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TEACHERS' QUALIFICATION AND SECONDARY SCHOOL PHYSICS STUDENTS' ACADEMIC PERFORMANCE IN EMOHUA LOCAL GOVERNMENT AREA, RIVERS STATE

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Abstract
This study investigated teachers' qualifications and secondary school physics students' academic performance in Emohua Local Government Area of Rivers State. Three (3) research questions and two (2) hypotheses were formulated to guide this study. A descriptive analytical design was adopted. A purposive sampling technique was employed to use all six (6) Physics teachers in all the secondary schools while a simple random sampling technique was used to select 141 SS2 students offering physics. Checklists titled: "Physics Students' Academic Performance Checklist (PSAPC)" and two questionnaires titled "Physics Teachers Qualification Questionnaire (PTQQ)" and "Students Interest Towards Physics Questionnaire (SIPQ)" were used for data collection. The analysis of the result was carried out using percentages, mean and standard deviation to answer the research questions while a t-test was used to test the hypotheses at a 0.05 level of significance. The results revealed that teacher qualification had a significant influence on students' academic performance. It was also found that teacher qualification does not significantly influence students' interest towards Physics. It was recommended among others that qualified physics teachers should always be employed to teach students.

Keywords: Teacher, Qualification, Performance, School, Physics

Introduction

Education we know is the tool a nation needs to advance technologically thereby improving the socioeconomic status of its people. Supporting this, Ofeimu and Kolawole (2017) noted that education is expected to be of high quality to produce sound and quality products that can contribute to the growth of the national economy. The Longman Dictionary of Contemporary English (2016) defines education as the process of teaching and learning, usually at school, college or university. Teaching has been one of the primary professions necessary for the development of individuals and society from the beginning of humanity (Mammadov & Cimen, 2019). The quality of education according to Anderson (2011) cited in Ichazu and Omeregie (2020) hinges on the quality of teaching that goes on in the classroom reinforcing the idea that quality teachers make up for the deficiencies in the curriculum and educational resources. As such, the importance of teachers in society can never be overemphasized.

Spring (2013) cited in Omonzejele (2018) noted that the most important school-based factor is the teacher whose responsibility is to shape a student to become a better citizen of the nation. On his part, Adesina (1981) as cited in Adeniyi et al. (2014) asserted that the teacher is required to give knowledge and train students in the basic skills as stipulated in the curriculum and provide guidelines for effective teaching in class. Nonetheless, Ekwuewe (2001) also cited in Adeniyi et al. (2014) stated that a well-planned curriculum does not guarantee that learning takes place but for the competent teacher and a pupil who is reasonably motivated and ready to learn. Yahaya (2015) study listed three schools of thought on who a teacher is as stated below;

i. Firstly, anybody who occupies a leadership position in any sphere of society is a teacher e.g. religious schools and parents.
ii. Secondly, someone who imparts ideas, knowledge and skills in an organized classroom e.g. untrained teachers, half-baked teachers and trained teachers.
iii. Thirdly, someone who is professionally qualified to impart knowledge and stimulate learning formally in a classroom situation.

According to Yahaya (2015), the third school of thought view sees the teacher as someone grounded in his subject area and must necessarily possess basic teaching qualifications, which enable him to be appointed to teach in institutions of learning. He added that this group includes trained teachers, tutors, instructors and lecturers who are paid to teach in the institutions of learning. Adeniyi et al. (2014) in their study, do not mince words when they state that there is a need for emphasis on appropriate and adequate intellectual training of teachers in their interest in particular and students who are always at the receiving end. In corroboration, Abe and Adu (2013) posited that it is one thing to have teachers and another thing to have seasoned qualified teachers in all schools to improve students' academic achievement.

In their study, Onyekuru and Ibegbunam (2013) unveiled that teachers from secondary schools' performance was poor. In this contemporary time, there has been a significant focus on the problem of educational quality in society. Stakeholders of education especially parents, as well as the entire society, are now clamouring for quality in the educational system which may be a result of the perceived poor-quality products turned out from the higher institutions every year (Ofeimu & Kolawole, 2017). This poses a great challenge to our nation because the workforce that will be needed in the future to greatly contribute to her economic growth may not be available in their numbers. Our secondary schools which are the foundation of undergraduate students' educational preparation cannot be exonerated from the half-baked graduates produced by our higher institutions as noted by researchers. Could it be that something is at stake as regards the teachers? If so, this needs to be fixed so that our nation will not be backwards economically and technologically.

The advancement of any country technologically depends on its scientific education. This is the reason that science education is given special attention in every country. Science involves the basic disciplines such as physics, chemistry, mathematics and biology. However, this study is on physics. The knowledge of physics and its application has immensely contributed to the technological development of any nation. The study of physics has produced various specialists in different fields. These fields among many include electrical engineering, mechanical engineering, shipbuilding, aviation, petroleum engineering, mining, architecture, metallurgical, chemical engineering, astronomy, civil engineering, transportation, geology as well as medicine. Similarly, Seth et al. (2017) study pointed out that the ideas and principles of physics are employed in a variety of day-to-day activities, such as the technology of transportation, communication, power production, as well as the discovery and exploration of space. To provide more evidence of the significance of understanding the fundamentals of physics, Obafemi and Ogunkunle (2013) focused on the substantial contribution that physics has made to the development of contemporary technology.

However, the chief examiner's report of the West Africa Senior Secondary School Certificate Examination, (WASSCE) from 2010 to 2020 confirmed the consistence low academic achievement of physics students over time. All stakeholders of the educational system are worried about this poor performance. Still stressing the poor performance of physics students, the research by Ennosho (2013) cited in Achor and Gbadamosi (2020) revealed that consistently for five years, on average, less than 30% of the total students who registered for secondary school certificate examination (SSCE) entered for physics. Furthermore, on average, slightly over 30% of the students who sat for physics passed at the credit level compared to well over 40% in biology and chemistry. This poor performance in physics shows signals of challenges faced by secondary physics students. Okoye (2002) in Ojediran et al. (2014) listed such challenges to include:

- shortage of qualified teachers
- poor preparation of teachers who teach new programs
- lack of motivation among teachers
- the use of archaic teaching methods

Researchers and educators have been debating which school elements affect students' achievement for a long time (Ayodele & Ige, 2012; Shadrack, 2015; Twahirwa &Twizeyimana, 2020). Several researchers have attached this poor academic performance in physics to various reasons. Jegede and Adedayo (2013) and Owolabi and Oginni (2013) both cited in Oluwasegun and Olabode (2020) attributed the deterioration in students' achievement in physics to inappropriate teaching methods. In another vein, Murunga et al. (2019) attributed this poor performance to their attitude towards physics. According to them, physics students with positive attitudes towards physics performed better than their counterparts with negative attitudes. Blickenstaff (2010) cited in Wilfredo (2016) reported that physics is mystified to be a tough and abstract discipline yet university physics courses do little to change this negative attitude towards it.

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Nonetheless, this general poor performance was attributed by many researchers (Adedayo, 2012; Achufusi, 2015; Daso, 2013 in Ofeimu &Kolawole, 2017; Machingambi et al., 2018; Ichazu & Omoregie, 2020; Ekmekci & Serrano, 2022) to teacher qualification. This corroborates Ojediran's (2016) study which reported that one of the reasons for this poor performance is an insufficient number of quality science teachers produced from the universities of which physics is among. Some scholars see teacher qualities and teacher qualifications as meaning the same thing. Aina and Olanipekun (2015) stated that a teacher's qualification is a particular skill or type of experience or knowledge someone possesses to make him or her suitable to teach. According to them, teachers' qualifications could therefore mean all the skills a teacher required to teach effectively. Furthermore, they pointed out that someone might have a teaching certificate at hand but without adequate knowledge of the subject matter. In their view, Scheerens and Blömeke (2016) cited in Toropova et al. (2019) posited that teacher quality is a multi-faceted construct, comprising both cognitive (knowledge) and non-cognitive aspects (beliefs, attitudes etc.). On his part, Goe (2007) defined teacher quality as the characteristics and qualifications of a teacher which affect his or her pedagogical methods thereby determining students' outcomes.

Darling-Hammond et al. (2005) cited in Burroughs et al. (2019) found that those teachers who had completed training that resulted in a recognized teaching certificate were more effective than those who had no dedicated teaching qualifications. In another related study, Omosewo (1998) found in his work that students taught physics by qualified teachers performed better than other students who were not. Evidence suggests that the quality of teacher education does have an impact on teachers' educational outcomes in terms of teacher knowledge and skills (Boyd et al., 2009; Blömeke et al., 2012; Tatto et al., 2012 all cited in Blomeke et al., 2016).

Still buttressing teacher quality, Blomeke et al. (2016) reported in their work that teachers' experience, teacher education background, beliefs and motivations, as well as their content knowledge, pedagogical content knowledge, and general pedagogical knowledge (actual and perceived), are characteristics that, to varying degrees, have been shown to have effects on student outcomes. This is because the methods of teaching adopted, teachers' skills and ability to share knowledge effectively vary from one teacher to another. Agharuwhe and Nkechi (2009) who also investigated teachers' effectiveness and students' academic performance in public secondary schools, reported that effective teachers produced better-performing students though it was also concluded that teachers' effect is not the only determinant of students' academic achievement. However, Usman et al. (2016) study revealed that a teacher qualification is the strongest predictor of student satisfaction than teacher experience. Usman et al. (2016) view of what teacher qualification stood for which is teachers' certification is what this study anchored on. Certification is a document affirming that someone has gone through training in a particular field which qualifies him or her to deliver when called upon.

A continuous look at teachers' effect and their students' performance, several researchers agreed that teachers are one of the most important school-based resources in determining students' future academic success and lifetime outcomes (Chetty et al. 2014; Rivkin et al., 2005; Rockoff, 2004, all cited in Burroughs et al., 2019). In support of that, various other researchers have reported that teachers have a great impact on their students' academic success (Anugwo, 2014; Blomeke et al., 2016; Omonzejele, 2018) over time. Anugwo (2014) noted that students who are lucky to be taught science subjects are mostly taught the theoretical aspects without the integration of these theories with the practical aspects of the syllabus nor relate them to the student's everyday life. Furthermore, Solomon and Alkenhead in Wikipedia (2008) cited in Anugwo (2014) stated that students are exposed to the type of teaching lacking relevance to the student's scientific and technological developments in their cultural, environmental, economic, political and social contexts. Anugwo (2014) goes further to state that the need for quality teaching and learning of physics to enhance the academic performance of students in physics requires urgent attention in Nigeria. She added that this continuous poor achievement of students will deal a big blow to our society now and in future.

Continuously, Anugwo (2014) noted that the turnout of quality physics professionals is dependent on students' good academic performance which is borne out of adequate teaching and learning processes. She added that if students find it difficult to understand physics and cannot pass it at the secondary school level, they will not also gain admission to read physics-related courses like engineering, medicine, astronomy, architecture, geology and the like since they are not qualified to do so. How then can the country produce these professionals? How can the country progress without these people or can Nigeria afford to do without them? How can physics knowledge, attitude and literacy be communicated and applied? Anugwo (2014) who is also the architect of these questions also answered that: "of course, we know that this is not possible if teachers cannot achieve physics-intended learning outcomes via proper teaching procedures". According to her, if students are not trained in the understanding of conceptual knowledge and

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application of creative methods in their teaching, poor performance will still be ongoing in our schools. When this continues, one of the goals of teaching physics which is to generate knowledge among the students that will be used innovatively to solve everyday life problems will not be met.

However, to proffer a solution for poor performance among students, Pomplun (1988) and Jacob and Lefgren (2004) both cited in Lorence (2006) advocated for repetition of grades. According to them, allowing poor-performing students to repeat a grade improves academic performance. Lorence (2006) noted that merely repeating the failed grade may not help a student, but school districts more responsive to the needs of academically challenged students should be examined because the context of the school system may also affect student academic performance independent of making students repeat a grade. Supporting him, several researchers (Peterson et al.,1987; Jimerson et al.,1997; Lorence et al., 2002) all cited in Lorence (2006) indicated that providing additional assistance and special programs to retained students may be more beneficial than only repeating the same curriculum. According to them, students whose teachers developed individual educational plans to address the retained students' academic shortcomings maintained higher scores than their promoted counterparts. In another vein, Kot and Jones (2016) cited in Oriena et al. (2019) opined that going to the library and borrowing books has a bearing on the academic achievement of students. Likewise, Al Dossary (2008) cited in Oriena et al. (2019) disclosed that reading books from the science/mathematics section has a significant relationship with the lowest grade obtained. This according to him may be because respondents did not utilize or regard the section of the library as their chief source of information.

The discussion so far has proven that teachers in one way or another contribute to their students' academic performance positively or negatively. It now behoves all educational stakeholders to clamour for adequate training of physics teachers which if achieved, is likely to put to an end the abysmal failure of students who are expected to be the workforce of tomorrow and boost the economic status of their citizens. It is against this background that the researchers seek to investigate teachers' qualifications and secondary school physics students' academic performance in the Emohua local government area of Rivers State.

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Research Questions

The following research questions guided this work:

1. What is the percentage level of physics teachers' qualifications in the Emohua Local Government Area?
2. ii. What is the influence of teachers' qualifications on their students' academic performance in physics?
3. iii. What is the influence of teachers' qualifications on their students' interest towards physics?

Hypotheses

The following hypotheses guided this study:

Ho_1. Teachers' qualifications do not significantly influence the academic performance of physics students.

Ho_2 Teachers' qualifications do not significantly influence students' interest towards physics.

Methodology

The study adopted descriptive analytical design reason being that data were gathered on the situations on the ground. A purposeful sampling technique was used to adopt all 6 teachers teaching physics in all the schools while a simple random sampling technique was used to select 141 SS2 students offering physics in Emuoha L.G.A. The instruments used for the collection of data were a checklist titled: "Physics Students' Academic Performance Checklist (PSAPC)" and two questionnaires titled "Physics Teachers Qualification Questionnaire (PTQQ)" and "Students Interest Towards Physics Questionnaire (SIPQ)". PTQQ was on personal data on the teachers' academic qualifications. Two science education experts were consulted for the face and content validity of the instrument. Data collected were standardized, therefore reliability test was not carried out on the instruments. The researchers administered the PTQQ and SIPQ while PSAPC was collected from the physics teachers. Mean and standard deviation were used to answer the research questions while a t-test was used to test the hypotheses at 0.05 level of significance.

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Results

Research question 1: What is the percentage level of physics teachers' qualifications in the Emohua Local Government Area?

Table 1: Percentage level of physics teacher's qualification in Emohua Local Government Area.

Teachers Qualification	Numbers	%
M.Sc.Ed	1	29.8
B.Ed	4	39.1
NCE	1	31.1
Total	**6**	**100**

Table 1 showed 29.8% for M.SC.ED, 39.1% for B.ED and 31.1% for NCE as percentage level of Physics teachers qualification in Emohua Local Government.

Research question 2: What is the influence of teachers' qualifications on their students' academic performance in physics?

Table 2: Mean and standard deviation of teachers' qualifications and student's academic performance in physics

TQ	N	X	SD
M.Sc.ED	48	78.04	6.66
B.ED	63	52.65	20.97
NCE	30	55.96	9.49

The results in Table 2, show the mean and SD scores as 78.04 and 6.66 respectively for the teacher who has M.SC. ED qualification. Also, the mean and SD scores as 52.65 and 20.97 respectively for the teachers who have B.ED qualification while the mean and SD scores are 55.96 and 9.49 respectively for the teachers who have NCE qualifications.

Research question 3: What is the influence of teachers' qualifications on their student's interest towards physics?

Table 3: Mean and standard deviation of teachers' qualifications and students' interest towards Physics.

TQ	N	X	SD
M.Sc.Ed	48	19.54	7.110
B.Sc.Ed	63	19.59	5.079
NCE	30	18.46	7.011

The results in Table 3, show the mean and SD scores as 19.54 and 7.110 respectively for the teacher who has M.SC.ED qualification. Also, the mean and SD scores as 19.59 and 5.079 respectively for the teachers who have B.ED qualification while the mean and SD scores are 18.46 and 7.011 respectively for the teachers who have NCE qualifications.

Ho_1. Teachers' qualifications do not significantly influence the academic performance of physics students.

Table 4a: Summary of ANOVA analysis on students' performance in the three groups

SV	SS	Df	MS	F	Sig	Decision
BG	19391.908	2	9795.954	45.849	.000	Sig
WG	33758.154	158	213.659			
Total	53350.062	160				

On further statistical analysis of the mean values using Analysis of Variance, the calculated F(2,158) = 45.849S is significant since p(.000) is less than 0.05 level of significance. Hence, the stated hypothesis is rejected. The result is

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that there is a significant difference in the performance scores of students taught by teachers with M.SC.ED, B.ED and NCE qualifications.

Table 4b: ***Post Hoc analysis of the three groups on students' performance***

TQ	MD	Sig	Decision
M.Sc.Ed vs B.Sc.Ed	25.391	.000	Sig
M.Sc.Ed vs NCE	22.082	.000	Sig
B.Sc.Ed vs NCE	3.309	.234	NS

NS = Not Significant

Table 4b is the post hoc analysis of the three groups on Physics students' performance. The results revealed that there is a significant difference between the performance of Physics students taught by teachers with M.SC.ED qualification and those taught by teachers with B.ED qualification. There is also a significant difference between the performance of students taught by teachers with M.SC. ED qualification and those taught by teachers with NCE qualifications. There is no significant difference between the performance of students taught by teachers with B.ED qualification and those taught by teachers with NCE qualification

Ho_2 Teachers' qualifications do not significantly influence their students' interest towards physics.

Table 5: Summary of ANOVA analysis on teachers' qualifications and physics students' interest

SV	SS	df	MS	F	Sig	Decision
BG	42.344	2	21.172	0.524	0.593	NS
WG	6383.607	158	40.403			
Total	6425.950	160				

NS = Not significant $p=(0.593) > 0.05$ $F_{(2.158)} = 0.524$

On further statistical analysis of the mean values using Analysis of Variance, the calculated $F(2,158) = 0.524$ is not significant since p(.593) is greater than 0.05 level of significance. Hence, the stated hypothesis was accepted. The result is that teachers' qualifications do not significantly influence students' interest towards Physics.

Discussion

One research hypothesis which states that Physics teachers' qualifications do not significantly influence the academic performance of students' performance in Physics was rejected. This result is in agreement with the findings of Akinsolu (2010), Adeniyi (2014) and Omonzejele (2018) whose studies revealed that teacher qualification has a significant effect on students' academic performance. This study also aligns with that of Achufusi (2015), Mammadov and Çimen (2019) and Ekmekci and Serrano (2022) studies which revealed that there is a high relationship between the teacher's academic qualification and students' performance. This study is also congruent with that of Blazar (2016) who found in his work that there is a relationship between methods of teaching adopted by the teacher and their students. Furthermore, he found that there is a relationship between incorrect presentation of content and student outcomes. Both pieces of evidence speak of teachers' competency which is directly linked to teacher's qualifications.

However, this study negates the findings of several researchers as explained further. Ofeimu and Kolawole (2017) findings revealed that teachers' qualifications did not significantly influence the academic performance of their students in secondary schools but that teacher commitment and dedication to their duties are essential to improving students' academic performance. In his findings, Kapur (2018) cited in Mammadov and Çimen (2019) opined that student performance is a determinant of students' goals and objectives for the future and not a teacher's qualification. Coleman (1966) as cited in Archer (1999) findings also differ from that of this work, according to him socioeconomic status largely determines student achievement. He added that teacher qualification doesn't matter very much, but that students from rich homes learn a lot while students from poor homes learn very little.

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The research hypothesis two which states that teacher qualification does not significantly influence students' interest towards physics was accepted. This could be a result of the different variables pointed out by several researchers that influence the interest of students towards the science subjects of which physics is inclusive. Such variables among others include the attitude of students, the attitude of teachers, teaching methods adopted by teachers, socio-economic factors and environmental factors.

Conclusion

The study concluded that the academic qualification (certification) of physics teachers has a relationship with their student's performance. There is therefore the need for physics teachers to always go for upgrading. This work has also shown that teachers' role in society can never be quantified. This calls for adequate attention to be given to the teaching profession by the leadership of its nation.

Recommendations

1. Physics teachers should always seek to upgrade themselves by pursuing higher degrees.
2. The government should give scholarships to physics teachers to pursue higher certificate programs such that financial excuses will be avoided for not doing the needful.
3. Physics teachers should constantly undergo training to improve their teaching skills.
4. The government should motivate physics teachers by giving them incentives periodically.
5. Physics students should be motivated by all educational stakeholders to boost their interest towards the study of physics.

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