

Teacher Qualification and Students Performance in Physics Implication for Counseling: A Study of Schools in Suleja Local Government Area of Niger State

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Abstract: *The study examined the effect of teachers' qualification on the academic performance of Senior Secondary School Students in physics. The area for the study is Suleja Local Government Area of Niger State. The study applied ex-post-facto survey research design. Random sampling was used to select six (6) schools in Suleja Local Government Area of Niger State. The SS II student's 2020/ 2021 academic session result formed the data which was analyzed using simple percentage and t - test statistic. Three research questions were answered and the findings of the research showed that academic achievement of Senior Secondary School students in Physics subject was dependent on the teachers' qualification, and teachers' experience. Recommendation is made for organization of more regular training for teachers and in-service and refresher training of Physics teachers to enable them embrace and conform to the emerging technologies in pedagogy and more so, unqualified teachers should be given room to pursue postgraduate diploma in Education to get them qualify and counseling services should be made available to teachers so as to boost their professional quest and development. Also students should be enlightened on the relevance of Physics and be adequately motivated to have a positive attitude towards the subject.*

Key words: Physics Classroom, Student Performance, Teacher Qualification

Introduction

Academic qualification is one of the principal bases for working in any organization, but the situation is not so in the teaching Profession, as both qualified and unqualified teachers are found in the teaching field, thereby making the teaching job a dumping ground for all manner of graduates due to unemployment in their field. The academic achievement of pupils has always piqued the curiosity of educators, the government, parents, and society in general (Lydia and Nasongo, 2009; Adeogun, 2010). This is due to the significant impact that education has on the country's overall development (Unanma et. al., 2013). According to Adodo (2007), one of the most important factors in a student's academic success is the teacher. Similarly, Ibrahim (2000) stated that teachers' qualifications and experience can help students attain excellent academic accomplishment. Teachers' importance in preparing students to succeed in tests, according to Ibrahim (2000), Adodo (2007), and Ibukun (2009), cannot be overstated. Secondary school education is the base and foundation for higher education at postsecondary institutions. It is an investment and a tool for accelerating the nation's economic, social, political, technological, scientific, and cultural growth (National Policy on Education) (2004). Secondary education's goal is to establish the foundation for higher education, and if a strong foundation is laid at this level, there should be no problems in the higher levels. In the Suleja area council of Niger state Nigeria, the researcher sought to determine the impact of certification and years of experience on students' academic progress in physics.

The current senior secondary school physics curriculum is built on the concept of science as both a product and a process. Physics is concerned with the skills that scientists use when doing scientific

study as a process. In the high school physics classroom, this involves the use of an inquiry technique. As a result, scientists believe that physics is made up of scientific facts, principles, norms, and generalizations derived from research. The new science (Physics) curriculum uses a child-centered approach, with the instructor providing guidance to students who are expected to actively participate in the teaching-learning process. The teaching of science, particularly physics, and the performance of secondary school students have been a source of concern for the government and parents. In almost every field, innovation is a buzzword. In higher education, efforts to improve student accomplishment and performance, physical facilities, courses, and learning in general are of concern to school officials and teachers. To fulfill the expectations placed on these schools, innovations in these areas must be created and implemented, making education more responsive to the needs of a growing community.

Physics is regarded as a difficult and abstract discipline, and university physics courses do little to improve this perception (Blickenstaff, 2010). Nonetheless, studies have shown that kids generally enjoy working in laboratories (Deacon and Hajek, 2011). This could indicate that laboratory sessions provide an opportunity to eradicate physics' poor reputation. Building laboratories, outfitting them, purchasing sets of relevant equipment for the research, and producing laboratory manuals all cost a lot of money for universities. Teachers of laboratory courses, on the other hand, have typically received little attention. Despite the fact that laboratories are costly in terms of materials and time spent by students and professors, laboratory sessions are not often seen as a valuable learning experience (Kirshner and Meester, 1988). It is critical to ensure that students like the teaching-learning sessions and that they are able to build conceptual understandings of difficult physics topics in this regard. Despite the fact that students have a positive attitude about physics laboratories, there have been a variety of challenges that need to be addressed in laboratory educational methods. Despite the importance of laboratory experience in student learning, there is a need to conduct research in AMAIUB to investigate students' impressions of the Physics laboratory where cookbook adoption is prevalent. It is now widely accepted that the Physics course is intended to develop in students a variety of important cognitive and psychomotor abilities related to the conduct of experiments as well as physics-related activities, such as conceptual understanding, experimental skills, and experimental problem-solving ability, among other things. However, it has been highlighted that the methodologies used to assess what students learnt in a laboratory course are frequently incompatible with the laboratory course's aims. The findings / grades awarded are frequently subjective and fail to differentiate between students. These tactics are typically perceived as nondiscriminatory, lacking in reliability and validity, and unsatisfying as an accomplishment test. Physics courses aim to encourage conceptual comprehension as well as the development of a number of important cognitive, psychomotor, attitudinal, and affective skills. It is an understatement to say that physics teaching and learning are insufficient unless students have extensive "hands-on-minds-on" experience. The teaching profession has suffered in the hands of quacks, who know little or nothing about teaching ethics and skills but decided to teach due to unemployment in their various fields of study. To this end the researcher seeks to find out the implication of the afore mentioned scenario on the academic performance of physics students in Suleja local Government of Niger State and the need for counseling.

The achievement of an individual acquired via the use of evaluation instruments such as tests, which might be written or spoken, is referred to as performance. As a result, bad academic performance is defined as an examinee's performance that falls below an expected standard as determined by the examiner. Poor academic performance has been noted among secondary school pupils in disciplines such as English language, mathematics, physics, chemistry, and biology (Adesemowo, 2005). Academic failure, according to Aremu (2001), is not only frustrating for students and parents, but it also has serious consequences for society in terms of a lack of people in all aspects of the economy and politics.

According to Buddi and Zamarro (2009), teacher quality is a crucial element in student academic performance. According to Adeogun (2001)'s research in Nigeria, the quality of any education system is defined by the quality of its instructors, since no education system can outperform the quality of its teachers (Ibukun, 2009). According to Obasi (2010), a teacher's professional and academic training and certification can help a student's academic performance and attainment chances. According to an assessment of related information, the most important school-based deciding factor of kids'

achievement is teacher quality (Rockoff, 2004; Rivkin et al., 2005; Aaronson et al., 2007; Harris and Sass, 2008). Similarly, Ibrahim (2000) stated that teachers' qualifications and experience can help students attain excellent academic accomplishment. One of the primary causes of the drop in student performance, according to Ajukwu (2008), is a lack of skilled biology teachers. However, different persons have attributed low secondary school performance to students' particular gender sensitivity, cognitive, emotional (attitude), and psychomotor domains at different times (Aremu and Sokan, 2003; Aremu and Oluwole 2001; Aremu, 2000).

To encourage teachers to get equipped by going for further studies, it is vital to introduce counseling services into the education sector. The importance of counseling in the educational process cannot be overstated. Counseling seeks to prevent a crisis in a person's life from occurring. Secondary school guidance programs are designed to address the physical, emotional, social, academic, and occupational obstacles that students and teachers face (Denga, 1983). Advice and advice counseling helps people become more aware of themselves and how they respond to behavioural influences in their surroundings (Ubom, 2001). Counseling assists individuals in generating some personal meaning for their overall growth and clarification of a set of vocational goals (Edet, 2008). Counseling, in other words, helps people attain their full intellectual, social, and vocational potential. As a result, vocational education coaching and counseling are commonly regarded as the cornerstone for socioeconomic and technological advancement (Comfort, 2013). As a result of global socioeconomic shifts, several countries are confronting difficulties. This trend has resulted in economic, political, and social challenges, jeopardizing certain countries' political and economic stability. Rising unemployment, a dearth of skilled workers, high dropout rates, and the changing demographic makeup of the workforce, according to Giroux (1991) in Comfort (2013), have placed the topic of VTE on many countries' educational reform agendas. According to Okolocha (2006), the rising rate of unemployment, as well as the changing face of the global economic, social, political, and labor markets, has resulted in new education reforms/policies focusing on guidance and counseling, as well as Vocational and Technology Education, aimed at assisting people in becoming self-sufficient. The type of education encouraged is that which is provided by qualified teachers who, in addition to their academic abilities, have a nice personality capable of oozing love, care, understanding, and genuine concern not just for themselves but, more importantly, for their students (Borgen 2001). Only teachers who understand themselves, their pupils or students, and society can teach VTE, according to this theory. As a helping relationship, guidance and counseling allows both teachers and students to have a greater understanding of who they are and, more importantly, who they can become (career). This is because counseling and advice help a person better understand himself, his environment, and the others with whom he or she must interact. This awareness, according to Stasny (2001), will enable such a person to live a more functional and joyful life, capable of ensuring personal peace as well as national growth.

Objective of the Study

The following objectives guides the research work

1. To examine the difference in performance between students taught by qualified Teachers and those taught by unqualified teachers.
2. To examine the difference in performance between students taught by long – time experience Teachers and those taught by short-time experienced teachers.

Research Questions

The following questions were utilized in the study.

1. Is there any difference in students' performance in physics between those taught by qualified teachers and unqualified teachers in 2019/ 2021 Session?
2. Is there any difference in students' performance in Physics between those taught by long – time experienced Physics teachers and short – time experienced physics teachers in 2019/ 2020 Session?

Research Hypotheses

The following hypotheses have been generated to guide this study:

HO1: There is no significance difference in students' performance between those taught by qualified teachers and those taught by unqualified teachers.

HO2: There is no significant difference in students' performance between those taught by long - time experienced teachers and short – time experienced teachers.

Methodology

To investigate the degree of link between the independent variable (teacher qualification) and the dependent variable (students' academic achievement) in Physics at the Senior Secondary School (SS II) level, the study used an ex-post-facto survey research design. Ex-post-facto study design has the advantage of providing a precise manner of defining the amount to which teacher qualifications were related to students' academic success.

Population of the Study

The population that makes up this research comprises of Senior Secondary School Physics students in Suleja Local Government Area of Niger State.

Sample and Sampling Techniques

The sample for this study is made up of six (5) secondary schools; consisting of three (3) Government owned schools and three (2) private owned schools. These schools were randomly selected using the stratified random sampling technique. A sample size of 440 senior secondary school (SS II) Physics students was obtained from the randomly selected secondary schools.

Table 1.0 List of Sampled Schools and population for the study

S/N	Name of School	Type of School	Number of Physics Students
1	Government Secondary School Suleja	Government	120
2	Suleiman Barau Technical College Suleja	Government	120
3	Government Day Secondary School Suleja	Government	100
4	Great Zion International Academy Suleja Niger State	Private	35
5	Virgins International Academy Suleja Niger State	Private	35
6	Goshen International Academy Suleja Niger State	Private	30
	TOTAL	6	440

Instrument Used for Data Collection

The research instrument that was used for collection of data was the SS II students' result sheet for the 2019/ 2020 session. This was provided by the Physics teacher of the selected schools.

Method of Data Collection

The selected schools were visited by the researcher and discussions held with the school physics teachers. The 2019/ 2020 session's results summary for the SS II Class of each school was collected through the schools' registrars to collate their Physics scores, while the teachers supplied their bio data.

Method of Data Analysis

The data was analyzed using frequency counts and means, with inferences drawn using t-test statistics. Teachers' qualifications were displayed according to the sort of certificate/degree they held, while students' academic achievements were graded as pass or fail and expressed as a simple percentage. The percentages and mean of a student's academic achievement are displayed. The many research questions and hypotheses will be confirmed or refuted, depending on the situation.

Table 2.0 Qualification of Biology Teachers in the sampled schools

S/N	Name of School	Qualification of Teachers	Years of Experience
1	Government Secondary School Suleja	B.Ed Physics	13
2	Suleiman Barau Technical College Suleja	B.Sc Physics, PGDE,	12
3	Government Day Secondary School Suleja	NCE, B.Ed Physics	18
4	Great Zion International Academy Suleja Niger State	B.Tech ENG., PGDE,	7
5	Virgins International Academy Suleja Niger State	B.Sc Physics Electronics	5
6	Goshen International Academy Suleja Niger State	B.Eng Electrical Electronics	8
	TOTAL		

The table 3.0 below shows the data collected from Government Secondary School Suleja and their percentage in performance.

Table 3.0

Score Range	SS II		Mean Score	Percentage Pass
	Number of students	Percentage %		
0-39	15	12.5	61.7	79
40-49	30	25		
50-59	24	20		
60-69	35	29.17		
70-79	16	13.33		
Total	120	100		

Table 4.0 shows the data collected from Suleiman Barau Technical College Suleja

Table 4.0

Score Range	SS II		Mean Score	Percentage Pass
	Number of students	Percentage %		
0-39	18	15	603	74
40-49	38	31.7		
50-59	27	22.5		
60-69	23	19.1		
70-79	14	11.7		
Total	120	100		

Table 5.0 shows the data collected from Government Day Secondary School Suleja.

Table 5.0

Score Range	SS II		Mean Score	Percentage Pass
	Number of students	Percentage %		
0-39	12	12	63.5	76
40-49	34	34		
50-59	21	21		
60-69	25	25		
70-79	8	8		
Total	100	100		

Table 6.0 shows the data collected from Great Zion International Academy Suleja Niger State

Table 6.0

Score Range	SS II		Mean Score	Percentage Pass
	Number of students	Percentage %		
0-39	3	8.6	55.8	59
40-49	8	22.9		
50-59	11	31.3		
60-69	10	28.6		
70-79	3	8.6		
Total	35	100		

Table 7.0 shows the data collected from Virgins International Academy Suleja Niger State

Table 7.0

Score Range	SS II		Mean Score	Percentage Pass
	Number of students	Percentage %		
0-39	3	8.6	51.8	54
40-49	8	22.9		
50-59	11	31.3		
60-69	10	28.6		
70-79	3	8.6		
Total	35	100		

Table 8.0 shows the data collected from Goshen International Academy Suleja Niger State

Table 8.0

Score Range	SS II		Mean Score	Percentage Pass
	Number of students	Percentage %		
0-39	2	6.7	50.5	53
40-49	6	20		
50-59	8	26.6		
60-69	11	36.7		
70-79	3	10		
Total	30	100		

Answering of Research Questions and Testing of Research Hypothesis

Research Question 1: Is there any difference in students' performance in physics between those taught by qualified teachers and unqualified teachers in 2019/ 2021 Session?

Mean scores of academic performance of students taught by qualified skilled teachers and qualified unskilled teachers.

	N	Mean Score
Qualified Teachers	9	71.5
Unqualified Teachers	7	46.7

From the analysis of data collected, students taught by qualified teachers had an achievement mean score of 71.5, while students taught by unqualified teachers had an achievement mean score of 46.7 in Physics.

Testing of Research Hypothesis HO1 –There is no significance difference in students' performance between those taught by qualified teachers and those taught by unqualified teachers.

The purpose of this hypothesis was to establish whether there was any significant difference in students' performance between students' taught by qualified teachers and students taught by unqualified teachers. An independent samples t - test was employed to find out the differences in academic performance between the groups of Physics students.

Table 9.0 T – test analysis of academic performance between two samples of biology students.

Table 9.0

Source of Variation	N	Mean score	Df	t- calculated	t-critical
Qualified Teachers	9	71.5	282	1.51	0.87
Unqualified teachers	7	46.7			

From table above the null hypothesis is rejected because the t – calculated is greater than the t – critical. Thus there is significance difference in students’ performance between students taught by qualified teachers and students taught by unqualified teachers.

Research Question 2: Is there any difference students’ performance in Physics between those taught by long – time experienced teachers and short – time experienced teachers in 2019/ 2020 Session?

Here, long teaching experience refers to teachers who have consistently taught Physics subject for over ten (10) years. Teacher experience played a large role in terms of resulting in high student achievement, as analysis of collected data showed that students taught by long experienced teachers had an achievement mean score of 69.9, while students taught by short experienced teachers had an achievement mean score of 45.7 in Physics as shown on the table below

Mean scores of academic performance of students taught by long experienced teachers and short experienced teachers.

	N	Mean Score
Qualified Teachers	9	69.9
Unqualified Teachers	7	45.7

Testing of Research Hypothesis HO2 - There is no significant difference in students’ performance between those taught by long – time experienced teachers and short - time experienced Physics teachers.

The purpose of this hypothesis was to establish whether there was any significant difference in students’ performance between students’ taught by long – time experienced teachers and students taught by short – time experienced teachers. An independent samples t - test was employed to find out the differences in academic performance between the groups of Physics students.

Table 10.0 T – tests analysis of academic performance between two samples of Physics students.

Table 10.0

Source of Variation	N	Mean score	Df	t- calculated	t-critical
Long-term experienced Teachers	9	69.9	282	1.82	0.99
Short-experienced teachers	17	45.7			

*Significant at 0.05 (2 – tailed)

The null hypothesis is rejected because the t – calculated is greater than the t – critical. Thus there is significance difference in students’ performance between students taught by long - experienced teachers and students taught by short – experienced Physics teachers.

Discussion of Findings

The outcomes of this study revealed that Physics teachers in Suleja Local Government Area of Niger State have both certified and unqualified Physics Teachers in their schools and that academic

achievement in Physics were reliant on the teachers' qualification and experience. This study contradicts the findings of Igwe (1990) and Dahar et al (2011), who found no significant link between teachers' qualifications and students' achievement in biology, chemistry, and physics at the senior secondary school certificate level. However, the findings of this study are consistent with those of other studies that have demonstrated that teachers' qualifications and experience play a critical role in predicting students' academic progress (Ankomah et al., 2005; Asikhia, 2010; Umar-ud-Din et al., 2010; Olaleye, 2011; Maguswi, 2011).

Between students taught by long-time experienced teachers and students taught by short-time experienced teachers, there was a significant difference in student performance. Other research (Betts et al., 2003; Rivkin et al., 2005; Aaronson et al., 2007; Buddi and Zamarro, 2009; Feng and Sass, 2010) have found that teachers' educational level and teaching experience are not statistically relevant in determining students' academic achievement.

Conclusion

The magnitude and consequences of poor academic performance warrant serious consideration. Success in particular endeavors may be dependent on specific elements, such as an individual's gender sensitivity, cognitive, affective (attitude), and psychomotor domains, as well as their gender sensitivity, cognitive, affective (attitude), and psychomotor domains. Physics learning is influenced by the teacher's qualifications as well as his years of experience. The study's findings concluded that instructors' qualifications and expertise aid academic progress in Physics in the Suleja local government area.

Recommendations

The following suggestions are provided based on the data and conclusion of this study.

1. Physics teachers should improve their teaching methods and make every effort to improvise and organize practical sessions, as physics learning is based on experience.
2. Both students and teachers should be informed about the importance of Physics and sufficiently encouraged to develop a good attitude toward it.
3. Teachers should be able to pursue their education and become qualified to teach the subject.
4. Both the government and stakeholders should encourage teacher training and retraining.
5. Counseling services that will stimulate teachers to pursue their career goals should be promoted and provided in order to increase teachers' interest in obtaining the necessary qualifications.

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