

Methods of Teaching and Teachers' Qualification of Biology Teacher as Determinant of Poor Academic Achievement in Afijio Local Government Area

Agada, Allwell¹

Oladipupo, Shadrach Irawoola²

Adeyemi, Christianah Oluwakemi³

^{1,2&3}Department of Biology, School of Secondary Education, Science Programme, Federal College of Education (Special), Oyo

Abstract

The aim of this study is to investigate the impact of pedagogical practices and academic credentials of biology instructors on the disappointing academic performance of students in the Afijio LGA of Oyo State. The research comprises of five primary inquiries, with three addressed through hypotheses and two assessed with a 0.05 significance level. Data were collected via surveys and questionnaires, with 100 pupils from five different schools offering biology in the region taking part in the study. The questionnaire utilized a four-point scale to measure academic performance, proximity to schools, and social disparities between genders. Frequencies, percentages, and regression were utilized in data analysis. Results indicate that effective teaching methods and instructors' level of education significantly impact biology pupils' academic success. These findings support the views of Gupta (2017) and Ukpong (2021), who similarly emphasized the importance of a teacher's approach and qualification on student performance. The study recommends that the government incentivize and motivate experienced teachers in the education system, while also encouraging students to prioritize learning over just academic achievement. Additionally, it suggests that only certified teachers should be permitted to teach mathematics at the secondary level to enhance their pedagogical approach and enhance students' academic achievements.

Introduction

It has come to attention that pupils in Oyo state secondary schools frequently perform inadequately in Biology exams in Nigeria. This widespread underachievement may be attributed to various factors, such as the teacher's teaching methodology, the relationship between teacher and pupil, the adequacy of the teacher's educational resources, and more. The poor academic performance of students, particularly in science subjects, is a significant concern for parents, supervisors, teachers, and school counselors in senior secondary schools. The science education community is highly worried about the declining Biology performance of pupils. The biology test scores have sparked apprehension among educators and education stakeholders worldwide regarding students' understanding of essential scientific concepts. Numerous investigations have been conducted over the years from diverse perspectives in an attempt to identify the root cause of low academic performance among pupils. Attitude, school environment, parents' financial status, gender, school type, school budget, and other variables have all been identified as critical factors in significant research studies.

The educational success of any given school can be attributed to its students' academic achievements, which is the primary focus of the system (Narad and Abdullah, 2016). Nigerian parents often go to great lengths to ensure that their children excel academically, as it is believed to be a crucial determinant of their future success in both the public and private sectors. In today's educational system, identifying, evaluating, and stimulating students' academic growth has become a top priority (Ibrahim, Okeh and Ayorinde, 2019). Pandey (2008) asserts that a student's academic success is influenced by various factors, including their environment, culture, health, exposure, training, motivation, teaching methods, school location, physical abilities, and individual differences. These factors contribute to the development and enhancement of students' knowledge in educational settings where teaching and learning take place.

Education is viewed as the key to Nigeria's future prosperity, and high-quality education is expected to lead to the creation of products that are both economically viable and environmentally friendly. The quality of a country's educators is directly linked to its educational outcomes. Professionally trained teachers are individuals who have received specialized knowledge, skills,

procedures, and abilities in addition to the more general education typically provided to teachers (Abe and Adu, 2013). Teachers with advanced degrees in their respective fields, such as a Bachelor of Arts (BA), Bachelor of Science (BS), or Master of Arts (MA), are considered to be academically qualified. They have earned degrees like the B.A. A., B.A., B.S., and M. Ed. Onyekuru and Ibegbunam (2013) found that secondary school teachers generally had lower-than-average success in the classroom

A study conducted by Akinsolu (2010) discovered a significant correlation between student performance in the classroom and factors such as teacher education, experience, and student-to-teacher ratio. A comprehensive education involves the acquisition of values, skills, and competencies that enable individuals to contribute to society. It is essential to develop abilities in the cognitive, emotional, and psychomotor domains, and this can be achieved by improving the capacity of schools to support teachers and students in their work, as well as by achieving high exam results (which is often the primary goal). To achieve these objectives, it is critical to employ skilled teachers who can effectively engage students in the learning process through direct instruction (Ofeimu and Kolawole, 2017).

The role of education in determining a country's level of development is widely recognized. The teacher, as the primary figure in the educational system, plays a critical role in the lives of students. The success or failure of any educational program is largely attributed to the instructor. Consequently, educators play a vital role in defining what makes a quality education. As such, a strong education system should have knowledgeable, committed, and certified teachers to achieve national objectives such as preparing students for examinations. Teachers must be changing agents, turning ideas into long-lasting values and institutions. In these times of change, competent and dedicated teachers are needed to achieve this goal. Student achievement and school improvement are influenced by teacher commitment. A skilled and committed teacher can tailor their methods to meet the individual needs of each student, given the vast range of backgrounds and experiences among students. This will ensure that the appropriate instructional approach is used in the classroom, resulting in improved academic outcomes such as student achievement and written production.

In the realm of biological sciences education, significant progress has been made in the last decade thanks to the collaborative efforts of scientists and educators. It is well-established that the

success of students in this subject area is heavily influenced by the instructional strategies employed (Scherer, Siddiq, and Viveros 2020). Despite the proliferation of studies in recent years (Hillmayr et al. 2020), the full impact of biology education remains elusive as results vary widely. However, Appiah-Kubi (2018) has demonstrated the efficacy of interactive instruction in conveying a wide range of biological concepts to secondary school students. The primary objective of education is to effect a transformative change in the student, and this is best achieved through instructional strategies that are tailored to their specific needs and desired outcomes (Jeffrey, 2021). Unfortunately, in the past, many educators prioritized the teacher as the sole source of information transfer, rather than the students themselves. The impact of various instructional strategies on student knowledge acquisition has been a longstanding concern in educational research. At the senior secondary school level, student success in a given subject is a strong predictor of a country's future success and serves as a useful indicator of a school's effectiveness. Thus, the attainment of educational goals by students, professors, or instructors is of paramount importance as it informs teenagers about their talents, abilities, and competences, which are crucial for establishing aspirations

In 2021, Ukpong delved into the correlation between the level of education possessed by teachers and their pupils' academic performance. The research revealed that schools boasting competent and skilled educators had a markedly higher mean student success rate in comparison to those with untrained and less qualified instructors. The data firmly supported this finding, illustrating a direct association between higher teacher education levels and superior student achievement. Ukpong argued that instructors with a high level of qualification are more effective than their less qualified peers, and those possessing additional skills are even more productive than those with just the required knowledge. This notion could explain why Nigeria's National policy on education (2004) stipulates that the Nigeria Certificate in Education (NCE) is the minimum educational requirement for teachers in Nigeria.

Similarly, Munawaroh's 2017 study investigated the influence of teachers' pedagogical practices on their students' learning outcomes in class XI, focusing on the application of accounting knowledge to craft and entrepreneurship. Students reported that accounting was a weighty and dreary subject. However, the research indicated a positive correlation between the students' accounting ability and the teaching approach employed by their instructor at SMK PGRI 1

Jombang. The high Coefficient of Determination (R^2) highlights the substantial impact of the teaching approach variable (X_1) on student learning outcomes (Y), with other factors beyond the scope of the study accounting for the remaining 37.4%.

Numerous investigations have attempted to pinpoint the root cause of low academic performance among secondary school pupils, owing to the widespread interest in this matter among educators, parents, legislators, and planners. Scholars have defined academic achievement in various ways, encompassing classroom, laboratory, library, or fieldwork accomplishments. According to these researchers, the primary objective of schools is for students to attain academic excellence, which is a shared aspiration among parents who believe that adhering to the school's objectives, emphasizing rigorous scholarship, will result in their children's academic success.

The learning capacity of students at the outset of any academic activity varies depending on factors such as their prior knowledge, personality, and access to social resources. Proficiency development and progress hinge on a combination of parental and academic guidance, access to high-quality learning resources, competent educators, and an appropriate blend of teaching methodologies. The primary objective of the present study was to determine whether the teaching techniques and teacher qualifications in the biology classrooms of Afijio Local Government Area had a significant impact on the academic performance of students

Statement of the Problem

The annual release of SSCE results by WAEC has further demonstrated the widespread and systemic issues that hinder the academic success of economically disadvantaged secondary school students in various fields, including biology. It is widely believed that if biological concepts are not presented in a structured manner, progressing from known to unknown and from simple to complex, students may struggle to grasp the concepts taught. Educators, parents, policymakers, and planners have all expressed grave concerns about the poor performance of high school seniors in biology exams today. A multitude of factors, such as students' attitudes towards biology, the school environment, family income levels, gender, school location, and teaching methodologies, may all play a role. If a biology teacher is unable to effectively communicate complex concepts to their students, it may result in lower test scores and a loss of interest among students. Incompetence on the part of the educator is often to blame. This study aims to examine the instructional practices

and qualifications of biology teachers in the Afijio Local Government Area, to gain a better understanding of the factors that contribute to students' poor academic performance.

Aim and Objectives of the Study

The aim of this study is investigated on methods of teaching and teachers' qualification of biology teacher as determinant of poor academic achievement in Afijio local government area.

While the specific objective to:

- i. examine the level of academic achievement of Biology students in Afijio Local Government Area Oyo State;
- ii. to investigate the influence of teaching method on academic achievement of biology in Afijio Local Government Area;
- iii. identify the effects of teachers' qualification on academic achievement of biology in Afijio Local Government Area;

Research Questions

The following research questions are raised to guide the study:

- i. what is the level of academic achievement of Biology students in Afijio Local Government Area Oyo State?
- ii. What is the influence of teaching method on academic achievement of biology in Afijio Local Government Area?
- iii. What are the effects of teachers' qualification on academic achievement of biology in Afijio Local Government Area?

Hypotheses

The following null hypotheses would be tested in this study at 0.05 level of significance.

H_{01} There will be no significant relative influence of teaching method and teacher's qualification on academic achievement of biology in Afijio Local Government Area.

H_{02} There will no significant joint influence of teaching method and teacher's qualification on academic achievement of biology in Afijio Local Government Area.

Methodology

Research Design

The research study engaged survey design and the use of questionnaire to elicit responses from the samples.

Population and Sample

The populations of this study will be secondary school students that offered biology in Afijo Local Government Area, Oyo State. The sample in the study will be selected from the entire population of the selected schools. The schools are; Akinmorin Grammar School, Ilora Community Commercial Senior High School, Awe Senior High School, Ilora Baptist Senior Grammar School Idi Igba and Community High School Fiditi.

Sample and Sampling Techniques

In this research, one hundred respondents' (100) will be randomly selected from the selected school in Afijio Local Government, Oyo. Twenty (20) respondents will be selected in each selected school which will include boy male and female students.

Research Instrument for Data Collection

The instrument is the questionnaire on academic achievement, school location and social gender difference (QAASLGD) which has four sub- scale. The questionnaire contains ten (10) items which was designed by the researcher and validated by the expert in the area. This was done in order to collect accurate and unbiased information from the respondents. The 4 points Likert type scale was used in scoring the items as: SA =Strongly Agree; A = Agree; D = Disagree; SD = Strongly Agree.

Methods of Data Analysis

After the researcher has administered the questionnaire to the respondents, the data collected will be collated. The raw data will be analysed by using regression.

Results, Analysis and Discussion of Findings

This presents the results, analysis and discussion of the findings.

Research Objective One: Level of academic achievement of Biology students in Afijio Local Government Area Oyo State

Table1. Level of Academic Achievement of the Respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Extremely Poor	36	36.0	36.0	36.0

Poor	35	35.0	35.0	71.0
Fair	12	12.0	12.0	83.0
Moderate	17	17.0	17.0	100.0
Total	100	100.0	100.0	

Source: Fieldwork 2023

Table 1. shows that in the biology results collated 36(36%) of the students’ record denotes that the students perform extremely poor academically, 35 (35%) performs poorly, 12 (12%) fairs in their academic achievements while 17(17%) were found to be moderate in their academic achievement.

Research Objective Two: To investigate the influence of teaching method on academic achievement of biology in Afijio Local Government Area;

Table2. Descriptive Statistics showing the influence of teaching method on academic achievement of biology students in Afijio Local Government Area.

	N	Mean	Std. Deviation
Better performance	100	3.31	.761
Enhanced academic performance	100	2.25	1.095
Poor influence on Academic achievement	100	2.25	1.095
Valid N (list wise)	100		

Source: fieldwork 2023

Table 2. above shows that among the influence of teaching methods on the academic achievement of biology students in Afijio Local government Area of Oyo state, better performance with mean score 3.31 take pre-eminence followed by an enhanced academic performance of the students with mean score of 2.25. However, it was discovered that the negative influence of poor method of teaching may result to poor influence on academic achievement with mean score of 2.25

Research Objective Three: Identify the effects of teacher’s qualification on academic achievement of biology in Afijio Local Government Area;

Table 3. Descriptive Statistics showing the effects of teacher’s qualification on academic achievement of biology in Afijio Local Government Area.

	N	Mean	Std. Deviation
No effect	100	1.96	.994
Confidence in the teacher	100	2.03	1.039
Efficiency	100	2.50	1.124
poor academic achievement	100	1.57	.655
Incompetence of teachers	100	2.65	1.114
Valid N (listwise)	100		

Source: Fieldwork 2023

The findings presented in Table 3 highlight the impact of teacher qualifications on the academic performance of biology students in Afijio Local Government of Oyo. According to the respondents, the most significant effect was on the teacher's competence, with a mean score of 2.65, as they perceived that low qualifications often equate to incompetence among teachers. Furthermore, many believed that the teacher's efficiency is directly linked to their level of academic qualification, with a mean score of 2.50. This was followed by the teacher's confidence, which is based on their qualifications, with a mean score of 2.03. On the other hand, poor academic achievement and no effect were not considered to be as significant in relation to the effect of teacher qualifications on the academic achievement of biology students, with mean scores of 1.56 and 1.96, respectively. These findings demonstrate the importance of teacher qualifications, particularly with regard to their perceived competence and efficiency, in influencing the academic performance of biology students in the Afijio Local Government area.

Hypothesis One (H₀₁): There will be no significant relative influence of teaching method and teacher’s qualification on academic achievement of biology in Afijio Local Government Area.

Table 4. Regression Analysis showing the joint influence of teaching method and teacher’s qualification on academic achievement of biology in Afijio Local Government Area.

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.489	.137		-3.565	.001
	methods	.062	.029	.238	2.154	.034
	qualifications	.167	.025	.724	6.545	.000

a. Dependent Variable: achievement

Source: *Fieldwork 2023*

Table 4. above shows that methods of teaching employed by the teachers in passing the knowledge across has a significant influence on the academic achievement of the respondents $t = 2.154$ $P = 0.034$ at 0.05 alpha level of significant. More so, it is clear that the qualifications of the teachers independently influence the quality of knowledge that will be transferred from the teachers to students which will definitely influence the academic achievement of the students as $t = 6.545$ $P = 0.000$ at $P < 0.05$ alpha level of significant. Hence, the null hypothesis that there will be no significant relative influence of teaching method and teacher’s qualification on academic achievement of biology in Afijio Local Government Area is the therefore rejected.

Hypothesis Two (H_{02}): There will be no significant joint influence of teaching method and teacher’s qualification on academic achievement of biology in Afijio Local Government Area.

Table 5. Regression Analysis showing the joint influence of teaching method and teacher’s qualification on academic achievement of biology in Afijio Local Government Area.

R= .955							Durbin-Watson
R ² =.912							
Adj= .911							
Std Error Est.= .322							
Change Statistics							
Square	Change	F Change	df1	df2	Sig.	F Change	
.912		504.763	2	97	.000		

Source: *Fieldwork 2023*

Table 5 reveals that there is a significant joint influence of teaching method and teachers' qualification on academic achievement of biology in Afijio Local Government Area with $F_{(2, 97)} = 504.763 (P=0.000)$ at $P < 0.05$ level of significance, $R = .955$ accounting 91.2% of the respondents. Hence, the null hypothesis that there will be no significant joint influence of teaching method and teacher's qualification on academic achievement of biology in Afijio Local Government Area is therefore rejected.

Discussion of the Findings

The study conducted in Afijio Local Government Area indicated that the academic success of biology students was significantly impacted by the approach utilized by teachers as well as their level of education. This corresponds with Gupta's (2017) belief that effective teaching necessitates a good methodology. According to Ukpong's (2021) research, the quality of a biology teacher's education and experience significantly influences their students' performance, while their attitude has little to no effect. Jeffrey's (2021) findings reveal that using teacher-centered, student-centered, and student-teacher interactive strategies all have a positive impact on students' academic performance. Emmanuel, Irene, and Charles (2021) also suggest that there are various ways for teachers to come up with lesson ideas, including creating their own, borrowing from other educators, searching online, or consulting books. It is important to consider each student's learning objectives, context, background, and prior knowledge when deciding on the best teaching approach. Teachers recognize that every student has a unique approach to learning and demonstrating knowledge, which is why they frequently employ tactics that cater to a variety of learning styles to enhance understanding and recall of course information. Many strategies and techniques are utilized to ensure that all students have an equal chance to learn. Ukpong (2021) suggests that teachers with higher education are more effective than those with less education, and those with additional skills are more productive than those who are just skilled. This may be why the Nigerian government's National Policy on Education (2004) requires a Nigeria Certificate in Education (NCE) as the entry-level requirement for the teaching profession in Nigeria.

The study found that in Afijio Local Government Area, the teaching methodology and the educational qualifications of teachers had a significant impact on the academic achievement of biology students, which is consistent with Abe's research in 2014. Abe conducted a study that selected three hundred students from sixteen randomly chosen schools in the Ikere Local

Government Area of Ekiti state, where teacher qualifications were considered in the hiring process of math teachers. The study's hypotheses were evaluated using the T-test statistic, and it was discovered that there was a significant improvement in academic performance when students were taught by certified teachers. Additionally, there was a difference in performance between NCE and BSc-taught students, as well as between B.Sc. teachers and Bachelor of Science degree holders. Ukpong, a scholar in the field of education, found that pursuing more education and training increases an individual's rate of return at a given level, which he demonstrated by comparing the success of high school and college students. Therefore, teachers with a Bachelor of Science, Master of Science, or Master of Science in Education are expected to be more productive because they earn more money and consider themselves experts in their fields. The study also revealed that students taught by teachers with an HND or a degree in Education outperformed those who were not, and those taught by degree holders in Education, such as M.Sc., M.Sc. Ed, B.Sc., had higher success rates overall than those taught by HND holders.

Conclusion

As can be shown, the lackluster academic performance of children in the Afijio Local Government Area is significantly impacted by the biology teachers' pedagogical practices and professional credentials.

Recommendations

The following suggestions are made on the basis of the above.

1. Students should learn to be studious and not rely on alone for their academic progress, while the government should put in place measures and incentives to promote and inspire skilled teachers in the school system.
2. However, those with inferior qualifications, such as a Nigeria certificate of Education (NCE), should be given the opportunity to continue their studies while teaching mathematics at the secondary school level, either through study leave or by working fewer hours.
3. It is recommended that teachers who do not have a teaching credential earn a Master's degree in education (PGDE). In order to raise student achievement, teachers could benefit from adopting a more student-centered approach to instruction. This would allow them to better engage their students and make their lessons more engaging.

References

1. Abe, T.O. & Adu, E.I. (2013). Influence of qualification on development and assessment of computer programmed instructional package on energy concept in upper basic technology in Ekiti State. *Journal of Science and Technology*, 3 (6): 611-618.
2. Akinsolu, A.O. (2010). Teachers and students' academic performance in Nigerian secondary schools: Implications for planning. *Florida Journal of Educational Administration & Policy*, 3(2), 87-103.
3. Hillmayr, D. Lisa Z. Frank R, Sarah I. H, & Kristina M. R. (2020). The Potential of Digital Tools to Enhance Mathematics and Science Learning in Secondary Schools: A Context-Specific Meta-Analysis.” *Computers & Education* 153:103897.
4. Ibrahim, A. S. Okeh, B. I. & Ayorinde, M. O. (2019). Comparative analysis of students' academic performance in agricultural science in public and private secondary schools of Kaduna state, Nigeria. *International Journal of Thesis projects and Dissertations*, 1(2), 11-19.
5. Jeffrey, A. L. (2021). Teacher's teaching methods and student's academic performance in science: basis for teacher's in –service training program. *Global journal of research in humanities & cultural studies*, 7(13), 10-21.
6. Munawaroh. (2017). The influence of teaching methods and learning environment to the student's learning achievement of craft and entrepreneurship subjects at vocational high school. *International journal of environmental & science education*, 12(4), 665-678.
7. Chavada, J. K. (2024). The role of teacher has changed in the context of classroom education in the 21st century. *Shodh Sari-An International Multidisciplinary Journal*, 03(01), 66–70. <https://doi.org/10.59231/sari7655>
8. Narad, A., & Abdullah, B. (2016). Academic performance of senior secondary school students: Influence of parental encouragement and school environment. *Rupkatha Journal on Interdisciplinary Studies in Humanities*, 8(2), 12-19
9. Bhagoji, M. D. (2024). Navigating Global Dynamics in Teacher Education: A Comprehensive Overview. *Shodh Sari-An International Multidisciplinary Journal*, 03(01), 123–133. <https://doi.org/10.59231/sari7660>
10. Ofeimu, J. & Kolawole B. O. (2017). Teacher quality as determinant of students' academic performance in secondary schools in Edo South Senatorial District of Nigeria. *British*

11. Onyekuru, B. U. & Ibegbunam, J.O. (2013). Teaching effectiveness of secondary school teachers in Emohua Local Government Area of Rivers State, Nigeria. *European Scientific Journal*, 9(28), 212-226.
12. Pandey R. G. (2008). Academic achievement as related to motivation and parental background. *Indian Psychological Revolution*, 70(4): 213-216.
13. Addo, D. E., Efut, E. N., Akpo, D. M., & Egor, O. W. (2023). Innovative instructional design packages for promoting inclusive and participatory interactive learning experience in Nigeria. *Shodh Sari-An International Multidisciplinary Journal*, 70–87. <https://doi.org/10.59231/sari7575>
14. Scherer, Ronny, F. S. & Bárbara, S. V. (2020). “A Meta-Analysis of Teaching and Learning Computer Programming: Effective Instructional Approaches and Conditions.” *Computers in Human Behavior* 109:106349.
15. Ukpogon, J. B. (2021). Teacher’s characteristics and academic performance of biology students in secondary schools in Calabar municipality of cross river state. Research project.

Received on Feb 17, 2024

Accepted on March 19, 2024

Published on April 10, 2024

[Methods of Teaching and Teachers’ Qualification of Biology Teacher as Determinant of Poor Academic Achievement in Afijio Local Government Area](#) © 2024 by [Edumania-An International Multidisciplinary Journal](#) is

licensed under [CC BY-NC-ND 4.0](#)

