SER VOLUME 12 (2011)

SCHOOL PLANT CONSTRUCTION, UTILIZATION, MAINTENANCE AND SCHOOL EFFECTIVENESS IN KEBBI SECONDARY SCHOOLS, NIGERIA

Dr. SANI DANTANI MANGA

ABSTRACT

This study investigated the relationship among school plant construction, utilization, maintenance and school effectiveness in Kebbi State secondary schools, Nigeria. The study adopted the descriptive research design conducted ex-post-facto. Stratified and simple random sampling techniques were used to select 63% of 41 schools and 69% of 500 participants for this study respectively. A validated questionnaire with reliability index of .79 was used to generate data. Results of multiple regression and analysis of variance shows that school plant construction, utilization and maintenance were positively, highly and significantly correlated with school effectiveness with calculated revalue of 76.68. But in view of the poor quality of school environment in Kebbi state secondary schools, education policy and management practices should focus on improving the quality of school plant for attainment of school effectiveness.

Introduction

The issue of school effectiveness appears to be a global problem that is affecting many countries of the world and most especially a developing country like Nigeria (UNESCO, 2005). In the past, attention seem to have been focused on improving teachers competence, administrative effectiveness and other factors that were assumed to have a direct impact on school effectiveness, with very little or no attention given to the environment in which teaching and learning takes place. But in recent times, global attention seems to be focused on creating child-friendly environment as a strategy for the attainment of school outcomes. Although the physical environment plays a very significant role in the total education of the child, it seems to be grossly neglected in the scheme of things. Thus, according to Otu (2002) the school environment in most secondary schools in Nigeria is extremely unconducive and far from being learner friendly.

School plant construction, which is supposed to be the first step towards providing a conducive learning environment, seems to be poorly executed (Jeffery & Lackney, 2006). As a result, many secondary school plants in Nigeria do not have adequate provision for proper ventilation, lighting, colour acoustics, layout and landscaping. However, poor construction generates a lot of discomforts, which makes it very difficult for students to learn with minimum stress. School plant utilization though equally crucial for the attaint of school outcomes seem to be poorly managed due to misuse of school equipment (Ayoku, 2005). Wrong utilization destroys the facilities and renders them virtually useless for the attainment of school effectiveness. Likewise the maintenance of school facilities appears to be poorly executed in Nigerian schools in spite of the fact that good maintenance prolongs the life span of the school plant (Bower & Burkett, 1999).

Studies by Jeffery and Lackney (2006), Ayoku (2005) among others, have shown that there is a significant and positive relationship among school plant construction, utilization, maintenance and school effectiveness. But it appears that the implications of the findings of these studies have not been adequately appreciated by educational planners and policy makers, especially in the case of Kebbi State. This has consequently created a gap between theory and practice of school plant management vis-à-vis the attainment of school effectiveness in Kebbi State. The objective of this study is to examine the relationship among school plant construction, utilization and maintenance as they affect the attainment of school effectiveness in Kebbi State secondary schools.

Literature review

The task of identifying school effectiveness is not an easy one either conceptually, technically or politically. The concept of school effectiveness though a central issue in management has continued to generate a lot of controversies to the extent that researchers have not yet reached a clear cut consensus on what the term actually means (Oduwaiye, 1997). Blumende (2001) observed that underpinning this dilemma has been inability of research to produce consistent and unambiguous findings on school effectiveness across different criteria over time.

According to UNESCO (2005:2) school effectiveness connotes efficiency, quality, development and professionalism among others. This indicates that the concept of school effectiveness is very broad, ranging over purpose, effort and

accomplishment. Iyamu and Aduwa (2004) opined that whatever criterion is used, the ultimate measure of school effectiveness must be based on students' academic performance outcomes, popularly indicated by good performance in examinations. This appears to be a universal indicator by which government and society judge the effectiveness of a school. However Power (1997), rather considers an effective school as one in which students exhibit good conduct and high level of discipline. Foster (1999) in his own submission focuses attention on schools' openness to community interest as a mark of school effectiveness. Based on these and other submissions, this paper views school effectiveness as the ability of a school to consistently maintain high student academic performance, good student conduct and cordial school-community relationship. Since the attainment of these indicators is focused on the context of the school environment, the school plant therefore refers to buildings, grounds, furniture and infrastructure provided for the purpose of enhancing teaching and learning.

To demonstrate the impact of ambient factors in school plant construction as they affect learning, Jeffery and Lackney (2006), studied ventilation in Mississippi public schools. In their experiment, they divided students into two groups and placed one group in well ventilated classrooms, while the other group was placed in 'windowless classrooms' in which the windows were shut and the blinds were drawn. While there was adequate lighting, neither fans nor air conditioners were operated. The two groups were subjected to the same curriculum and similar teaching methods. After a period of time, they compared the academic performance of the two group using teacher made tests in mathematics and languages. The result of the study showed that the quality of ventilation resulting from quality of school plant construction had a direct effect on students comfort, mental concentration and academic achievement.

Ayaku (2005) studied the relationship between physical resource utilization and school effectiveness in Kwara State secondary schools. He measured school effectiveness by student promotion, repetition, dropout and graduation rates. He selected 77 out of 233 public secondary schools by stratified random sampling. He selected 1540 secondary school teachers by simple random sampling and used self-designed and validated instrument tagged: Resource Availability and Resources Utilization Questionnaire

(RARUQ), and School Effectiveness Questionnaire (SEQ) to collect data. He applied correlation analysis to test his hypotheses and found a significant and positive relationship between the utilization of available buildings, furniture, recreational facilities, instructional materials, conveniences facilities and school effectiveness with calculated r-values of .58, .66, .42, .53 and .61 respectively.

In another study, Bower and Burkett (1999) investigated the effect of maintenance of physical facilities on student academic performance in Florida high schools. They selected 50 schools cutting across urban and rural areas, by stratified random sampling. One thousand participants answered the self made and validated School Plant Maintenance Questionnaire (SPMQ). Final year result of students in Biology, Chemistry, Physics and Mathematics were used to measure student academic achievement. The Pearson product moment correlation co-efficient was used at 199 degrees of freedom at .05 alpha level. They found that there is a significant and positive relationship between the maintenance of school buildings, furniture, playgrounds, water supply, electricity, landscaping and student academic performance in sciences with calculated r-values ranging from .60 to .75.

What is common to all these studies with the exception of Ayoku (2005) is that they were conducted in the United States and therefore, the extent to which their findings are applicable to Nigeria and in the context of Kebbi State in particular has not been clearly ascertained. This study seeks to partly fill this gap from the environmental management perspective.

Methodology

This study used the descriptive research design conducted ex-post-facto. The main focus of the study lies on testing relationships and drawing inferences. The study hypotheses that there is no significant relationship among school plant constructions, utilization, maintenance and school effectiveness in Kebbi State secondary schools. Twenty six out of 41 senior secondary schools were selected by stratified random sampling to get 63% of the total population. Simple random sampling was proportionately used to sample 69% of teachers in each school, which yielded 586 out of 850 teachers which constituted 69% of the subjects.

A combination of WAEC Result Analysis format and questionnaire

tagged: School Plant Construction, Utilization, Maintenance and School Effectiveness Questionnaire (SPCUMSEQ) were used as instruments of data collection. After validation, the questionnaire was tested and re-tested and a reliability index of .79 was obtained. Out of 587 questionnaires administered, 500 were returned, making a return rate of 85%, which was used in the analysis.

Two statistical instruments were used to test the main hypothesis. First, was the use of Analysis of Variance (ANOVA) to determine whether the combination of school plant construction, utilization and maintenance was correlated to school effectiveness as well as to determine the magnitude and direction of the relationship. Secondly, Stepwise Multiple Regression analysis was applied to establish the relative weights of correlations among school plant construction, utilization and maintenance and school effectiveness in Kebbi State Schools.

Results and Discussions

One central hypothesis was tested for this study:

H_0: There is no significant relationship among school plant construction, utilization, maintenance and school effectiveness in Kebbi State secondary schools.

In testing this hypothesis, school plant construction, utilization and maintenance are taken as independent variables, while school effectiveness is taken as the dependent variable. Analysis of variance (ANOVA) is used to determine the extent and direction of relationship among the variables. The results were presented in table 1.

Table 1: Relationship among school plant construction, utilization maintenance and school effectiveness in Kebbi State secondary schools

Source of Variance	Sum of squares	DF	Mean Square	Calculated F-Value	Tabulated F-Value	Decision
Regression	.758	3	.253	76.68	3.05	Significant
Residual	7.331E-03	22	3.323E-04			
Total	.761	25				

Regressed variables: school plant construction, maintenance and school effectiveness

Results in table 1 shows that the analysis of multiple regression data using analysis of variance (ANOVA) yields a calculated F-ratio of 76.68, which was far greater than the F-tabulated value of 3.05 at 3 and 22 degrees of freedom using .05 level of significance. This led to the rejection of the stated hypothesis, which means that there is a significant positive and high relationship among school plant construction, utilization, maintenance and school effectiveness. This implies that the attainment of school effectiveness in Kebbi State secondary schools would partly depend upon adopting holistic approaches to ensure that school plant construction, utilization and maintenance are tailored towards the attainment of pre-determined objectives.

Multiple regression analysis was used further to determine the extent to which the combination of the three independent variables can be used to predict school effectiveness as presented in table 2.

Table 2: Prediction of school effectiveness from the combination of independent variables

Variables	Multiple R	R-Square	Adjusted	Std. Error	Sig. F
Effectiveness Construction Utilization Maintenance	.995[a]	.990	.989	1.823E-02	.000

a) All requested variables entered
b) Dependant variables: school effectiveness

Table 2 shows that using three independent variables (school plant construction utilization and maintenance) to predict school effectiveness yielded a co-efficient of multiple regression (R) of .995 and a multiple correlation square (R^2) of .099. These values were significant at .05 level, which suggests that 99% of the variance of school effectiveness was explained by the combination of the three independent variables. This implies that the quality of school plant construction, utilization and maintenance is very critical towards providing the right kind of learning environment for achieving school outcomes.

Further attempt was made to determine the relative power of each of the independent variables to predict school effectiveness and presented in table 3.

Table 3: Significance test of regression weights of the independent variables

Variables	B	Std. Error	Beta	T-Ratio	Sig. F
Effectiveness	8.784E-04	. 03		.03	.979
Construction	.26	.13	.27	1.98	.060
Utilization	.41	.10	.40	4.23	.000
Maintenance	.33	.13	.33	2.55	.018

Table 3 shows that school plant construction, utilization and maintenance had standardized regression weights (B) values of .26, .41 and .33 with T-ratios of 1.98, 4.23 and 2.55 respectively. These values were significant at .05 alpha level, which suggests that each of the three variables contributed immensely to the prediction of the dependent variable (school effectiveness).
From the standardised coefficient (Beta) weights for each of the independent variables, it shows that school plant utilization had the highest contribution of .40, which represents 40% in the prediction of school effectiveness. This is followed by school plant maintenance with .33, representing 33%. School plant construction relatively made the least of contribution of .27 or 27%.

The fact that school plant utilization had the highest contribution to the prediction of school effectiveness strongly suggests the fact that no matter how good school plant construction might be and no matter the degree of maintenance, if the facilities are not properly utilized, it will be virtually impossible to attain the objectives for which any given school is established. This confirms Ayoku (2005) submission that the utilization of school facilities is perhaps the most critical determinant of school effectiveness in Nigerian schools.

The finding that school plant maintenance came next to utilization could be explained from the fact that no matter how well a school plant is constructed and no matter how expensive the equipments, unless the facilities are regularly and adequately maintained, the school plant will rapidly dilapidate and lose its value towing the attainment of school outcomes. This finding agrees with Bower and Burkett (1994) who found that proper maintenance helps to preserve the beauty of the school environment, slow down the rate of degradation of facilities and sustains the conduciveness of the environment, slow down the rate of degradation of facilities and sustains the conduciveness of the environment for continuous attainment of school outcomes.

Although school plant construction had the least relative correlation

with school effectiveness if compared to utilization and maintenance, yet it also had a significant, positive and high correlation with school effectiveness. This is obvious because the creation of a conducive learning environment in the first instance depends on the quality or standard of school plant construction put in place. This submission accords with Jeffery and Lackney (2006) who maintained that a properly designed and well-constructed school plant provides buildings, grounds, furniture and infrastructure that will satisfy the requirements for effective teaching and learning in any kind of school, be it a science, technical or grammar school.

However, in spite of these findings, majority of participants to this study (72%) indicated that school plant construction in Kebbi State secondary schools was not properly executed; 79% believed that the utilization of school facilities was not properly regulated, while 75% opined that school facilities were not adequately maintained. This situation has resulted in having school buildings that are not properly ventilated, adequately lit, painted with the right colour, haphazard school layouts poor acoustics and inadequate landscaping of school environment. This was worsened by misuse and vandalization of facilities. Moreover, poor quality of maintenance has resulted in dilapidated structures and infrastructure. Sani (2007) using specially designed observation inventories, found that poor learning environment has contributed significantly to poor level of student academic performance, poor conduct and low school community interaction in Kebbi State secondary school.

Recommendations

1. The quality of school plant construction should be improved by ensuring that construction processes are strictly in line with educational specifications. Severe penalties should be imposed on those who deliberately neglect to comply with stipulated standards and master plans.
2. School plant utilization should be in line with official regulations. Facilities should be expanded through joint provision by the government and the communities in Kebbi State.
3. Maintenance of school plant should be well planned and executed to ensure that facilities are constantly kept in good working condition.

4. School managers, policy makers and educational planners need continuous training and re-training so as to equip them with school plant management skills that will enable them to translate theory into practice as well as to create and sustain a conducive child-friendly learning environment that would enhance the attainment of school effectiveness in Kebbi secondary schools today and for future generations.

Conclusion

A conducive physical environment is a prerequisite for the attainment of school effectiveness. Policy making and management practices in schools should focus on improving the quality of school plant construction, utilization and maintenance so as to be able to maximise the attainment of school effectiveness out of minimum physical inputs.

References

Ayoku, D. B. (2005). *Relationship among physical resource availability, utilization and school effectiveness in Kwara State secondary school.* Unpublished doctoral thesis. University of Ilorin, Nigeria.

Blumende, R. S. (2001). Making schooling effective in Nigeria. *Journal of Educational Research.* **5** (1): 65 - 78.

Bower, J. H. & B. Burkett, C. W. (1999). Effect of maintenance of school physical facilities and environment on student learning C.E.I.P.I. *Educational facilities planner.* **27** (1): 28 - 29.

Foster, B. (1999). Education in selected African countries, in Smith, V. (Ed.). *Education and survival.* London: Clark & Gold.

Jeffrey, A. & R. A. Lackney (2006). *Reading school building like a book: The influence of physical school setting on learning and literacy.* Paper presented at the programme for research and evaluation of public schools (PREPS), conference, Jacksonville, Mississippi, Jan. 19. (on line). Retrieved April, 8, 2006, from: http://schoolstudioengr.wisc.education./reducingschool.htm.

Odunwaiye, R. O. (1997). *The influence of role conflict and administrative effectiveness in Nigerian Universities*. Unpublished doctoral thesis, University of Ilorin, Nigeria.

Otu, D. O. (2002). The effects of the environment on pupils learning: A case study of schools in Zaria metropolis of Kaduna State in: *Journal of basic education in Nigeria*. **2** (2): 11-20 UBE forum. Abuja (on line). www.ube-Nigeria.org.

Power, M. J. (1997). Delinquent schools. *New society*. **5** (13): 4 - 6.

Sani, D. M. (2007). *Relationship among school plant construction, utilization, maintenance and school effectiveness in Kebbi State secondary schools, Nigeria*. Unpublished doctoral thesis, University of Ilorin, Nigeria.

UNESCO (2005). *Better schools: Resource Materials for school needs in Africa* (on line). Retrieved March 18, from: http://libraryunescoiicba.org/english/betterschools/modul6-unit1.htm.