

Comparative Analysis of Public and Private Secondary Schools Students Biology Performance in WASCE in BirninKebbi, Nigeria.

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Abstract

The study comparatively analyzed public and private secondary school students' biology performance in WASCE in Birnin Kebbi, Kebbi state. The study had two specific objectives, two research questions. A survey research design was used for the study. The population of the study is consist of (37) private schools and (30) public secondary schools, given a total of (67). The researcher collected a letter of introduction from the department of education, that enabled the researcher to collect official data needed for the study from Ministry of Education and also from sample Schools, The instrument used for collecting data is through oral interview with principals of samples schools and also students WAEC result from (2017-2019), data collected were analyzed using simple percentages, the research findings showed that unavailability of biology equipment and resources are among factors that influence academic performance of students in biology WASCE examination in the period of study and the study concluded that Both public and private secondary school students are doing well in their biology west African senior Secondary Certificate examination though private schools performed better than those in public schools due to the availability of teaching facilities and laboratory equipment and study recommend that the state ministry of education should provide public schools with biology laboratory equipment and also science teachers should have to adopt the usage of instructional material in order to improved students level of performance.

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I. INTRODUCTION

Biology is the science of life. The term was introduced in Germany in 1800 and popularized by the French naturalist Jean-Baptiste de Lamarck to encompass the growing number of disciplines involved with the study of living things. The subject biology is made up of the following disciplines: botany, taxonomy, zoology, anatomy, physiology, microbiology, embryology, genetics, ecology, evolution, parasitology, among others. Today's biology is subdivided into hierarchies based on the molecule, the cell, the organism and the population. National Policy on Education (2013), one of the aims and objectives of teaching Biology in secondary schools is to communicate the skills of Biology to ensure that Biology students acquire the process and skills of Biology as a science subject. In addition, the aims of secondary education, according to the NPE, are to equip the students with useful concepts, principles and theories that will enable them to face challenges before and after graduation (Nwokocha & Amadike, 2005).

Despite the importance of biology as a science subject, Lawal (2012) opined that the statistics of grades obtained by candidates in the West African Examination Council (WAEC), especially in the Biology examination in recent years, have not been encouraging. The West African Examination Council (WAEC) Zonal Coordinator reported that 57% of candidates who sat for West African Senior Secondary School Examination (WASSCE) in 2012/2013 failed Biology. This also agrees with the Registrar and Chief Executive of the National Examination Council (NECO) report, who said that 71% of candidates who registered for science subjects failed Biology. The importance of Biology as a valuable science subject is further emphasized in the Joint Admissions and Matriculation Board syllabuses (JAMB, 2010/2011); it is stipulated that a minimum of credit pass in Biology is required as one of the criteria for admitting candidates aspiring to study science and science-related courses in tertiary institutions. Unfortunately, the number of candidates with a minimum of

credit pass in Biology has not been encouraging; this has denied many Nigerian students the opportunity to get admitted into higher institutions to study science and science-related courses. Students' failure trends in Biology at the SSCE level is illustrated in Table 1.1

Table 1.1: Students' failure trends in Biology at the SSCE level

YEARS	TOTAL	% WITH A1 – C6	% WITH D7 – F9
2015	1,249,028	57.27	42.73
2016	1,268,213	47.04	52.96
2017	1,348,528	41.95	58.05
2018	1,306,535	42.98	57.02
2019	1,508,965	52.17	47.83

Source: West African Examination Council, Kebbi (WAEC, 2020)

Some of the reasons for the failure of students in the examination were attributed to the methods of teaching adopted by the teachers in teaching Biology, which is mostly lecture method, and it is not recommended for teaching science (Lawal, 2012). The teacher-centred approach whereby most of the talking is carried out by the teacher while the students remain passive listeners taking notes, thereby denying the students the opportunity to develop the required manipulative skills needed in learning science (Usman 2008). The use of lecture method is attributed to the fact that the school calendar in Nigeria is often interrupted by industrial actions and public holidays, and there is a need for completion and covering of the syllabus to prepare the students for both external and internal examinations, hence the use of lecture method which is less time consuming and can use it to teach large and small class size (Ashaolu, 2014). Other factors contributing to the failure may be connected to how the teachers introduce their lesson at the beginning of each topic or unit, hence the need by the teachers to change their pattern of introduction, lack of or insufficient laboratory facilities and equipment, psychological factors such as anxiety, low self-esteem among others (Olatunji, 2015).

Another factor attributing to the failure of the SSCE Biology examination is students' academic performance in both internal and external examinations. Poopola (2010) defined academic performance as an expression used to present students' educational standing, which is a function of various factors such as teaching method, teacher qualifications, students' home background, school environment, attitude, and interest. In addition, performance is defined as the observable or measurable behaviour of an animal in a particular situation, usually an experimental situation. Performance measures the aspect of behaviour that can observe at a specific period. To determine performance, a performance test is conducted.

According to Magawata (2020), the school system in Kebbi State, in which Birnin Kebbi metropolis is inclusive, is beset by unhealthy situations. Therefore, the research is geared towards Comparative Analysis of Public and Private Secondary Schools Students Biology Performance in WASCE in Birnin Kebbi. Although it is expected that all secondary schools in the country should be of the same standards in terms of academics, putting in the same resources, it is obvious that some schools perform better than others.

Indeed the proliferation of Private schools and the surge of admission into them, despite high school fees, attest to parents' desire for an alternative educational system to the decadence in Public schools. It is worthy to note that the secondary schools in Birnin Kebbi operate through systems guided by regulatory agencies of the Kebbi State Ministry of Education to ensure quality services in both Public and Private secondary schools to have quality output through students' success in their academics at both junior and senior secondary schools level. However, the students' Biology performance in WASCE has become a worry to parents. This is because past research shows that there has been a high failure rate in Biology, indicating too that other students who come with credit in Biology are few. This trend has become a concern both to the schools and parents.

OBJECTIVES OF THE STUDY

The specific objectives are to:

1. Identify students' performance in Biology in WAEC in Public and Private Secondary Schools from 2017 – 2019 in Birnin Kebbi.
2. Compare the Biology performance in WASCE of selected public and private Secondary Schools WASCE from 2017 – 2019 in Birnin Kebbi.

RESEARCH QUESTIONS

1. What is the level of students' performance in Biology WASCE in Public and Private Secondary Schools from 2017 – 2019 in Birnin Kebbi?
2. Is there any difference in the performance of Biology WASCE between students of Public and Private Secondary Schools from 2017 – 2019 in Birnin Kebbi?

THE RESEARCH DESIGN

The researcher used a survey research design. According to Mustapha (2000), Survey research design is a technique in research where the desired characteristic of a given population is systematically examined. This research design is used because an entire population cannot be studied.

POPULATION OF THE STUDY

The research was carried out in Birnin Kebbi metropolis Kebbi State. The population of this study consists of 37 Private schools with 5834 Senior Secondary students (SS3) and 30 Public Secondary Schools with 9459 SS3 Students, given a total of 67 Schools and a total of 15293 Students offering Biology in the selected years of the research study.

SAMPLE AND SAMPLING TECHNIQUES

The samples size was selected based on the World Bank standard, which recommended that the realistic sample size from every population be 20% for a study (World Bank, 2007). This sample was arrived at by using simple random sampling by Hat drawn technique to select the respondents. The names of the 37 Private and 30 Public schools were written on a paper filed and put inside a box. Anybody other than the researcher was asked to pick at random. Therefore, the sample size of this study is 3 Private schools and 3 Public schools. The sample schools are shown in table 3.1

Table 3.1 Sample Schools

S/N	NAME OF SCHOOL	YEAR	STUDENT PASSED FOR WASCE
1.	Government Day Sec. Sch. Junju	2017	36
		2018	117
		2019	222
2.	Government Day Sec. Sch. Gwadangaji	2017	87
		2018	108
		2019	137
3.	Zannan Gwandu Gov. Day Sec. Sch. Gesse Phase I	2017	72
		2018	76
		2019	119
4.	Abdullahi Fodio Islamic Centre	2017	3
		2018	0
		2019	27
5.	Al-ihsan International Nur., Pri., & Sec. Sch. Badariya	2017	6
		2018	3
		2019	9
6.	De-ultimate Nur., Pri., and Secondary School	2017	26
		2018	29
		2019	38
	TOTAL		1,115

Source: SSMB Kebbi (2021)

INSTRUMENTATION

The instrument used to collect the data for this research was Secondary data titled Secondary School West African Senior Secondary School Certificate Examination. The grades obtained by students in Biology Subject for the years (2017 – 2019) in Birnin Kebbi metropolis in Kebbi State and oral interview with the principals of sample schools.

METHOD OF DATA ANALYSIS

Data were collected and computed using a descriptive-analytical approach which permits ready and meaningful analysis and interpretation, as indicated in chapter four of this study. The data were also analyzed using simple percentages to obtain mean scores and frequency distribution tables using the extent of the degree to measure Students' Biology performance in WASCE from 2017 - 2019.

Research Question One: What is the level of students' performance in Biology WASCE in Public and Private Secondary Schools from 2017 – 2019 in BirninKebbi?

To answer research question two, data obtained from selected 3 public and 3 private Secondary Schools were presented in tables 4.2.1 - 4.2.6 of Biology WASCE results from 2015 - 2019 were used. Table 4.2.1 shows Biology WASCE analysis of Government Day Secondary School Junju.

Table 4.2.1 Government Day Secondary School Junju Biology WASCE Results (2015 – 2019)

GOVERNMENT DAY SECONDARY SCHOOL JUNJU															
YEAR	A1	A2	B3	C4	C5	C6	TOTAL A1-C6	% CRD PASS	D7	E8	TOTAL PASS	% PASS	F9	AR	NO OF STUDENTS
2017	-	-	-	-	1	45	46	67.6	14	8	22	32.3	-	-	68
2018	4	-	15	-	6	40	65	30.2	22	15	37	17.2	69	7	178
2019	-	-	19	60	19	70	168	60.4	45	9	54	19.4	53	3	278
TOTAL							279	53.2			113	21.6	132 (25.6%)		524

Source: Field Study, 2021

The result of Biology WASCE from 2017 – 2019 for Government Day Secondary School Junju reveals a total number of 279 or 53.2% students passed with credit grades, 113 or 25.2% obtained passed grades, while 132 or 25.6% passed with F9 grades.

A similar analysis for Government Day Secondary School Gwadangaji Biology WASCE results is presented in table 4.2.2

Table 4.2.2 Government Day Secondary School Gwadangaji Biology WASCE Results (2015 – 2019)

GOVERNMENT DAY SECONDARY SCHOOL Gwadangaji															
YEAR	A1	A2	B3	C4	C5	C6	TOTAL A1-C6	% CRD PASS	D7	E8	TOTAL PASS	% PASS	F9	AR	NO OF STUDENTS
2017	-	-	6	9	21	43	79	64.2	6	2	8	6.5	31	5	123
2018	-	-	17	-	6	68	91	45.9	10	7	17	8.6	87	3	198
2019	3	-	13	10	29	59	114	49.7	15	8	23	10	90	2	229
TOTAL							284	51.6			48	8.7	218 (39.6%)		550

Source: Field Study, 2021

The findings in the second public Secondary School showed a level of students' performance of Biology WASCE that a total of 284 or 51.6% obtained credit grades, 48 or 8.7% passed with pass grades and 218 of 39.6% obtained F9 grades. It is seen from the result that students' performance in Biology WASCE of study public secondary school is encouraging. The performance of students in the public school is presented in table 4.2.3

Table 4.2.3 Zannan Gwandu Government Day Secondary School Birnin Kebbi Biology WASCE Results (2015 – 2019)

ZANAN GWANDU GOVERNMENT DAY SECONDARY SCHOOL BIRNIN KEBBI															
YEAR	A1	A2	B3	C4	C5	C6	TOTAL A1-C6	% CRD PASS	D7	E8	TOTAL PASS	% PASS	F9	AR	NO OF STUDENTS
2017	-	-	-	-	14	37	51	29.6	9	12	21	12.2	95	5	172
2018	3	-	4	15	15	21	58	26.9	10	8	18	8.4	136	3	215
2019	8	-	10	5	5	73	101	41.5	8	10	18	7.4	122	2	243
TOTAL							210	33.3			57	9.1	363 (57.6%)		630

Source: Field Study 2021

The findings of the third public Secondary Schools revealed that 210 or 33.3% of students obtained credit grades, 57 or 9.1% passed grades and the level of failure rate is higher with 363 or 57.6% of students with F9 grades in Biology WASCE. Similarly, the first private Secondary School analysis is presented in table 4.2.4.

Table 4.2.4 Al-Ihsan International Nursery, Primary & Secondary School, Badariya Biology WASCE Results (2015 – 2019)

AL-IHSAN INTERNATIONAL NURSERY, PRIMARY & SECONDARY SCHOOL, BADARIYA															
YEAR	A1	A2	B3	C4	C5	C6	TOTAL A1-C6	% CRD PASS	D7	E8	TOTAL PASS	% PASS	F9	AR	NO OF STUDENTS
2017	3	-	2	1	-	-	6	100	-	-	-	-	-	-	6
2018	3	-	-	2			5	100	-	-	-	-	-	-	5
2019	-	-	3	2	2	2	9	100	-	-	-	-	-	-	9
TOTAL							20	100			-				20

Source: Field Study 2021

The findings revealed 100% success as all students performed very well in the Biology WASCE examination in the period under study. The Biology WASCE analysis of the second private Secondary School is presented in table 4.2.5

Table 4.2.5 De-Ultimate Nursery, Primary & Secondary School Birnin Kebbi Biology WASCE Results (2015 – 2019)

De-ULTIMATE NURSERY, PRIMARY & SECONDARY SCHOOL BIRNIN KEBBI															
YEAR	A1	A2	B3	C4	C5	C6	TOTAL A1-C6	% CRD PASS	D7	E8	TOTAL PASS	% PASS	F9	AR	NO OF STUDENTS
2017	5	-	9	6	1	-	21	80.7	5	-	5	19.3	-	-	26
2018	9	-	4	3	8	5	29	87.8	-	-	-	-	4	-	33
2019	4	-	10	2	7	10	33	82.5	3	2	5	12.5	2	-	40
TOTAL							83	83.8			10	10.1	6 (6.1%)		99

Source: Field Study, 2021

The Biology WASCE results in table 4.2.5 showed that the cumulative score was 83 or 83.8% with credit grades, 10 or 10.1% with pass grades and 6 or 6.1% with F9 grades. The findings showed a remarkable performance of private Secondary School students' high level of achievement in the Biology WASCE examination in the study period. The analysis of the last item of research question two is presented in table 4.2.6

Table 4.2.6 Abdullahi Fodio Islamic Centre, Birnin Kebbi Biology WASCE Results (2015 – 2019)

ABDULLAHI FODIO ISLAMIC CENTRE, BIRNIN KEBBI															
YEAR	A1	A2	B3	C4	C5	C6	TOTAL A1-C6	% CRD PASS	D7	E8	TOTAL PASS	% PASS	F9	AR	NO OF STUDENTS
2017	-	-	-	4	5	16	25	51.1	4	6	10	20.0	8	6	49
2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2019	-	-	4	4	9	10	27	54.0	4	4	8	16	9	6	50
TOTAL							52	52.5			18	18.2	29 (29.3%)		99

Source: Field Study, 2021

In table 4.2.6, the performance level of private Secondary School students in West African Senior School Certificate Examination in Biology from 2017 to 2019 was 52 or 52.5% passed with credit grades, 18 or 18.2% passed with pass grades and 29 or 29.3% fail or passed with F9 grades. Since the cumulative percentile score was above 50%, the results are, to some extent, satisfactorily.

Research Question Two: Is there any difference in the performance of Biology WASCE between students of Public and Private Secondary Schools from 2017 – 2019 in BirninKebbi?

In order to answer research question two, “Is there any difference in the performance of Biology WASCE between students of Public and Private Secondary Schools from 2017 – 2019 in Birnin Kebbi” a comparative analysis is made between public and private secondary schools students’ performance in Biology WASCE results. The comparative analysis is presented in table 4.3

Table 4.3: Comparative Analysis of Biology WASCE Results of Public and Private Secondary Schools From 2017 – 2019

SCH	PUBLIC SECONDARY SCHOOLS						PRIVATE SECONDARY SCHOOLS						
	CUM. CREDIT GRDS		CUMM. PASS GRDS		CUMM. FAILS GRDS		SCH	CUM. CREDIT GRDS		CUMM. PASS GRDS		CUMM. FAILS GRDS	
	FRE Q	%	FRE Q	%	FRE Q	%		FREQ	%	FRE Q	%	FRE Q	%
JUJ	279	52.2	113	21.6	132	25.6	AL-I	6	100				
G/G	284	51.6	48	8.7	218	39.6	DE-U	83	83.8	10	10.1	6	6.1
ZAN	210	33.3	57	9.1	363	57.6	AFF	52	52.5	18	18.2	29	29.3
PERCENTILE MEAN		45.7		13.1		40.9	% MEAN	78.8		14.2		11.8	

In the table, the observed mean percentages of students who passed Biology WASCE with credit grades in the Public schools were 45.7% compared to 78.8% from Private schools. Biology WASCE pass grades in Public schools were 13.1% compared to 14.2% from Private schools. The mean percentages of failure rate in Public schools were 40.9% compared to 11.8% from Private schools throughout the study. The table revealed that the Private school students performance in Biology WASCE were significantly better than the Public students in the percentages of passes obtained in Biology over the study period in Birnin Kebbi.

II. DISCUSSION ON MAJOR FINDINGS

The initial analysis has shown that the unavailability of Biology equipment and resources is among the factors that influence students' academic performance in the Biology WASCE examination throughout the study. In research question two on the level of students' performance in Biology WASCE in Public and Private Secondary Schools from 2017 – 2019 in Birnin Kebbi, the result showed a significant difference between percentages of students who passed Biology among Public and Private schools throughout the study. Results revealed that more students from Private schools passed the Subject than those from Public schools. The observed difference between the Private and Public schools' performances here is in agreement with Sato (2005), who argued that "there is more chance of a better academic performance in Private schools" and Dalma (2005) reported that the present Public schools in Nigeria did not measure up to expectation. The poor performance of Public school teachers here agrees with Nwaozuzu (2012) report, which blamed the poor performance of students in the WAEC examination on the poor quality of teachers.

Academic performance has been described as the scholastic standing at a given time; This could be explained in the grades obtained in a course or groups of courses (Daniels 2007). Comparing students' performance in Biology West African Senior School Certificate Examination between Public and Private schools in Birnin Kebbi Metropolis, a fall in performance in public examination core subjects has been recorded in many States (World Bank, 1988 and Onipede, 2003). In Nigeria, Adeyegbe (2012) found a decline in students' performance in West African Senior School Certificate Examination of Public schools. He reported that students tend to perform below expectation in subjects where teachers found difficult to teach. However, it is observed that the sampled Private Secondary Schools performed well in the Biology of West African Senior School Certificate Examination from 2017 to 2019, but Public schools performed woefully in the Biology WASEC examination. This is probably due to the sizeable number of students and adequate facilities. The teachers were also qualified and competent according to the research. The students were likewise studious.

Omotoso (2012) described poor staffing in schools, frequent and early withdrawal of students from Primary to Secondary education, laziness on account of many students, poor preparation of work in respect of many teachers, wrong societal values, truancy, etc. general indiscipline. All these problems lent credence to the poor performance of students in external examinations.

The low level of students' performance in Biology WASCE examination in Public Secondary Schools in Birnin Kebbi found in this study agreed with the findings of other researchers (Oke, 2012; Adeyemi, 2018; Onipede, 2003). Oke (2012), for example, gave other reasons for this poor low-level performance of schools in certificate examinations. He argued that adolescents experience other problems, which affect their studies. These include repeating classes and the lack of adequate knowledge in particular subjects, especially English Language, Mathematics, the Sciences and Vocational and Technical subjects. He then reported that the problem of failure had contributed a lot to the moral decadence of adolescents.

The low-performance level found in Public schools from 2017 to 2019 agreed with the findings made in previous studies (Adeyemo, 2011; Adeyegbe, 2012; Adeyemi, 2018). Adeyegbe (2012) observed a decline in students' performance in West African Senior School Certificate Examinations in other States of the country and attributed this to the inadequacy of facilities in schools. The study showed that Private secondary schools with high standards and prescribed educational facilities did perform better than Public secondary schools in Biology

subjects in West African Senior School Certificate Examinations. The researcher found out that the analysis in Table 4.2.3 revealed a significant difference between being Public and Private Secondary students and being day students. The Private secondary schools performed better than the Public secondary schools in Biology West African School Certificate Examinations from (2017 to 2019)

III. CONCLUSION

Both public and private secondary school students are doing well in their biology west African senior Secondary Certificate Examination (WASSCE) though private secondary school students performed better than those in public secondary schools; based on this research study, this happened because their biology laboratories are well equipped, availability of teaching facilities, fewer students play truancy, less number of students and also the commitment of their teachers to their work.

IV. RECOMMENDATIONS

Based on the findings study recommend that.

1. The state ministry of education should provide public schools with biology laboratory equipment to improve their performance level.
2. Science teachers should adopt instructional materials for teaching and learning to be more effective.
3. Headteachers, especially in public schools, have to frequently visit their teachers while teaching, mark their lesson plan, organize extra lessons for their students, and answer passed questions paper to prepare students for WASCE.
4. Professional bodies, Federal and state ministry of education should embark on training and retraining teachers through seminars and workshops to make teachers have the self-esteem of their jobs

REFERENCE

- [1]. Adeyemi, T. O. (2018). Predicting students' performance in senior secondary certificate examinations from junior secondary certificate examinations in Ondo State, Nigeria. *Humanity and Social Science Journal*. 3(1): 26 — 36.
- [2]. Adeyegbe, S.O., (2003), How students examiners perform at WAEC Examinations, *Education and Manpower, Vanguard*, pp: 19, 22.
- [3]. Ashaulu, D. A. (2014). Students and Teachers Perceptions of the Causes of Poor Academic Performance in Ogun State Secondary Schools in (Nigeria): Career and Technical Education; Washington office of Superintendent of public Instruction: http://www.k12.wa.us/career_tech/Eh/.
- [4]. Dalma L.E (2015) Comparism in Student Performance in Public and Private Secondary Schools in Nigeria [www.slideshare.net June 2014](http://www.slideshare.net/June2014)
- [5]. Federal Republic of Nigeria (2013). *National Policy on Education (rev.)*. Lagos. NERC Press.
- [6]. Lawal, F. K., (2012). Availability and Impact of Material Resources on Achievement in Biology in Selected Secondary Schools in Katsina Metropolis. In Uchenna (Ed.) *Proceedings of Annual Conference of Science Teachers Association of Nigeria*.
- [7]. Magawata, M. (2021) Keynote addressed in Annual Conference of Science Teachers Association of Nigeria, in Kebbi State
- [8]. Nwaozuzu C.O (2012). "Poor Performance of Students". An Article in *Journal of oj I. learning*. Vol. 2 No 2, pp 4-5. University of Nnsuka.
- [9]. Nwokocha, A. C., & Amadike, N. N. F., (2005). A Comparative Study of Academic Performance in Public and Private Secondary Schools in River State. *Nigerian Journal of Educational Administration and Planning*. 5 (2):
- [10]. Oke, E. A. (2012). *Raising the standard of performance in public examination. Ibadan paper presented at the WAEC symposium on raising the standard of performance of public examination*. University of Ibadan April 2-5
- [11]. Olatunji A. (2015). Teachers and students academic performance in Nigerian secondary school: Implication for planning. *Journal of educational Administration and policy*. 3,(2). 16-20
- [12]. Onipede, H. (2005). *Principle of Secondary Schools*. National development Hinge on. *Proceedings of the 41th Annual Conference of the Science Teachers' Association of Nigeria (STAN)*. University of Lagos. Pp 215 – 220.
- [13]. Popoola, T. A. (2010). An Investigation between Instructional Resources and Academic Performance. Unpublished M.ED Project, University of Ilorin.
- [14]. Sato, C.A (2015). Need for academic performance in school. Retrieved from <http://www.dailyindependent.com> July, 2021
- [15]. Usman, M. (2008). Science and Technology in Modem Day. *Journal of Education* Vol 10, No. 4, p 16. Retrieved from www.academia.edu
- [16]. Word bank, (1988). *Education in sub-Saharan African, Policies for Sub-Saharan Africa*.