



*Original Research Article*

# Effect of Chemistry teachers' Gender and Academic qualification on performance of students in senior secondary schools in kwara State, Nigeia

\*Abidoye Florence Omosholape and Bamuwagun Oluwakemi Atinuke

Abstract

Department of Science Education,  
Faculty of Education, University of  
Ilorin.

\*Corresponding Authors E-mail:  
[abidoye.fo@unilorin.edu.ng](mailto:abidoye.fo@unilorin.edu.ng);  
Tel.:08035850695

This study examined the effect of Chemistry teachers on the performance of students in senior secondary school in Kwara State, Nigeria. The target population for the study was all Chemistry teachers in Kwara State, Nigeria, three hundred and eighty-two (382) public senior secondary school and three hundred and sixty-two (362) private schools. The researcher designed teachers' questionnaire was administered to one hundred and firth-five (155) teachers selected from thirty (30) public and twenty (20) private secondary schools in Kwara State. Researcher-designed validated questionnaire was used to elicit information from the respondents on the teachers 'influence towards the performance of students in senior secondary schools. Three research questions were answered and two hypotheses were tested. Percentage, t-test statistics and ANOVA were used to analyze the data collected. The finding of this study revealed that effect of Chemistry teachers towards the performance of students in senior secondary school in Kwara State, Nigeria was significant based on their responses and academic qualification but not significant on gender. Based on the findings of this study, it is hereby recommended that; Report of this study implies that educational administrators must ensure adequate and sufficient moral support for chemistry teachers. This will enable teachers to become more committed in the discharge of their duties. Chemistry teachers should get teacher training, should be given due respect and should be paid according to their qualifications and abilities among others.

**Keyword:** Chemistry teachers, Gender, Academic qualification, students in senior secondary schools.

## INTRODUCTION

Science education is a major agenda of the education sector in Nigeria. It is part of the Country's mission towards developing a scientific and progressive society. In accordance with the goals of secondary education system in providing quality education, it is the responsibility of teachers to have significant effect in the

teaching of science subjects. One of these subjects is Chemistry. Science being dynamics has also necessitated the transformation and reforms in the School Science curriculum. The education reforms embraced upon worldwide does not exempt Nigeria. This led to the review of National policy on Education as well

the School system. The 6334 education system in Nigeria was aimed at making Science and Technology an achieving goal. This was however made abortive because it was not well implemented (Alao, 2010).

Chemistry is one of the core subjects in science. It is the study of nature and properties of non-living materials that surrounds man. It is the study of the components and properties of matter and the changes which they undergo either naturally or by human efforts (Oladipupo, 2013). Chemistry is also an integration of discipline in itself as does the integrated science. This is because there are discipline areas in chemistry such as; Organic, Inorganic, Physical and Industrial chemistry aspects. The study of chemistry as contributed immensely to National development all around the world. The inclusion of chemistry as basic ingredient and criteria for studying all Science related professions including Medicine, Engineering has made it the hub in the wheel of Science (Jimoh 1992). The position of Chemistry as a determining factor for Professional and Career acquisition necessitated for proper teaching and learning of the object. This will assist in small measure to achieve the golden objectives of its study for natural development. It has become heart felt that the performance of the students in the subject has not been encouraging over the years.

A lot of efforts have been made by government at the three Tiers of Federal State and Local Government. These efforts seem not to have yielded positively as expected. This present study therefore seeks to explore into the role the teacher plays in the teaching and learning of Chemistry. Teacher Education is a very important requirement for anybody that will engage in teaching job (FRN 2004).

Abimbola and Abidoye (2013) examined the views of Kwara State senior school Biology teachers on the status of ecology teaching and their result indicated that there was no significant difference in the teaching of ecology.

Ugbe and Agim (2009) investigated the influence of teachers' competence on students' academic performance in senior secondary school chemistry. A random sampling technique was used to select 6 secondary schools out of 12 secondary schools in Yala Local Government Area of Cross River State. 200

200 students, 20 teachers and 6 principals were used in the study. A survey design was adopted for the study. Three researcher – made instruments namely School Principal Questionnaire (SPQ), Teachers Competence Questionnaire (TCQ) and Chemistry Achievement Test (CAT) were used to gather data for the study. Data were analyzed using the Pearson Product Moment Correlation (PPMC) and t-test. Results revealed that there is significant difference in the students' academic performance. Chemistry students taught by qualified teachers performed significantly better than those taught by unqualified teachers.

Farombi (2013) was on effect of subject combination on student combination on student performance in biology. The respondent to the study comprised of the biology students admitted into Osun State College of Education, Ila - Orangun in the year 2002/2003. Their results in NCE I, II and III of the one hundred and forty-seven students was the data used for the study. The instrument for data collection was a designed performance to elicit Cumulative Grade Point Average (CGPA) of the biology combination students which includes chemistry, integrated science, and geography and computer science. Pictorial diagram was used to present the distribution of combination variables while mean and standard deviation was used in presenting the results. The findings from the study revealed that students perform in biology courses than other combination courses because of the pre-requisite knowledge in chemistry as condition for enrolling for biology in the higher institutions. The least performance was geography combination because it was observed that students that are weak in science at ordinary level put into study geography as a science course at higher institutions but they all offer biology as the only requisite science subject. It was however noted that qualified teachers at the secondary school level have significant role to play to enhance better performance at higher institutions of learning.

Tukur and Abimbola (2013) observed the factors influencing effective learning of mathematics at senior secondary schools within Gombe Metropolis, Gombe State Nigeria. Survey research design was adopted. One hundred and twenty (120) students of SSII were purposively sampled from four senior secondary schools out of twenty six senior secondary schools in Gombe Metropolis. In each of the sampled school, thirty (30) students comprising of fifteen (15) males and fifteen (15) females were involved and all the teachers teaching Mathematics were used as samples for the study. The three hypotheses formulated in the study were tested using t-test and chi-square at 0.05% level of significant. The results revealed that lack of qualified teachers and gender will not have significant effect on students learning of Mathematics.

The study conducted by Andrew (2004) was an empirical studying of dating competency and station and assertiveness. The students of Nebraska College were investigated comprising of ninety six of average age of twenty one in their third year in college. The dating ability was related with assertiveness and concept conception. It was revealed that there was no significant difference between male and female. Studies reviewed under this section reflected that the issue of gender influence on student performance has been conflicting over years. While some researchers report no significant influence, others provide a contrary finding. The issue of gender therefore needs continuous attempt of study. This is

because students and teachers are one either female or male. To this fact this study has made gender issue as one of the focal point of investigation.

### Statement of the Problem

The importance of science, especially Chemistry cannot be over emphasized. Science educators has continuously been reporting poor performance of students in Science subject most especially chemistry. The view of researchers on students poor performance varied from classroom environment (Abidoye, 2018), teachers academics qualification and gender. The chief Examiner's report (2007) on the performance of students on their West African Examinations revealed that students performed poorly in science subjects. It further reported that students lack understanding of question requirements, using of wrong units, inability to arrive at accurate titre values in titration, spelling mistakes, poor concepts of the understanding of solubility among others in Practical Chemistry Examinations. The students' inability to provide relative concepts, poor communication and mathematical abilities as well as inability to balance chemical equation was also noticed in the theory aspect of chemistry. The foregoing is an indication that the chemistry teachers have a lot to do in guiding the students as well as providing the necessary content knowledge.

The study conducted by Oladipupo (2012) revealed that between the periods of 1994-2008, students' performance below 30% at an average. This is far below expectation which is an indication that less than 30% of graduating students could proceed to the university. This is equally a threat to the scientific and technological development of our dear Nation. It is on this premise that the researcher has decided to carry out study on the effect of chemistry teachers' variables on the performance of chemistry students.

This study, therefore, sought to investigate effect of chemistry teachers on the performance of students in Kwara State, Nigeria. The researcher would investigate the underlying effect so as to understand the state of performance of students in Chemistry in senior secondary schools.

### Purpose of the Study

The main purpose of this study was to finds out the effect of chemistry teachers towards the performance of students in Kwara State, Nigeria.

Specifically this study wound find out effect of:

- i. Chemistry teachers on the performance of students in Kwara State.
- ii. Chemistry teachers on the performance of students based on academic qualification.

- iii. Chemistry teachers towards the performance of students based on their gender.

### Research Questions

The following research questions were answered in this study:

- i. What is the effect of chemistry teachers on the performance of students?
- ii. Do chemistry teachers' academic qualification has effect on the performance of students?
- iii. Does gender of chemistry teachers' has effect on the performance of students?

### Research Hypotheses

The following null hypotheses were tested in the counsel of this study;

- i. There is no significant difference in the performance of students based on academic qualification of chemistry teachers.
- ii. There is no significant difference in the performance of students based on their gender.

### Scope of the study

The study examined the effect of chemistry teachers on the performance of students in senior secondary school in Kwara State, Nigeria. The geographical area where the study was carried out is Kwara State. A total of one hundred and fifty-five (155) chemistry teachers in thirty (30) secondary schools in Kwara State served as respondents for the study from out of 382 senior secondary school and 362 private schools in Kwara State and the chemistry teachers' variables such as the academic qualification and gender.

### METHODOLOGY

The descriptive survey research was carried out in senior secondary schools in Kwara State, Nigeria. The target population for the study was the entire chemistry teachers in both public and private senior secondary schools in Kwara State, Nigeria. There are 382 public senior secondary and 362 secondary schools in Kwara State. Thirty public and twenty private secondary schools were randomly sampled across the State for the study. The total numbers of the respondents are 155 chemistry teachers. The major instrument for this study was a researcher's designed questionnaire titled "Chemistry Teachers Assessment Questionnaire" (CTAQ). This is contained in Appendix I.

The schedule consist of two sections, A and B.

**Table 1.** Description of the Respondents of chemistry teachers towards the performance of students.

Variable	Groups	Frequency	Percentage (%)
Academic qualification	Qualified	88	57
	Unqualified	67	43
Total		155	100
Gender	Male	76	49
	Female	79	51
Total			100

**Table 2.** ANOVA Table and Mean of chemistry teachers' academic qualification effect on the performance of students.

Total	Sum of Squares	Df	Mean Square	F	Sig
Between Academic Qualification	235.239	1	235.239	65.026	0.001
Within Academic Qualification	553.497	153	3.618		
Total	788.735	154			

Section A contains chemistry teachers demographic information while section B contains Questionnaire items on teachers' variables such as chemistry teachers' academic qualification and gender. The instrument is a close-ended questionnaire based on a four (4) point Likert-type scale ranging from strongly agree (4 point), agree (3 point), disagree (2 point) to strongly disagree (1 point).

The instruments were subjected to both content and face validation by three experts: the Supervisor, One Lecture from Noun and one lecturer from University of Ilorin, Ilorin Kwara state. The reliability of the instrument was tested using Pearson Product Moment Correlation (PPMC) to determine the reliability index.

The researcher issued a letter of introduction obtained from the Head of Department, Science Education, Open University of Nigeria, Ilorin study centre, to the authorities of the sampled secondary schools. To solicit the permission and assistance of the school principals' and appropriate authorities. Thereafter, the Heads of the Science Department was consulted and briefed about the objectives of the study.

The instruments were administered immediately with the support of the Head of science Department as research assistants. The teachers were encouraged to fill the questionnaire immediately. Thereafter, the questionnaire was collected immediately after response for analysis. The research questions were answered using the frequency count and mean statistics. The null hypothesis 1 was tested using ANOVA, while hypothesis 2 was tested using t-test statistics at 0.05 significant level.

## RESULTS AND DISCUSSION

This section describes the demographic characteristics of the respondents using frequency counts and percentage as illustrated.

Table 1 reveals that out of the 155 respondents that participated in the study, 88 (57%) are qualified Chemistry teachers while 67 (45%) were unqualified. 126 (82%) were experienced while 28 (18%) were less experienced Chemistry teachers. 76 (49%) were male while 79 were female Chemistry teachers. 121 (78%) were public while 34 were private school chemistry teachers. 77 (50%) were low, 76 (49) were medium while 3 were high (1%) chemistry teachers motivation.

### Research question one

What is the effect of chemistry teachers towards the performance of students?

### Research Question two

Do chemistry teachers' academic qualification has effect on the performance of students?

$H_{01}$ : There is no significant difference in the performance of students based on academic qualification of chemistry teachers.

Table 2 shows that there was significant effect on the performance of students based on academic qualification of chemistry teachers since the p-value (0.01) was less

**Table 3.** Mean Scores and t-test for testing Chemistry teachers' effect on the performance of students' in Kwara State based on Gender.

Variable	Gender	N	Mean	Std. Deviation	Std. Error Mean	p-value	T	df	Remarks
Gender	Male	76	47.0789	6.64081	0.76175	0.868	-3.374	153	NS
	Female	79	50.8987	7.4155	0.83431				

NS = Not Significant at  $P > 0.05$

than the alpha level of 0.05. The mean square range between 235.239 and 3.618. Thus, the null hypothesis ( $H_{01}$ ), which states that there is no significant difference in the performance of students based on academic qualification of chemistry teachers, was therefore rejected.

### Research Question two

Does gender of chemistry teachers' has effect on the performance of students?

$H_{03}$ : There is no significant difference in the performance of students based on their gender.

Table 3 indicated that there was no significant difference in the performance of students on their gender since the p-value (0.87) was greater than the alpha level of 0.05. The male chemistry teachers mean score was 47.08 while the female chemistry teachers' score was 50.89. Thus, the null hypothesis ( $H_{02}$ ), which states that there is no significant difference in the performance of students based on gender of chemistry teachers, was therefore not rejected.

### Summary

There was significant effect in the performance of students in senior secondary school in Kwara State, Nigeria based Chemistry teachers' responses.

There was significant effect on the performance of students in senior secondary school in Kwara State, Nigeria based Chemistry teachers' academic qualification.

There was no significant difference on the performance of students on their gender

### DISCUSSION OF FINDINGS

It was found that influence of Chemistry teachers towards the performance of students in senior secondary school in Kwara State, Nigeria was significant based on their responses. It could be as a result of helpful behaviour, resourcefulness, enthusiasms, good method of presentation and concern for students and teachers

knowledge of the subject matter and the acceptance that they are role model. This is in agreement with the findings of Ugbe and Agim (2009) investigated the influence of teachers' competence on students; academic performance in senior secondary school chemistry and the result indicated that there was no significant influence. Abimbola and Abidoye (2013) examined the views of Kwara State senior school Biology teachers on the status of ecology teaching and their result indicated that there was no significant difference in the teaching of ecology.

It was revealed from the results of this study that there was significant effect based on academic qualification of chemistry teachers. The preceding results could be due to the fact that the qualified chemistry teachers are well train in the subject matter while the unqualified chemistry teachers' just accepted the job because of no offer in the society. This is in agreement with the findings of Abidoye (2017) on effect of qualification and experience of biology teachers on the status of Ecology teaching in Kwara state. The result shows that there was significant difference between qualified and unqualified teachers.

It was established in this study that there was no significant influence of gender of chemistry teachers in the performance of students. This may be hinged on the fact that intelligence is not gender based. The preceding finding is in line with the findings of Tukur & Abimbola (2013) observed the factors influencing effective learning of mathematics at senior secondary schools within Gombe Metropolis, Gombe State Nigeria and the result indicated that there was no significant difference in the performance of students based on gender.

### CONCLUSION

There was significant effect on the performance of students in senior secondary school in Kwara State, Nigeria based Chemistry teachers' responses, academic qualification but no significant based on gender.

### RECOMMENDATIONS

It was recommended that:

1. Report of this study implies that educational

administrators must ensure adequate and sufficient moral support for chemistry teachers. This will enable teachers to become more committed in the discharge of their duties.

2. Chemistry teachers should get teacher training, should be given due respect and should be paid according to their qualifications and abilities.
3. Both male and female science teachers should be encouraged by provision of special incentive for improvement on their impact on students' performance.

## REFERENCES

- Abidoye FO (2018). Impact of Biology Teachers on the Students' Performance in Senior Secondary School in Osun State, Nigeria. *European J. Health Biol. Educ.* 7(2) 35-40.
- Abidoye FO (2017). Effect of Qualification and Experience of Biology Teachers on the Status of Ecology Teaching in Kwara State. *Ilorin J. Educ. Faculty of Education, University of Ilorin* 36, pp 117 – 125. <http://ejournals.unilorin.edu.ng/journals/index.php/ije/issue/view/205>
- Abimbola IO, Abidoye FO (2013). Views of Kwara Senior Secondary School Biology Teachers on the Status of Ecology Teaching. *J. Curriculum and Instruction.* 8, (1), pp 1 – 10.
- Alao O (2010). Towards effective teaching and learning of integrated science at junior secondary schools levels in Nigeria. *J. Educ. Stud. Res.*, 6 (1), 117 - 124.
- Andrew H (2004). Dating competence and assertiveness among students. *Sci. Res. J.*, 317 - 321.
- Faronbi A (2013). Effect of subject combination on students performance in Biology. *Nig. J. Educ. Stud. Res.*, 9 (1), 242 - 250.
- Federal Ministry of Education, Science and Technology and Comparative Education Study and Adaptation Centre (1995). *Physics Curriculum for Senior Secondary Schools*. Lagos: Federal Ministry of Education.
- Federal Republic of Nigeria (2004). *National Policy on Education* (4<sup>th</sup> ed.), Lagos: NERDC press.
- Jimoh A (1992). Influence of gender and school variables in student achievement in 'O' level chemistry. University of Ilorin.
- Oladipupo M (2012). Effect of concept mapping instructional strategy on the performance of chemistry student in Kwara south Education zone. Nigeria. Unpublished M.Ed (Tech) Thesis. Abubakar Tafawa Balewa University Bauchi.
- Oladipupo M (2013). Using concept maps to teach basic science in the upper Basic schools in Kwara state: An appraisal of conventional Teaching methods. *Nig. J. Educ. Sci. Res.*, 1 (1), 129 - 135.
- Tukur MY, Abimbola NGA (2013). Factors that influencing effective learning of mathematics at senior secondary school in Gombe metropolis of Gombe state-Nigeria. *International Institute for science, Technology and Education (IISTE): E-Journals.* <https://www.iiste.org/Journals/index.php/JEP/article/download/9042/9271>
- Ugbe AU, Agim JI (2009). Influence of teachers' competence on students academic performance in senior secondary School Chemistry. *Glob. J. Educ. Res.* 8 (1&2) pp 61-66.