RELATIONSHIP BETWEEN BIOLOGY TEACHERS' MOTIVATION AND ACADEMIC PERFORMACE OF STUDENTS IN BIOLOGY IN KOGI WEST SENATORIAL DISTRICT

BY

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Abstract
This research assessed the relationship between Biology teachers' motivation and academic performance on senior school students in Biology in Kogi West Senatorial District, Nigeria. Descriptive survey research was adopted for the study. A total of one hundred and twenty (120) Biology teachers were randomly sampled from seven (7) local Government Areas (LGA) out of twenty-one LGAs (21) in Kogi West Senatorial District. Total numbers of 93 senior secondary schools were covered. Three research questions and two hypotheses guided the study. A questionnaire was used as an instrument for data collection and the data were analysed using frequency, mean and standard deviation while *PPMC was used to test hypothesis 1 and t-test was used to test hypotheses 2 and 3. The result of the study revealed that Biology teachers' motivation have significant relationship with senior school students' performance while school type and gender also has influence on the relationship. Recommendations made were that; the government should motivate the biology teachers based on the gender and school type.*
Keywords: Relationship, Biology Teachers, Motivation, Senior School Students, Performance

Introduction

Science is defined as a body of knowledge, a way of investigating and way of thinking in pursuit of an understanding of nature (Abimbola, 2013). Science plays important and dominant roles in spearheading technological advancement, promoting national wealth, improving health and accelerating industrialization (Validya, 2003). Abimbola (2013) defined science as a body of knowledge, a way of investigating and way of thinking in pursuit of an understanding of nature. The technological development/advancement of a nation is more accurately gauged by the quality of its science education, than any other single index such as the size of its population, for without science, technological culture in terms of improving the quality of health cannot really take root no matter the amount of imported technical expertise.

Biology is central to many sciences related courses such as Medicine, Pharmacy, Agriculture, Nursing and Biochemistry. It is obvious that no student intending to study the above-mentioned disciplines can do without Biology; therefore, Biology is the study of living and non-living things. The study of life. Teachers' motivation affects every aspect of school life from attendance to extra-curricular activities. According to Dinah (2012) motivation is what people need to perform better. Motivation is the sum totals

of all job facets that give rise to satisfaction. Promoting teachers' motivation may go a long way to promoting learning. The quality of a nation could be determined by the quality of her teachers as it is widely known that no nation can rise above its teachers. The issue of poor academic performance of students in Nigeria has been of much concern to all and sundry. The problem is so much that it has led to the widely acclaimed fallen standard of education in Nigeria. Teachers have been shown to have an important influence on students' academic achievement and they also play a crucial role in educational attainment because the teacher is ultimately responsible for translating policy into action and principles based on practice during interaction with the students (Afe, 2016).

Teaching and learning depend on teachers; no wonder an effective teacher has been conceptualized as one who produces desired results. Considering governments' huge investment in public education, its output in terms of quality of students has been observed to be unequal with government expenditure. The desire to know the causes of students' poor performance in Biology has been the focus of researchers for some time now. Adodo (2007) opined that one key factor to success of students' academic achievement is the teacher. It has been observed that the performances of students are very poor in Biology. Ibe and Maduabum (2001) argued that candidates' performance at the West African Senior Secondary Certificate Examination (WASSCE) conducted by West African Examinations Council (WAEC) have consistently remained poor with Biology having the highest enrolments but the poorest result over the years. The analysis of Senior Secondary Certificate Examinations results in Table 1 made available from the West African Examination Council (WAEC) statistics unit on enrolment of students and their performance in Biology revealed the enormity of this problem.

Considering the performance of students in Table 1, the percentage number of credits passes and above for the period (2006 – 2016) reviewed fell below average (50%). It should be noted that even though grades D7 and E8 are passes, they do not qualify candidates for entry into the tertiary institutions.

Table 1: Students' Enrolment and Performance in May/June from 2007 to 2016 Senior School Certificate Examination in Biology Chemistry and Physics

	BIOLOGY			CHEMISTRY			PHYSICS		
Year	Total Sat	Credit Passes	%	Total Sat	Credit Passes	%	Total Sat	Credit Passes	%
2007	1,238,163	413,211	33.37	422,681	194,284	45.92	218,593	180,797	82.71
2008	1,259,964	427644	33.94	418,423	185,949	44.47	415,113	200,345	48.38
2009	1,903,552	644,733	33.87	422.091	194,035	45.97	429,174	186,940	43.56
2010	1,300,418	427,644	33.90	465,643	236,059	50.70	463,755	237,756	51.27
2011	1,505,199	579,432	38.50	565,692	280,250	49.54	563,161	360,096	63.94
2012	1,646,150	587,044	35.66	627,301	270,570	43.13	624,658	429,415	68.74
2013	1,648,363	852,717	51.73	639,296	462,517	72.34	637,023	297,988	46.77
2014	1,365,384	766,971	56.17	636,268	397,649	62.49	635,729	386,270	60.76
2015	1,390,234	798,234	57.42	680,357	412,323	60.60	684,124	401,221	60.01
2016	1,200,367	740,345	61.68	706,873	408,122	57.74	705,125	415,555	58.95

Source: West African Examination Council (WAEC), 2016. National Head Office, Yaba, Lagos.

The best result was recorded in 2016 while the worse was in 2007. But from 2007 to 2012, there was no much improvement in the results that is below 40%. It can be deduced that students' performance was not encouraging. Also, Biology has the highest enrolment in the three science subjects and the poorest results as shown in Table 1.

Gender is a cultural concept that distinguishes the roles, behaviours, mental and emotional characteristics between males and females developed by a society. Some studies indicated that significant difference existed between teaching profession and gender. National Education Association (2014) indicated that

there were more male teachers in public elementary and secondary schools than females, while Association of American Educators (2012) and United Nations Educational, Scientific and Cultural Organization (2015) indicated that the teaching profession has been largely dominated by women and thus, became gender-imbalanced in favour of women. Abidoye (2018) examined the impact of biology teachers on the performance of students in secondary schools in Osun State, Nigeria. This study sample included forty-eight (48) secondary schools, selected by random sampling technique. The researcher designed teachers' questionnaire which were administered to one hundred forty-five (145) biology teachers. Researcher-designed validated questionnaire was used to elicit information from the respondents on the impact of biology teachers to the performance of students. Three research questions and two research hypotheses were formulated. Frequency counts and t-Test statistics were used for analysis. It was revealed that there was a significant difference based on the gender.

Alimi, Ehinola and Alibi (2012) investigated the influence of school type facilities and academic performance of students in senior secondary schools in Ondo State, Nigeria. t-Test was used in the study, it was revealed that a significant difference existed in facilities available in public and private schools in Ondo State. Also, Okon and Archibong (2015) conducted a survey on school type and students' academic performance in social studies in Junior Secondary Certificate Examination, the findings of the study revealed that students in private schools performed better in social studies than in public schools. Abidoye (2019) observed the influence of teacher characteristics on achievement of senior secondary schools' students in Biology in Osun State, Nigeria and the finding revealed that there was a significant difference based of the school type. The influence of motivation in teaching–learning situation cannot be over emphasized, so this study investigated the relationship between teachers' motivation and the academic performance of students in biology in Kogi State.

Purpose of the Study

The study investigated Relationship between Biology teachers' motivation and academic performance of students in Biology in Kogi West Senatorial District.

Specifically, the study assessed Relationship between Biology teachers':

(1) motivation and academic performance of students in Biology in Kogi West Senatorial District.
(2) motivation and academic performance of students in Biology in Kogi West Senatorial District based on gender.
(3) motivation and academic performance of students in Biology in Kogi West Senatorial District based on school type.

Research Questions

The following research questions were answered in the study:

(1). What is the Biology teachers' motivation and academic performance of students in Biology in Kogi West Senatorial District?

(2). Does Biology teachers' motivation have influence on academic performance of students in Biology in Kogi West Senatorial District based on gender?

(3). Do Biology teachers' motivation have influence on academic performance of students in Biology in Kogi West Senatorial District based on school type?

Research Hypotheses

The following null hypotheses were tested at the 0.05 level of significance;

Ho_1**:** there is no significant relationship between teachers' motivation and students' academic performance in Biology

Ho_2: there is no significant relationship between Biology teachers' motivation and senior school students' performance based on their gender.

Ho_3: there is no significant influence on Biology teachers' motivation on senior school students' performance based on their school type

Methodology

This research was a descriptive survey in which data were collected from a sample of individuals from a specific population. The sampled population was asked questions according to standardized procedures, with the aim of obtaining a composite report of the population, with regards to particular aspects and the data obtained were used to describe the population and the influence of Biology teachers' motivation on the senior secondary school students' performance. This study was carried out in senior secondary school in Kogi West Senatorial District, Nigeria.This included biology teachers in all Secondary Schools located in seven LGA in West Senatorial District, Kogi State, Nigeria. The study was carried out in 93 senior secondary schools in Kogi West Senatorial District, Nigeria. One Hundred and Twenty (120) biology teachers were involved in the study. Variables that were tested in the study were: gender and school type of Biology Teachers. The instrument for this study was a questionnaire which consisted of two sections (sections A and B); Section A of the questionnaire requests for personal information of the Biology teachers such as; school name, teachers' gender and school type. Section B of the questionnaire contains 22 statements representing opposing viewpoints of the influence of biology teachers' motivation. The responses to the questionnaire items are on a five Likert scale such as Strongly Agree (SA) 5 points, Agree (A) 4 points, Undecided (UD) 3 points, Disagree (D) 2 points and Strongly Disagree (SD) 1 point.

The validity of the instrument was done by two lecturers in the Department of Biological science, faculty of life science and two science educators' lecturers in the Department of Science Education, and one lecturer in area of Test and Measurement in University of Ilorin for both face and content validation. Their observations and comments were effected to further improve the focus of the research instruments. In addition, the research instrument was administered to twenty (20) Biology teachers at three weeks interval in some secondary schools in West Senatorial District, Kogi State, Nigeria. The reliability of the instrument was determined using test-retest method. Questionnaires were administered to Biology teachers from four schools. Data obtained from the four schools were correlated using Pearson-Product Moment Correlation Coefficient Formula (PPMC) which showed the reliability of the instruments to be significant (r=0.891). The values obtained as r = 0.891 indicates that there is a high correlation between the two scores. The influence of Biology teaching scale was adapted and prepared with the 22 valid items. The aggregate mean (x) was 2.186 and standard deviation (S. D) was 1.066. This indicated the influence of Biology teachers' motivation on the performance of senior secondary students.

The researcher personally visited the selected schools for the study. The researcher sought for permission from the appropriate authorities. The administration of the questionnaires was done with the help of the Heads of Science Departments in each of the selected school. Biology teachers were encouraged to be objective in their responses. The researcher waited and collected the filled questionnaires immediately to avoid bias. Data analysis was done using frequency, mean and standard deviation while the research hypotheses were tested using t-test.

Data Analysis and Results

Results from table 2 shows the demographic information of the respondent for the study 51(42.5%) of the respondents were female teachers while 67(57.5%) were male teachers. 76 (63%) of the respondents were public schools Biology teachers while 44(37%) private school Biology teachers. This implies that both sexes were adequately represented in the study and the difference in sexes implies that they may be motivated differently and this may have influence on students' academic performance.

Table 2: ***Respondents' Demographic***

Variable	Frequency	Percentage
Gender		
Male	51	43
Female	69	57
School Type		
Public	76	63
Private	44	37

Research Question 1: What is the relationship between Biology teachers' motivation and academic performance of students in Biology in Kogi West Senatorial District?

The data in Table 3 revealed that the level of teachers' motivation in the study area was low. This is indicated by an aggregate mean rating 2.19 (mean rating <3.00 criterion value for motivation). Teachers rated eleven items in the cluster disagreed (D)/ low with mean rating which ranged from 1.09 to 2.69 and only three items agree (A)/ high with mean rating between 3.00 and 3.033 respectively. This implies that, generally teachers were not well motivated

Table 3: Frequency Count, Mean Rating and Standard Deviation of Biology Teachers' Responses showing their Motivation to Performance of students'

S/N	Motivation Variable	SA	A	U	D	SD	Mean	SD	Remark
1	I am allowed to work independently and to use my initiative.	12	51	3	33	21	3.000	1.347	A
2	I am always involved in school decision making.	18	46	-	32	24	3.017	1.438	A
3	Prompt attentions are paid to my job problem by the school management.	18	27	4	26	45	2.558	1.538	D
4	My outstanding performance is always recognized, praised and rewarded.	2	11	-	61	46	1.85	0.940	D
5	Teacher's recruitment/ development/ promotion is generally transparent.	3	5	7	72	33	1.942	0.853	D
6	I have been given teaching and learning materials necessary to do my job.	13	10	-	59	38	2.175	1.268	D
7	I am happy with the professional opportunities offered in my job.	5	14	1	73	27	2.142	1.031	D
8	My students' achievement motivates me to carry on teaching.	18	36	-	64	2	3.033	1.229	A
9	I am fully satisfied with my current job.	-	32	7	26	55	2.133	1.256	D
10	I receive feedback about my teaching from my principal/supervisor.	2	9	-	82	27	1.975	0.825	D
11	My salary and allowance are properly and promptly paid.	-	-	-	24	96	1.20	0.402	D
12	My remuneration and incentives meet my basic. Needs (food, housing and health).	-	-	-	11	109	1.092	0.290	D
13	I will not change my current employer if I have the opportunity to do so.	-	18	-	41	61	1.792	1.036	D
14	I am proud of the decent and comfort of my school environment.	21	24	2	43	30	2.692	1.477	D

Aggregate Mean(X) and Standard Deviation (S.D)	**2.186**	**1.066**

The research question is further answered by the test of research hypothesis1.

Ho_1: there is no significant relationship between teachers' motivation and students' academic performance in Biology

The result in Table 4 revealed that there is a significant positive relationship between teachers' motivation and students' academic performance as indicated r= 0.93, p < 0.05. Therefore, Hypothesis is rejected.

Table 4: Relationship between Teachers' Motivation and Students' Performance using PPMC

Variables		Teachers' motivation	Students Performance
Teachers' gender		1	0.93
	Pearson (r)		
	Sig.(2-tailed)		0.01
	N	120	120
		0.93	1
Students' performance	Pearson (r)		
	Sig.(2-tailed)	0.01	
	N	120	120

Research Question Two

What is the relationship between Biology teachers' motivation and academic performance of students in Biology in Kogi West Senatorial District based on gender?

Ho_2: there is no significant relationship between Biology teachers' motivation and senior school students' performance based on their gender

The result in Table 5 revealed that gender influence the relationship between Biology teachers' motivation and senior school students' performance since the r= 0.93, p (0.01) < 0.05. Since hypothesis (Ho_2) which stated that there is no significant influence in Biology teachers' motivation on senior school students' performance based on their gender was not significant was therefore not rejected.

Table 5: Influence of Biology teachers' motivation on senior school students' performance based on their gender

Gender	N	**Mean**	**Std. Dev.**	T	Df	**p-value**	**Remark**
Male	51	2.186	1.066	0.463	119	0.01	NS
Female	69						

Research Question Three

What is the relationship between Biology teachers' motivation and academic performance of students in Biology in Kogi West Senatorial District based on school type?

Ho_3: there is no significant influence on Biology teachers' motivation on senior school students' performance based on their school type

Table 6 presented the mean value of teachers' motivation based on school type is 2.35 with standard deviation of 1.02, while the mean value of students' BAT results is 12.99 with standard deviation of 3.40 and the p (0.01) < 0.61. Since hypothesis (Ho_3) which stated that there is no significant influence in Biology teachers' motivation on senior school students' performance based on school type was not significant was therefore not rejected.

Table 6: Influence of Biology teachers' motivation on senior school students' performance based on school type

School type	N	Mean	Std. Dev.	T-cal	Df	p-value	Remark
Public	76	2.35	3.40	0.27	119	0.610	S
Private	44						

Discussion

The findings revealed that there was a significant influence on Biology teachers' motivation on students' performance based on their responses. This may be because they play an important role in imparting the knowledge and equipping the students to be useful to themselves and society. This finding is in agreement with the findings of Adodo (2005) who observed the Correlate of students' variables and achievement in integrated science and the result indicated that there was significant influence of teachers towards the students' performance.

The findings revealed that there was a significant influence on Biology teachers' motivation on students' performance based on their gender. This could be as a result that the biology teachers realized importance of Biology teaching for their future. This is in agreement with the finding of Abidoye (2018) who examined the impact of biology teachers on the performance of students in secondary schools in Osun State and the result shows that there was significant difference in the performance of students based on teachers' gender.

The finding of this study shows that there was a significant effect on motivation of Biology teachers-based school type on the students' performance. This is in line with the finding of Alimi, Ehinola and Alibi (2012) investigated the influence of school type and facilities in Ondo State, Nigeria and the result indicated that there was significant difference.

Conclusion

The study concluded that there was a significant influence on Biology teachers' motivation on students' performance based on their responses, but there was not significant influence based on gender while significant based on School type.

Recommendations

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

1. Government and school administrators should improve on the intrinsic motivation factors of teachers, by recognizing the teachers for their achievement through commendation, recommendation and inclusion in decision making that affect them.
2. The male and female teachers should be motivated in order to excel in Biology teaching.
3. Biology teachers in public secondary schools should be motivated and encouraged to attend seminars and workshops regularly so that they can improve on their effectiveness in teaching biology in secondary schools.

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