ANALYSIS OF PRIVATE AND PUBLIC JUNIOR SECONDARY SCHOOL STUDENTS' ACADEMIC PERFORMANCE IN BASIC SCIENCE IN RIVERS STATE

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Abstract

Good knowledge of Basic Science can inculcate into the students right attitude and wisdom as well as scientific literacy. It is a common belief in every nock and cranny of Rivers State that Private Junior Secondary School Students do better than the Public Junior Secondary School Students in Basic Science. Hence, the purpose of the study was to analyze the academic performance of Private and Public Junior Secondary School Students in Basic Science. The study was carried out in Rivers State, Nigeria. The cluster sampling technique was used to categorize Rivers State into 3 educational zones. A stratified random sampling and finally simple random sampling by balloting was used to obtain sample size of 892 JSS3 students that participated in the study. Percentage mean and standard deviation was used to answer all the research questions while t-test statistical tool was used to test the hypotheses. The study found that there was no significant difference between the academic performance of private and public school students in Basic Science as the t-calculated was less than the table t-value at degree of freedom of 10 and .05 level of significance. Hence, Government should approve more private schools and ensure adequate funding of public secondary schools. Government should as well monitor the standards of private and public schools in the state by motivating the teachers and students in public schools, and also give grants to private schools.

Introduction

The usefulness of Basic Science to the development of the individual and the nation in general through inculcation of right attitude and wisdom in citizens as well as scientific literacy cannot be overemphasized. Basic Science develops in the learner a good command of rational power, the spirit of science and high intellectual power of understanding the environment in terms of matter, life energy and their interactions (Wagbara, 2002).

The development of Basic Science in this context depends on the quality of Science Education in the nation and to a high extent a function of the quality of the educational system operating in the country. The quality of science education that will promote performance of students in Basic Science may require, functional laboratories stocked with equipments and materials for practical work (Joseph, 2012), adequate instructional materials (Balogun, 2001) and good interest of students as well as good emotional and social stability of the students (Uwauna, 2017). Some other major factors are the

cognitive styles of the student in processing information (Wagbara, 2015) and students learning styles (Ahuama, 2018).

Furthermore, the quality of educational system operating in the country can be traced from the colonial era. It is obvious that during the colonial era of the 1940s, the mission schools that existed at that period did not include the teaching of science. They controlled education principally for two reasons; as a source of evangelization of natives and for the expansion of the gospel. Education helped the missionaries in the supply of school masters, Catchiest ministers, Clerks and Interpreters (Wosu 2016). The ideology of missionaries did not realize that Nigeria is a country with diverse tribes of many languages. Hence, the control of education by missionaries and other proprietors raise vital issues and challenges to the government programmes. Some of the issues include; creating disparity in educational development between the South and North as they required that people must accept Jesus before they could be given admission into schools, culture and tradition of the people were not considered.

More worrisome was the poor situation of the schools due to lack of qualified teachers, poor learning environment and infrastructures. Generally speaking, the activities of the various proprietors, voluntary agencies and missionaries became of serious concern to everyone including the government. Public opinion and the outcry of various commissions warranted government takeover of schools in the West in 1968 (Kosemani and Okorosaye-Orubite, 1995). In Nigeria a serious effort was made to boost the teaching and learning of science in secondary schools in the 1969 National Curriculum Conference held in Lagos. A more boost was experienced by the emergence of Universal Basic Education in 1999 which among the objectives, advocates for acquisition of the appropriate levels of literacy, numeracy, manipulative communicative and life skills as well as the values needed for laying strong foundation for lifelong learning (Maduagwu, 2006).

Rivers State, government 1986 in Kosemanri and Okorosaye-Orubite (2008-110 cited in Wosu 2016) asserted that government takeover of schools was intended to ensure that no child was denied education on account of race, ethnicity, social status, religion, state, sex or physical disability and also to be able to control standards. It was also observed that the various government takeover of schools from the former owners brought about uniformity in education sector, helped to maintain measure of educational equality and standard across the country (Fafunwa, 1974, Abdulraham, 2014).

The quality of educational system operating in the country can be measured by analyzing performance of Private and Public Junior Secondary School Certificate Examination (JSSCE). Analysis that could unveil the academic performance of Private and Public Junior Secondary School Students in Basic Science. It can help to ascertain the standard of Science Education in the Country. This inference could be drawn from the fact that, a child that is not well prepared in Basic Science may not have interest or perform well in the Senior School Core Science Subjects like; Physics, Chemistry and Biology

(Wagbara and Nwala, 2016). This will as well affect enrolment of students into Science Oriented Courses like Medicine, Engineering, Mathematics and Geology in Tertiary Institutions. It could also affect gainful employment into industries.

The success of a nation towards achieving high level of performance in Basic Science and Technology is a function of good Qualitied Science Education. Also, good performance of the students across schools in Basic Science plays a serious role, especially in their Junior School Certificate Examination. Furthermore, poor performance in both Public and Private Secondary Schools in External Examinations implies obtaining grades below 50%. In external examination like Junior (WAEC) organized by the state ministry of Education for students in Junior Secondary School 3 (JSS3). A score of 45% - 49% if obtained by a student is a pass level, while any score below 45% leads to a failure.

But, it have been observed that the educational system to a great extent is not achieving the desired goals and objectives due to problem of high rate of failure in external examination in Basic Science (Universal Basic Education Council (UBEC) report of Table 10, 2009). In Rivers State, the Government have given a boost to the teaching and learning of Basic Science by equipping the science laboratories of most secondary schools. The Government have also promised to pay science allowance to the science teachers and have also employed qualified science teachers to teach Basic Science in Schools.

Despite, the fact that much encouragement have been given to the teaching and learning of Basic Science in Rivers State Public Junior Secondary Schools. The schools in Rivers State have continually experienced poor performance in Basic Science. This poor performance has given most parents and general public great concern. Most people are beginning to contemplate whether the private schools are doing better than the public schools in Basic Science. Hence the need to investigate whether the private schools can afford their children good quality science education than the public secondary schools become necessary.

Purpose of the Study

The main purpose of this study was to determine the academic performance of Private and Public Junior Secondary School Students in Basic Science in Rivers State. Specifically the study was design to:

1) Identify the factors that account for the high level academic performance of students in Basic Science.
2) Compare the academic performance of students in Private and Public Junior Secondary Schools in Basic Science.

Research Questions

The following research questions were formulated to guide the study.

1) What are the mean responses of students on factors that account for high academic performance of Private and Public Junior Secondary School Students in Basic Science?

2) What is the comparative academic performance of Private and Public Junior Secondary School Students in Basic Science?

Hypotheses

The following null hypotheses were tested at .05 level of significance.

1) There is no significant difference between the mean responses of students on factors that account for the high academic performance of students in Private and Public Junior Secondary Schools in Basic Science.
2) There is no significant difference between the academic performance of students in private and public junior secondary schools in Basic Science.

Methodology

The study adopted survey research design. The study was carried out in Rivers State, Nigeria. A sample size of 892 JSS 3 students comprising (82) Private Junior Secondary School Students and (810) Public Junior Secondary School students participated in the study. Cluster sampling technique was used to categorize Rivers State into 3 geographical educational zones. Stratified random sampling was carried out on basis of (private and public schools) to select 12 Junior Secondary Schools (6 Private and 6 Public Schools). Simple random sampling by balloting was carried out to obtain 892 JSS 3 students that participated in the study. The data collected were analyzed by using percentage, mean, and standard deviation for answering the research questions while t-test inferential tool was used to test the hypotheses at .05 level of significance.

Results

Research Question 1

What are the mean responses of students on factors that account for high academic performance of Private and Public Junior Secondary School Students in Basic Science?

Table 1: Mean and Standard deviation scores of students' responses on factors that account for high academic performance of Private and Public Junior Secondary School Students in Basic Science.

S/N	FACTORS	CATEGORY OF SCHOOL	N	MEAN	SD
1.	Quality and Quality of staff	Private Public	82 810	1.93 1.87	2.9 3.0
2.	Schools Supervision	Private Public	82 810	2.3 1.6	3.54 2.69
3.	Students and staff discipline	Private public	82 810	2.6 3.14	4.03 3.07
4.	Students and staff motivation	Private Public	82 810	3.4 3.66	0.49 1.09
5.	Home Background	Private Public	82 810	2.4 2.41	2.36 2.02

6.	School facilities	Private Public	82 810	2.92 2.33	5.33 4.59
7.	School funding	Private Public	82 810	4.0 2.8	0 1.16
8.	School location	Private Public	82 810	2.2 2.13	1.16 1.17

Table 1 shows that quality and quantity of staff had a mean score of 1.93 with associated standard deviation of 2.9 for the private schools while the public schools had a mean score of 1.87 with a standard deviation of 3.0. School supervision had a mean score of 2.3 with standard deviation of 3.54 for private schools while public schools had a mean score of 1.6 with associated standard deviation of 2.69. Students and staff discipline yielded a mean score of 2.6 for the private schools and associated standard deviation of 4.03 while the public schools had a mean score of 3.14 with standard deviation of 3.07. Students and staff motivation indicated a mean score of 3.4 and standard deviation of 0.49 for the private schools while public schools had a mean score of 3.66 with standard deviation of 1.09. Home background showed a mean score of 2.4 with standard deviation of 2.36 for the private school students while public schools had a mean score of 2.41 and associated standard deviation of 2.02. For school facilities the private school students' responses showed a mean score of 2.92 with standard deviation of 5.33 while public school students had a mean score of 2.33 and standard deviation of 4.59. For school funding private school students responses showed a mean score of 4.0 and standard deviation of 0 while public schools had a mean score of 2.8 and standard deviation of 1.0. For school location the responses of private schools students showed a mean score of 2.2 with standard deviation of 1.16 while public schools had a mean score of 2.13 with standard deviation of 1.17.

Hypothesis 1

There is no significant difference between the mean responses of the students on factors that account for the high academic performance of students in private and public junior secondary schools in Basic Science.

Table 2: T-test of the mean response difference of the students on factors that account for the high academic performance of students in private and public junior secondary schools in Basic Science.

S/N	Factors	Category of school	N	Mean	SD	Cal. t.value	Table t-value	Remark
1.	Quality and quantity of staff	Private Public	82 810	1.93 1.87	2.9	0.178		Not significant
2.	Schools supervision	Private Public	82 810	2.3 1.6	3.54	1.74		Not significant
3.	Student and staff discipline	Private Public	82 810	2.6 3.14	4.03 3.07	1.18	1.98	Not significant
4.	Student and staff	Private Public	82 810	3.4 3.06	0.49 1.09	5.2		Significant

	motivation							
5.	Home Background	Private Public	82 810	2.4 2.41	2.36 2.02	0.04		Not significant
6.	School facilities	Private Public	82 810	2.09 2.3	5.33 4.59	1.02		Not significant
7.	School funding	Private Public	82 810	4.0 2.8	0 1.02	4.47		Significant
8.	School Location	Private Public	82 810	2.2 2.13	1.16 1.17	0.52		Not significant

Table 2 above which was used to show the result of determining the response difference of the students on factors that account for the high academic performance of students in Private and Public Junior Secondary Schools in Basic Science. Table 2 with a table t-value of 1.98 at .05 level of significance showed that the table t-value of 1.98 was greater than the calculated t-value of 0.178, 1.74, 1.18, 0.48, 1.02 and 0.52 which shows that there is no significant difference between the mean scores of Private and Public Secondary Schools Students responses on the following factors; quality and quantity of staff, schools supervision, students and staff discipline, Home Background, school facilities and school location. Hence, the null hypothesis one (HO_1) was accepted for the six factors; students/staff motivation and school funding, the null hypothesis one (HO_1) was rejected. There was significant difference as the table t-value is 1.98 and the calculated t-value of 5.2 and 4.47 were obtained, which were greater than the table t-value at .05 level of significance.

Research Question 2

What is the comparative academic performance of private and public Junior Secondary School Students in Basic Science?

Table 3: Percentage, mean and standard deviation scores of students in Private and Public Junior Secondary Schools in Basic Science (JSCE).

Years	2013		2014		2015		2016		2017		2018			
CATEGORY OF SCHOOL	No. of Candidates	% passes	No. of Candidates	% passes	No. of Candidates	% passes	No. of Candidates	% passes	No. of Candidates	% passes	No. of Candidates	% passes	MEAN % PASSES	STANDARD DEVIATION (SD)
PRI-VATE	842	8290	1,129	75.55	689	95.93	1,171	84.12	1,177	75.02	511	77.70	81.87	7.1
PUBLIC	2,489	8297	2,809	74.05	1,784	96.07	3,334	82.15	2,967	82.00	2,568	83.96	83.53	6.5
MEAN DIFF.													1.66	

From table 3 above shows that, Private Junior Secondary Schools recorded: 82.90%, 75.59%, 95.93%, 84.12%, 75.02% and 77.07% passes in JSCE in Basic Science from 2013 to 2018 with a mean percentage pass of 81.87 and standard deviation of 7.1 While, the Public Junior Secondary

Schools recorded; 82.97%, 74.05%, 96.37%, 82.15%, 82.00% and 83.96% passes in JSCE in Basic Science from 2013 to 2018 with a mean percentage pass of 83.53 and standard deviation of 6.5. The Public Junior Secondary Schools had a higher mean than the Private Schools with a mean difference if 1.66. The higher standard deviation of the private schools shows that the scores of the private schools deviated more from the mean than that of the public schools. Hence, the higher mean of the public schools may be real as it appears.

Hypothesis 2

There is no significant difference between the academic performance of students in Private and Public Junior Secondary Schools in Basic Science.

Table 4: T-test of mean score difference of students in Private and Public Junior Secondary Schools in Basic Science in JSCE.

Category of school	Mean % pass	SD	N	DF	t-Cal	t-Crit	Decision
Public	83.53	6.5	6	10	0.122	2.228	Accept null Hypothesis
Private	81.87	7.1	6				

The result in table 4 was used to determine whether there is significant difference in the mean score of students in Public Junior Secondary Schools and that of Private Junior Secondary School Students performance in Basic Science in JSCE. Table 4 shows that at degree of freedom 10 calculated t-value of 0.122 was obtained with a critical t-value of 2.228 at .05 level of significance. The calculated t-value of 0.122 was less than the Table t-value of 2.228, this revealed that there is no significant difference between the academic performance of the Public Junior Secondary School Students and that of the Private Junior Secondary School Students in Basic Science. Hence, the null hypothesis two (HO_2) was accepted.

Discussion

The result of the t-test used in testing hypothesis one (HO_1) as shown in Table 2 revealed that t-critical value was 1.98 and the observed t-values for quality and quantity of staff, school supervision, Students and Staff Discipline, Home Background, School Facilities and School Location were; 0.178, 1.74, 1.18, 0.48, 1.02 and 0.52. This indicates that the calculated t-values for these while Table t-value was 2.228 at a degree of freedom of 10 and .05 level of significance. Hence, the null hypothesis two ($H0_2$) which states that, there is no significant difference between the academic performance of students in Private and Public Junior Secondary Schools in Basic Science in JSCE was accepted. Wagbara (2002) also agreed with the findings of this study as he asserted that there is no significant difference between the academic performance of students in Private and Public Secondary Schools in the Sciences. However, the findings

of Kemenanabo-Emi (2019) did not support the findings of this study as he reported that there was significant difference between the mean performance of Private and Public Junior Secondary School Students in Basic Science. The result of this study has confirmed that there is no significant difference between the academic performance of students in Private and Public Junior Secondary School in Basic Science.

Conclusion and Recommendations

Firstly, this study has shown that there is no significant difference in the mean response of Private and Public Junior Secondary School Students on the following factors that affect high academic performance in Basic Science; quality and quantity of staff, schools supervision, student and staff discipline, Home Background, school facilities and school location. The result of t-test showed that table t-value was greater than the observed t-values for these factors. While there was significant difference between the responses of Private and Public Junior Secondary School Students for; student and staff motivation, and school funding as the t-calculated for those factors were greater than the t-critical value. Government and proprietors of schools should regard Basic Science education as one of their areas of higher priority and ensure it is given a high boost, especially school facilities, quality and quantity of teachers, student/staff discipline and school supervision. Government should fund public schools adequate and ensure that Basic Science teachers and students are well motivated.

Secondly, this study has shown that, there is no significant difference between the mean academic performance of private and public Junior Secondary School Students in Basic Science. The result of t-test in Table 4 shows that the t-calculated was less than the Table t-value. Hence the null hypothesis two ($H0_2$) was accepted. The t-calculated was 0.122 while the t-critical was 2.228. Hence Government should fund their Public Schools adequately, motivate their school teachers and students adequately and help to approve more Private Schools as well as monitor the standards of Private Schools existing in the State.

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