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PUBLIC SCHOOL TEACHER'S PERCEPTION ON FACTORS INFLUENCING TEACHING OF BIOLOGY IN SENIOR SCHOOL IN KWARA STATE

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ABSTRACT

This study investigates the perceptions of public school teachers with regards to factors that shape the teaching of biology in senior secondary schools in Kwara State, Nigeria. The effective teaching of biology holds a crucial position in equipping students with the requisite knowledge and skills necessary for careers in science and healthcare, underscoring the significance of comprehending the obstacles and enablers educators face in this domain. The study collects data through structured quantitative surveys using a quantitative approach. A simple randomly selected 50 seasoned biology teachers, drawn from public senior secondary schools situated in Kwara State, actively participated in the research. The study found that teaching biology plays a significant role for students pursuing careers in science and healthcare. While the current curriculum is effective in preparing the students for their chosen career, up-to-date resources are essential in enhancing the efficacy of biology instruction in public schools in Kwara State. There is also the need for adequate teacher training and professional development opportunities for effective biology teaching, coupled with the support of the school administration. Students need meaningful engagement and a keen interest in the biology teaching and learning process. There is a need to pay attention to the classroom facilities, laboratory apparatus, and equipment to facilitate effective teaching in biology. The study recommends the need for comprehensive and up-to-date curricula tailored towards biology education needs, continuous teacher training and professional development, support from the school administration to create an enabling environment for the teaching learning process, and student active engagement in classroom learning.

Keywords: ***Teachers' Perception, Biology Education, Teaching.***

1. INTRODUCTION

In recent times, Biology education has become more relevant (Oghenevwede, 2022). This is as a result of the growing concern in the face of global health crises and environmental challenges, as evident in the global pandemics and ecological crises (Filip, Gheorghita, Anchidin-Norocel, Dimian, Savage, 2022). The growing concern has made the role of biology education to expand beyond merely influencing individual career choices to actively shaping society's capacity to address the ensuing issues. Aside the relevance in global concern, biology education serves as a fundamental building block for various scientific disciplines, encompassing medicine, genetics, ecology, and biotechnology (Nehm, 2019). Additionally, in Biology has maintained its prominent position as a core subject taught globally across all level of education (Nwoke and Lavonen, 2022). Ever since curriculum reforms in Nigeria, Biology has occupied a central role in shaping career decisions related to science and healthcare (Adolphus, 2020; National Policy on Education, 2018). It acts as a pivotal determinant for guiding career choices toward healthcare-related professions. The effective teaching of biology holds a critical place in equipping students with the essential knowledge and skills needed for careers in science and healthcare, underscoring the importance of comprehending the challenges and opportunities faced by educators in this domain. Within the Nigerian educational context, the teaching of Biology in senior schools plays a pivotal role in molding the future of students who aspire to pursue careers in healthcare and the biological sciences (Oghenevwede, 2022). Like many other regions in Nigeria, the North Central is grappling with the complexities and possibilities associated with teaching Biology in its public senior schools (Abdulkadir, 2021).

The efficacy of biology instruction in these institutions is influenced by a plethora of factors that affect both educators and students. These are in form of challenges and perceptions from the students and the teachers. The challenges span various aspects, including curriculum design, teaching methodologies, resource availability, and student engagement (Chukwuemeka and Osuafor, 2022; Davis, Petish, and Smithey, 2006; Envulu, 2018) among others. These are the challenges faced by the educators in Nigeria, as in many other nations, while delivering biology education in preparing students for careers in science and healthcare. However, there exist blueprints, both internal and external to the educational system, which can enhance the provision of high-quality biology education. These blueprints encompass innovative teaching approaches, technological advancements, access to educational resources, supportive policies, and the dedication of educators themselves. This study is situated within the framework of Albert Bandura's Social Cognitive Theory (SCT). Originally known as Social Learning Theory (SLT), this theory was developed by Albert Bandura in the 1960s and later evolved into SCT in 1986. SCT posits that learning takes place in a social context characterized by dynamic and reciprocal interactions among individuals, their environment, and their behaviors.

This theory places particular emphasis on the significance of social interactions, observational learning, and self-efficacy in molding human behaviour (Nickerson, 2023). Within the scope of this study, SCT serves as a valuable lens through which to understand how teachers' perceptions regarding the factors influencing Biology teaching are molded by their observations, interactions with students, and their confidence in their own teaching abilities. Kwara State, located in the North-Central region of Nigeria, consists of diverse educational institutions, featuring a significant number of public senior secondary schools. Nevertheless, concerns have been raised regarding the quality of biology education in these institutions, prompting questions about the factors influencing the teaching of Biology at this level (Abdulkadir, 2021; Egun, 2016; Hadiprayitno, G., Muhli and Kusmiyati, 2019). This study explores the perceptions of public school Biology teachers in Kwara State regarding the factors that impact the teaching of biology in senior schools. Through a comprehensive analysis of these factors, we aim to shed light on how biology education can be enhanced to better equip students for careers in science and healthcare for 21st century challenges.

Purpose of the study:

The main purpose of this study is to determine the perceptions of Biology teachers on the factors that influenced the effective teaching of Biology. Specifically, the study will:

1. Investigate the perceptions of public school biology teachers on the factors influencing the teaching of biology in secondary schools in Kwara Central.
2. Examining the difference in the perceptions of male and female public school Biology teachers on the factors influencing the teaching of Biology in Kwara Central.

Research Questions

1. What are the perceptions of public school biology teachers on the factors influencing the teaching of biology in secondary schools in Kwara Central?
2. How is the perceptions of male different from the female in Biology teachers in public school on the factors influencing the teaching of Biology in Kwara Central?

Hypothesis

H_0: There is no significant difference between the perceptions of male and female public school Biology teachers on the factors influencing the teaching of Biology in Kwara Central

H_1: There is a significant difference between the perceptions of male and female public school Biology teachers on the factors influencing the teaching of Biology in Kwara Central

Methods

This study adopts a quantitative research approach in which inferences were drawn through a descriptive and inferential analysis. A quantitative research approach is relies on the collection and analysis off numerical data to describe, explain, predict or control variables and subject of interests (Gay, Mills and Airasian, 2009). The questionnaire was administered among the selected 50 biology teachers in public secondary schools in Kwara State, Nigeria. Out of the 50 posted questionnaires, 41 were responded to, making 82% of the responses received. The respondents were selected using simple random sampling method. This with a view to give each participant a fair chance of participating in the research (Noor, Tajik, and Golzar, 2022). The questionnaires were administered through the respondent social media in which the questionnaire was posted to them directly. This is in line with the postulation of Wardropper, et al (2021) and a study conducted by Knekta, Rowland, Corwin, and Eddy (2020). Questionnaire on the perceptions of public school teachers about teaching Biology in Senior Secondary Schools in Kwara State, Nigeria was designed. It has two sections. Section one contains the demographic data of the respondents. While the second section contains questions on the perception of teachers about teaching Biology in Senior Secondary Schools in Kwara State. The questionnaire was analysed using descriptive and inferential statistics in SPSS 21.

Results

Table I: Demographic Data

Items	Frequency	Percentage
Gender		
Male	14	34.1
Female	27	65.9
Age		
24 below	11	26.8
25-30	5	12.2
35-above	25	61
Educational Qualifications		
Bachelor's Degree	20	48.8
Master's Degree	15	36.6
Ph.D	1	2.4
Others	5	12.2
Years of teaching Experience		
1-10 years	19	46.3
11-20	17	41.5
21-30	5	12.2
Location of school		
Rural	13	31.7
Urban	28	68.3

The table presented above illustrates the frequency and percentage distribution of respondents' demographic characteristics. It indicates that 34.1% of respondents are male, whereas 65.9% are female. Regarding age distribution, 26.8% of respondents fall within the 24 years and below category, 12.2% are aged between 25 to 30 years, and 61% are 35 years and older. In terms

of educational attainment, 48.8% possess Bachelor's degrees, 36.6% hold Master's degrees, a mere 2.4% have obtained a Ph.D., while the remaining 12.2% hold qualifications other than those mentioned. Concerning professional experience, 46.3% of respondents have between 1 to 10 years of experience, 41.5% have accumulated 11 to 20 years, and 12.2% possess 21 to 30 years of experience. Regarding school location, 31.7% of respondents' schools are situated in rural areas, whereas 68.3% are located in urban centers. **Research Questions 1:** What are the perceptions of public school biology teachers on the factors influencing the teaching of biology in secondary schools in Kwara Central?

Table II: Perceptions of public school biology teachers on the factors influencing the teaching of Biology in secondary schools in Kwara Central

Items	SD (%)	D (%)	N (%)	A (%)	SA (%)
The teaching of biology is crucial for students pursuing careers in science and healthcare	2.4	2.4	4.9	28.8	63.4
I believe that the current biology curriculum effectively prepares students for science and healthcare careers	0	4.9	4.9	56.1	34.1
The availability of up-to-date teaching resources significantly affects the effectiveness of Biology teaching.	9.8	9.8	7.3	31.7	41.5
Adequate teacher training and professional development opportunities are crucial for effective Biology teaching.	0	4.9	7.3	29.3	58.5
The support from school administration positively impacts Biology teaching quality.	2.4	2.4	2.4	56.1	36.6
Student engagement and interest in Biology significantly affect teaching outcomes.	2.4	7.3	2.4	39	48.8
Classroom facilities and equipment play a crucial role in effective Biology teaching.	0	2.4	4.9	39	53.7

Key: SD-Strongly Disagree D-Disagree N-Neutral A-Agree SA-Strongly Agree

According to the data presented in the table above, a significant portion of respondents, 92.2%, agreed with the importance of biology education for students pursuing careers in science and healthcare. Additionally, 90.2% of participants agreed with the effectiveness of the current biology curriculum in preparing students for such careers. Moreover, 73.2% agreed with the importance of having up-to-date teaching resources for effective biology instruction. Furthermore, 87.8% of respondents agreed with the significance of adequate teacher training and professional development opportunities in ensuring quality biology education. The findings also highlight the positive impact of school administration support on biology teaching quality, with 92.7% of respondents in agreeing with this. Furthermore, 87.8% of participants agreed with the influence of student engagement and interest in biology on teaching outcomes. Finally, an overwhelming majority, 92.7%, agreed with the essential role played by classroom facilities and equipment in facilitating effective biology instruction. Therefore, the respondents agreed that the teaching of

biology holds significant importance for students pursuing careers in science and healthcare. Furthermore, they are in agreement regarding the effectiveness of the current biology curriculum in preparing students for such career paths. Additionally, they recognize the pivotal role of up-to-date teaching resources in enhancing the efficacy of biology instruction. Moreover, they emphasize the necessity of adequate teacher training and professional development opportunities for effective biology teaching. Furthermore, they affirm the positive impact of school administration support on the quality of biology education. They also acknowledge the influence of student engagement and interest in biology on teaching outcomes, along with the crucial role played by classroom facilities and equipment in facilitating effective biology instruction. Consequently, it can be inferred that teachers hold a positive perception of the factors influencing the teaching of biology in secondary schools in Kwara Central as shown in the table above.

Testing Hypothesis

H_0: There is no significant difference between the perceptions of male and female public school Biology teachers on the factors influencing the teaching of Biology in Kwara State

H_1: There is a significant difference between the perceptions of male and female public school Biology teachers on the factors influencing the teaching of Biology in Kwara State

Table 3: Chi-square analysis of the perception of male and female public school Biology teachers on the factors influencing the teaching of Biology in Kwara State

Variables		Teachers' Perception	X^2	df	P
Sex	Male	14 (34.1%)	0.361	11	> 0.05
	Female	27 (65.9%)			

The chi-square value in the table above shows that 34.1% for male perception and 65.9% for female perception. The table also shows the calculated value of 0.361 which is greater than 0.05 with 11 degree of freedom. Since the calculated value is greater than 0.05 (P>0.05). The result shows that there is a significant difference between the perceptions of male and female public school Biology teachers on the factors influencing the teaching of Biology in Kwara State. Hence the null hypothesis is rejected.

Discussions of Findings

The findings of the study show the factors influencing the teaching of Biology in secondary schools in Kwara Central (See table II). Teaching of Biology holds significant role for students pursuing careers in science and healthcare. While the current curriculum is effective in preparing the students for the chosen career, up-to-date resources is essential in enhancing the efficacy of the biology instruction in public schools in Kwara State. There is also the need for adequate teacher training and professional development opportunities for effective biology teaching, coupled with the support of the school administration. Student need the meaningful engagement and show keen interest in biology teaching-learning process. There is need to play attention to the classroom facilities laboratory apparatus and equipment in facilitating effective teaching in Biology. Attention must be paid to classroom facilities and laboratory equipment to facilitate effective Biology teaching. This aligns with Olajide's (2022) study, which underscores the correlation between teacher competencies, academic resources, teaching methodologies, and students' Biology performance. Similarly, Abidoye, Abidoye, and Olaide (2023) examined the significance of instructional materials such as textbooks, charts, specimens, and other resources in Biology teaching. As emphasised earlier,

Biology serves as a fundamental pillar for various scientific disciplines, including medicine, genetics, ecology, and biotechnology, as corroborated by Onyeka's (2003) study, which highlights

Biology's role in improving food supply and eradicating hereditary diseases. Furthermore, there exists a divergence in the perceptions of male and female teachers regarding the factors influencing Biology teaching in Kwara State public schools, as indicated in Table III. This finding resonates with Ahmed, Moradeyo, and Danmole's (2017) research on the perceptions of secondary school teachers' needs in Kwara State. The study discerns a significant disparity in teachers' academic requirements based on gender, with male Biology instructors expressing a greater inclination towards academic needs compared to their female counterparts.

Recommendations

The study shows that to ensure effective Biology education in secondary schools necessitates several key actions. Hence, the following recommendations are put forward: Firstly, it is imperative to develop and maintain a comprehensive and up-to-date curricula tailored towards Biology education needs. This includes continuous review and updating to align with evolving scientific knowledge and educational standards. Secondly, a strong emphasis must be placed on continuous teacher training and professional development. This encompasses various forms of training, including formal education, in-service programs, and workshops. It is crucial to actively encourage teachers to participate in these opportunities to keep abreast of the latest educational developments and instructional techniques, thus enhancing their teaching efficacy.

Moreover, the school administration plays a pivotal role in providing essential support structures for Biology teachers. This entails creating an enabling environment conducive to effective teaching and learning. This support extends to the procurement of necessary resources such as laboratory equipment, teaching aids, and instructional materials, ensuring that Biology teachers have access to the tools required for engaging and informative lessons. Furthermore, active student engagement is essential for fostering meaningful learning experiences in Biology. Students should be encouraged to develop a keen interest in Biology, actively participating in the teaching-learning process. Emphasis should be placed on fostering curiosity and exploration, encouraging students to interact with classroom and laboratory facilities and apparatus, thus deepening their understanding of Biological concepts through hands-on experiences.

Conclusion

The research focused on assessing public school teachers' perceptions regarding the factors affecting Biology teaching in senior secondary schools within Kwara State. Given Biology's crucial role in preparing students for diverse scientific fields like medicine, genetics, ecology, and biotechnology, it remains a core subject globally across educational levels. Employing Albert Bandura's Social Cognitive Theory (SCT), which posits that learning occurs within a social context characterized by interactive influences among individuals, their environment, and behaviors, the study utilized a quantitative research approach. Data were collected via questionnaires administered to 41 Biology teachers in public secondary schools in Kwara State, Nigeria. Analysis involved descriptive and inferential statistical methods. The findings underscored the significant importance of Biology education for students aspiring to pursue careers in science and healthcare. Furthermore, factors such as a comprehensive curriculum, access to updated teaching resources, teacher training and professional development, support from school administrations, student engagement and interest, and adequate classroom facilities and equipment were identified as critical for effective Biology instruction in secondary schools in Kwara State. Additionally, the study highlighted a notable difference in perceptions between male and female public school Biology teachers regarding the influences on Biology teaching in Kwara State.

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