PERCEIVED IMPACT OF LEARNING ENVIRONMENT ON PUPILS’ PERFORMANCE AND INTEREST IN BASIC SCIENCE AND TECHNOLOGY IN OBANLIKU LOCAL GOVERNMENT AREA OF CROSS RIVER STATE, NIGERIA

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ABSTRACT

This study investigated the impact of physical learning environment on pupils’ performance and interest in basic science and technology. The investigation was carried out in Obanliku Local Government Area of Cross River State, Nigeria. This study used a survey design and 294 pupils were involved in the study. The research questions were answered using mean and standard deviations statistics while the hypotheses were tested using chi-square statistical tool. The study found that physical learning environment has significant impact on pupils performance and interest in the area under investigation. It recommended among others conducive classroom with basic facilities like tables, desks, fans, chairs and equipped laboratory, technical and vocational workshop as well as equipped library for effective teaching of this subject.

Key Words: Physical learning environment, performance, interest, basic science and technology.

Introduction

The development of any nation depends on its scientific and technological awareness. The world is said to be a global village today because of its scientific and technological network which have made life in the entire universe more comfortable. Science has provided foundation for wealth creation and improved quality of life (Lawal, 2007). Nigeria a developing nation and can achieve her dreams of growing into a developed nation through progress in science and technology. To realize this dream, the Nation Policy of Education (FRN, 2004) recommends the study of science and technology from primary level of education. This awareness on the importance of science and technology was precipitated by Fafunwa’s (2004) warning on the value placed on teaching and learning of science in schools in developing countries.
Learning environment is defined as all the physical, psychological, emotional, social and cultural influences affecting the growth and development of a learner (Gebraith, 2005; Heimstra, 1991). The physical learning environment according to Haggai (2002) includes among other things; school building, classroom, garden, stationeries, magnetic boards, libraries, laboratory equipment, technical and vocational workshops and recreational facilities. Ayeni and Atalada (2004) assert that the various types of equipment required in a classroom, which range from desk, chairs, chalkboard, cupboards to shelves, dustbins, dusters create a conducive learning environment which enable a teacher to achieve some level of instructional efficiency and effectiveness.

Social learning environment according to Gabbraith (2005) refers to the teacher-pupils and pupils interaction. Social learning environment can make or mar the academic performance of the pupils. If their learning environment is friendly, both pupils and their teacher move freely and relate to one another both within and outside the school. This consequently motivates pupils’ interest in learning.

Interest refers to the way in which urges, drives, desires, aspirations and strivings or needs influence the choice of alternatives in the behaviour of human beings. Interest spurs us to action (Akagwu, 2002). Iheanacho (2002) define interest as an organism condition that results in a desire for further stimulation from a particular type of object or experience. Osafehinti in Akinsola and Popoola (2004) observes that lack of interest by the pupils is a major problem associated with pupils’ low achievement resulting in their failure in basic science. Obodo (2004) also points out that pupils’ low interest in basic science makes them absent themselves during lessons. Odugwu (2002) and Adaobi (2006) observed that pupils perceived science as a very demanding subject, which requires high intelligence and that positive interest in science will lead to persistence and better performance.

Academic performance, according to Akpuruaja (2006) is a framework for determining the synergy between the level of skill development in learning and the output measurable by grading system. For one to attain a high performance, interest or motivation must be the bedrock or the “set stepping stone”.

Basic science is a body of organize knowledge in which concepts and principles are presented so as to express the fundamental unity of scientific concepts without any bias to the compartmentalized science (Adewum, 2002). It is a subject which embraces all science subjects, namely Biology, Chemistry, Physics and Mathematics, therefore it is a subject that cut across the school curriculum and needed in all branches of science, applied science and social science. Pupils should be given sound knowledge and proper grasp of basic science at the primary and junior secondary classes which in Nigeria include 9-years basic science and technology programme.

The studies seek to determine the extent to which the school physical environment will influence pupils’ academic performance and interest in basic science and technology.

Research Questions

The following research questions guided the study:

1. To what extent does the school physical learning environment influence academic performance of pupils’ in basic science and technology?
2. To what extent does the school physical learning environment influence pupils’ interest in basic science and technology.
Hypotheses

The following hypotheses were formulated and tested at 0.05 alpha level:

1. Physical environment of pupils has no significant impact on their performance in basic science and technology.
2. Physical environment of pupils has no significant impact on their interest in basic science and technology.

Theoretical Background of the Study

This study is anchored on two theories, namely Ausubel (1968) and Piaget (1961). Ausubel theory of meaningful learning. Ausubel based his own theory on ideas and materials that facilitate learning and which the author referred to as organizers. Ausubel’s view is that each learner has a body of previous experience with he/she interacts with the new situation (his/her repertoire of knowledge). What therefore facilitates learning in Ausubel’s conception is the association between what is already known and the new learning materials. Ausubel’s work in relation to basic science teaching/learning is relevant because it helps the teacher and learner on how to cope with the over abundance of knowledge available for instruction.

While Piaget in cognitive development theory posited that learning occurs as a result of cognitive (or intellectual) development. Implications of this theory to this study is that instruction should be adopted to pupils developmental levels.

Adodo (2011) conducted a study in Ondo State on predication of attitude and interest of science students of different ability of their academic performance in basic science. Three instruments wee used for the study. They are, Science Oriented Attitude Scale (SOAS), Science Vocational Interest Inventory (SVII) and Achievement Test in Integrated Science (ATIS). The study used a quasi-experimental design. The sample consisted of 30 junior secondary school or students in Nigeria. Multiple regression was used to analyze the hypotheses raised for the study and out come shows that science interest possesses the strongest strength for predicting performance than attitude among the students in their different ability level group. It was therefore recommended that teaches should use good innovative methods that will stimulate students interest in an attempt to make learning of science more meaningful to the learners and thereby generating improved learning outcomes that will lead to a change of attitude to science.

Results of the Findings

Research Question I:

To what extent does the school physical learning environment influence academic performance of pupils in basic science and technology?

Table 1: Means and standard deviation of items measuring the influence of school physical learning environment on primary school pupils’ academic performance in basic science and technology.
Table 1 show the means and standard deviations of the items used in measuring the influence of school physical environment on pupils’ academic performance in basic science and technology (BST) in Obanliku Local Government Area of Cross River State. From the table, the means range from 4.1224 to 4.5102 showing a positive influence of school physical environment on pupils’ performance in basic science and technology. Also the grand mean was 4.3714 showing a positive influence. Similarly, all the statements involved are positive statement and the means are high showing either an agreement or strong agreement with the statements. More so, the low values of standard deviation (0.58270 to 1.08290) indicate the high level of homogeneity of the respondents in agreeing with the fact that the school physical environment influence pupils’ performance in basic science and technology among primary school pupils in Obanliku.

**Hypothesis 1:**

Physical environment of school has no significant impacts on pupils’ performance in basic science and technology.

**Table 2:** Chi-square, observed and expressed frequency of impact of school physical environment on pupils performance in basic science and technology.

<table>
<thead>
<tr>
<th>Occurrence</th>
<th>Observed N</th>
<th>Expected N</th>
<th>Residual</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>1</td>
<td>26.7</td>
<td>-25.7</td>
</tr>
<tr>
<td>3.2</td>
<td>2</td>
<td>26.7</td>
<td>-24.7</td>
</tr>
<tr>
<td>3.4</td>
<td>5</td>
<td>26.7</td>
<td>-21.7</td>
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<tr>
<td>3.6</td>
<td>10</td>
<td>26.7</td>
<td>-16.7</td>
</tr>
<tr>
<td>3.8</td>
<td>23</td>
<td>26.7</td>
<td>-3.7</td>
</tr>
<tr>
<td>4.0</td>
<td>49</td>
<td>26.7</td>
<td>22.3</td>
</tr>
<tr>
<td>4.2</td>
<td>39</td>
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<td>19.3</td>
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</tr>
<tr>
<td>5.0</td>
<td>53</td>
<td>26.7</td>
<td>26.3</td>
</tr>
</tbody>
</table>

\[ \chi^2 = 143.16^* \]

\[ \text{df} = 10 \]

\[ p = .000^- \]  

Significant
significant at .05 levels. 0 cell (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 26.7.

From table 2, the result of the chi-square tests shows a value of 143.16 at 10 degree of freedom (p>.000). Since the critical value is at p<.05, it mean that he null hypothesis is rejected. Therefore, the school physical environment has significant impact on the pupils’ performance in basic science and technology.

**Research Question 2:**

To what extent does the school physical learning environment influence pupils’ interest in basic science and technology?

**Table 3:** The mean scores and standard deviation of school physical learning environment on pupil’s interest in basic science and technology.

<table>
<thead>
<tr>
<th>S/N</th>
<th>Items</th>
<th>N</th>
<th>( \bar{x} )</th>
<th>stdder</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lack of laboratory facilities discourage me from studying basic science and technology</td>
<td>294</td>
<td>4.345</td>
<td>.83093</td>
<td>Agree</td>
</tr>
<tr>
<td>2</td>
<td>Pupils who relate intimately in basic science and technology perform well in the subject</td>
<td>294</td>
<td>4.4184</td>
<td>.68014</td>
<td>Agree</td>
</tr>
<tr>
<td>3</td>
<td>My teacher’s friendliness in basic science and technology encourages my understanding of the subject</td>
<td>294</td>
<td>4.3946</td>
<td>.77555</td>
<td>Agree</td>
</tr>
<tr>
<td>4</td>
<td>My teachers’ regular marking of my assignment is a joy for my learning basic science and technology</td>
<td>294</td>
<td>4.3299</td>
<td>.73665</td>
<td>Agree</td>
</tr>
<tr>
<td>5</td>
<td>My teacher’s rewards during classroom lessons in basic science and technology makes me happy with the subject</td>
<td>294</td>
<td>4.2415</td>
<td>.75237</td>
<td>Agree</td>
</tr>
</tbody>
</table>

**Table 3** presents the mean and standard deviation of the items used for measuring the influence of school physical learning environment on pupils’ interest in basic science and technology among pupils in Obanliku Local Government Area. From the table, the least mean was 4.2415 while the highest mean was 4.4184 and the overall mean was 4.3456, it implies that the respondents agree to all the items. Since the items involved are positive and the respondents agree to all the items, it means school physical environment positively influence pupils’ interest in basic science and technology. To ascertain the significance of the influence of the school physical environment on the pupils’ interest on basic science and technology hypothesis 2 was tested.
Hypothesis 2:

Physical environment of pupils has no significant impact on their interest in basic science and technology.

Table 4: Chi-square test of impact of physical learning environment on pupils’ interest in basic science and technology

<table>
<thead>
<tr>
<th>Occurrence</th>
<th>Observe N</th>
<th>Expected N</th>
<th>Residual</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.6</td>
<td>1</td>
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<tr>
<td>3.0</td>
<td>1</td>
<td>26.7</td>
<td>-23.5</td>
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<tr>
<td>3.2</td>
<td>6</td>
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<td>26.7</td>
<td>-18.5</td>
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<tr>
<td>3.8</td>
<td>9</td>
<td>24.1</td>
<td>-15.5</td>
</tr>
<tr>
<td>4.0</td>
<td>38</td>
<td>26.7</td>
<td>-13.5</td>
</tr>
<tr>
<td>4.2</td>
<td>47</td>
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<td>62</td>
<td>26.7</td>
<td>37.5</td>
</tr>
<tr>
<td>5.0</td>
<td>23</td>
<td>24.5</td>
<td>-1.5</td>
</tr>
</tbody>
</table>

\[ x^2 = 143.16^* \]

*significant at .05 levels; 0 cell (0%) have expected frequencies less than 5. The minimum expected cell frequency is 24.5

Table 4 shows the calculated chi-square value of 234.33 (p<.05), since the p value was 0.000 (p = .0000) which is less than .05 therefore the null hypothesis is rejected. To this end, the physical environment of the school has significant impact of pupils’ interest in basic science and technology.

Discussion of the Result

Learning environment and pupils’ academic performance in basic science and technology.

The result of hypothesis one shows that the school physical environment has significant impact on the pupils performance in basic science and technology. The implication of these findings is that the learning environments of the school is a significance factor in the consideration of pupils’ performance in basic science and technology. The finding is in line with earlier work (Adodo, 2011; Ukoha, 2009) which showed that the physical environment of the school significantly relate to the academic performance of pupils’ in basic science and technology.

Further more, Ukoha (2009) had separately found out that the learning environment factors such as teaching aids, instructional amenities, laboratory, libraries were significance factors in the consideration of pupils’ academic performance in science. The same implies to cases in Obanliku Local Government Area of Cross River State.

The outcome of this study showed that the absence of variables like teaching aids, infrastructural amenity, libraries, classroom facilities, would discourage pupils’ from the study of basic science and technology (mean = 4.3714), (mean = 4.3456). The responses of the respondents showed that hey agree with the
items. They have a positive response that the learning environment influence pupils’ performance in basic science and technology.

The result of hypothesis two shows that, the physical environment of the school significantly impact on pupils’ interest in basic science and technology. The implication of these finding is that the learning environment of the school are significant factors in the consideration of pupils’ interest in basic science and technology. These finding are in line with earlier work (Padhi, 1991; Das, 1996 and Adodo, 2011) which showed that the social environment of the classrooms and indeed the physical environment significantly relate to the interest of pupils in basic science and technology.

Also, Suntha (2005) and Pedhi (1991) had in separate instances found that environmental factors such as pupil-pupil interaction, teacher-pupils’ interaction, teachers’ qualification and so on were significance factors in the consideration of pupils interest in science. The same applies to cases of pupils studied in Obanliku.

The outcome of the study showed that the absence of facilities such as laboratory discourages pupils from the study of basic science and technology. (mean= 4.3435). This confirms the finding and advice of Chin and Zeng (2007) which showed that the type of motivation adopted by teachers and indeed the school system is paramount in arousing the interest of the learners in science and technology.

Conclusion

The study investigated the impact of schools’ physical learning environment on pupils’ performance and interest in basic science and technology using primary school pupils’ in Obanliku Local Government Area of Cr4oss River State. A total of 294 pupils (144 male and 150 females were involved) in the study which adopted the survey technique. A questionnaire designed by the researcher and validated by the supervisor which was administered by the researcher was used for the study. 294 pupils responded to the LEPIQ. Data collected from the respondents were analyzed using means, standard deviations statistics was used for the research questions while chi-square was used to test the hypotheses.

Based on the result of the analysis, the following conclusions were drawn:

i. The school physical environment significantly influences their pupils’ performance in basic science and technology.

ii. The physical environment of the school influences the pupils’ interest in basic science and technology.

Recommendations

Based on the findings of this work and discussion thereof, it is recommended that:

Conducive classroom with basic facilities like tables and desks should be provided for effective teaching and learning among pupils. Variety of teaching aids should be provided for the teaching and learning of basic science and technology.

School libraries should be provided with requisite and stimulating textbooks and equipped science and technology workshop for effective teaching of this subject.
REFERENCES