Teachers' Years of Teaching Experience as Determinant of Students' Academic Performance in Basic Science in Secondary Schools in Ado Local Government Area of Ekiti State, Nigeria

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Abstract
This study investigated the influence of teachers' years of teaching experience on students' academic performance in Basic Science in secondary schools within Ado Local Government Area of Ekiti State. A descriptive survey research design was employed. The population comprised all Basic Science teachers and Junior Secondary School Three (JSS3) students in 15 public secondary schools in the area. A purposive sampling technique was used to select 150 students and 30 Basic Science teachers—ten students and two teachers from each school. Data were collected using a self-designed questionnaire consisting of bio-data and Likert-scale items assessing the impact of teacher experience, quality, and methodology on student performance. Face and content validity were ensured by experts, while the reliability of the instrument was established using a test-retest method, yielding a correlation coefficient of 0.80. Data were analyzed using descriptive statistics (frequency, percentage, mean, standard deviation, and graphs) and inferential statistics, specifically Univariate Analysis of Variance (ANOVA), to test hypotheses at a 0.05 significance level. it was concluded that more than half of the Basic Science teachers in Ado Local Government Area are experienced, having taught for at least five years. Teachers' years of experience do not significantly influence students' academic performance in Basic Science. It was recommended among others that Policy makers should prioritize teacher retention strategies, including competitive salaries, attractive benefits, and continuous professional development programs.

Keywords: Teachers, Teachers' Years of Teaching Experience, Level of Experience, Academic performance, Basic Science

Introduction

Basic science serves as a foundational subject in the education system, particularly at the primary and junior secondary school levels. It encompasses core scientific concepts from biology, chemistry, physics, and earth science, providing learners with the necessary skills for scientific inquiry and critical thinking. The importance of basic science in fostering scientific literacy and innovation cannot be overemphasized, especially in a rapidly advancing, technology-driven world. The quality of basic science education is directly linked to the competence and experience of the teachers who deliver it. Teachers are central to curriculum implementation, classroom management, and the creation of effective learning environments. Their pedagogical skills, content knowledge, and ability to motivate students significantly influence student performance and interest in science. Basic Science remains a fundamental component of early education, serving as the cornerstone for developing scientific literacy, inquiry skills, and critical thinking abilities among learners. As a multidisciplinary subject that introduces students to foundational concepts in biology, chemistry, physics, and earth science, Basic Science plays a crucial role in preparing students for advanced STEM education and fostering interest in science-related careers. (Darling-Hammond, 2017; Kraft & Papay, 2014).

The quality of education in any country is greatly influenced by the effectiveness of its teachers. Among the many factors that contribute to teacher effectiveness, years of teaching experience play a crucial role. Teaching experience can impact not only the delivery of instructional content but also classroom management, assessment strategies, and student engagement. In the context of Basic Science at the primary and junior secondary levels, the role of experienced teachers becomes even more significant due to the foundational nature of the subject in promoting scientific literacy and inquiry-based learning. The quality of instruction in Basic Science significantly influences students' academic achievement, engagement, and long-term orientation toward science. At the heart of effective science instruction are teachers—whose experience, pedagogical knowledge, and professional growth shape the learning environment. Recent research continues to underscore the critical role that teaching experience plays in enhancing student outcomes, particularly in science education (Darling-Hammond, 2017; Schmidt et al., 2019).

Experienced teachers bring with them refined classroom management skills, a deeper understanding of curriculum content, and the ability to adapt instructional strategies to suit diverse learners. According to Darling-Hammond (2017), years of teaching enable educators to better implement inquiry-based approaches, promote hands-on learning, and simplify complex scientific concepts in ways that enhance student comprehension. Furthermore, Kraft and Papay (2014) affirm that while the most substantial gains in teaching effectiveness often occur in the early years of practice, continued experience—especially when supported by positive professional environments—yields ongoing improvements in student performance.

In Basic Science classrooms, where practical engagement, observation, and experimentation are essential, experienced teachers are often more adept at utilizing instructional materials, integrating technology, and facilitating active learning. Hattie (2015) highlights that such teachers are better positioned to maximize the impact of teaching tools and resources, thus making abstract science concepts more accessible and meaningful to students.

Nevertheless, teaching experience alone does not automatically translate to high instructional quality. The dynamic nature of science education—with evolving curricula, pedagogical innovations, and advances in educational technology—requires teachers to continuously update their knowledge and skills. Opfer and Pedder (2011) argue that sustained professional learning and reflective practice are necessary for teachers to remain effective over time. Similarly, Wilson et al. (2018) stress that pedagogical content knowledge—especially the ability to connect scientific principles to students' real-life experiences—is a critical factor in effective science teaching.

Curriculum reforms globally, including those guided by the National Research Council (2018), emphasize active learning, critical thinking, and scientific literacy. These reforms challenge teachers to go beyond traditional lecture-based methods, underscoring the importance of both experience and continuous professional development in delivering high-quality Basic Science education.

In many education systems—particularly in developing regions—Basic Science instruction still faces significant hurdles. These include shortages of qualified science teachers, inadequate laboratory facilities, and limited access to professional training. As a result, even experienced teachers may struggle to fully implement student-centered and inquiry-based approaches, thereby limiting the potential impact of their experience on learning outcomes.

Given this context, it becomes imperative to investigate the extent to which teaching experience influences the teaching and learning of Basic Science. Understanding this relationship can provide valuable insights for teacher recruitment, training, and support policies. Moreover, such understanding can inform classroom practices and systemic reforms that enhance science education and promote better academic outcomes for students.

However, research findings on the relationship between teacher experience and student academic achievement have been mixed. Some studies suggest that teacher effectiveness increases significantly during the first few years of teaching and plateaus afterward. Others argue that experience consistently enhances teaching quality over time. In many educational systems, especially in developing countries, concerns also arise regarding the equitable distribution of experienced teachers, particularly in rural or under-resourced schools.

This study aims to investigate the relationship between teachers' years of experience and students' academic performance in Basic Science. By exploring this relationship, the research seeks to inform educational policy, teacher recruitment and placement strategies, and professional development programs. Understanding whether and how teaching experience influences student outcomes in Basic Science can contribute to improving the quality of science education and, ultimately, student achievement in the subject.

The study investigated teachers' years of experience as determinant of students' academic performance in Basic Science in Secondary Schools in Ado Local Government Area of Ekiti State

Research Question

This research question was raised the guide the study

1. What is the level of experience of Basic Science teachers in secondary schools in Ado Local Government Area of Ekiti State?

Research Hypothesis

This research hypothesis was generated for the study.

1. There is no significant effect of teachers' years of experience on their students' academic performance in Basic Science in Secondary schools in Ado Local Government Area of Ekiti State.

Method

This study adopted a descriptive survey research design, which allowed the researcher to investigate the impact of teachers' years of teaching experience on students' academic performance in Basic Science in secondary schools within Ado Local Government Area of Ekiti State. The population for this study comprised all Basic Science teachers and Junior Secondary class three (JSS 3) students across fifteen public secondary schools in the area. A sample of 30 Basic Science teachers and 150 students was selected using a purposive sampling technique. Specifically, two teachers and ten students were selected from each of the fifteen

schools. The instrument used for data collection was a self-designed questionnaire titled: Teachers' Years of Experience as a Determinant of Students' Performance in Basic Science. The questionnaire was divided into two sections: Section A: Contained four items on students' bio data while Section B: Comprised twenty items related to teachers' experience, teaching quality, and methodologies, measured using a 4-point Likert scale: Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD). To ensure face and content validity, experts in Basic Science reviewed the instrument to correct spelling errors, improve clarity, and adjust language readability. The reliability of the instrument was determined using the test-retest method. It was administered to five Basic Science teachers and fifty JSS 3 students in five schools outside the study area. After two weeks, the same instrument was re-administered to the same respondents. The responses were analyzed using Pearson's Product Moment Correlation, yielding a reliability coefficient of 0.80, indicating a high level of consistency. Data collected were analyzed using both descriptive and inferential statistics: Descriptive statistics such as frequency counts, percentages, mean, standard deviation, and bar charts. Inferential statistics of Univariate Analysis of Variance (ANOVA) was used to test hypotheses at the 0.05 significance level.

Results

Research Question

Question 1: What is the level of experience of Basic Science teachers in secondary schools in Ado Local Government Area of Ekiti State?

Table 1: Frequency and Percentage Analysis of Basic Science Teachers' Experience

Experience	**1 – 4 Years**	**5 – 10 Years**	**11 – 15 Years**	**Above 15 Years**	**Total**
No of teachers	-	11	13	6	**30**
Percentage	-	36.7	43.3	20.0	**100**

The table showed that none of the sampled Basic Science teachers have taught Basic Science at the Junior Secondary school level between 1-4 years while 11 (36.7%) taught between 5 – 10 years and 13 (43.3%) taught between 11 – 15 years. It was revealed that 6 (20.0%) taught Basic Science at the Junior Secondary school level above 15 years. Therefore, most of the teachers teaching Basic Science are experienced teachers as all of them had put in at least 5 years in teaching. This was in agreement with the recommended standard by the Federal Ministry of Education. Figure ii further revealed the analysis of Basic Science teachers based on their experience.

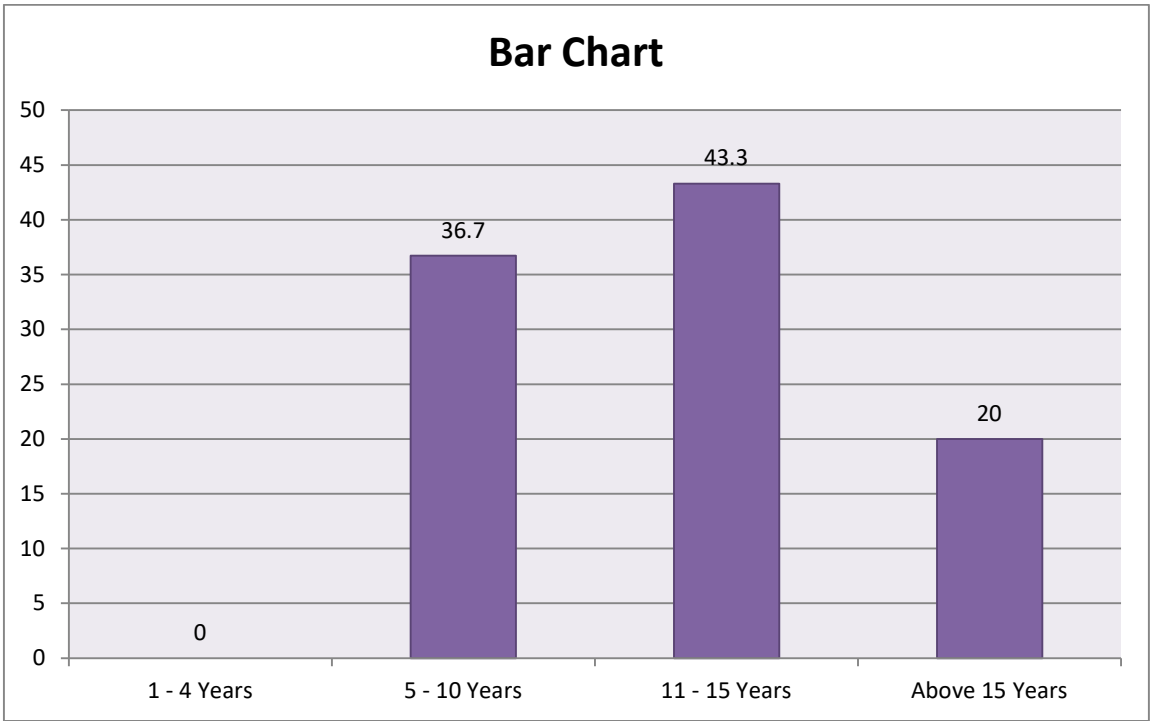

Figure i: Bar Chart showing Basic Science Teacher's Experience

Testing of Hypothesis

Hypothesis 1: There is no significant effect of teachers' years of experience on their students' academic performance in Basic Science in secondary schools in Ado Local Government Area of Ekiti State.

Table 2: Two-way Analysis of Variance (ANOVA) for influence of teachers' teaching experience on academic performance of students.

Source	Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	3029.496[a]	5	605.899	125.360*	.000
Intercept	254931.616	1	254931.616	52744.929*	.000
Teachers' Experience	8.551	2	4.275	.885	.414
Performance	2257.454	1	2257.454	467.064*	.000
Teachers' Experience * Performance	.592	2	.296	.061	.941
Error	695.952	144	4.833		
Total	**344715.000**	**150**			
Corrected Total	**3725.448**	**149**			

a. R Squared = .704 (Adjusted R Squared = .698) * P < 0.05

From the table above, the F-value for teachers' experience is 0.885, with a p-value of 0.414, which is greater than 0.05. Also, the interaction effect (Experience * Performance) has a p-value of 0.941. Therefore, the null hypothesis is retained, indicating that teachers' years of

experience do not have a statistically significant effect on students' academic performance in Basic Science.

Discussion

The study revealed that most of the Basic Science teachers were experienced in teaching Basic Science at the junior secondary school level. This implies that a high percentage of the teachers teaching Basic Science had invested many years in the profession. This finding aligns with those of Ajayi (2007) and Adeyemi (2008), who reported a high proportion of experienced teachers in Nigerian secondary schools. Recent studies continue to affirm this trend; for instance, Ibrahim and Lawal (2022) found that the majority of Basic Science teachers in public secondary schools across southwestern Nigeria have over ten years of teaching experience, suggesting continuity in teacher retention and experience levels.

Another major finding of this study is that teachers' teaching experience has a significant influence on the academic performance of students. This result supports the finding of Zuelke (2008), who concluded that teachers' experience does not necessarily predict students' academic performance. However, it contradicts the findings of Rice (2003) and Olaleye (2011), who argued that teacher experience significantly affects student achievement. More recently, Okeke and Bassey (2021) examined this dynamic and concluded that while teaching experience enhances classroom management and subject delivery, its direct correlation with students' academic performance is often mediated by other factors such as teaching methodology and instructional resources.

Conclusion

Sequel to the findings of this study, it was concluded that more than half of the Basic Science teachers in Ado Local Government Area are experienced, having taught for at least five years. Teachers' years of experience do not significantly influence students' academic performance in Basic Science. This suggests that other factors beyond teaching experience, such as teaching methods, student engagement, curriculum content, and classroom environment, may have greater influence on student outcomes.

Recommendations

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

1. Policy makers should priotize teacher retention strategies such as competitive salaries, benefits and professional development opportunities
2. Government should establish comprehensive induction programs to support new teachers
3. Teachers performance evaluation should be taken into account in order to evaluate their year of teaching experience, as well as other factors like students growth and teacher effectiveness.
4. Basic Science teachers should be mentored by the experienced teachers so as to ensure good students' academic performance in Basic Science.

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