

# Teachers' Teaching Experience and Secondary School Students' Performance in Science Subjects in Ondo State, Nigeria

**AUTHOR(S):** FATOBA, JOSEPH OBA (Ph.D.),  
AKINNODI, OLADAMOLA DICKSON,  
ADELEYE, ADEMOLA MOFFY (Ph.D.),  
**AND**  
OLOFIN, SAMUEL OLUWASEYI (Ph.D.)

## Abstract

The study examined teachers' teaching experience and secondary schools' performance in science subjects in Ondo state, Nigeria. The study specifically examined how teachers are distributed on the basis of teaching experience in the selected public secondary schools in Ondo state. The study also examined the influence of Biology, Chemistry and Physics teachers' years of experience on students' performance. The descriptive research design of the survey type and ex-post facto were adopted in this study. The population for the study consisted of all 1805 science teachers in public secondary schools in Ondo state. The sample for the study was 180 science teachers selected in Ondo State using multistage sampling procedure. The instruments that were used for this study are inventories. The first instrument was an inventory which sought for the teaching years of experience and science subject taught. The second instrument was an inventory on Senior Secondary School Certificate Examination results. The responses obtained were collated and analysed using descriptive statistics while the hypotheses were subjected to inferential statistics of Univariate analysis of Variance at 0.05 level of significance. The findings revealed that the performance of students in Biology was

**IJARBAS**Accepted 24 June 2020  
Published 30 June 2020  
DOI: 10.5281/zenodo.3928822

not determined by teachers' experience in public secondary schools in Ondo State but their performance in Chemistry and Physics were determined by teachers' experience. It was recommended among others that Government should make sure teachers with required experience are allowed to teach science subjects in schools as this would go a long way in improving the performances of the students' in external examinations.

**Keywords:** Teachers, Teaching Experience, Students, Performance, Science Subjects,

**About Author**

Author(s):

**FATOBA, JOSEPH OBA (Ph.D.)**

Department of Science Education,  
Faculty of Education, Ekiti State University, Ado – Ekiti, Nigeria.

**AKINNODI, OLADAMOLA DICKSON**

Department of Science Education,  
Faculty of Education, Ekiti State University, Ado – Ekiti, Nigeria.

**ADELEYE, ADEMOLA MOFFY (Ph.D.)**

Department of Science Education,  
Faculty of Education, Ekiti State University, Ado – Ekiti, Nigeria.

AND

**OLOFIN, SAMUEL OLUWASEYI (Ph.D.)**

Department of Science Education,  
Faculty of Education, Ekiti State University, Ado – Ekiti, Nigeria.



## Introduction

Science has developed to be one of the greatest and most influential fields of human endeavour. Different branches of science investigate almost everything that can be observed or detected and science as a whole, shape the way we understand the universe, planet, ourselves and other living things (Ogunleye & Adepeju, 2011). Science has become an integral part of human culture.

Science is the bedrock on which modern day technological breakthrough is hinged. Since science is the bedrock that offers sustainable national development by protecting human societies from ignorance, illiteracy, disease and poverty (Omotayo, 2011). Science education is therefore a veritable tool for scientific and technological advancement of any nation. This fact is enshrined in the National Policy on Education of the Federal Republic of Nigeria (FRN, 2014) which states that science education should among other things equip students to live effectively in the modern age of science and technology. The policy also emphasized that science teaching and learning are viable instruments for inculcating necessary scientific knowledge, skills and competencies.

Science subjects are Biology, Chemistry and Physics. These subjects play important role in the development of a nation. The Contribution of core science subjects to industrialization of the world in general and Nigeria in particular have been felt on all phases of human life (Adaramola & Obomanu, 2011). The knowledge of science subjects has played an important role in the improvement of the quality of life, economic growth and transformation of the society. For a nation that wants to achieve rapid technological development, academic performance in core science subjects might be key.

Biology, Chemistry and Physics are core subjects in sciences. Science prepares learners for professional careers in such fields as medicine, bio-technology, agriculture and pharmacy. This implies that science subjects are needed for higher education in virtually all the science related professions such as Medicine, Pharmacy, Agriculture, Engineering, food and nutrition. Therefore, the essence of appropriate conception of concepts related to science is of a very great significance.

When one examines the senior secondary school Biology results, particularly in Ondo state, in the last nine years (2009-2017), one finds out that the results were generally poor. For instance, an analysis from Ondo State Ministry of Education has shown that in 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016 and 2017, only 34.37%, 35.09%, 32.11%, 38.85%, 29.38%, 35.09%, 39.31%, 42.54% and 44.19% respectively, obtained credit pass and above in Biology.

When one examines the senior secondary school Chemistry results, particularly in Ondo state, in the last nine years (2009-2017), one finds out that the results were generally poor. For instance, an analysis from Ondo State Ministry of Education has shown that in 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016 and 2017, only 34.12%, 32.01%, 30.82%, 31.04%, 29.17%, 33.12%, 32.12%, 34.03% and 38.29% respectively, obtained credit pass and above in Chemistry. Their performance in Physics seems to follow the same trend in the last nine years (2009-2017). For instance, an analysis from Ondo State Ministry of Education has shown that in 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016 and 2017, only 35.22%, 27.41%, 28.12%, 33.45%, 30.93%, 31.50%, 29.25%, 31.01% and 37.19% respectively, obtained credit pass and above in Physics.

From the data presented above, it can be seen that from 2009 to 2017, the percentage of candidates that passed Biology, Chemistry and Physics at credit level and above in Ondo State was below 40%. Thus, the results showed candidates' poor achievement in science

subjects in all the years under review (2009 - 2017). Thus, a large number of the students did not perform well. One wonders whether it is because of lack of infrastructural facilities, the teaching methods in use or characteristics of the teacher.

In most of the schools visited by the researcher, he observed that one of the most important factors influencing students learning could be the teacher. Teacher could stand in the interface of the transmission of knowledge, values and skills. Therefore, in the learning process, if the teacher is ineffective, students under the teacher tutelage will achieve inadequate progress academically. This is regardless of how similar or different the student is in terms of individual potential in academic achievement.

Teaching experience is also as important as the teacher. According to Bamidele and Adekola (2017) experience serves to nourish teachers through exposure to training, rearing, and upbringing and socialized them into teaching the culture that translates into good pedagogic technique and problem-solving strategies required of physics students. Ewetan and Ewetan (2015) observed that teachers with long experience use better classroom management approaches and adequate teaching methods that encourage students' autonomy and reduce teacher control, thus taking responsibility for students learning needs, managing classroom problems and keeping students on tasks.

The issue of teachers' experience as a factor that affects students' academic performance in Science has received a lot of attention in the literature and findings have been mixed and inconclusive. Teacher's teaching experience appears to have a significant effect on students' academic performance in Science. Experienced Science teachers seem to have a richer background of experience to draw from and can contribute insight and ideas to the course of teaching and learning, are open to correction and are less dictatorial in classroom. Ewetan and Ewetan (2015) commented that a professional becomes more efficient and more effective as he stays longer on his profession by learning more and more on the job, learn more about the difficulties students encounter while learning.

Considering the aforementioned, this study intends to investigate teachers' teaching experience and secondary schools' performance in science subjects (Biology, Chemistry and Physics) in Ondo state, Nigeria. The study specifically examined:

- i. how teachers are distributed on the basis of teaching experience in the selected public secondary schools in Ondo state;
- ii. the influence of Biology teachers' years of experience on students' performance in Biology;
- iii. the influence of Chemistry teachers' years of experience on students' performance in Chemistry; and
- iv. the influence of Physics teachers' years of experience on students' performance in Physics.

### Research Question

This research question was raised to guide the study:

1. How are the teachers distributed on the basis of teaching experience in the selected public secondary schools in Ondo state?

### Research Hypotheses

The following null hypotheses were generated for this study:

1. Biology teachers' years of experience will not significantly influence students' performance in Biology in public secondary schools in Ondo State
2. Chemistry teachers' years of experience will not significantly influence students' performance in Chemistry in public secondary schools in Ondo State

3. Physics teachers' years of experience will not significantly influence students' performance in Physics in public secondary schools in Ondo State

### Methodology

The descriptive research design of the survey type and ex-post facto were adopted in this study. The population for the study consisted of all science teachers totaling 1805 which comprises of 452 Biology teachers, 698 Chemistry teachers and 655 Physics teachers in public secondary schools in Ondo state. The sample for the study was 180 science teachers selected in Ondo State using multistage sampling procedure.

The instruments that were used for this study are inventories. The first instrument was an inventory which sought for the teaching years of experience and science subject taught. The second instrument was an inventory on Senior Secondary School Certificate Examination results. The inventory was used to obtain students' results in science subjects namely Biology, Chemistry and Physics at West African Senior School Certificate Examination in May/June of 2014/2015, 2015/2016, 2016/2017 and 2017/2018 sessions.

The face and content validity of the instruments was ensured only by experts of Tests and Measurement. The expert determined its face and content to ensure the appropriateness of the instruments in measuring what they are supposed to measure. This study is a one short-case study of teachers' experience and previous students' scores of subjects which was collected from the schools under study. The results are already standardized by the external examining body and the reliability was not necessary.

The responses obtained were collated and analysed using descriptive statistics of frequency counts, percentages, mean standard deviation and graphs, while the hypotheses postulated were subjected to inferential statistics of Univariate analysis of Variance. All hypotheses were tested at 0.05 level of significance.

### Results

**Research Question 1:** How are the teachers distributed on the basis of teaching experience in the selected public secondary schools in Ondo state?

**Table 1:** Frequency count and Percentage of teachers' distribution on the basis of teaching experience

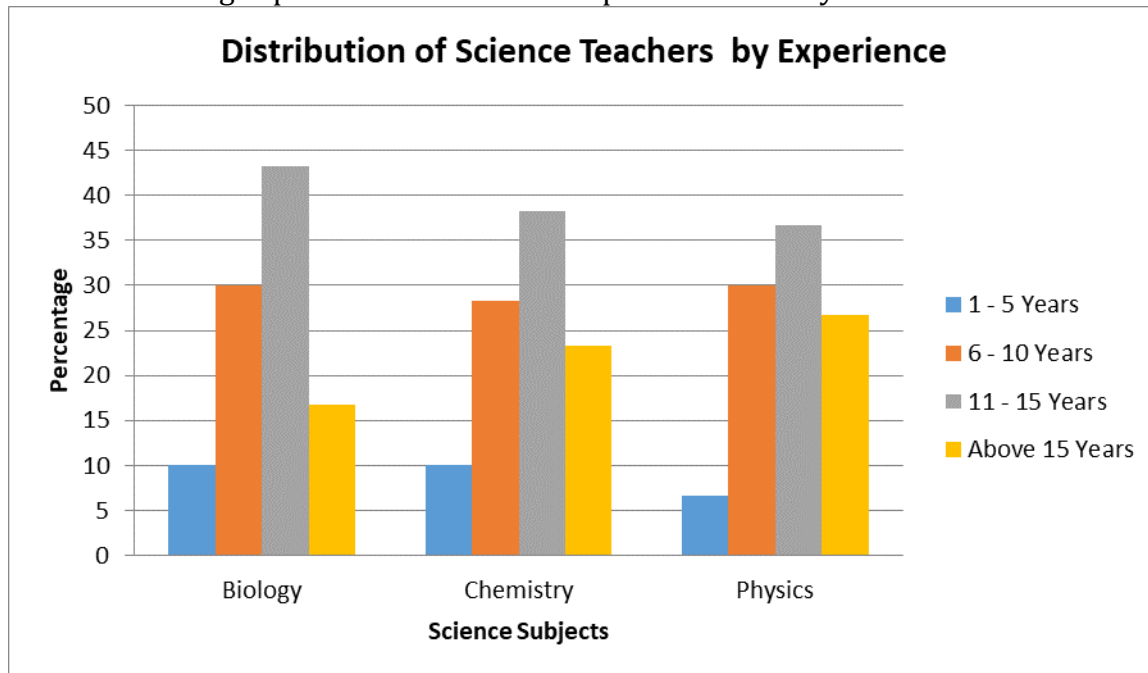
Years of Experience	Biology	%	Chemistry	%	Physics	%
1 - 5	6	10.0	6	10.0	4	6.7
6 - 10	18	30.0	17	28.3	18	30.0
11 - 15	26	43.3	23	38.3	22	36.7
16 Years and above	10	16.7	14	23.3	16	26.7
<b>Total</b>	<b>60</b>	<b>100</b>	<b>60</b>	<b>100</b>	<b>60</b>	<b>100</b>

Table 1 revealed the frequency count of teachers' distribution on the basis of teaching experience in the selected public secondary schools in Ondo state. The table revealed that Biology teachers with 1 - 5 years' experience were 6(10%), those with 6 - 10 years' experience were 18(30%), while those with 11 - 15 years' experience were 26(43.3%) and those who are above 15 years' experience were 10(16.7%).

The table also revealed that Chemistry teachers with 1 - 5 years' experience were 6(10%), those with 6 - 10 years' experience were 17(28.3%), while those with 11 - 15 years' experience were 23(38.3%) and those who are above 14 years' experience were 10(23.3%). The table further revealed that Physics teachers with 1 - 5 years' experience were 4(6.7%),

those with 6 – 10 years' experience were 18(30.0%), while those with 11 – 15 years' experience were 22(36.7%) and those who are above 14 years' experience were 16(26.7%).

The graph below further shows the frequency count of teachers' distribution on the basis of teaching experience in the selected public secondary schools in Ondo state



**Figure i:** Bar Chart showing Percentage of teachers' distribution on the basis of teaching experience

### Testing of Hypotheses

**Hypothesis 1:** Biology teachers' years of experience will not significantly influence students' performance in Biology in public secondary schools in Ondo State

**Table 2:** Two-way Analysis of Variance (ANOVA) of Biology teachers' years of experience on students' performance in Biology

Source	Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	4.336 <sup>a</sup>	6	.723	47.251*	.000
Intercept	295.730	1	295.730	19335.652*	.000
Biology Teachers' Years of Experience	.035	2	.018	1.159	.322
Biology Performance	1.141	1	1.141	74.631*	.000
Biology Teachers' Years of Experience*Biology Performance	.012	2	.006	.391	.678
Error	.811	53	.015		
<b>Total</b>	441.144	60			
<b>Corrected Total</b>	5.147	59			

a. R Squared = .842 (Adjusted R Squared = .825)

Table 2 shows that the F-cal value of 0.391 is not significant because the P value (0.678) > 0.05. This implies that the null hypothesis is not rejected. Hence, Biology teachers'



years of experience have no significant influence on students' performance in Biology in public secondary schools in Ondo State.

**Hypothesis 2:** Chemistry teachers' years of experience will not significantly influence students' performance in Chemistry in public secondary schools in Ondo State

**Table 3:** Two-way Analysis of Variance (ANOVA) of Chemistry teachers' years of experience on students' performance in Chemistry

Source	Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	6.710 <sup>a</sup>	5	1.342	105.332*	.000
Intercept	268.540	1	268.540	21076.971*	.000
Chemistry Teachers' Years of Experience	.037	3	.012	.979	.410
Chemistry Performance	.613	2	.307	24.074*	.000
Chemistry Teachers' Years of Experience* Biology Performance	.101	2	.051	3.923*	.001
Error	.688	52	.013		
<b>Total</b>	<b>392.566</b>	<b>60</b>			
<b>Corrected Total</b>	<b>7.499</b>	<b>59</b>			

a. R Squared = .907 (Adjusted R Squared = .898)

Table 3 shows that the F-cal value of 3.923 is significant because the P value (0.001) < 0.05. This implies that the null hypothesis is rejected. Hence, Chemistry teachers' years of experience have significant influence on students' performance in Chemistry in public secondary schools in Ondo State.

**Hypothesis 3:** Physics teachers' years of experience will not significantly influence students' performance in Physics in public secondary schools in Ondo State

**Table 4:** Two-way Analysis of Variance (ANOVA) of Physics teachers' years of experience on students' performance in Physics

Source	Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	7.286 <sup>a</sup>	8	.911	61.590*	.000
Intercept	256.534	1	256.534	17347.443*	.000
Physics Teachers' Years of Experience	.048	3	.016	1.089	.362
Physics Performance	3.802	2	1.901	128.550*	.000
Physics Teachers' Years of Experience* Biology Performance	.176	3	.059	3.933*	.001
Error	.754	51	.015		
<b>Total</b>	<b>411.248</b>	<b>60</b>			
<b>Corrected Total</b>	<b>8.141</b>	<b>59</b>			

a. R Squared = .906 (Adjusted R Squared = .891)

Table 4 shows that the F-cal value of 3.933 is significant because the P value (0.001) < 0.05. This implies that the null hypothesis is rejected. Hence, Physics teachers' years of experience have significant influence on students' performance in Physics in public secondary schools in Ondo State.

### Discussion

The findings of the study revealed that Biology teachers' years of experience did not significantly influenced students' performance in Biology in public secondary schools in Ondo State. This result supports the finding of Zuelke (2008) and Olofin (2020) who concluded that teachers' experience has no influence on students' academic performance while it contradicted the findings of Olaleye (2011) as they concluded that teachers' experience has significant influence on students' academic performance.

However, the study revealed that Chemistry teachers' years of experience significantly influenced students' performance in Chemistry in public secondary schools in Ondo State. The reason for this finding might be because experienced Chemistry teachers are considered to be more able to concentrate on the most appropriate way to teach particular topics that involved much technicalities to students. This finding is in consonance with the findings of Ewetan and Ewetan (2015) as they concluded that teachers' experience has significant influence on students' academic performance.

The study also revealed that Physics teachers' years of experience significantly influenced students' performance in Physics in public secondary schools in Ondo State. This finding might be due to the fact that the more the teachers know about students, the better the teachers can connect with them and the more likely they will be able to benefit from the teachers' experience in reconstructing their world. The result is line with Bamidele and Adekola (2017) who found significant difference in the achievement of students taught by long time experienced teachers and short time experience teachers.

### Conclusion

Sequel to the findings of this study, it is concluded that the performance of students in Biology is not determined by teachers' experience in public secondary schools in Ondo State but their performance in Chemistry and Physics are determined by teachers' experience.

### Recommendations

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

1. Government should ensure that teachers with required experience are allowed to teach science subjects at senior classes in schools as this would go a long way in improving the performances of the students' in external examinations.
2. Teachers who teach science should ensure they garner requisite experience that would improve teaching and learning process with the aim of improving students' performances in Science subjects.

### References

- Adaramola, M.O and Obomanu, B.J (2011). Factors Related to Under Achievement in Science, Technology and Mathematics Education (STME) in Secondary Schools in Rivers State, Nigeria. *World Journal Education* 1(1)102-109
- Bamidele, A.D. and Adekola, F.F. (2017). Effects of teacher's qualifications and teaching experience on students' academic achievement in Basic Science in junior secondary school. *International Journal of Education and Evaluation*, 3(2), 1 – 9



- Ewetan, O.O and Ewetan, O.T, (2015). Teachers' Teaching Experience and Academic Performance in Mathematics and English Language in Public Secondary Schools in Ogun State, *Nigeria International Journal of Humanities Social Sciences and Education* 2(2), 123-134
- Federal Republic of Nigeria (2004). *National Policy on Education*. Lagos: Nigerian Educational Research and Development Council Press.
- Ogunleye, B.O & Adepeju O.F (2011). Everyday phenomena in physics education: Impact on male and female students' achievement, attitude and practical skills in urban and peri-urban settings in Nigeria. *Pakistan Journal of Social Sciences*. 8(6) 316 – 324.
- Olaleye F.O (2011). Teacher characteristics as Predictor of Academic Performance of Students in Secondary Schools in Osun State – Nigeria. *European Journal of Education Study*. 3(3), 505 -511.
- Olofin, S.O. (2020). Effect of Kolawole's Problem-Solving Teaching Strategy and Teachers' Characteristics on the Academic Performance of Secondary School Students in Mathematics in Nigeria. *African Scholar Journal of Contemporary Education Research*, 17(8), 33 – 54
- Omotayo, K.A. (2011). Acquisition, Improvisation and Maintenance of Science Apparatus. *In Science Education and Science Teaching Methods Series* 1 (Jegede and OmotayoEds) Ado-Ekiti: Green Line
- Zuelke, W. (2008). The case study approach on teachers' characteristics and science achievement, *Educational Research*, 9(4), 604 – 611.

### Cite this article:

**Author(s)**, FATOBA, JOSEPH OBA (Ph.D.), AKINNODI, OLADAMOLA DICKSON, ADELEYE, ADEMOLA MOFFY (Ph.D.), OLOFIN, SAMUEL OLUWASEYI (Ph.D.), (2020). "Teachers' Teaching Experience and Secondary School Students' Performance in Science Subjects in Ondo State, Nigeria". Name of the Journal: *International Journal of Academic Research in Business, Arts and Science*, (IJARBAS.COM), P, 35- 43. DOI: <http://doi.org/10.5281/zenodo.3928822> , Issue: 6, Vol.: 2, Article: 4, Month: June, Year: 2020. Retrieved from <https://www.ijarbas.com/all-issues/>

### Published by



AND

*ThoughtWares Consulting & Multi Services International (TWCMSI)*

