

# Comparative Analysis of Students' Academic Performance in Physics in Public and Private Secondary Schools in Kaltungo Town of Gombe State

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**Abstract**—This study compares Physics students' academic performance between public and private secondary schools in Kaltungo town of Gombe State. A structured questionnaire and a documented results of National Examination Council (NECO) was used in data collection on performance of students' in Physics. The collected data was analyzed using descriptive statistics and t-test. The result showed that private school students' academic performance in Physics was better than that of public school. It was further discovered that some factors such as; availability and degree of use of school facilities, parents' social high status, student-teacher relationship, and effective lesson time use are responsible for academic achievement differences. As a result of the findings, it is recommended that government pay more attention to the education sector, more especially science subjects to improve Physics students' academic performance.

**Keywords**— Academic Performance, students, Private Schools, Public Schools, Physics.

## I. INTRODUCTION

Academic performance is usually seen as a basic pointer of how effective students understand learning objectives, typically measured by grades, test scores, and any other evaluation tools (Sarker, Paul, Thasin, Hasa, 2024). There are many factors that may affect academic performance which include; cognitive abilities, motivational levels, background of family, effectiveness of teaching, and the environment where the learning takes place (Zajda, 2021). In a period where knowledge and education determine the economy and social progress, achievement academically will play a significant role in determining future opportunities for personal and national development. Technological advancements and changes that occurred in formats of teaching, which include online and hybrid learning models, are additional factors that can alter academic performance.

Moreover, psychological factors such as confidence, anxiety, and emotional intelligence have been recognized for their role in academic achievement (Sander & Fuente, 2020). Gaining a deeper understanding of these diverse influences is essential for educators, researchers, and decision-makers working to enhance student learning and educational quality.

In the recent decades all over the world, students have been the pride and the dignity of every important society, therefore the role in updating the quality of education which in turn improves the financial status of the country. The Nigerian

federal government acknowledges the significance of education in the nation's progress, perceiving it as a tool for national development and encouraging the productive advancement of its citizens.

The Nigerian education suffered serious challenges in the 1980s due to implementation of the Structural Adjustment Program (SAP), a policy recommended by the International Monetary Fund (IMF). This policy emphasize on restructuring economy which includes; devaluation of currency and reduction in spending by the government, which in turn affected education as well as other public services negatively. Therefore, all the three tiers of government find it difficult to pay public school teachers' salaries, leading which resulted in decline in educational standard. The situation was worsened by the military government in power at that time, where some corrupt officials embezzled funds intended for the education sector (Aluko, Odewale, Taiwo and Adefeso, 2024).

To keep with the responsibilities life, teachers begin to teach private lesson part time and evening classes. People with degrees saw the good outcome of that began to teach in other to make money as a result of job scarcity and because of the of fact that public school are not free has been an incrementing call toward privatization of education in Nigeria since the mid – 1980s (Afemikhe and Imobekhai, 2014). While government on the other hand tried to review the educational structure by making a good package offer of salaries and other benefits to teachers and making public education free again but yet the private schools continue to progress. At present, the private schools keep on increasing more especially the secondary schools despite the federal government policy of liberalization, most people have the notion that the standard of education in private schools are better than that of public schools.

Ekandayo (2013) reported that performance is mostly affected by a range of statistical analysis including students-staff ratio, qualification of teachers, and the years of experience of the teachers. Nowadays in Nigeria, private schools are classified into three different categories; the expensive, middle class and the less cost private schools based on what the parent may afford. According to the research conduct at the University of Newcastle, in the three of the poorest district they look at “an estimate that 75% of school children were admitted in private school. (Vasiliki, K.

W. (2023)). In educational settings, the study of science will be incomplete without physics being inclusive. Therefore, physics is the one of the major branch of pure science in addition to chemistry and biology which are compulsory by the national policy on education (Nwuba and Osuafor, 2021) and it is concern with finding out things and understanding what lies behind every day phenomena.

#### *Concept of Academic Performance*

Academic performance may comprise students' academic achievement and mastery of skills in different subjects. The key indicators are: Grades and CGPA, standardized test scores, attendance and engagement, assignment completion and progression in academics. The indicators evaluate students' academic achievement, progression, and areas for improvement, indicating the direction of the overall academic performance.

#### *Public versus Private Schools*

There are key factors that will be considered when it comes to Private versus Public Schools in Nigeria. The breakdown of the disparities are:

- i. Management and funding:  
Public Schools: they are basically managed and funded by the government and usually with lesser fees or even free of charge. Nevertheless, they serious issues of underfunding, which leads to poor infrastructure and needy resources.  
Private Schools: most often funded with students' tuition fees and other investments. Privately owned schools have better capital for infrastructural development, advanced teaching aids, and extracurricular programs. But most times they are exorbitant and exclusive.
- ii. Infrastructure and facilities  
Public Schools most times face challenges of infrastructure, classroom congestion, insufficient facilities, and restricted modern technological access. While privately owned schools boast superior infrastructure, more well-equipped classrooms, laboratories, libraries, and sporting amenities (Eshun, 2022)
- iii. Curriculum and academic rigor  
Public schools make use of standardized national curriculum consistently nation wide but may not adapt to rapid change in global trends or provide advanced learning in specialized subjects. While Privately owned schools are flexible and offer wider and more broader curriculum, including international curricula and specialized subjects (Aguas, 2022).
- iv. Teacher quality and training  
Public Schools find it difficult in terms of motivating and professional development of the teachers due to inadequate funding and poor working conditions while some private schools have better working conditions and professional development opportunities.
- v. Student performance and outcomes.

Private Schools usually produced better students with good grades, due to its consistency on personalized learning, lower class sizes, and rigorous educational structures while public schools struggle with low student performance due to inadequate infrastructure and overpopulated classrooms. Nevertheless, some public schools achieve high academic success and produce excellent results (Sander & Fuente, 2020).

- vi. Cost and accessibility  
Private Schools are sometimes very cost and exclusive, restricting its accessibility to only the rich class while public schools are more affordable and accessible because of lower fees or free education, therefore rendering it a necessary option for many families that cannot afford private schools (Azimi, Friesen, and Woodcock, 2023).

Ultimately, the choice between private and public schools depends on personal requirements and principles. While private schools offer better infrastructure and academic performance, public schools bridge the gap of making education accessible to higher population.

#### *Statement of the Problem*

Physics has tremendous contribution to national development and technological inventories globally, but the standard of students performance in the subject is not meeting the target at which education is entitle to achieve both in the public and private sectors of education (Nwuba and Osuafor 2021). The Gombe state government in its effort to see that science education subjects, especially physics is upgraded for better development of the state but the attitude of students more especially in public schools toward the subject is not encouraging. This study compares the academic performance of students in Physics in two selected schools one public and one private in Kaltungo town of Gombe State at Senior Secondary School level.

#### *Objectives of the Study*

The objective of the study to determine the following:

- i. To compare the academic performance of students in physics at SSCE level in both public and private schools in Kaltungo town.
- ii. To determine the factors responsible for the differences in academic performance between public and private schools in Kaltungo town.
- iii. To suggest for improvement of academic performance in Physics at SSCE level in schools.

#### *Research Questions*

- i. Is there any significance difference in mean academic performance between students in public and that of private schools in Physics at SSCE level in Kaltungo town?
- ii. What are the contributing factors to the differences in academic performance between private and public schools in Kaltungo town?

- iii. How can the academic performance of students in both private and public schools be made better at SSCE level?

### *Hypothesis*

Null Hypothesis ( $H_0$ ): There is no significant difference in the mean of academic performance of Physics between public and private schools at SSCE level in Kaltungo town.

Alternative Hypothesis ( $H_1$ ): There is a significant difference in the mean of academic performance in Physics between public and private schools at the SSCE level in Kaltungo town.

### *Scope of the Study*

This research evaluates the academic performance of students from private and public schools in the SSCE physics examinations in Kaltungo town of Gombe state.

## II. METHODOLOGY

This chapter outlines the approach and study process utilized by the researcher, the study's population, the sample, the technique of data collection, and the approach to data analysis employed in the study is detailed and debated.

### *Design of the Study*

The research design employed was ex-post-factor design because the study attempted to test hypotheses on the performance of two groups which differ on characteristics such as ownership of schools.

### *Area of the Study*

The area of the study is Kaltungo town of Gombe State, located in north-eastern Nigeria and the geographical coordinates are latitude 9.88°N and longitude 11.43°E (Loyal and Wali, 2023)

### *Sample and Sampling Technique*

The data for this research was collected from the past results sheet of National Examination Council (NECO) which cover all the students that sat for examination from 2016-2018 in the two selected secondary schools in Kaltungo town.

### *Instrument for Data Collection*

The results collected from the Examination offices of the two schools. School reference results sheet of Senior Secondary School Certificate Examination (NECO) was used as the main instrument for data collection for this study.

### *Method of Data Analysis*

The researcher adopted the use of Statistical Packages for the Social Sciences (SPSS) for the analysis. The results collected were coded and changed from ordinal scale to interval scale which was used as the data. The statistical technique employed in analysis of the data was t-test. This is because the data used are non-parametric in nature, and it was used to compare two group of population whether two population are equal or not, and to determine whether there are statistically significant differences between the means in two

related and unrelated groups of students, that is why it is sometimes called students t test. The decision to use the public and private school was to see if ownership of school can play a role in bringing about differences in the academic performance of students. The t-test is used to establish whether or not a significant difference exist between the variables at 0.05 level of significance.

## III. RESULTS

*Research Question 1:* Is there any significance difference in the mean academic performance between students in public and private schools in Physics at SSCE level in Kaltungo town?

TABLE 1: Mean Academic performance of Physics students in private and public and secondary schools in Kaltungo town.

Schools Diff.	N	Mean	SD	Mean
Michael Lamai Trustee	52	27.51	10.158	7.07
GGSS Kaltungo	103	20.44	9.250	
<b>Total</b>	<b>155</b>	<b>47.95</b>	<b>19.408</b>	

Results from Table 1 shows the mean and standard deviation of the discrepancies in academic performance of public and private Secondary Schools in Physics at SSCE level in Kaltungo town. It reveals that the students in public Secondary School (GGSS Kaltungo) has a mean of 20.44 and standard deviation of 9.25 while that mean performance of students from private Secondary School (Micheal Lamai Trustee) was 27.51 and standard deviation of 10.158 at 0.05 significant value of. This suggest that private secondary school students had better mean compared to public secondary school students. As a result, there is a distinction in academic achievement between students in public and private secondary institutions, with those from private secondary schools exhibiting superior academic performance.

*Research Question 2:* What are the factors that contribute to the variations in academic performance between private and public schools in Kaltungo town?

Table 2 above reveals the several responses to factors that are responsible for difference(s) in academic performance in Physics between public and private secondary school pupils in Kaltungo town. It shows that items 1, 2, 3 and 4 have 63.11%, 39.81%, 69.90% and 66.02% of the public secondary school students agreed that factors such as: availability and degree of use of school facilities, parents' social high status, Student - teacher rapport, and effective lesson time use are all positive influencers of students' academic achievement in their schools, while 36.69%, 60.19%, 30.10% and 33.01% of them disagreed accordingly.

Similarly, the table also indicate items 1,2,3 and 4 have 71.15%, 63.46, 78.85 and 80.77 of private secondary school students also agreed that factors mentioned above influences students' academic performance positively while 28.85%, 36.54, 21.15 and 19.23 objected.



TABLE 2: Response to numerous contributing factors responsible for the discrepancies in Physics' academic performance between private and public schools students in Kaltungo town.

S/N	FACTORS	N	PUBLIC SCHOOLS				N	PRIVATE SCHOOLS			
			A	%	D	%		A	%	D	%
1	The availability and degree of use of school facilities have a positive impact on students' academic performance.	103	65	63.11	38	36.69	52	37	71.15	15	28.85
2	Students' academic success is positively influenced by their parents' high social status.	103	41	39.81	62	60.19	52	33	63.46	19	36.54
3	Student - teacher rapport influences students' academic performance positively	103	72	69.90	31	30.10	52	41	78.85	11	21.15
4	Effective lesson times use by school teachers has positive influence students' academic achievement	103	68	66.02	34	33.01	52	42	80.77	10	19.23
	Total	412	246	238.84	165	159.99	208	153	294.23	55	105.77
	Mean	103	61.5	59.71	41.25	40.00	52	38.25	73.56	13.75	26.44

### Hypothesis testing

TABLE 3: Analysis of t-test for the differences between Physics' academic performance of private and public secondary school students.

Schools	N	Mean	SD	t <sub>(cal)</sub>	t <sub>(tab)</sub>
Michael Lamai Trustee	52	27.51	10.158	4.213	0.001
GGSS Kaltungo	103	20.44	9.25		
Mean/SD Difference		7.07	0.908		

From table 3 above, the mean achievement score of students in physics in private secondary school (Michael Lamai Trustee) is 27.51 which is greater than that of students in public secondary school (20.44) with a difference of 7.07 and the calculate value of t-test analysis is 4.213 which is greater than the table value (0.001) at 0.05 level of significance. It means that there is significant difference in academic performance of public and private secondary school students. Therefore, the null hypothesis is rejected.

### IV. DISCUSSION

This research revealed that, private secondary schools students' academic performance in Physics in Kaltungo town was better than that of public school students, which is in agreement with Adeyemi (2014), he stated that privately owned secondary schools concentrate more on teaching and learning than the administration work, thereby achieving better results than their public counterpart. This view is in line with Lloyd (2016) stated that public schools which perceives education as good but neglect the educational failure or success in the hands of children' parents and the public. This means that educational issues are not taken with all the seriousness by the government as it demands with the public schools.

The research outcome also show that various factors responsible for the difference(s) in Physics' academic performance between public and private secondary school students in Kaltungo town, these include; availability and degree of use of school facilities, parents' social high status, Student - teacher rapport, and effective lesson time use. The finding is in supports of Alsbury and Whilaker (2015) findings which opines that teachers are very significant factor in creating conducive learning atmosphere. He suggested further that as professionals, they should be aware that teaching is far more than just passing information. Some teachers knew that they need to engage in the 'search for more life-enhancing and

effective processes. Onabamiro (2017) also opined that some teachers lack subject mastery therefore cannot communicate very well while others are too inflexible in methods of teaching. The study results confirms Adesina (2019) who pinpoint poor and inefficient physical facilities, overpopulated learning space, outdated teaching techniques among others, as factors. Stressing more on facilities in school and moral guiding its provision, Fabunmi (2017) asserts that school facilities if supplied will help in teaching and learning and which will improve academic achievement of the students.

### V. CONCLUSION

Comparing the academic performance in Physics of students in Kaltungo town both private and public Secondary Schools, the research was able to find out the connections between them. The study indicates that government have not been meeting the necessary demand of the education sector despite having superior teaching staffs and better finance compared to private Secondary Schools, hence the low academic performance. The findings also indicate various factors that have influence on Physics academic performance of students in the area.

### VI. RECOMMENDATIONS

In view of the findings of this paper, it is recommended that government should prioritize education sector, especially science education in public secondary schools in order to improve the academic achievement of progressive students. In addition, government should also and always ensure that both public and private schools are properly supervised. Conducive teaching and learning in terms of classrooms, welfare of teachers, necessary instructional materials should always be provided by the owner.

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