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Teachers' Quality and Academic Performance of Physics Students in Public Secondary Schools in Uyo Local Government Area, Akwa Ibom State

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Abstract
This study investigated the influence of teachers' quality on students' academic performance in Physics in Uyo Local Government Area. Four research questions were raised. The research design adopted was correlational design. The population of the study comprised the 36 Physics teachers in the 14 public secondary schools in Uyo Local Government Area of AkwaIbom State. The sample of the study was 36 Physics Teachers and 6838 senior secondary one students. "Teachers' Quality Scale (TQS)" and the "Students' Academic Performance Checklist (SAPC)" were used for data collection. The instruments were validated and tested for reliability. Data analysis was done using mean scores for answering research questions raised. The results indicate that majority of Physics teachers in the study area had only first degree (72.2%), indicating lack of career development; had less than ten years of experience (61.1%), indicating absent of mentorship; and lack requisite professionalism (66.7%). The findings of the study revealed that students' academic performance in Physics differs based on teachers' years of experience, teachers' educational qualification, and teachers' professionalism in Uyo Local Government Area. It is concluded that teachers that graduated from education, those with highest qualifications (Doctorate), and those teachers with many years of experience significant influence students' academic performance in Physics than others in other cadres. It is recommended among others that AkwaIbom State Government should design policy that would actively engage teachers, not only in teaching but equally in school administration; create avenues for workshops and seminars that are geared towards improving teachers' professionalism vis-à-vis teaching proficiency. This will enhance their efficiency in the coordination of assigned and statutory responsibilities in schools for quality assured educational service delivery.

Keywords: Teachers' quality, Academic performance, Working experience, Professionalism, Educational attainment

INTRODUCTION

The greatest investment for human development that has translational effect on the transformation of human society is education. Education has the potency to transform and configure human social, emotional, mental and psychological intelligence for a better informed individual that can contribute to self and societal development. The achievement of the goals of education depends greatly on the students' academic achievement.Fundamentally, students' academic achievements in sciences generally and Physics in particular become worrisome, considering it importance in the development of a nation. Students' academic performance in Physics can determine the level of advancement in scientific base of any nation. This is because Physics is a basement of Science and its discoveries have continued to act as catalysts to technological advancement in the 21st century society. However, the fact that Physics is fundamental in the advancement of science development prompt the desire to investigating students' performance in the subject. According to the National Policy on Education (2016), academic excellence in Physics areas will provide high level skilled manpower who can apply the scientific knowledge to solve environmental problem, provide goods and services for the convenience of man. Sadly, review of studies such as Isola (2022) testified to poor performances of secondary school students in physics. This unimaginable level of failure in physics is understatement but worst hit are the major concepts embedded in the subject such as radioactivity, matter, upthrust, electricity and magnetism among others (Isola, 2022).

Basically, teaching has been argued as the most prominent determinant of the success or failure of any educational system. This is perhaps due to the fact that every curriculum instruction must be transferred to the learners using teaching process. Thus, teaching process is the prominent input variables require for the actualization of expected educational output. It could be said to function as a model structure that sustains the spark in the cognitive development process of a learner. Teaching involves bringing about or at least facilitating desirable changes in learners. This underscores the fact that teaching is the determinant of the success or failure of students academically. It facilitates easy interpretation of curriculum blueprint (instructions); determines the level of interest and retention command in students, as well as the general attainment of the aims of which it was design to achieve. In other words, teaching effectiveness is the type of teaching characterized by the exhibition of intellectual, social and emotional stability, love for children and positive disposition towards the teaching profession and ability to inspire good qualities in students.

Nevertheless, the quality of education outcome derived from Physics especially in secondary schools promote an intense doubt that the aims of the subject has been achieved. This is evident in issues of mass failure in the subject occasioned by the students' apathy, poor concentration, poor attendance, and poor retention. The current status quo as observed by the researcher may not be separated from teaching ineffectiveness, a situation which has bedeviled the school system making learning uninteresting; boring and highly dissatisfactory to students.

More worrisome is the fact that most of the teaching approaches adopted in transferring Physics instructions are vague and discouraging students' retention on the subject. Although many factors have been attributed to these challenges, it is a researcher's view that teachers' quality could play a prominent role in determining the extent of effectiveness or ineffectiveness in achieving Physics curriculum goals in secondary schools. This is premised on the fact that teachers are the transformers, moulders and designers of learners' skills and attitudes.

According to Afe (2021), teachers hold the key to their own teaching by playing crucial roles in educational attainment. The teacher is ultimately responsible for translating policy into action and principles based on practice during interaction with the students. They help the students to decide on what to learn, and how to learn. Teachers develop appropriate learning units, establish functional classroom cultures, effectively organize and manage classroom planning. They deliver focused, structural and engaging lesson as well as communicate clearly, the curriculum instructions to their students. These broaden the potentials of teachers as the machinery on which everything in school system is based.

Teachers' qualities are what qualify the teachers as persons responsible for the translation of curriculum instructions. They are the variables that distinguish two or more teachers uniquely. It includes both teacher qualifications and characteristics (input) that influence teachers' instruction (process) and students' outcomes (example achievement and motivation) (Akinyemi, *et.al.,* 2017).). Some of the teachers' quality as considered in this study are: teachers' educational qualification, years of working experience, and professionalism.

Teacher's qualification determines the level of educational attainment of a teacher. It has been argued that teachers' qualification has remarkable effect on their teaching effectiveness (Bett, Zau and Rice, 2003; Goldhaber and Brewer, 2000). On a contrary, Nilsen (2022) inferred that educational qualification of a teacher does not have significant effect on teacher's teaching effectiveness. However, this contradictory position of scholars informs the researcher's contemplation to assess whether teacher's qualification could really be responsible for the current state of teaching ineffectiveness as could be seen in the relatively poor academic performance of students in Physics in secondary schools.Another variable of teachers' quality that could have significant influence on teaching is the teachers' years of working experience. Effiong (2017) considers teacher's years of experience as the numbers of years a teacher puts in doing the teaching engagements. One could argue that the more an individual is on a particular job/task, the more efficient, proficient and passionate he/she might tend to be. This argument might either be true or false depending on if other essential variables that make working environment interesting are available or not available. Ololube (2018) maintained that teacher's years of experience has significant influence on their job performance and job satisfaction. Whether this is applicable to Physics is the concern for the study.

Teachers' professionalism is equally a vital aspect of teacher's quality that has a tendency to influence their obligatory effectiveness and efficiency. Ololube (2018) explains that a professional teacher is a teacher that acquired professional training that gives him/her professional knowledge, skills, technique, and aptitude required for effectiveness. It entails a

teacher that possesses requisite expertise in any area of specialty including Physics. It is noteworthy to state that a professional Physics teacher has a requisite knowledge of the concepts in the curriculum that does not need much effort to promote his/her efficiency and effectiveness. However, a professional might not render effective service when other important school variables are lacking.

From the positions of scholars on the effect of teachers' quality as highlighted in the background, many scholars believed that teachers' quality have significant effect on teaching effectiveness while others reported no significant effect. Therefore, consensus has not been reached on this case coupled with the fact that no such study has been found that assess their relational effect with specific emphasis on Physics in Uyo Local Government Area. It is premised on this position that the basis of this study is formed.

Objectives of the Study

The objectives of the study were to:

(i) Examine the differences in Physics teachers' quality in Uyo Local Government Area.
(ii) Ascertain the difference in students' academic performance in Physics based on teachers' working experience in Uyo Local Government Area.
(iii) Determine the difference in students' academic performance in Physics based on teachers' educational qualifications in Uyo Local Government Area.
(iv) Determine the difference in students' academic performance in Physics based on teachers' professionalism in Uyo Local Government Area.

Research Questions

The following research questions were used:

(i) What is the differences in Physics teachers' quality in Uyo Local Government Area?
(ii) What is the difference in students' academic performance in Physics based on teachers' working experience in Uyo Local Government Area?
(iii) What is the difference in students' academic performance in Physics based on teachers' educational qualifications in Uyo Local Government Area?
(iv) What is the difference in students' academic performance in Physics based on teachers' professionalism in Uyo Local Government Area?

Review of Literature

Advances in physics often enable advances in new technologies. For example, advances in the understanding of electromagnetism and nuclear physics led directly to the development of new products that have dramatically transformed modern-day society (Akinyemi, *etal*., 2017). As such, for Nigeria top development technologically, issues of students' academic performance in Physics must be holistically considered. Ujulu, Abah, Kilian and Hikon (2019) explained academic performance of students as a yardstick for education itself. It is the indices for testing educational quality and thus is a challenge to schools to aspire to maintain a high level performance in internal and mostly external examinations. Put differently, Cohen, Manion and Morrison (2011) refers to students' academic performance as qualified by measure of students' academic standing in relation to same age bracket. The optimization of students' academic

performance in Physics depends greatly on the teachers' quality.Teacher quality such as qualification, professionalism, confidence, motivation and experience may be contributing factors to their output. For instance, Ujulu, Abah, Kilian and Hikon (2019) investigated the influence of teacher's quality on student's academic achievements in secondary schools in Jalingo Local Government Area of Taraba State. It was found that majority of secondary schools' teachers in Jalingo were professionally qualified. But their teaching was not effective.

The professionalism of a teacher is a process that has to do with teachers adhering to the code of conducts guiding the teaching profession. Basically, two categories of teachers are employed in Nigeria. That is, teachers who are academically qualified and those that are professionally qualified to carry out instruction in the classroom. By academically qualified (non-professional) teachers, it means teachers who have academic training without professional teacher training as a result of enrolment into institution of higher learning to obtain qualifications that can enable them gain lucrative employment. While professionally qualified teachers, are teachers who get professional teacher training that gives them professional knowledge, skills, techniques, aptitude as different from the general education.According to Fehintola (2014), in a typical classroom setting, a professional teacher demonstrates excellent attitudes in his or her teaching better than non-professional teacher. Professionalism of a teacher has influence on a lot of variables such as student motivation, teaching methodologies, communication skills, organization of content and planning of lessons, students' participation during lessons, teacher confidence and knowledge of subject matter (Maende, 2012). Nabukenya (2007) opined that teacher professionalism affects the role of the teacher and his or her pedagogy, which in turn affects the students' ability to learn effectively.

Akinyemi, Shittu, Faduyile and Orunbon (2017) emphasized that teachers' professional traits are key predictors of improved students' academic performance. This according to the authors emanates from the fact that professionalism provides teachers with adequate knowledge of the subject and significant enablement to coordinate the classrooms environment for effective teaching. Zhaohui and Anning (2020) asserted that teacher professionalism improved teachers' research abilities and instructional methods and in turn, improved students' outcome significantly. This is similar to that of Oshinyadi (2020) and Akinyemi, etal., (2017) which amongst others, a positive correlation between teacher preparation and students' academic performance, teacher professional development and students' academic performance and a significant impact of teacher preparation pathways on students' academic performance scores. It was concluded that teachers with at least postgraduate diploma in education (PGDE) have the most significant impact on students' academic performance.

Qualification is also one of the critical factors that drive students' academic performance (Kola etal., 2015). Merriam - Webster Dictionary defines 'qualification' as a special skill or type of experience or knowledge that makes someone suitable to do a particular job or activity. Teachers' qualifications could, therefore, mean all the skills a teacher required to teach effectively. Such skills include formal education, experience, subject matter knowledge, pedagogy studies, duration of training, certificate/licensing and professional development (Kola

and Sunday, 2015). In another perspective, Goe (2007) defined qualifications as resources which teachers bring with them to the classroom and which are considered important in establishing who should be allowed to teach. These resources include teachers' coursework, grades, subject-matter education, degrees, test scores, experience, certification and credentials, as well as evidence of participation in continued learning such as internships, induction, and professional development. Akpan (2012) remarked that a teacher cannot teach the student well, if he or she is not well trained and grounded in the subject he is teaching due to poor qualification. While many studies showed that additional teacher education has a positive correlation with student achievement in some cases, others found that it negatively affects achievement (Greenwald, Hedges, and Laine in Goe, 2007; Hanushek in Kennedy, 2004). Goldhaber and Brewer in Effiong (2018) found that a teacher's advanced degree is not generally associated with increased student learning in Grade 8 to Grade 10, but for Mathematics and Science teachers, having an advanced degree does appear to influence students' achievement. The same was not found to be true for teachers of English or History (Goldhaber and Brewer in Tella, 2020). Tella (2020) found a positive relationship between these variables; with higher levels of performance among students whose teachers held a bachelor's or master's degree in mathematics than among students whose teachers were out-of-field. This is similar to the study done by Etiubon, *et al.,* (2014), Leonard, *et al.,* (2019), and Owolabi, *et al.,* (2012) which revealed that students taught by teachers with higher qualifications performed better than those taught by teachers with lower qualifications. It was also showed that students performed better in physics when taught by professional teachers.

Teacher working experience as a concept is the number of years a teacher has taught. Experienced teachers are argued to have a richer background of experience to draw from and can contribute insight and ideas to the course of teaching and learning, are open to correction and are less dictatorial in classroom (Grady, 2015), which indicated that as the number of years of teaching experience increases, job satisfaction also increases. According to the author, teachers with fewer years of teaching experience have relatively higher satisfaction, regarding salary, than those with many years of teaching experience. Furthermore, the author emphasized that people who stayed in the teaching profession longer are less satisfied with their professional role as teachers than those who are just employed. In an empirical study, Tella (2020) found that years of teaching experience were not significantly related to job satisfaction.

RESEARCH METHODOLOGY

The study employed descriptive survey research design. This design was found fit for the study because the data collected were already on ground and needed not to be manipulated. The study was carried out in Uyo Local Government Area of AkwaIbom State. Uyo Local Government Area is situated between the North and South East corner of AkwaIbom State. It is located between longitude 7^0 40^1 and 5^0 40^1 North of the equator (Department of Geography and Regional Planning, University of Uyo, 2023). Educationally, there are 14 public secondary schools and numerous private secondary schools in Uyo Local Government Area of AkwaIbom

State with numerous public and private higher institutions of learning. The choice of the area emanates from the fact that it has the largest number of students' population in AkwaIbom State, as such, what is influencing the students' satisfaction, improve learning commitment and promoting their academic performance in Physics in the area could equally be used to generalize in high extent what affect the other educational zones.

The population of the study comprised of the 36 Physics teachers in the 14 public secondary schools in Uyo Local Government Area of AkwaIbom State. Meanwhile, the senior secondary one students' academic performance scores (SS1) in the 14 public secondary schools served as raters of the teachers' quality. Two researcher's designed instruments tagged "Teachers' Quality Scale (TQS)" and the "Students' Academic Performance Checklist (SAPC)" were used for data collections. TQS was used in eliciting information from the Teachers on their educational qualification, professionalism, and years of working experience. The students' academic performances of the participating schools were gathered from the subject teachers in the sampled schools using the SAPC. The coding scale for the students' academic performance were categorized into four groups: 0-25 point, 26-50 point, 51-75 point, and 76-100 point which represented 1,2,3 and 4 in the analysis. The instruments were validated by experts. The instruments were administered by the researcher to the respondents during school hours using instant retrieval approach. To answer the research questions raised, mean scores was used to assess the differences in students' academic performance in Physics based on teachers' educational qualification, years of working experience, and professionalism. Meanwhile, the null hypotheses formulated were tested using t-test and the analysis of variance.

RESULTS

Research Question 1: What is the differences in Physics teachers' quality in Uyo Local Government Area?

Table 1: Physics Teachers' Quality Chart

Codes Schools	Total Physics Teachers	Teachers' Quality Variables								
		Educational Attainment			Years of Working Experience				Professionalism	
		HND/ Degree	Masters	PhD	1-10yrs	11-20yrs	21-30yrs	31Above	Education	Non-Edu.
A	2	2	-	-	2	-	-	-	1	1
B	2	2	-	-	1	1	-	-	-	2
C	3	2	1	-	2	1			1	2
D	2	1	1	-	2	-	-	-	1	1
E	2	2	-	-	1		1	-	1	1
F	4	2	1	1	2	-	1	1	2	2
G	3	2	1	-	2	1	-	-	-	3
H	2	2	-	-	2	-	-	-	1	1
I	2	1	1	-	1	-	1	-	1	1
J	3	2	1	-	2	1	-	-	-	3
K	2	1	1	-	1	1	-	-	1	1
L	2	2	-	-	1	1	-	-	-	2
M	5	3	1	1	2	1	1	1	2	3
N	2	2	-	-	1	-	1	-	1	1
Total	36	26(72.2%)	8(22%)	2(%)	22(61.1%)	7(19.4%)	5(13.9%)	2(6%)	12(33.3%)	24(66.7%)

(Source Field Survey, Third Term Session, 2023)

Table 1 indicates that majority of Physics Teachers in Uyo Local Government Area were HND/degree holder (72.2%), only within working years of experience of 1-10years (61.1%) without professionalism in education (66.7%). It therefore likely that teachers are not routinely expose to career development and may be those that were exposed must have attrite from the profession. This may be responsible for lack of mentoring, coaching and the resulted failure in students' academic performance in Physics. Meanwhile, these teachers' qualities are represented in Figure 1, 2, and 3 below.

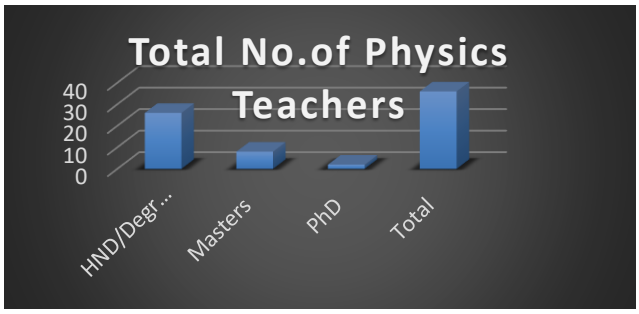

Figure 1: Number of Physics Teachers with regards to Educational Attainment in Uyo Local Government Area

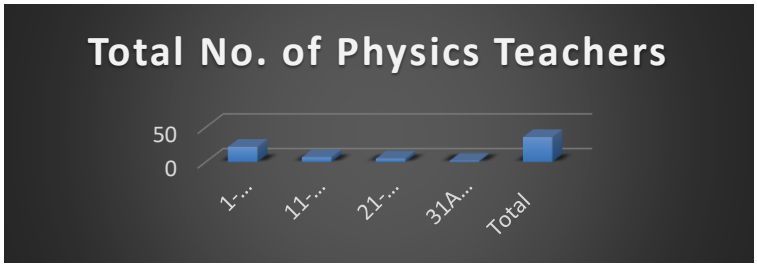

Figure 2: Number of Physics Teachers with regards to Years of Working Experience in Uyo Local Government Area

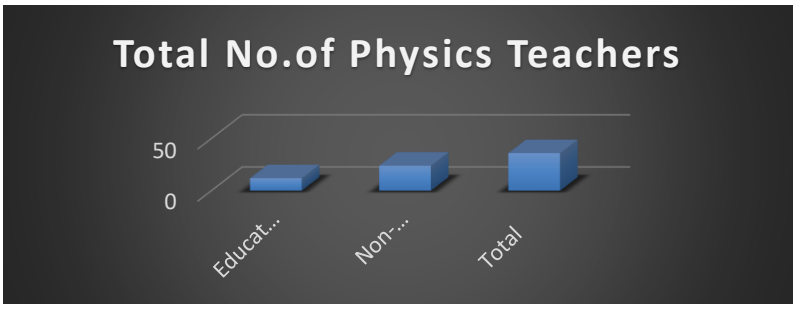

Figure 3: Number of Physics Teachers with regards to Professionalism in Uyo LGA

Research Question 2: What is the difference in students' academic performance in Physics based on teachers' working experience in Uyo Local Government Area?

Table 2: Mean Score Analysis on the Differences in Students' Academic Performance (SAP) based on Teachers' Years of Experience (N=26)

Years	N	Mean of SAP	SD
1-10	22	13.21	3.91
11-20	7	41.01	2.32
21 and above	5	55.09	2.10

Table 2 indicates the mean score of 13.21, 41.01, and 55.09 for the Physics teachers with the years of working experience 1-5, 5-10, and 11 years and above respectively. The result shows

that students under the tutelage of teachers with many years of experience had the highest mean score of 55.09 greater than those with lesser number of years. This implies that teachers with the highest years of experience in Physics exhibited more teaching effectiveness than those teachers with lesser experience in the field. Therefore, students' academic performance in Physics differs based on teachers' years of experience in Uyo Local Government Area. The implication is that students' academic performance in Physics improves along with improved teachers' years of working experience. In other words, teachers who have more experience exhibited more advancement in instructional handling, improve self-esteem, teaching effectiveness and zealousness in impacting on their students. The findings of this study is supported by the Etiubon and Benson (2014) but however, contradicted that of Tella (2020).

Research Question 3: What is the difference in students' academic performance in Physics based on teachers' educational qualification in Uyo Local Government Area?

Table 3: Mean Score Analysis on the Difference in Students' Academic Performance (SAP) in Physics Based on Teachers' Educational Qualification (N=38)

Qualification	N	Mean of SAP	SD
HND/Degr	26	37.50	4.11
Masters	8	40.25	3.00
PhD	2	48.62	2.09

Table 3 shows the mean score of students taught by teachers with Doctorate degree (48.62) is the greatest closely followed by those with Master (40.25) and HND/First Degree (37.50) in descending order. In essence, this implies that students' academic performance in Physics differ based on teachers' academic qualification attainment. This implies that students' academic performance in Physics improves along with improved teacher professional development and career advancement. In other words, teachers who have higher degree exhibited more advancement in instructional handling, improve self-esteem, teaching effectiveness and zealousness in impacting on their students. In essence, the teachers with higher educational attainment are more proficient in coordinating students' interest, sustaining their concentration, and enhancing their retention on the subject. The findings of this study is supported by the findings of Etiubon and Benson (2014).

Research Question 4: What is the difference in students' academic performance in Physics based on teachers' educational professionalism in Uyo Local Government Area?

Table 4: Mean Score Analysis on the Differences in Students' Academic Performance (SAP) Based on Teachers' Professionalism (N=36)

Profession	N	Mean of SAP	SD
Graduate of Education	12	83.21	0.91
Graduate of other fields	24	41.01	2.32

Table 4 indicates the mean score of 83.21 and 41.01 for the Physics teachers that graduated with education qualification and those from other fields outside education that are just assigned to handle the subject respectively. The result shows that students under the tutelage of teachers with degree in education have the highest mean score of 83.21 greater than those with other non-education degree, 41.01. This implies that teachers who have degree in education specifically in Physics exhibited more teaching effectiveness than those teachers with qualification outside the field of education. Therefore, students' academic performance in Physics differs based on teachers' professionalism in Uyo Local Government Area. The implication is that students' academic performance in Physics improves with teachers' professionalism. In other words, teachers who have degree in education specifically in Physics exhibited more teaching effectiveness than those teachers with qualification outside the field of education. In essence, the graduates from the field of Physics education are more proficient in coordinating students' interest, sustaining their concentration, and enhancing their retention on the subject. The findings of this study aligned with the position of Oshinyadi (2020)that there is a positive correlation between teacher preparation and students' academic performance, teacher professional development and students' academic performance and a significant impact of teacher preparation pathways on students' academic performance scores.

Recommendations

In light of the conclusion drawn from the findings of the study, the following were recommended to AkwaIbom State Government (in particular) if quality of students' academic performance in Physics is desired to be sustained:

(i) AkwaIbom State Government and corporate organisation should create avenues for workshops and seminars geared towards improving teachers' professionalism vis-à-vis teaching proficiency. This will enhance their efficiency in the coordination of assigned and statutory responsibilities in schools for quality assured educational service delivery.

(ii) That higher degrees should be encouraged for teachers in secondary schools and high remuneration be given to holders of these degrees.

(iii) That only qualified Physics teachers should teach the subject at the secondary school level. While the holders of HND/Degree should be allowed to proceed in their education either through part-time or study leave likewise teachers without teaching qualification should pursue their Post Graduate Diploma in Education. As a result, their teaching method shall be improved upon in order to better the performance of students in Physics.

Conclusion

The assessment of the influence of teachers' quality on students' academic performance in Physics has serve as valuable pointer to the development of self before engagement in the management of others. The findings of the study have shown that the teachers handling Physics in Uyo LGA are majorly first degree holders which lack career development opportunities, mentorship, and the requisite knowledge of educational professionalism. However, the study has

brought to the fore that only properly qualified teachers with experience and self-confidence can effectively engaged, recognized, and supervised students in an effective teaching atmosphere that can assist in the enhancement of students' academic retention as well as encouraging them (the students) to optimally exhibit favorable attitude to work vis-à-vis to the successful academic achievement. Thus, these findings will enhance students' learning effectiveness and efficiency in Physics. Therefore, it is concluded that students' academic performance in Physics improves with teachers' professionalism; that students' academic performance in Physics improves with teachers' years of experience; and that students' academic performance in Physics improves with teachers' higher attainment in education.

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