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Abstract: This study aimed to compare senior secondary school student's academic performance in Physics in external examinations from 2014-2018 using specific objectives and research questions for all the secondary schools selected from Makurdi local governments. ANOVA, which is the analysis of variance, was used in analyzing the scores of the students' tests. Similarly, three other hypotheses were tested at a 0.05 level of significance using the Chi-square. The first hypothesis analysis shows no significant difference in male students' academic performance in their Physics subject. The result also showed no significant differences in the male students’ academic performance in Physics after they were separated from the female students. The third hypothesis also indicated no significant difference in the male students’ performance in Physics in private and public secondary schools. However, there were fluctuations in students' academic performance in Physics in Makurdi over the years of study. As a result, it is recommended that the government empower the ministry of education's supervisory unit to provide timely and thorough teaching instruction supervision to ensure that education practice in the state follows authorized regulations.

Keywords: comparison, academic performance, physics students, secondary school

I. INTRODUCTION

The comparison of academic performance using students’ academic performance is challenging since student performance is the product of socio-economic, psychological and environmental factors. Education ought to be growing as a profitable industry with prime objective of maximizing profit by delivering high quality education that produces well educated, skilled mannered students according to needs and requirements of the dynamically growing market. There are two groups of students as generally perceived: those who improve and those who do not improve on their academic performances (Alaye, 2013).

Students performance is also affected by different factors such as learning abilities because new paradigm about learning assumes that all students can and should learn at higher levels but it should not be considered as constraint because there are other factors like race, gender, sex that can affect students’ performance Hansen (2011).

Mishae (2011) explained the effect of age, qualification and distance from learning. Place on the students’ performance in his explanation concerns the readiness in doing a particular discipline in the school; for instance, a student that is not capable of doing sciences in the secondary school joins sciences because his/her friends are offering the subjects. Winston et al (2012) added that the academic performance of student is also coined in the student’s impatience (this time discount behavior). Yuonne (2012) further elaborated that students’ academic performance is very much dependent on SEB (socio-economic background) as per his statement, secondary school student’s performance is with statically significant differences. Alexander (2011) explained that some of the practice adopted by secondary school administration could also influence their academic performance, such as organized study groups, debating clubs, media and culture clubs, etc.

According to Bello Lawal, an Abuja-based educationist, a member of the All Nigeria committee of Principals of secondary school (ANCOFSS). The truth is that the reading culture in Nigeria is generally poor. To make it worse, these days, most of our students hardly read. Instead, they waste their precious time watching televisions or films, listening to music, playing to music, playing video/computer games.

Another educationist Mohammed (2010), attributed the dismal performances of students in external examinations to the government's lackadaisical attitude and its refusal to fund the education sector adequately.

According to him, “on several occasions we clamored for improved budgeting allocation to the education sector, but all these have fallen on deaf ears.” For instance, UNESCO recommends that 26 percent of any country's budget be allocated to the education sector instead of what we have in Nigeria (Abube, 2009).
The government is paying lip service to the education sector. Other countries that understand the importance of education have taken proactive steps to fund their education sector adequately. For instance, Ghana has allocated 29 percent to its budget education sector, even far more than the UNESCO recommendation. The same thing with countries like South Africa and Botswana who allocated 35 and 37 percent respectively to the education sector. So until these things are implemented, we would continue to martyr age the future of our children.

Statement of the problem

Secondary school students’ performances in physics external examinations, specifically WAEC, have been a nagging issue in Nigeria, particularly in the Makurdi Local Government Area of Benue State.

There has been inadequate funding of secondary schools in Makurdi Local Government Area of Benue State, which is due to the global economic reality as it has dampened the morale of teachers and other workers as it has affected their productivity which could affect the students and lead to poor performance in physics examination. The result is an increasing rate of examination malpractices and contempt by secondary school physics teachers. What is more worrisome is that the Parent-Teacher Association (PTA), the Alumni Association, communities, and social organizations contributing in cash and kind to finance schools seem not to be participating as actively as they were doing before thus heightening the financial crisis in school.

The problem of this study is the inabilities of the government to pre emotively take drastic measures in financing the educational sector, which would improve teaching and learning. This study, therefore, is to find out the performance of students in physics examination, specifically WAEC and the improvement strategies to be taken if needed in secondary schools of Benue State.

Purpose of the study

Based on the background and the problem of this study, the study's primary purpose is to compare the senior secondary school students' academic performances in Physics external Examinations from 2014-2018 (a case study of Makurdi Local Government Area, Benue State), specifically the WAEC.

Objective of the Study

1. To determine the difference in the academic achievement of senior secondary school students in Physics examination (WAEC) from 2014-2018.
2. To determine the difference in the quality of grades of students in Physics external examination (WAEC) from 2014-2018.
3. To find out if there is a significant difference in the academic performance of male and female students of private and public schools in Physics in Makurdi Local Government Area of Benue State.
4. To find out if there are significant differences in terms of school equipment/facilities between the private and public secondary schools in Makurdi Local Government Area.
5. To find out if there are significant differences in terms of qualification of teachers in private and public schools in Benue State.

Research questions

The following research questions were formulated to guide the study. These questions are:-

i. What is the difference in the academic achievement of junior students in Physics from 2014-2018?
ii. What is the difference in the quality of grades of students in Physics from 2014-2018?
iii. Is there any significant difference in the academic performance of male and female students of private and public schools in Physics in Makurdi Local Government Area?
iv. Do private schools have better equipment/facilities than public senior secondary schools?
v. Do private schools have more qualified teachers than public secondary schools?

Significance of the Study

The usefulness of the research work in educational system cannot be over emphasized if the result of the study is properly utilized. It is going to be a benefit to the students, teachers, parents and government. This would help provide some information for curriculum designers and classroom teachers to utilize relevant approaches to enhance meaningful learning and teaching of Physics Education, Physics Education students.

Thus, the knowledge of students’ cognitive style and attitude would be very useful in both academic and career enhancement.

The research design of this study is multiple research design, i.e., quasi-experimental design and survey. Quasi-experimental design involves selecting a group upon which a variable is tested, without any random pre-selection processes. It is often integrated with individual case studies; the figures and results generated often reinforce the findings in a case study and allow some statistical analysis.

In fact, quasi-experimental design is normally constructed to analyze the effects of different educational programs on two groups of children, which generates results that show that one program is more effective than the other. While survey research method. According to Abdullahi (2015), the survey research method is a form of descriptive research used when dealing with a very systematic collection of data or information from population or sample of the population through personal interview opinion scale, questionnaire and observation.
Rasaq (2010) also viewed survey research as a study investigating the entire population of people or items by collecting data from a sample drawn from the population and assuming that they represent the whole population.

In line with the objective of the study that is to find out differences in academic performance among students of private and public schools in Makurdi, the target population for this study is made up of secondary school students and teachers from the following private and public schools in Makurdi. They are totaling eighty thousand (80,000) in number. Their distribution is as shown in table 3.1.

![Table 3.1: Target Students’ population for the Study](image)

The researcher marked the test and analyzed it statistically. The instrument for data collection used in this study was questionnaires designed by the researcher. A set of questionnaires for both students and teachers was used. Forty questions were constructed from the researcher's Physics subject and the questions were answered by the students selected as samples from the entire population. A teacher questionnaire was also constructed to have vital information for making a good comparative analysis of public and private schools within Makurdi.

According to Osuala (2010), an instrument for a research could be valid when measuring what is supposed to measure. Therefore, to establish the validity of the instrument, experts and professionals were consulted, as such the language can be adjusted and some items could be dropped. The research instruments were submitted to the research supervisor for further comments and suggestions before the final draft was taken for pilot testing.

The researcher collected a letter of instruction from the department of Education U.N.N. to the Benue state universal Basic Education Board division to help the researcher to get permission from the schools’ authorities. Thus, one thousand one hundred and four (1104) copies of the questionnaires were distributed to the six different public and private secondary schools in the Makurdi, with the help of research assistants trained on the process of distributing and collecting the questionnaires on behalf of the researcher.

The researcher adopted the self-administration method of test administration in the sense that the researcher administered the test—items with the help of research assistants and then collected them back for analysis. This method was chosen because in some schools’ permanent teachers influence external exams by telling students correct answers, e.g., senior secondary school certificate exams. The completed questionnaires were collected back and checked and ensured that the respondents complied with the instruction given in the questionnaires.

The statistical techniques used in analyzing the data collected are: ANOVA (analysis of variance) and Chi-square (X²) statistical tools as a non-parametric method of testing hypotheses. The researcher used ANOVA to analyze the scores obtained after the study because the groups are two. The decision to use the variable sex was to see if gender can play a role in bringing about differences in the performance of both public and private school students. The researcher also used Chi-square, which is used to establish whether a significant difference exists between the variables at a 0.05 level of significance.

## II. RESULT

The researcher conducted tests for 1104 students from both private and public secondary schools selected from Makurdi. The researcher marked the test and analyzed it statistically.
It can be seen from the above table that there is no much difference in the Mean and Standard deviation between the two different schools studied. The difference in the Mean scores of private and public schools is less than one. The same thing applied to Standard deviation as mentioned in the table. This shows that there was no significant difference that exists in the students’ academic performance in the geography subject of the two different schools studied.

Summary table showing the candidates with high-quality grades, low-quality grades and those with (failure) grade in Physics between 2014 and 2018.

The analysis in table 3 shows there is neither a significant increase in the quality of performance nor a significant decrease in the performance of Physics students in Makurdi over the years of study.

The only noticeable event is that there is fluctuation over the years in the quality of the grades.

For instance, in the year 2014 out of 4435 candidates that sat for Physics examination, 2524 (56.9%) had high-quality grades, 1243 (28.0%) had low-quality grade and while 668 (15.1%) candidates had failure (F9) grade. Also, in the year 2015, out of 3385 candidates that sat for Physics, 1274 (37.6%) had high-quality grades, 797 (23.5%) had low-quality grade and while 1314 (38.9%) candidates had failure (F9) grade. Likewise, in the year 2016, out of 4289 candidates that sat for Physics, 2296 (53.5%) had high-quality grades, 1036 (23.5%) had low-quality grade and while 957 (21.0%) candidates had failure (F9) grade. In the year 2017, out of 5459 candidates that sat for Physics, 2569 (49.8%) had high-quality grades, 1825 (33.1%) had low-quality grade and 957 (17.8%) candidates had failure (F9) grade. In the year 2018, out of 6859 candidates that sat for Physics, 4020 (58.6%) had high-quality grades, 1124 (16.4%) had low-quality grade and 1715 (25.0%) had failure (F9) grade.

Testing of Research Hypotheses

Hypothesis I: There is no significant difference in the academic performance of male students in Physics subject of private and public secondary schools.

The first hypothesis was tested using one-way analysis of variance to see whether a difference could be obtained in the academic performance of male students in two schools and the result is presented below:
Table 4
Summary of the scores obtained by male pupils of private and public schools in Makurdi Local Government Area

<table>
<thead>
<tr>
<th>Scores of variation</th>
<th>Sum of squares</th>
<th>Degree of freedom (df)</th>
<th>M-square</th>
<th>F-Ration</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between the group</td>
<td>5458.5</td>
<td>237</td>
<td>1293664.5</td>
<td>0.60</td>
<td>0.05</td>
</tr>
<tr>
<td>Within the group</td>
<td>38495</td>
<td>2</td>
<td>769912</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>239</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The summary table above shows that the calculated value (0.60) is less than the critical value (3.00) at 0.05 with d.f (2,237), which is less than 1. This means that the null hypothesis is accepted that there is no significant difference in the academic performance of male students of public and private secondary schools in Makurdi.

There is no significant difference in the academic performance of female students in Physics subject of private and public secondary schools in Makurdi local government area.

The same procedure was employed in analyzing female scores in the two schools and the result is presented below:

Table 5
Summary of the scores obtained by the female students of private and public schools in Makurdi Local Government Area

<table>
<thead>
<tr>
<th>Scores of variation</th>
<th>Sum of squares</th>
<th>Degree of freedom (df)</th>
<th>M-square</th>
<th>F-Ration</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between the group</td>
<td>1659</td>
<td>273</td>
<td>393183</td>
<td>0.585</td>
<td>0.05</td>
</tr>
<tr>
<td>Within the group</td>
<td>11,498</td>
<td>2</td>
<td>229978</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>239</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The summary table above shows that the critical value (3.00) is greater than the calculated value (0.585) at 0.05 with d.f (2,237), which is less than 1. This means that the null hypothesis is accepted that there is no significant difference in female students' academic performances of private and public secondary schools in Makurdi local government area.

Hypothesis 2: There are no significant differences in terms of better school facilities between the private and public secondary schools.

Table 6
Below shows the Number of Private and Public schools’ Teachers who have chosen “Yes” and “No” concerning better school facilities between private and public schools.

<table>
<thead>
<tr>
<th>Better school facilities</th>
<th>Private</th>
<th>Public</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>30%</td>
<td>25%</td>
<td>55%</td>
</tr>
<tr>
<td>No</td>
<td>10%</td>
<td>35%</td>
<td>45%</td>
</tr>
<tr>
<td>Total</td>
<td>40%</td>
<td>60%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 7
Chi-square statistics showing the opinions of private and public secondary school Teachers on the Better school Facilities in private and public secondary schools

<table>
<thead>
<tr>
<th>Cell</th>
<th>F0</th>
<th>Fe</th>
<th>(F0-Fe)2</th>
<th>(F0-Fe)2/Fe</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>30</td>
<td>22</td>
<td>8</td>
<td>64</td>
</tr>
<tr>
<td>B</td>
<td>10</td>
<td>33</td>
<td>-23</td>
<td>529</td>
</tr>
<tr>
<td>C</td>
<td>25</td>
<td>18</td>
<td>7</td>
<td>49</td>
</tr>
<tr>
<td>D</td>
<td>35</td>
<td>27</td>
<td>8</td>
<td>64</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
<td></td>
<td>24.032</td>
</tr>
</tbody>
</table>

The above shows that the Chi-square value, which is 24.032 is far greater than the Chi-square table value, which is 3.841 at a 0.05 level of significance with the degree of freedom of 1. This shows no significant differences in terms of school facilities among the private and public secondary schools.

Hypothesis 3: There are no significant differences in terms of qualified teachers between private and public secondary schools.

Table 8
Indicating the Percentage of Private and Public secondary school Teachers that have chosen “Yes” and “No” about qualified teachers in private and public secondary schools

<table>
<thead>
<tr>
<th>Qualified Teachers</th>
<th>Private</th>
<th>Public</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>40%</td>
<td>20%</td>
<td>60%</td>
</tr>
<tr>
<td>No</td>
<td>25%</td>
<td>15%</td>
<td>40%</td>
</tr>
<tr>
<td>Total</td>
<td>65%</td>
<td>35%</td>
<td>100%</td>
</tr>
</tbody>
</table>
The study also revealed that there was no significant difference that exists in the academic performance of female students in physics subject in the schools studied. Although, the schools differ in many areas like funding, administrative management, location, number of teachers and variables such as incentives to teachers, adequate monitoring, etc., no significant differences were noted in the performance of the students in Physics.

- The study revealed significant differences in terms of school facilities between the private and public secondary schools. This was arrived at after using the Chi-square value which is 24.032 which is far greater than the Chi-square table value, which is 3.841 at 0.05 significance with degree of freedom of 1. This therefore confirmed that there were no significant differences between private and public secondary schools in terms of school facilities.

- The table 4.5 shows that there were significant differences in terms of qualified teachers between the private and public secondary schools selected from the local governments. This was arrived at after calculating the Chi-square value, which was 2.2435 is less than the Chi-square table value, which is 3.841 at 0.05 of significance with degree of freedom of 1. This means that there are significant differences in terms of qualified teachers between private and public secondary schools, and based on the collected data, it shows that private schools are having more qualified teachers than the public secondary schools in the local governments.

IV. CONCLUSION

The results of the study indicated that there was no substantial rising in the performance of students in the External Examination with respect to Physics as a subject and that it cannot be categorically stated that there is a fall in the performances of students in Examination in Physics as a subject within the period under study. What emerged from this study was that there was a fluctuation in students’ academic performance in Physics in Makurdi over the years of study in quantitative terms.

Consequently, the analysis showed that there are no significant differences in academic performance of the male students in physics after they were separated from the female students. This was arrived at after comparing the scores obtained by the students of each school. Thus, based on the data collected and analyzed, it proved that there was no significant difference in the male students’ performance of private and public secondary schools. The outcome of hypothesis two mentioned that there was no significant difference in the academic performance of female students in physics of private and public secondary schools from the male students. This was arrived at after comparing the scores obtained by the students of each school. It revealed that no significant differences existed in the female students’

<table>
<thead>
<tr>
<th>Cell</th>
<th>F0</th>
<th>Fe</th>
<th>F0-fe</th>
<th>(F0-fe)²</th>
<th>(f0-fe)²/fe</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>40</td>
<td>39</td>
<td>1</td>
<td>1</td>
<td>0.0256</td>
</tr>
<tr>
<td>b</td>
<td>25</td>
<td>21</td>
<td>4</td>
<td>16</td>
<td>0.7619</td>
</tr>
<tr>
<td>c</td>
<td>20</td>
<td>26</td>
<td>-6</td>
<td>36</td>
<td>1.3846</td>
</tr>
<tr>
<td>d</td>
<td>15</td>
<td>14</td>
<td>9</td>
<td>1</td>
<td>0.0714</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.2435</td>
</tr>
</tbody>
</table>

\[ \chi^2 = 2.2435 \]

Table 9

Chi-square statistics showing opinions of Private and Public secondary school Teachers on the Availability of Qualified Teachers in private and public secondary schools in Makurdi

III. SUMMARY OF FINDINGS

There was no significant difference in male students' academic performance in all the six private and public secondary schools studied. The male students were separated from the females to see if any significant differences can be found in their performance. The results revealed no significant differences in the male secondary's academic performances in the physics subject.

It is therefore important to note that the main reason for classifying the students according to gender was necessitated by the fact that the researcher wanted to see whether or not gender plays a role in determining academic performance among students as expressed by Yusuf (2013) that gender plays a role in determining academic performance. He supported his ideas using a study conducted on the academic performance of students in higher institutions of learning where he found out that male students performed better than female students because the male students have enough time to go to the library as compared to their female counterparts who are most often preoccupied with domestic activities.

The table 4.1 Show that the calculated value of the Chi-square, which is 2.2435 is less than the Chi-square table value, which is 3.842 at 0.05 of significance with a degree of freedom of 1. This means that there are significant differences in terms of qualified teachers in private and public secondary schools and based on the collected data, it shows that private schools are having more qualified teachers than the public secondary schools.
performance in all the schools selected from Makurdi local government.

REFERENCES


