.0
7	Introductory technology teachers identify and use appropriate instructional methods in our schools.	2	33.33	4	66.67
8	There are regular supply of electricity to power introductory technology machines in our schools.	-	0.0	6	100.0
9	There are conducive learning environment for the handling of introductory technology in our schools.	1	16.67	5	83.33
10	Introductory technology teachers are adequately monitored and supervised by the inspectorate unit of the Ministry of Education/Science board.	2	33.33	4	66.67

Table 5 above shows that the identified factors were responsible for the performance of students in introductory technology in the study area as items 1, 2, 3, 5, 6, 7, 8, 9 and 10 recorded higher percentage scores. The respondents perceived negatively to these identified items. There are more males than the females in the schools sampled for the study thus making item 4 to be positively perceived by the respondents.

Major Findings

The following findings were deduced from the study:

1. The general performance of students in introductory technology at the junior secondary school certificate examination was not encouraging.
2. There were inadequate skilled and qualified teachers in introductory technology in the study area.
3. There were more males than females students offering introductory technology at the junior secondary school level within the study area.
4. Male students performed better than their females counterparts.

5.   Students performance in introductory technology at JSSCE examination were dependent on factors like inadequate instructional facilities/equipment; lack of teachers exposure to workshops, conferences or refresher courses; poor funding; poor conducive learning environment; inadequate monitoring and supervision by Ministry of Education/Science board; inadequate time allocation to introductory technology lessons and others.

Discussion of Findings

The general performance of students in introductory technology in our junior secondary schools is not very encouraging. The occurrence may be attributed to inadequacy of qualified and well skilled teachers in the subject. Supporting this finding, Nwodo (1997). Stated that the poor performance of our students in the course may be due to lack of use of inappropriate teaching methods. Still in the same vein, Jati (2003) together with Adah; Omalle and Okedi (2008) attributed students' poor performance in the course 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 programme on pre-vocational subjects in which introductory technology is inclusive.

On the issue of male and female enrolment in our junior secondary schools, this study shows that there are more males than females in our schools. In support of this, Okorie (1997) remarked that introductory technology has been regarded as a masculine discipline. On the male and female students' performance in introductory technology, the study revealed that male students performed better than their female counterparts. This is in agreement with Agwagah (2001) when his study revealed that male students performed better in introductory technology than the female students because of the practical involvement of the subject. However, Armstrong (2002) and Aiyedun (2000) opined that there is parity in the performance of males and females in this subject.

Introductory Technology teachers are not exposed to workshops, conferences and refresher courses thus affecting their input in the course during the teaching and learning process. This is in contrary with Olaitan (1994) when he observed that requisite training and retraining is very necessary for teachers to be well equipped and up to date in both knowledge and skills. Another major finding from the study was inadequate funding of the programme. This agrees with Imarhiage (1992) and Majemite (1996) when they observed and stated that no educational programme can be successful without adequate funding by relevant agencies.

Implication of the Study

The findings and the discussion of this study will greatly assist to expose the relevance of introductory technology as a core subject offered at the junior secondary schools. This because, it will equip students with valuable skills and knowledge that will form a foundation which enable them to carry out vocational and technical education inclined tasks. Possession of these skills and knowledge will help our citizens in the production of goods and services. The acquisition of their basic technology will also go a long way to help man satisfy his numerous social, economic, cultural and psychological needs.

The results of this study serve as a pointer to individual, government and non-governmental agencies in attaching great importance to the effective teaching and learning of introductory technology in our secondary schools in Nigeria.

Conclusion

Students' poor performance in introductory technology is an indication of the inadequacy of correct teaching methods and up to date knowledge on the part of the teachers. It can also be concluded here that male students performed better in the subject than their female counterparts. Introductory technology teachers are not experienced and at the same time they are in short supply and not exposed to conferences, workshops and refresher courses.

Finally, most of the schools in the study area lack infrastructural facilities and adequate time was not really allocated for the teaching of the course thus affecting required skill acquisition by students.

Recommendations

Based on the findings and discussion of the study the following recommendations are proffered.

a) The local, state and federal governments should make it as one of their major priority in their budget to allocate enough funds for the provision of teaching facilities, equipment and physical infrastructures.

b) Teachers of introductory technology should be sponsored by the governments at the state and federal levels to attend refresher courses, workshops and conferences as this will help them update their knowledge and skills in the subject.

c) Enough time should be allocated for the teaching and learning of introductory technology as it involves theory and practicals.

d) Qualified and well skilled teachers should be selected and recruited for the teaching of the course. The selection should be done through well organized oral and written interview by experts from state and Federal Ministry of Education.

e) Adequate supervision, monitoring and evaluation of instruction in introductory technology by the inspectorate unit of the state and federal ministry of education should be encouraged and given adequate attention.

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