TEACHERS' VARIABLES AS PREDICTORS OF JUNIOR SECONDARY SCHOOL STUDENTS' ACADEMIC ACHIEVEMENT IN BASIC SCIENCE IN ILE-IFE, OSUN STATE

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Abstract
The study was aimed at examining the predictive role of teacher variables on high school student performance in basic sciences. An association-type descriptive survey was used as the survey design. Study subjects included a basic science teacher and secondary school students from Ile – Ife, Osun State. A sample size of 20 teachers as well as 200 students was chosen using a simple random procedure. Collection of data was done using two research tools. Basic Science Teacher Questionnaire (BSTQ) and Basic Science Preliminary Results (PTRBS). The BSTQ was used to collect information about teachers' educational background and years of teaching experience, and the PTRBS was used to assess students' academic performance in basic sciences. Collected data were analyzed using various statistical measures such as percentage, frequency, standard deviation, mean, and Pearson Product Moment Correlation (PPMC). These analyzes allowed the examination of the relationship between teacher variables (educational background and years of teaching experience) and basic science academic performances of the high school students. The results showed a significant positive association between teachers' educational attainment in Basic Sciences and the academic performances of the students (r=0.775; p<0.05). This suggests that better-educated teachers tend to have a positive impact on the academic performance of students in basic science. Similar to this, the study found a substantial correlation (r = 0.704; p 0.05) between instructors' years of teaching experience and academic success of students in Basic Science. This suggests that teachers with more experience help students perform better in this subject. Based on these results, the study concludes that the academic achievement of junior secondary school student' in Basic Sciences in Ile-Ife, Osun State is significantly affected by educational backgrounds and years of experience of teachers. The findings emphasize how crucial teacher training and expertise are in impacting students' subject-area learning outcomes.

Keywords: Basic Science, Teachers' Educational Background, Teachers' Years of Teaching Experience, Academic Achievement.

Introduction

According to Ajewole & Bello (2022), science is an endeavour to get a better understanding of humankind and the environment through clearer interpretation and explanation. In this regard, it is the underpinning upon which the greater part of technological innovation is put up. All technical improvements and discoveries in the world are built on science. Furthermore, science is a methodical way to gaining knowledge through meticulously documented study and testing (Olajide, Ajewole, & Amusat, 2018). According to Alebiosu and Bilesanmi (2005), science attempts to find the origins of events or experiences in life and to provide basis for and/or way out to those experiences or situations.

More so, sciences play vital roles in the society, but students' academic achievement is poor in science subjects in external and internal examinations. Owing to this, researchers in the field have embarked on a range of studies to discover reasons for the horrid situation. They discovered that the trouble emanated from the kind of science a learner is exposed to at the elementary level. Afuwape and Olatoye (2004) are among the researchers that discovered that inadequate number of trained teachers, inadequate number of necessary facilities needed for training and demonstration, inadequate practical/experimental works, adoption of poor teaching methods and deficient allocation of periods for Basic Science on the school time-table are the major conditions limiting the successive putting into practice of this major curriculum in

Basic Science as a whole. In the same vein, poor training strategies adopted by teachers have been a big challenge to teaching-learning process in science subjects (Agboola & Oloyede, 2007; Aladejana & Olajide, 2017). Okigbo (2010) submitted students' lack of interest in science subjects; gender (Oluwatosin & Bello, 2015); availability and usability of science laboratory equipment (Bello, 2012) and students' anxiety (Jegede, 2010) as factors influencing students' achievement in science subjects.

Among the main areas of science taught in lower level high schools is basic science. Basic science is taught to introduce students to the foundations of scientific innovation and to provide students with the foundations they need for post-secondary scientific research growth. Regarding teacher qualifications, as Adjei (2017) points out and Olaofe (2006) rightly emphasizes, subject teachers need to have academic and professional training to make teaching a profession. . This enables Adjei (2017) to pursue academic and professional degrees such as the Bachelor of Science Education, Nigerian Certificate of Education (NCE), Master of Education, Bachelor of Arts in Education or Master of Philosophy in Education. A teacher is better than someone without professional qualifications. This is because a teacher's expertise in mastering a subject, along with the adoption of various teaching strategies/techniques, can lead to professional and academic competence, leading to improved subject-related outcomes. The studies conducted by Owolabi and Adedayo (2012), Abe (2014), and Bamidele and Adekola (2017) all support the idea that the qualifications and educational background of teachers have a significant effect on the students' academic achievements. In comparison to those that are taught by teachers holding lower qualifications, such as NCE & OND. In 2012, Owolabi and Adedayo discovered that some students who were taught by professional teachers holding higher degrees, such as HND, B.A., B.Sc. did better academically. This shows that pupils perform better academically the more qualified their teachers are. Similarly, Abe (2014) observed a significant difference in academic performance between students taught by non-professional and professional teachers, with the latter group of students achieving better results. This indicates that teachers who possess professional qualifications and certifications tend to have a positive impact on students' academic achievement. In line with these findings, Bamidele and Adekola (2017) also reported a marked difference in academic achievement of pupils based on the qualifications of their instructors. The set of students taught by instructors holding higher qualifications demonstrated better academic performance compared to students who were taught by lower qualified teachers. These studies highlight the importance of teacher qualifications and professional training in enhancing students' academic achievement. The findings suggest that teachers with higher qualifications and professional training are better equipped to facilitate effective learning and positively influence students' academic outcomes.

According to Umar, Ahmad, and Awogbemi (2013), instructors' educational attainment in terms of their credentials is favorably correlated with the results of their students. According to Akinsolu (2010), a correlation exist between the academic performance of pupils and qualification of their teachers. According to Kanori *et al.* (2018), there are statistical correlations between information searching and e-resource use among Bachelor of Education Teacher Trainees (BEDTTs). The results showed that increasing Bachelor of Education Teacher Trainees' (BEDTTs') capacity for information seeking increased student use of online resources. Contrastingly, it was reported that the professional backgrounds of teachers did not significantly affect the academic achievement of pupils in Science, Mathematics, and Technology (SMT) subjects (Musau and Abere, 2015). According to Maphoso and Mahlo (2015), there is no conclusive link between teachers' credentials and student accomplishment. The contrast as shown above further substantiates the idea that teachers' credentials should be used in conjunction with other factors to encourage students to perform well academically. In the review of a range of previously published studies on the impact of teachers' experience on students' performance in the US, Kini & Podolsky (2016) discovered a positive correlation between the

teachers' teaching experience and increases in student success throughout the course of the career of a teacher. The increase in teacher's effective performance brought on by experience is greatest during the first few years of teaching, but they continue to be considerable when teachers enter their second and even third decades of employment. Additionally, when teachers get more experienced, their students are likelier to also improve in more success indicators, like attendance in school, in addition to learning more as seen by standardized tests.

The studies conducted by Yusuf and Dada (2016), Agbo-Egwu et al. (2017), Kadri et al. (2018), Jaime (2008), Kosoko-Oyedeko (2008), and Daso (2013) shed light on the correlation between the experience of teachers, background in education, and instructional strategies and academic achievements of students. Yusuf and Dada (2016) found that students taught by teachers with 6-15 years of experience performed better academically compared to those taught by teachers with 1-5 years of experience. This suggests that teachers' teaching experience plays a significant role in students' academic performance. Similarly, Agbo-Egwu et al. (2017) reported that schools with more teachers having over ten years of experience demonstrated better academic performance compared to schools with fewer experienced teachers. This supports the notion that more experienced teachers have a positive impact on students' academic achievement. In contrast, Kadri et al. (2018) found that there not a significant relationship between the students' performance and teachers with at least 10 years teaching experience as well as those with fewer than 10 years' experience. Their findings suggest that the years of teaching experience may not be the sole determinant of students' academic performance. Jaime (2008) reported a correlation between the teachers' degree, years of teaching experience, along with the students' performance in both math and communication arts. This implies that teachers' educational background and experience can influence students' academic outcomes. Kosoko-Oyedeko (2008) emphasized the importance of factors such as teachers' self-efficacy, training duration, and attitude toward instructional activities in influencing students' academic achievement. These findings suggest that teachers' personal characteristics and beliefs can impact their instructional effectiveness and subsequently affect students' performance. Furthermore, Daso (2013) found a strong correlation between teachers' instructional strategies and attitudes and students' math achievement. This highlights the significance of teachers' pedagogical approaches and attitudes in fostering positive academic outcomes in students. Considering the findings from these studies, it is crucial to conduct research on factors such as teachers' educational background, years of teaching experience, instructional strategies, and attitudes to gain insights into how these factors influence the academic performance of students in Basic Science in the junior secondary school pupils of Ile-Ife, Osun State. Such research can contribute to improving teaching practices and identifying areas for teacher professional development to enhance students' academic performance.

Statement of the Problem

Basic Science, as a foundation for other science courses, has had a low number of pupils performing well in it. If the variables influencing students' strong performance in the topic are not discovered and addressed, the situation will deteriorate. Meanwhile, teachers have been identified as having a significant impact on students' academic achievement as well as playing a critical part in educational attainment. However, some Basic Science teachers lack the characteristics necessary to adequately transfer knowledge to students. Therefore, the need to investigate teachers' variables such as educational background and years of teaching experience as predictors of students' academic performance in junior secondary school in Basic Science in Ile-Ife, Osun State becomes imperative. Hence, this study.

Purpose of the Study

The study investigated the correlation in the teachers' variables and academic performance of students in the junior secondary school in Basic Science in Ile – Ife, Osun State.

The specific purposes of the research are as follows:

i. to examine the correlation in teachers'

educational background and academic performance of students in junior secondary schools in Basic Science in Ile-Ife, Osun State: This objective focuses on exploring the correlation between teachers' educational qualifications, such as their degrees or certifications, and the learning outcome of students in Basic Science. The study was aimed at determining whether teachers' educational background has any significant effects on the students' learning outcome in this subject.

ii. to determine the relationship between the years of teaching experience of teachers and the learning performance of junior secondary school students in Basic Science in Ile – Ife: This objective aims to explore the association between teachers' years of experience in the teaching profession and students' subject improvement.

By addressing these objectives, the study seeks to provide insights into how teachers' educational background and years of teaching experience contribute to the student's learning performance in Basic Science in Ile-Ife, Osun State. The findings can inform educational policies and practices, teacher training programs, and professional development initiatives aimed at improving teaching effectiveness and enhancing students' learning performance in this subject.

Hypotheses

Based on the aim of this study, the following null hypotheses were developed and evaluated at a confidence level of 0.05:

I. There is no significant correction in the educational background of teachers and learning performance of pupils in Basic Science in Ile – Ife, Osun State

ii. No significant relationship exist between the years of teaching experience of teachers and the learning outcome of junior school pupils in Basic Science in Ile – Ife.

Methodology

This study utilized a descriptive correlation survey to investigate the relationship between teachers' variables and learning outcome of junior high school students in basic science in Ile-Ife. The population was consisted of all teachers of Basic Science and students in junior secondary school two (JSS II). Samples were selected using the multi-stage sampling technique. Twenty Basic Science teachers and two hundred JSS II Basic Science students were chosen as participants. The selection of the sample involved a simple random sampling procedure. Ten (10) Junior Secondary Schools were selected randomly from the chosen area, and from each selected school, two teachers and twenty students were randomly chosen to participate in the study. Data for the study were collected using two research instruments: the Basic Science Teachers Questionnaire (BSTQ) and the Previous Term Results in Basic Science (PTRBS). The BSTQ consisted of two (2) sections, with Section A gathering socio-demographic data of the teachers, while Section B comprised seven questions related to the teachers' perceptions of their traits and how they influence the students' learning performance in basic science. The PTRBS was used to assess the students' learning performance. All collected data were analyzed using various statistical measures, including percentage and frequency to describe the characteristics (distribution) of the sample, standard deviation and mean to summarize the teachers' perceptions, and Pearson Product Moment Correlation (PPMC) to examine the relationship between teachers' variables and students' academic progress in Basic Science. By employing this research design and data collection methods, the study aimed to provide a comprehensive understanding of the correlation in the teachers' variables and students' academic performance in Basic Science, with the goal of contributing valuable insights to educational practices and policies in Ile-Ife, Osun State.

Results

Table 1: Descriptive analysis of socio-demographic information of the respondents

S/N	Variables		Frequency (f)	Percentage (%)
1.	Gender			
		Male	7	35.0
		Female	13	65.0
2.	Qualifications			
		NCE/OND	3	15.0
		BSc./BSc.Ed.	10	50.0
		MSc./MSc.Ed./M.A.Ed.	6	30.0
		Others	1	5.0
3.	Years of experience			
		<10 years	10	50.0
		10-20 years	7	35.0
		>20 years	3	15.0

N = 20

Table 1 shows the socio-demographic data of the Basic Science teachers used for the study. It can be gathered that 35.0% of them are males while 65.0% are females even as 15.0%, 50.0%, 30.0% and 5.0% of the teachers are qualified educationally with NCE/OND, BSc./BSc.Ed., MSc./MSc.Ed./M.A.Ed. and others respectively. Considering years of teaching experience, 50.0% have taught Basic Science for less than 10 years, 35.0% have taught the subject for 10-20 years and 15.0% have taught the subject for more than 20 years.

Hypothesis One:

There was no significant relationship between teachers' educational background and the academic achievement of JSSII students in basic science in Ile-Ife, Osun State.

This hypothesis was tested using data on students' learning performance in Basic Science with the teachers' educational backgrounds. Students' scores were used as the dependent variable and teachers' educational backgrounds were used as the independent variable. Table 2 presents the outcomes.

Table 2: Pearson Product Moment Correlation between teachers' educational background and JSSII students' academic performance in Basic Science

Groups	N	Mean	SD	r	Sig.(2-tailed)	Remark
TEB	20	12.50	2.55	0.775	.002	Significant
AA	200	16.32	6.72			

($r = 0.775$; $p < 0.05$)
Teachers' Educational Background (TEB)
Academic Achievement (AA)

According to the result in Table 2, it was determined that in Ile-Ife, JSSII pupils' academic performance in Basic Science is significantly correlated to the instructors' educational backgrounds. A high positive association between these variables is indicated by the correlation coefficient (r) value of 0.775. The statistical significance of this link is suggested by the p-value of <0.05. Hence, the null hypothesis, that no significant relationship exist between teachers' educational background and junior secondary school students' academic achievement in Basic Science in Ile-Ife is rejected. This results indicate that teachers' educational background plays a predictive role in the academic performance of JSSII students in Basic Science in our study area. These findings highlight the importance of teachers' educational qualifications in influencing students' academic outcomes in Basic Science. It suggests that teachers with higher educational backgrounds are more likely to contribute to students' improved performance in the subject. These results have implications for educational policies and

practices, emphasizing the need to prioritize teachers' qualifications and ensure that they are adequately trained and equipped to effectively teach Basic Science to JSS students in Ile-Ife.

Hypothesis Two:
No statistical significant correlation exists in the number of years of teaching experience of teachers and the learning outcome of JSSII students in basic science subjects in Ile – Ife.

The hypothesis was tested using data on the learning performance of students in Basic Science and teachers' educational backgrounds. Students' scores were used as the dependent variable and teachers' educational backgrounds were used as the independent variable. Table 3 presents the outcomes.

Table 3: Pearson Product Moment Correlation between teachers' years of teaching experience and the academic performance of JSS students in Basic Science in Ile – Ife

Groups	N	Mean	SD	r	Sig.(2-tailed)	Remark
TYTE	20	11.79	2.25	0.704	.005	Significant
AA	200	16.32	6.72			

($r = 0.704$; $p < 0.05$)
Teachers' Years of Teaching Experience (TYTE)
Academic Achievement (AA)

Based on the results shown in Table 3, we observed a marked association between the years of teaching experience of teachers and the performance of high school students in the basic sciences of their disciplines. A correlation coefficient (r) value of 0.704 indicates a moderate correlation in these predictors. A less than 0.05 p-value suggests that this relationship is significant. As such, the null hypothesis that no significant association exists between the years of teaching experience of teachers in Ile-Ife, Osun State and the academic performance of students in basic sciences was rejected. The results show that the years of teaching experience of teachers predict the academic performance of junior high school students in the basic sciences of their field of study. These findings suggest that teachers with higher years of teaching experience are more likely to contribute to students' improved performance in Basic Science. It implies that the accumulated knowledge, skills, and pedagogical expertise gained through years of teaching experience have a positive effect on students' academic learning outcomes in the subject. This underscores the importance of experienced teachers in promoting effective learning and academic success in Basic Science. The results have implications for teacher recruitment, professional development, and retention policies. It highlights the value of providing opportunities for teachers to gain teaching experience and continuously improve their instructional practices. By investing in the professional growth of teachers, schools and educational authorities can enhance the quality of education and promote better academic achievement among JSS students in Basic Science in Ile –Ife.

Discussion of Findings
The study's conclusions are consistent with earlier studies and lend support to the notion that teachers' educational backgrounds and years of teaching experience are significantly related to the academic success of JSS students in Basic Science. The outcomes are in line with those of Umar, Ahmad, and Awogbemi (2013) as well as Akinsolu (2010), who also found a favorable relationship between teachers' credentials and students' academic achievement. This shows that teachers with more education have a greater chance of influencing students' outcomes for the better. Similar findings were made by Kanori, Amollo, and Inyega (2018), who discovered a statistical correlation between teacher candidates' information-searching prowess and their use of online resources. This finding suggests that enhancing instructors' information-searching abilities can increase students' use of educational resources. It is important to note, however, that neither Maphoso and Mahlo (2015) nor Musau and Abere (2015) reported any evidence of a substantial impact of instructors' professional backgrounds on students' academic performance in science, technology and mathematics. These

contrasting results indicate that teachers' qualifications should be considered alongside other factors to achieve favorable academic performance among students. Regarding teachers' years of teaching experience, the study's findings are in line with Agbo-Egwu et al. (2017) and Yusuf and Dada (2016) who both observed a significant difference in student achievement based on teachers' teaching experience. Students taught by teachers with 6-15 years of experience or more outperformed those taught by teachers with 1-5 years of experience. On the other hand, Kadri, Alwi, and Hashim (2018) did not find a significant correlation in students' performance and teachers with 10 or more years of experience and those with less than 10 years.

Conclusion

The study's conclusion states that both teachers' educational background and years of teaching experience have predictive value for JSS students' academic achievement in Basic Science in Ile-Ife. This means that students' learning performance in the subject is influenced by the qualifications of their teachers and the amount of teaching experience they possess. The findings of the study support the idea that teachers' educational background and teaching experience are important factors in determining students' academic success. It implies that teachers with higher educational qualifications and more years of teaching experience are more likely to significantly contribute to students' learning outcomes in basic science. By acknowledging the significance of teachers' educational background and teaching experience, policymakers and educational institutions can focus on strategies to enhance teacher qualifications and provide opportunities for professional development. This can include encouraging teachers to pursue higher degrees, providing ongoing training and support, and creating an environment that values and rewards teaching experience. The study's conclusion emphasizes the importance of investing in the quality and expertise of teachers as a means to enhance students' academic achievement in Basic Science.

Recommendations

Based on the outcome of the investigation, the following suggestions were made:

i. Stakeholders, including governments and parents should focus on improving the commitment and dedication of teachers in rural schools. Efforts should be made to create conducive learning environments for students in these schools, without neglecting the needs of students in other schools.
ii. The governments together with professional bodies like the Teachers' Registration Council of Nigeria (TRCN) should prioritize making teaching a noble profession. This can be achieved by implementing stricter regulations that restrict the entry of non-qualified applicants based on their certificates during the recruitment process.
iii. Employers, especially those in the education sector, should reconsider their emphasis on years of working experience when filling positions. Instead, they should prioritize applicants with relevant qualifications and prerequisite skills that can be acquired through training and education.
iv. Both Non-government and governmental organizations should organise regular on-the-job training, seminars, workshops, and other professional development programs for teachers. These initiatives will help teachers upgrade their skills and knowledge, keeping them abreast of the latest teaching methodologies and practices.

Implementing these recommendations can contribute to the improvement of teachers' commitment, professionalism, and effectiveness in the classroom. Ultimately, it will lead to enhanced educational outcomes and better academic achievement for junior secondary school students in Basic Science in Ile-Ife.

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