



# **Influence of Teachers' Years Of Teaching Experience And Qualification On Students' Academic Performance in Basic Education Certificate Examination In Basic Science In Delta State**

**OKOSE, Nneka Faith (PhD) & OBIUNU, Augustine Esevosa (PhD)**

**Curriculum and Instruction  
College of Education Warri, Delta State, Nigeria**

## **ABSTRACT**

This study investigated Influence of Teachers' years of Teaching Experience and Qualification on Students' Academic Performance in Basic Education Certificate Examination in Basic Science. The study which was carried out in the three senatorial district of Delta State was guided by two specific objectives, two research questions and two null hypotheses. Ex-Post facto research design was adopted. The sample comprised of ninety Junior Secondary III Basic science teachers and 1800 students who sat for the Basic Education Certificate Examination in Basic Science in the 2021/2022 academic session .Data were collected through the multistage sampling procedure. Basic Science Teachers' Questionnaire (BSTQ) was use elicit the teacher's information and the Basic Education Certificate Examination in Basic Science was used to access the student's performance. Research question was answered using mean and standard deviation while the t-test analysis was used to test the null hypothesis at 0.05 level of significance. The result of the study showed that teachers' years of teaching experience and qualification has influence on the mean academic performance of Basic science students in BECE. Based on the finding, recommendations and implications of the study were stated.

**Keywords:** Basic Science, Academic Performance, Teachers' Teaching Experience, Teachers' Qualification, Basic Education Certificate Examination

## **INTRODUCTION**

There have been in recent times a growing public anxiety about the state of our science education and development in Nigeria despite the various efforts aimed at its improvement. Ezekannaya and Ikeju (2004), Osuafor (2008) in Ogumongu (2011) criticized the persistent poor state of infrastructure for teaching science and showed dissatisfaction over the rate and level of science education development in Nigeria. The rate of science education development in Nigeria today is not enough to raise the scientific and technological literacy level of Nigerians to a level comparable with those in the developed countries. Science is the bedrock of development in any country. The role of science and technology (which is the application of scientific knowledge) in any society cannot be neglected or done away with Science and technology are important components of the wall dividing poverty and prosperity (Iyobhebhe, 2002). Fafunwa (1974), Bajah (1982) and Yoloye (1984) as cited in Ukpentenan (1992) all maintained that we are living in a world where science and technology have become integral part of the world's culture. Any country that undermined this significant fact does so at the risk of remaining backward in this technological fast moving world.

Consequently, any nation that believes in education as an instrument for development has to recognize the significance of science education and accord it the desired place of popularity and patronage (Ogunmangu, 2011). The objective of science education was clearly stated in the National Policy of Education (FRN, 2004) as follows:

- i. To cultivate inquiry, knowing and rational mind for the conduct of a good live and democracy;
- ii. To produce scientists for national development;
- iii. To service students in technology and the causes of technological development; and
- iv. To provide knowledge and understanding of complexity of the physical world the forms and the conduct of life. (p. 29)

In recognition of the importance of science education to the country by the government, it was clearly stated in National Policy of Education (FRN, 2004) that the government shall popularize the study of the sciences and the production of appreciable number of scientists to inspire and support national development. To this end, the government stipulated a policy of 60% science as against 40% Arts and Social Science in admission into tertiary institutions (FRN, 2004).

Oriafo (2002), argued that the relevant statistics on science education together with educational qualities, efficiency and standard estimation barometers clearly shows that there is crisis in science education. For decades, a lot of research works were done and most focused on ways of improving the standard of science education in Nigeria. Also, several workshops, conferences and seminars have also been organized by various organizations and associations such as National Educational Research and Development Council (NERDC), Science Teachers Association of Nigeria (STAN), West African Examinations Council (WAEC), National Institute of Physics (NIP), University Administration, and Governments through her Ministries.

Some of the reforms and initiatives taken by both State and Federal Government at various times, as cited in Oguleye (2006), include: modification of science curriculum used in primary, secondary and tertiary schools:

- Establishment of more secondary schools
- Establishment of agencies like the national science and technology development centre and science equipment centre.
- Provision of educational science such that boys and girls have equal opportunity to learn science among others. All these efforts made by the government were to improve science teaching and learning.

Basic Science is a combination of all the sciences. It involves the study of science in general. As a subject, it lays the foundation upon which all other science subjects are built. Basic Science was formerly known as Integrated Science, it gives students and teachers the opportunity to look at science in a new way not following the traditional division of science (Biology, Chemistry and Physics). Corroborating this view, Yusuf and Adigun (2010), opined that the fields of physics, chemistry, biology, and mathematics comprise basic science. This was due to some curriculum reforms by the Nigerian Educational Research and Development Council (NERDC) in 2006, which was made to allow its learners appreciate the fundamental unity and basic nature of the subject. As noted by Yusuf and Adigun (2010) the principal idea behind something being labeled “Basic” is that, its study leads to a better understanding of natural phenomena. It leads to “knowledge and discovery of facts” to enable one to understand a phenomenon. Basic science serves as the cornerstone of all science courses created to prepare students for the study of core science subjects at the post-basic education level. Therefore, it becomes necessary that students should achieve highly in Basic Science. Academic achievement is regarded as students’ score or grade in a test or an examination.

Chukwunke and Chikwenze (2012) noted that Basic science involves basic training in skills required for human survival, sustainable and human development. A comprehensive and all compassing description of science and technology is provided by basic science. This was intended to enable students’ development in technology and scientific skills. These abilities will help students make wise judgments, create strategies for survival, and discover how to contribute to and live successfully in the global community (Dauda & Udofia, 2010).

Considering its importance, the governments at different levels have trained teachers and are still training to produce teachers for the teaching of Basic Science. It has been argued that junior secondary school students must be well grounded in Basic Science at this level for them to be able to study core science subjects at the senior secondary school level. This notion resulted in a call by .WAEC for setting up a committee to look into Integrated Science now Basic Science as a subject matter (Olarawaju, 1974). The committee recommended the following specific methods for teaching Basic Science.

- Use of discovery teaching tactics
- The inclusion of problem, solving activities
- The involvement of students in open ended field laboratory exercise.

The efforts of the committee were expected to bring about change in focus in the teaching and learning of the subject. The implementations of these recommendations are dependent on the teachers themselves considering some of their characteristics known to influence learning outcomes.

Teachers characteristics for science education are most widely studied under six headings to include: personality, attitudes experience, aptitude/achievement, sex and training as measured by the certificates obtained. Efforts are made in understanding the roles these characteristics play in teaching and learning because of the critical role science teachers play in science curriculum implementation. Studies have found that the single most important factor that can influence students' achievement is the teacher. Science teacher can have a major influence on the way science students learn and develop. Science teachers who have an impact on students' lives are those who have genuine interest in students, know their subject matter and poses detailed information about instructional processes and the way students learn and develop which are most often hinged on training and experience. Teachers' qualification a factor known to influence learning outcomes refers to it as the type of certificate possessed by a teacher. Teachers years of experience another factor, refers to the number of years a teacher has taught. According to Khu-shid (2008), the qualification of a teacher plays an important role in teaching but the professional education or training is more important in teaching because a trained teacher can teach better than an untrained teacher.

Generally, it is claimed that a trained teacher knows well how to teach effectively. The situation on ground shows that Basic Science as a subject in the secondary level is taught by both qualified and inexperienced teachers. According to Afuwape and Olatoye (2004), lack of qualified teachers is one of the major factors militating against the successive implementation of Basic science. It is a general opinion that when a trained teacher teaches the students, the performance of the students will most likely to be better because of the training on how to present content materials to the students. There therefore appears to be a direct relationship between qualification of teachers and performance of the students besides other factors. This study intends to confirm this assumption.

### **Problem Statement**

In recent times, most educationists and the general public have become worried about the level of academic performance of students in secondary schools at local and national examinations. A common observation in the schools in Delta Central Senatorial District is that a number of teachers who teach Basic Science are graduates of Chemistry, Biology, Physics or Zoology. Many of these teachers seem to lack the much needed experiences and the teaching methods that could bring about effective teaching and learning of Basic Science in the schools.

Facts on ground also show that the junior secondary schools where Basic Science is taught lack laboratories and infrastructural facilities that would encourage inquiry method of teaching. Hence, teaching tends to be done in abstraction and learning possibly by rote memorization. The statement of problem therefore is will teachers qualification; years of experience and use of instructional materials have a positive influence on student's performance in Basic Science.

### **Aims and Objectives of the Study**

The aim of this study is to examine the influence of teachers' qualifications and teachers experience on academic performance of students in Basic Science at the junior secondary school level. Specifically the purposes are:

- to determine if teachers years of experience has any influence on students' performance in Basic Science;
- to determine if teachers' qualification has any influence on Basic Science performance;

### **Research Questions**

To guide this study; the following research questions were raised:

1. Do students taught Basic Science by experienced Teachers perform better than student taught by inexperienced teachers?
2. Do students taught Basic Science by Basic Science graduates perform better in Basic Science than students taught by any of the pure science graduates?

### **Hypotheses**

The following hypotheses formulated for testing were tested at 0.05 level of significance.

1. There is no significant difference in performance between Basic Science students taught by experienced teachers and those taught by inexperienced teachers.
2. There is no significant difference in Basic Science performance among students taught by Basic Science graduates and those students taught by pure science graduates.

## **REVIEW OF RELATED LITERATURE**

### **Conceptual Framework of the study**

The conceptual framework for this study was based on human resource management and its relationship with teachers' qualification and experience in the secondary schools as there is the need to employ qualified personnel as teachers to handle the activities of the school system. Thus, human resource management has been defined by various authors as either a field of study and practice as it focuses on the whole process of planning, finding, building, coordinating, utilizing work- force and handling the formal system for the management of people within the organization until and after their retirement (Peretomode and Edeh, 2005).

This is in consonance with Dobb and Dick (1993), who affirm that human resource management is the process of working with people so that they and their organization reach full potentials even to acquire new skills, assume new responsibilities and form new relationships. Thus, human resources are organizational most important assets and educational institutions are no exception (Nakpodia, 2000).

However, human resources are those people with different specialists, competencies and roles, who are part of an organization (Onyejemezi, 2000). This agrees with the structure of this study which intends to find out if qualification, experience and use of instructional materials would affect students' performance in Basic Science. These three teacher characteristics have the potentials to enhance teaching and learning.

### **Influence of Teachers Qualification and Experience on Students' Performance**

Akinsolu (2010) defined the teaching experience of a teacher as the routine gathering of the students, the planning and delivery of instruction, the creation of learning materials, and the evaluation of the students to ascertain what they have learned. However, teacher's years of experience refers to the number of years of full-time classroom tutor event a teacher had in the school setting (Hanover, 2016). Students' academic achievement has been linked by researchers to teachers' years of teaching experience. Researchers have identified that teacher experience is one of the factors that affect pupil performance in primary schools.

Teacher qualification is the educational attainment of the teacher. That is the highest qualification the teachers obtained namely Nigeria Certificate of Education (NCE), Ordinary National Diploma (OND), Bachelor of Science Education (B.Sc Ed), Bachelor of Arts Education (B.A. Ed) or Bachelor Degree in Education (BEd), Master's and Doctoral Degree in Education (M.Ed) and Doctor of Philosophy (Ph.D). A qualified teacher is one who is academically and professionally trained on how to transmit knowledge, ideas and values to students.

McDowell as cited by Oghenero (2006), examined the science curriculum and reported that a large majority of science teacher are unqualified and that the majority of in experienced and unqualified teachers do not remain at individual school long enough to provide the needed continuity in science teaching limits effective science teaching and learning. A number of studies have examined the ways in which teachers highest qualification are related to student's achievement. Many of the studies found that

teachers qualifications corresponds positively to students achievements. Betts, Zan & Rice (2006) found that when teachers have advanced degree in their teaching subjects, it will have a positive impact on the students' achievement. The success of students in any examination is largely dependent on the quality and dedication of teachers. Adeniji (1999), Osokoya (1999), Oladele (1999), Ahiauzu & Princewell (2011) and Edu & Kalu (2012) and Abe (2014) said that, teachers' qualification contributed to the students' academic achievement in Mathematical and Sciences.

Owolabi & Adedayo (2012) noted that students taught by teachers with higher qualifications performed better than those taught by teachers with lower qualifications. Duiylemi & Duiylemi (2002) noted that students in any country cannot perform beyond the quality of the teachers in his own contribution. Basic Science could be regarded as undifferentiated course designed to show the unity, wholeness and inter-relationships of the separated disciplines that makes up science (Madisbum, 1990). In the light of this, Basic Science is regarded as some form of unified science. Therefore, it requires a well-trained teacher in the field of Basic Science in order to achieve its aims and objectives. A teacher that is trained in the field of Basic Science will teach the subject effectively without isolating certain areas as belonging to the some subject discipline and their help the students the gain the concepts of the fundamental unity of science and also make the students to understand the role and functions of science in everyday life and the world in which we live.

Adeniyi (1993) observed that the manpower development is a function of qualified teachers. Fajonyomi (2007) success of any educational enterprise depends largely on the availability of professional teachers.

Unqualified teachers of Basic Science are in most cases bias when they teach this subject. They tend to concentrate more in their areas of specialization. And the justification for restricting their teaching within their areas of specialization lies on the principles of teaching what are knows. Foecke (1974), confirmed this when he noted that teachers of Basic Science asked to teach what they have not learned. He asked, how we can expect teachers who have studied science only in specialized packages and by methods which many have stressed lecture and memorization and avoided direct involvement is experimental work to completely depart from this background and teach science in an integrated and inquiry oriented manner.

Apart from the qualification of the teachers, the effect of a teacher experience in teaching a subject on students' achievement in that subject cannot be overlooked. This is because effective teaching cannot take place in the absence of a good and well experienced teacher in the art of teaching. Teachers experience could be explained as the number of years a qualified teacher as taught a particular subject. The higher the number of teaching years, the more experienced the teacher is. The experience of a teacher in teaching a particular subject has been found to be more impressive in terms of the achievement level of the students when compared with those of qualified but inexperienced teacher. The period of years a teacher has been teaching determined has exposure and the experience in teaching a particular subject. There is a notation that experience is the best teacher. This means that teacher that has experience are the best teachers. Adeyemi (2007), Kosgei and Ayugi (2013), confirmed that teachers' teaching experience was significant with students' learning outcomes as measured by their performance in SSC examination in Ondo State. They noted that as the number of years of teaching progress, student academic achievement increases.

## **METHODOLOGY**

The research design that was used for this study is ex-post-facto and survey. The target population of the study consisted of all Junior Secondary School Basic Science teachers and students in Delta State. The study employed a multistage sampling techniques. The first stage was the selection of five Local Government Areas from the three senatorial district. The second stage is the selection of six public junior secondary form each of the local government area. The finally stage is the selection 90 Basic Science teachers and 20 students drawn from 90 schools in state making a total of 90 Basic Science teachers and 1800 students. The research instrument used for data collection included two major instruments. These were: Teachers 'Qualification, Experience and Use of Instructional Materials Questionnaire (TQEUMQ) and Basic Education Certificate Examination in Basic Science. The Teacher Qualification Experience and Use of Instructional Material Questionnaire (TQEUMQ) is made up of two sections A and B. Section A contains items asking for the bio-data as, name of school, Local Government Area, teachers' sex,

qualification of teacher years of experience and area of specialization. Section B consists of 6 items which asked questions on the use of instructional materials as it influence students' performance in Basic Science. The teachers' qualification, experience and use of instructional materials questionnaire (TQEUMQ) will be validated by a team of 3 specialists, in College of Education , Warri ,two from Curriculum and Integrated Science Department and one from measurement and evaluation department. They determined both the face and content validities of the instrument. The reliability of the teachers' qualification, experience and use of instructional material questionnaire (TQEUMQ) was done using Cronbach's Alpha with a coefficient of 0.789. This will involve administering the instrument to 20 Basic Science teachers in Ethiop West Local Government who are not part of the study. The data was collected by a team of four made up of the researchers, and two research assistants. The members of the team administered the questionnaire to the Basic Science teachers and collect the Basic Science Examination result from the scores. Data generated for the study were collated and analyzed using t-test statistics with SPSS version 27.

## RESULTS AND DISCUSSION

The result was presented in tables in line with the research questions and the corresponding null hypotheses that guided the study.

### Research Question one:

*Do students taught Basic Science by experienced Teachers perform better than student taught by inexperienced teachers?*

Table 1: Mean and Standard Deviation of the Influence of Teachers' experience on the Mean Academic Performance Scores of Basic Science Students in BECE

Teachers Experience	N	Mean ( $\bar{x}$ )	Standard Deviation (SD)
Inexperienced Teachers	815	2.0650	.85823
Experienced Teachers	985	3.7391	.96585

Source: Field Survey 2023

Result in Table 1 shows the mean and standard deviation of academic performance scores of Basic science students in BECE by teachers' experience. Result shows that students who were taught by inexperience teachers had a mean performance score of 2.0650 with a standard deviation of 0.858, while students taught by experienced teachers in Basic science had performance mean score of 3.7391 with a standard deviation of 0.96585.

### Research Question Two

*Do students taught Basic Science by Basic Science graduates perform better in Basic Science than students taught by any of the pure science graduates*

Table 2: Mean and Standard Deviation of the Influence of Teachers' Qualification on the Mean Academic Performance Scores of Basic Science Students in BECE

Teachers Qualification	N	Mean ( $\bar{x}$ )	Standard Deviation (SD)
Specialized (Qualified )	482	3.1058	1.16391
Non Specialized (Not Qualified)	1318	2.9355	1.26441

Source: Field Survey 2023

Result in Table 2 shows the mean and standard deviation of academic performance scores of Basic science students in BECE by teachers' qualification. Result shows that students who were taught by teachers with degree in Basic science had a mean performance score of 3.1058 with a standard deviation of 1.16, while students taught by teachers without a degree in Basic science (Pure Science degree) had performance mean score of 2.9355 with a standard deviation of 1.26.

**Hypothesis 1**

There is no significant difference in performance between Basic Science students taught by experienced teachers and those taught by inexperienced teachers.

*Table 3 – t-test Comparisons of the Mean performance of the Students taught by inexperienced Basic Science graduates and those students taught by experienced Basic Science graduates.(N=1800)*

Teachers Experience	N	Mean ( $\bar{x}$ )	SD	t'cal	Df	(two-tailed)
Inexperienced Teachers	815	2.0650	.85823	-38.482	1798	.000
Experienced Teachers	985	3.7391	.96585			

**Source:** Field work 2023.

The t-test conducted to compare the performance of *Students* taught by inexperienced Basic Science graduates and those students taught by experienced Basic Science graduates indicates a significant difference. This can be seen in the mean and SD scores of students taught by inexperienced teachers and those taught by experienced basic science teachers on Table 2. For students taught by Inexperienced Teachers (**Mean ( $\bar{x}$ )=2.0650, SD =0.85823**) and For students taught by Experienced Teachers (**Mean ( $\bar{x}$ )=3.7391, SD =0.96585**),  $t=(1798)=-38.482$ ,  $P=.000$ . This result revealed that there is a significant difference at 0.05 level of significance. Therefore, the null hypothesis was rejected and the alternative hypothesis accepted. This means that students taught by experienced teacher's performance better than those students taught by inexperienced teachers.

**Hypothesis 2**

There is no significant difference in Basic Science performance among students taught by Basic Science graduates and those students taught by pure science graduates

*Table 4 – t-test Comparisons of the Mean performance of the Students taught by Basic Science graduates and those students taught by pure science graduates.(N=1800)*

Gender	N	Mean ( $\bar{x}$ )	SD	t'cal	Df	(two-tailed)
Specialized(Basic Science teachers)	482	3.1058	1.1639	2.584	1798	0.01
Non Specialized( Pure Science teacher's)	1318	2.9355	1.2644			

**Source:** Field work 2023.

The result in Table 4 show the t-test analysis to compare performance of *Students* taught by Specialized (Basic Science teachers and those students taught by Non Specialized (Pure Science teacher's indicates a significant difference. This can be seen in the mean and SD scores of students taught by Non Specialized (Pure Science teacher's in Table 4. For instance, students taught by Specialized (Pure Science teachers (**Mean ( $\bar{x}$ )=3.1053, SD =1.16391**) and For students taught by Non Specialized(Basic Science teachers (**Mean ( $\bar{x}$ )=2.9355, SD =1.26441**),  $t=(1798)=2.584$ ,  $P=.001$ . This result revealed that there is a significant difference at 0.05 level of significance. Therefore, the null hypothesis was rejected and the alternative hypothesis accepted. This means that students taught by Specialized (Basic Science teachers performance better than those students taught by Non Specialized (Pure Science teachers).

**DISCUSSION**

The result of the study shows that teachers' years of teaching experience have significant influence on the mean academic performance scores of Basic science students in BECE. This difference is in the direction of teachers with experience teachers which are above 10years of teaching perform better than other teachers below. The result is in accordance with Ene. et al (2022) and Agharuwhe (2013) who stated that effectiveness due to number of years into teaching positively influence students' academic achievement. The result of the study is consistent with the findings of Ewetan and Ewetan (2015), they found that teachers teaching experience has significantly influence students' academic achievement in mathematics and English language as measured by their achievement in SSCE and as perceived by the respondents. Schools that have more teachers with experience above ten years in teaching achieved better result than

schools having more teachers with less than ten years teaching experience. The result also corroborates the findings of Bamidele and Adekola (2017) who found that achievement of students differ when taught by long time experienced teachers and short time experienced teachers. Similarly, the finding was not consistent with Adewale (2016) the reached optioned finding that experience had no significant correlation with pupils' achievement in mathematics.

Regarding the influence of teachers qualifications on academic performance , the findings fo the study corroborate that of Omaliko and Okpala (2021), they examine the effect of teachers' qualification on students' academic performance in mathematics. The findings generally indicated that a significant difference existed in the performance of students taught by professional teachers and non-professional teachers.

Similarly, Unanma et al. (2013) examined the relationship between Teacher's academic qualifications and academic achievement of Senior Secondary school Students in Chemistry and discovered that there is a positive relationship between the variables. This was endorsed by the findings of Adeyemi (2013) in the reports to analysis the performance of the English Language Teachers (ELTs) and Teachers with Formal Education (TFEs) at secondary level in public high schools. Adeyemi's results show that those students who receive instruction from the ELTs show better results in the final examinations as compared to those who receive input from the TFEs. However, this results are at variance with Akpo, (2012), found that thater is no significant relationship between teacher educational qualification and students' academic achievement. In Rivers State, teachers who are academically qualified and those that are professionally qualified are engaged to carry out instructional process (Ahiauzu and Princewell, 2011).

Adaramola and Obomanu (2011) also showed the lack of qualified teachers led to consistent poor performance of students in Science and Mathematics (SMT) subjects. Also studies done by other scholars found that teachers' professional qualifications and teaching experience are not significantly related to students' academic achievement (Rivkin et al., 2005; Buddin and Zamarrow, 2009; Mbugua et al., 2012; Valentin et al., 2018).

## CONCLUSION

This study having empirically examined the influence of teachers' years of teaching experience and qualifications on academic performance of students, concludes that students taught specialized Basic science teachers perform better than the students taught by Non -specialized Basic science teachers, it also concludes that performance of students taught experienced teachers are higher than those by inexperienced teachers, based on the above the recommendations were suggested.

## RECOMMENDATIONS

Based on the findings of the study, it is strongly recommended therefore that.

1. Educational administrators/government should organize in-service training, workshops and seminars for teachers to enhance Basic science teachers' qualitative development for better experience.
2. The experienced teachers should mentor the less experienced teachers, and capacity building programs should be organized.
3. School management should consider teaching experience in allocation of classes to the teachers, especially for the JSS3 examination classes.
- 4 School management should consider teaching qualification in allocation of classes to the teachers, especially for the JSS3 examination classes.

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