Influence of School Infrastructures on Students’ Academic Performance in Public Senior Secondary Schools in Kogi State, Nigeria

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Abstract: School infrastructures are usually defined to include the site, the building and all unmovable structures in the school. The study shows how effective funding and maintenance of school infrastructures influence students’ academic performance. A descriptive survey research designed was used. The simple random sampling procedure was adopted. The population of this study consists of 56 principals and 3,394 teachers in public secondary schools in Kogi State. A questionnaire: Influence of School Infrastructures on Students’ Academic Performance (ISISAP) was used for data collection. Two research questions were answered and two hypotheses tested at 0.05 level of significance with the use of chi-square. Data were analyzed using simple percentage. The finding reveals that school infrastructures to a large extent influence students’ academic performance. However, there are problems encountered in the application of school infrastructures planning which include; involvement of non-educationist expert, shortage of professional literature for planning, engagement of large contractors in school infrastructures planning, poor maintenance of school infrastructures and poor maintenance approach as a result of inadequate inventories. This paper therefore recommends involvement of educational experts for school infrastructures planning, acquisition of professional text materials for school infrastructures planning by developing countries, engagement of smaller contractors in school infrastructures planning, application of well planned strategies by school managers and development of good planned approach by government and educational managers.

Keywords: School Infrastructures, Students’ Academic performance and Secondary Education.

Introduction

Education is seen as the backbone of development in any nation. It improves the quality of life of a society through refinement of its potentials. Education further enhances the application of man’s achievement towards improvement of his environment. In every known great nation, therefore, national development was preceded and accomplished by educational advancement. Today, there is an increasing faith in the casual relationship between education and national development especially in the developing countries like Nigeria. Education has been seen as a vehicle for economic, social-cultural and political development of nations and individual (Olowonefa & Kalu, 2016).

It must be stressed that education cannot be an instrument par excellence for achieving national development where the secondary education is not effectively managed to accomplish its aims and objectives. In the management of the school, principals’ gives direction and lead to achieve objectives; ensure the implementation of school programmers, including efficient and effective maintenance of school infrastructure with its facilities (Saleh & Kalu, 2017). Principals’ managerial roles involves supervision of instructional programmers in the school, management of school personnel, management of school finance, maintenance of student welfare services and
establishment of good community relations. Principals’ failure to perform these roles effectively and efficiently will affect the tone of the school and achievement of the school aims and objectives. To this end, principals are seen to be responsible for the three ‘Ps’ in the school – the people, the program me, and the plant (Olowonefa & Kalu, 2010). In the management of the school infrastructure, the principal ensures that school infrastructure planning are effectively managed and maintained to achieve educational aims and objectives.

The school infrastructure is defined to include the site, the building, equipment and all the unmovable structures in the school. It is the controlled environment which facilitates the teaching–learning process while at the same time protecting the physical well being of the occupants (Olowonefa & Kalu, 2016). School infrastructure planning can be taken to be the process of selecting a suitable site for the school. The buildings are designed to satisfy the educational needs of the students. School infrastructure planning being a process begins with the proper survey of the educational needs of students and terminates with the completed building where the students and their teachers will sit to interpret the curriculum (Olowonefa & Kalu, 2016). For proper interpretation of curriculum by teachers to students in the classroom, the management and maintenance of school infrastructures need to be done efficiently and effectively. In fact, the adequate provisions of school infrastructures bring about effective and purposeful teaching which influences students’ academic performance.

Adeyemi (2008) explains that academic performance refers to all areas of students’ endeavours in the school system with more emphasis to subject matters in the classroom. Hence, the author emphasize that the students attitude to learn in the school, the level of participation during teaching and learning process, interaction with students in terms of socialization, good characters and behaviors, high level of psychomotor skills, communication skills and good expression of oneself, including good grades in both formative and summative evaluation in subject matters in the school system is regarded as academic performance.

Good quality and standard of school depend largely on the provision, adequacy, unitization and management of school infrastructure. Akinsolu (2014) asserted that educational curriculum cannot be sound and well operated with poor and badly managed school infrastructure. From all indication, school infrastructures are physical resources that facilitate effective teaching and learning. In fact, research reports have revealed that a significant relationship exists between school infrastructures and students’ academic performance. Ikoya and Onoyase (2015) reported that only 48% of public secondary schools across the country have school infrastructures in adequate quality and quantity. Ajayi (2015) reported that some of the Nigerian public secondary schools are dilapidated due to inadequate funding while most of the schools are living in their past glories. Such situation hinders effective teaching and learning, making the process rigorous and uninteresting to students and teachers. This seems to be the situation in most public secondary schools in Kogi state where most of the public schools experienced poor adequate funding from the state government through its secondary education board in charge of the various secondary schools, which then limits the availability of these facilities necessary for effective teaching and learning to take place. In fact, the adequate provision of school infrastructures bring about effective and purposeful teaching and learning experience which has a strong influence on students’ academic performance.

Researchers like Wilcockson (2014), Lawal (2010), Ajayi (2012) and Owoeye (2010) have long identified the importance of school infrastructures in teaching and learning while the inadequacy, deterioration and lack of maintenance of these infrastructures will spell doom for the teachers and students in the teaching and learning activities. Negligence in the maintenance of school infrastructures has many negative consequences. When school infrastructures are not well managed and maintained, they constitute health hazards to students and teachers who use the infrastructures. For instance Fabumi (2007) reported the killing of pupils and teachers of a primary school in Nigeria when the school walls and roofs collapsed. Even large amount of money invested on school infrastructures are wasted when school buildings are left to deteriorate without maintenance.
Research Questions

The following research questions were formulated to guide the study:
1. How does school infrastructures funding influences students’ academic performance in public senior secondary schools in Kogi state?
2. How does maintenance of school infrastructures influences students’ academic performance in public senior secondary schools in Kogi state?

Purpose of the Study

The main aim of this research work is to show the influence of school infrastructures on students’ academic performance in public senior secondary schools in Kogi state, Nigeria. Specifically, the study aims to achieve the following objectives:
1. To determine how school infrastructures funding influences students’ academic performance in public senior secondary schools in Kogi state
2. To examine how maintenance of school infrastructures influences students’ academic performance in public senior secondary schools in Kogi state

Hypothesis

Based on the objectives of the study and the stated research questions, two hypotheses were constructed to help address the research problem:

HO1: There is no significant influence of school infrastructures funding on students’ academic performance in public senior secondary schools in Kogi state

HO2: There is no significant influence of maintenance of school infrastructures on students’ academic performance in public senior secondary schools in Kogi state

Methodology

The study adopted a survey research to show the influence of school infrastructures on students’ academic performance in public senior secondary schools in Kogi state, Nigeria. A population of 56 principals and 3,394 teachers in public secondary schools in Kogi state was used. Simple random sampling procedure was used in determining the sample. Taro Yamene formulae was used in determining the sample size of the study. Using Taro Yamene formulae (1973: 723) for selection of sample size, the sample size is therefore determined by applying an equation as follows:

\[ n = \frac{N}{1+\alpha^2N} \]

Where;

\( n \) = Sample size

\( N \) = Total Population

\( \alpha \) = Level of significance

1 = Constant

Applying the equation to a population of 3,450 consisting of 56 principals and 3,394 teachers at a 5% (0.05) level of significance, we obtained the sample size as follows:

\[ n = \frac{3,450}{1+3,450 (0.05)^2} \]

\[ = 3,450 \]
The sample size is therefore 358. The level of significance indicates the confidence the researcher has on the sample that the subjects drawn, has all the characteristics of the population. The level of significance in management and social sciences is arbitrarily fixed at 5%, this means that we are 95% confident that the sample members have all the essential characteristics of the population.

A 10 – item researchers made questionnaire with four- point modified Likert rating scale of strongly agreed (SA), Agreed (A) and Disagreed (D) strongly disagreed (SD) was used to collect data from the respondents. The instrument was validated through Peers review and the reliability co-efficient of 0.74 was derived by administering the questionnaire twice at two weeks interval to ten teachers outside the zone of the study, using Split Half reliability estimate.

The instrument was personally administered to the principals and teachers. Simple percentages were used to answer the research questions. Chi-square was used to test the null hypotheses at 0.05 level of significance.

Results

The results of the findings are presented in tables 1 and 2.

Table 1: School infrastructures funding influences students’ academic performance in public senior secondary schools in Kogi state

<table>
<thead>
<tr>
<th>S/N</th>
<th>ITEMS</th>
<th>SA %</th>
<th>A %</th>
<th>D %</th>
<th>SD %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Adequate funding in the provision of classrooms enhance students’ learning which in turn improve their academic performance</td>
<td>79</td>
<td>22</td>
<td>56</td>
<td>14</td>
</tr>
<tr>
<td>2</td>
<td>Adequate funding in the provision of laboratory building enhance students’ learning which in turn improve their academic performance</td>
<td>64</td>
<td>18</td>
<td>41</td>
<td>20</td>
</tr>
<tr>
<td>3</td>
<td>Adequate funding in the provision of library building enhance students’ learning which in turn improve their academic performance</td>
<td>83</td>
<td>23</td>
<td>107</td>
<td>24</td>
</tr>
<tr>
<td>4</td>
<td>Adequate funding in the provision of staff offices enhance teachers’ job performance which in turn improve their academic performance</td>
<td>99</td>
<td>28</td>
<td>149</td>
<td>18</td>
</tr>
<tr>
<td>5</td>
<td>Adequate funding in the provision of sports environment enhance students’ psychomotor learning which in turn improve students’ academic performance</td>
<td>146</td>
<td>41</td>
<td>147</td>
<td>15</td>
</tr>
</tbody>
</table>

The table above shows that most of the respondents both agree and strongly agree that school infrastructures funding influences students’ academic performance in public senior secondary schools in Kogi state.

Table 2: Maintenance of school infrastructures influences students’ academic performance in public senior secondary schools in Kogi state

<table>
<thead>
<tr>
<th>S/N</th>
<th>ITEMS</th>
<th>SA %</th>
<th>A %</th>
<th>D %</th>
<th>SD %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A clean marker-board makes learning interesting and enhance students’ academic performance</td>
<td>106</td>
<td>29</td>
<td>167</td>
<td>14</td>
</tr>
<tr>
<td>2</td>
<td>Good windows makes learning environment comfortable and increases students participation</td>
<td>167</td>
<td>47</td>
<td>141</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
<td>Good library facilities enhance students’ learning which in turn improve students’ academic performance</td>
<td>91</td>
<td>26</td>
<td>177</td>
<td>8</td>
</tr>
</tbody>
</table>
The table above shows that most of the respondents both agree and strongly agree that maintenance of school infrastructures influences students’ academic performance in public senior secondary schools in Kogi state.

Test of Hypothesis

The statement of hypothesis is tested using chi-square at 0.05 significance level. The chi-square is denoted by;

\[ X^2 = \sum \frac{(O - E)^2}{E} \]

Where;

\[ X^2 = \text{Chi-square} \]
\[ O = \text{Frequency Observed} \]
\[ E = \text{Frequency Expected} \]
\[ \sum = \text{Summation} \]

HO1: There is no significant influence of school infrastructures funding on students’ academic performance in public senior secondary schools in Kogi state

<table>
<thead>
<tr>
<th></th>
<th>Observed</th>
<th>Expected</th>
<th>O – E</th>
<th>( \frac{(O – E)^2}{E} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>1219</td>
<td>179</td>
<td>1040</td>
<td>( \frac{(1219-179)^2}{179} = \frac{1,081,600}{179} = 6042.4 )</td>
</tr>
<tr>
<td>Disagree</td>
<td>571</td>
<td>179</td>
<td>392</td>
<td>( \frac{(571-179)^2}{179} = \frac{153,664}{179} = 858.4 )</td>
</tr>
<tr>
<td>Total</td>
<td>1900</td>
<td>358</td>
<td>1432</td>
<td>6900.8</td>
</tr>
</tbody>
</table>

\[ X^2 = \sum \frac{(O - E)^2}{E} \]
\[ X^2 = \frac{1,081,600}{179} + \frac{153,664}{179} = 6042.4 + 858.4 = 6900.8 \]
\[ 179 179 179 179 \]

The null hypotheses is therefore rejected since it is above the significance level. The rejection of the hypotheses as shown in table 3 was as a result of the fact that most of the respondent who agrees and disagrees to the null hypotheses was analyzed and the result of the analyses was above 0.05 percent which is the level at which when exceeded, a null hypotheses can be rejected. This therefore shows that, there is significant influence of school infrastructures funding on students’ academic performance in public senior secondary schools in Kogi state

HO2: There is no significant influence of maintenance of school infrastructures on students’ academic performance in public senior secondary schools in Kogi state
<table>
<thead>
<tr>
<th></th>
<th>Observed</th>
<th>Expected</th>
<th>O – E</th>
<th>((O – E)^2)</th>
<th>(E)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>1261</td>
<td>179</td>
<td>1082</td>
<td>((1261-179)^2=1,170,724)</td>
<td>6540.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(\frac{179}{179})</td>
<td></td>
</tr>
<tr>
<td>Disagree</td>
<td>529</td>
<td>179</td>
<td>350</td>
<td>((529-179)^2=122,500)</td>
<td>684.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(\frac{179}{179})</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1790</td>
<td>358</td>
<td>1432</td>
<td></td>
<td>7224.7</td>
</tr>
</tbody>
</table>

\[X^2 = \frac{(F_o - F_e)^2}{E}\]

\[X^2 = \frac{(1261-179)^2 + (529-179)^2}{179} = \frac{1,170,724 + 122,500}{179} = \frac{1,303,224}{179} \approx 7224.7\]

The null hypotheses is therefore rejected since it is above the significance level. The rejection of the hypotheses as shown in table 4 was as a result of the fact that most of the respondent who agrees and disagrees to the null hypotheses was analyzed and the result of the analyses was above 0.05 percent which is the level at which when exceeded, a null hypotheses can be rejected. This therefore shows that, there is significant influence of maintenance of school infrastructures on students’ academic performance in public senior secondary schools in Kogi state.

**Discussion of Findings**

The study which sets out to ascertain the influence of school infrastructures on students’ academic performance in public senior secondary schools in Kogi state, Nigeria revealed that, the quality of school infrastructures plays a vital role in student’s academic performance. Earthman (2015) supported this when he pointed out that schools with lesser quality of school infrastructures has minimal effects on teachers’ efficiency and effectiveness and by extension to students’ academic performance, which will in turn affects entirely the general performance of the school. For instance, school buildings that can adequately provide a good learning environment are essential for student success. Old building does not have such features as control of thermal environment, adequate lighting, good roof and adequate space that are necessary for a good learning (NCES, 2010). However, they are challenges encountered in the application of school infrastructures planning which include; involvement of non-educationist expert, shortage of professional literature for planning, engagement of large contractors in school infrastructures planning, poor maintenance of school infrastructures and poor maintenance approach as a result of inadequate inventories. Non-educationists like the architect are involved in the educational planning. They have no knowledge of school planning, and educationists who are involved do not share the same expertise as engineers and architects. Few texts on professional literature for school infrastructures planning are written. This makes developing nation like Nigeria to have required knowledge necessary for efficient and effective school infrastructures planning. Large and small contractors present problems to school infrastructures planners. The smaller contractors are easier to control, but the problem may lie in the construction of the work, though construction cost may be less. Furthermore, maintenance is not properly done and inventories are not kept regularly. Finally, there is lack of a planned approach to maintenance. This is related to the inadequate keeping of inventories.

**Conclusion**

They are indeed a significant relationship existing between school infrastructure sand students’ academic performance. Schools with well coordinated infrastructures planning and maintenance practices will perform better. Conducive school physical environment could enhance staff performance, students’ school attendance, involvement in academic activities and academic performance positively which in turn help secondary education in producing individuals who will contribute to sustainable national development, while the inadequacy, deterioration and lack of maintenance of these infrastructures will spell doom for the teachers and students in the
teaching and learning activities. Negligence in the maintenance of school infrastructures has many negative consequences. When school infrastructures are not well managed and maintained, they constitute health hazards to students and teachers who use the infrastructures.

Recommendations

Based on the findings of the study, the following recommendations are made:

i) School infrastructures planning should be handled by educational experts like educational administrators and planners for successful achievement of school aims and objectives

ii) Educational organizations in developing countries should acquire more professional text materials on school infrastructures planning for their clientele to make good use of the materials in order to ensure general school infrastructures planning in the country

iii) Smaller contractors should be employed as school infrastructures planners for easier control by school management

iv) A well planned techniques should be applied by the government and educational managers on how proper and regular maintenance should be given to infrastructures in the school

v) Government and educational managers should develop a good planned approach to maintenance. This can be achieved with adequate record keeping of inventories.

References


