Relationship Between School Infrastructural Facilities and Students' Academic Performance among Colleges of Education in Borno State, Nigeria

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Abstract

The study is aimed at determining the influence of funding and staffing on students' academic performance in Borno State Colleges of Education. Three objectives were formulated to guide the study. One research question was answered and one hypothesis was tested at a 0.05 level of significance. A survey research design was adopted in this study. The population of the study comprised all the tertiary institutions in Borno State while the sample of the study was three colleges of Education. A pro former was used for data collection. Data collected were analyzed using Pearson Product Moment Correlation Coefficient. Results revealed that there was a moderate positive relationship between infrastructural facilities and students' academic performance (r=0.502, p-value=0.029). The study recommended that: government and relevant stakeholders should provide the necessary infrastructural facilities to the colleges of education to achieve the main aim of establishing the colleges of education in the state and the country at large.

Introduction

Higher Education refers to all forms of post-secondary education such as Universities, Polytechnics, Colleges of Education, Monotechnics, and Professional Schools (Akinsanya, 2009). In the quest for development, developing countries have acknowledged that investment in and adequate funding of higher education are viable conditions that facilitate change since the value of education hinges on teaching, learning, research, and production of qualified personnel and adequate infrastructural facilities which are needed for national development (Durenberger & Warning, 2018).

Infrastructure is defined as the facilities and system serving, a city or such educational, public, or private organizations. These include the service and facilities necessary for its well-being to function typically characterizes technical structures such as roads, bridges tunnels, water supply seweges electricity supply, telecommunication. As well infrastructure can define as the physical component of an interrelated system providing commodities and services essential to enable sustained or enhance societal living conditions. Hence infrastructure is, the basic physical and organizational structures needed for the operation of a school, society or enterprise (Nwajiuba et al., 2020; Ubogu & Veronica, 2018). Infrastructure can also be defined as the set of interconnected structural elements that provide the framework supporting an entire structure of development. School infrastructure refers to the site, building, furniture, and equipment that contribute to a learning environment. School infrastructure refers to schools with buildings reported in good shape, including an adequate number of well-appointed classrooms (sufficient blackboards, tables, desks, chairs, and space per class), an adequate number of sanitation facilities, etc. School facilities have been observed as a potent factor in quantitative education. The importance of teaching and learning

in the provision of adequate instructional facilities for education cannot be over-emphasized. The dictum that "teaching is inseparable from learning but learning is not separable from teaching" is that teachers do the teaching to make the students learn, but students can learn without the teachers.

According to Zavala, (2018), learning can occur through one's interaction with one's environment. The environment here refers to facilities that are available to facilitate students' learning outcomes. It includes books, audio-visual, software, and hardware of educational technology; so also, size of the classroom, sitting position and arrangement, availability of tables, chairs, chalkboards, and shelves on which instruments for practicals are arranged (Jacob et al., 2020; Robinson; Varghese & Mandal, 2020). According to (Fernández et al., 2021), facilities constitute a strategic factor in organizational functioning. This is so because they determine to a very large extent the smooth functioning of any social organization or system including education. He further stated that their availability, adequacy, and relevance influence efficiency and high productivity.

Nepal (2016) conducted a study on the relationship between school infrastructure facilities, learning environment, and student outcomes in secondary schools in India. The research design was survey type. The population of the study was 3,125 secondary schools. The districts were Sindhupalchok, Kavre, Makwanpur, Kathmandu, and Chitwan. 40 schools were taken using proportionate stratified random sampling. Respondents were taken equally from the community and institutional schools. Respondents' that is 4 students and 4 teachers were selected from each school. As whole 320 respondents were selected from 40 schools. The instrument used for data collection was a close-ended questionnaire. Analysis of data was done by using multi regression test. The findings of the study revealed that there were inadequate infrastructural facilities in most of the schools. Also, the learning environment is not conducive. Based on the findings recommendations were made: Government and community should provide adequate infrastructural facilities, and the learning environment should be conducive to enhancing the teaching-learning process.

Fagbohunka (2017) studied infrastructural facilities and students' academic performance at Adekunle Ajasin University, Akungbo Akoko, Ondo State, Nigeria. Thirty questionnaires were administered through systematic sampling techniques in each of the six faculties making a total of 180 questionnaires. The study found a positive relationship between the student's academic performance, power supply, and health facilities and transportation facilities were not adequate, whereas water supply was adequate. A test of the impact of infrastructural facilities on the student's academic performance, using a Chi-Square statistical technique. The study revealed a significant value of 177. 1 at 0.05% level of significance. The study recommends that the existing facilities should be upgraded and significantly improved by the government; urgent attention should be given to the development of the internet facilities and transportation sector of the University. Also, the private partnership should be encouraged in the infrastructural development of the University.

Assumpta and Andala (2020) researched the relationship between school infrastructure and student academic performance in twelve years of Basic Education in secondary schools in Gasabo District, Rwanda. The design of the study was correlation research type. The population of the study comprised all the secondary school schools in Gasabo District. The sample size of 200 participants was adopted. The study used a questionnaire and guided interview as the research instruments. The quantitative findings that were collected from the guided interview were analyzed by using the thematic method. The results that were obtained, indicated that an average of 70.5% disagreed on the adequate school infrastructures

available in twelve years of basic education (12YBE) in Gasabo District. The inadequate school infrastructure indicated in twelve years of basic education reduces the academic performance of students. Despite the improvement of students' academic performance valued at an average of 27.1% which is low. The study also found that there is a significant low positive correlation between school infrastructures and students' academic performance in twelve years of basic education in Rwanda as was proved by Karl Pearson's coefficient of correlation (r) was +0.408. The qualitative findings revealed that school infrastructures to be available in twelve years of basic education are likely completed classrooms, well-equipped libraries and laboratories, adequate playgrounds, and school sanitation.

However, these infrastructures were experienced to be inadequate in twelve years of basic education. Based on the findings of the study, recommendations were made. Government should provide adequate infrastructural facilities to support the teaching and learning process. Also, students should be encouraged to improve their academic performance. Jacob et al., (2020) and Salau et al., (2020) observed that the lack of adequate infrastructure in our higher education has posed serious setbacks in the achievement of higher education goals. In institutions where there are no adequate classrooms, resource rooms, staff rooms, lack of laboratory facilities, computers, and the like; proper teaching and learning cannot be effective and efficient in the system. Salisu (2001) in her study of the influence of school physical resources on students' academic performance concludes that there is a significant difference in the academic performance of students in institutions with adequate facilities and those with inadequate facilities. The lack of good buildings or funds to rehabilitate collapsed structures poses threat to the system's performance and its sustainability hence education to some extent is falling due to low standards.

Akmal & Pritchett (2021) opined that the wealth of a nation or society could determine the quality of education in that land; emphasizing that a wealthy society will establish good schools with quality teachers, and learning infrastructures that with such, students may learn with ease thus bringing about good academic achievement. Writing on the role of facilities in teaching, submitted that no effective science education program can exist without equipment for teaching. This is because facilities enable the learner to develop problem-solving skills and scientific attitudes. In their contribution, Joseph (2020) and Rahim, (2018) reiterated that when facilities are provided to meet the relative needs of a school system, students will not only have access to the reference materials mentioned by the teacher, but individual students will also learn at their paces. The net effect of this is increased overall academic performance of the entire students.

According to Jacob et al., (2020), the conditions of facilities are still a far cry from acceptable basically, due to past underfunding and systemic corruption. Education is an essential service that must be scrutinized, monitored, constantly evaluated, and fully exorcised from the grip of corruption if Nigeria is ever going to attain the education for all (EFA) goals. This realization has elicited stringent calls for the effective utilization of funds to solve the myriad of problems in the education sector. The impact of corruption is pervasive both in terms of the drain on national resources and its corrosive influence on institutional efficiency and service delivery in all sectors including teacher education.

According to Olufemi et al., (2018), needs not to be overemphasized that classrooms, libraries, laboratories, workshops, and equipment are germane in education provision. Unfortunately, the educational system in Nigeria is characterized by the inadequacy of these infrastructural facilities. In many schools in Nigeria, the physical or learning environment is poorly designed, without ample space, furniture, wholesome pictures, and other materials

which students need for effective learning, exploration, and simulation (Onyesom & Okolocha, 2013).

According to Rahim, (2018) Writing on the importance of location, found that it's one of the potent factors that influence the distribution of educational resources. Throwing light on locational influence. (Burns, 2017) conceptualized the urban environment as this environment as that environment that has high population densities containing a high variety and beauty and commonplace views. He further identified the rural environment as being characterized by low population density containing a low variety and isolated place views. Earlier in his contribution, Lipton (1962) corroborated that "rural community is characterized by low population, subsistence mode of life, monotonous and burdensome: Citing hotels, recreational centers, markets, banks, and good road network as being present in their urban environment.

Olufemi et al., (2018) accentuated that our highly qualified teachers prefer to serve there in rather than the rural areas. As a corollary of the above, Rahim (2018) observed that teachers do not accept postings to rural areas because their conditions are not up to the expected standard as their social life in the areas is virtually restricted as a result of inadequate amenities; facilities are deficient, playground are without equipment, libraries are without books while laboratories are glorified ones. Making a critical analysis of locational factors, Olufemioladebinu et al., (2018) surmised that the provision of education in rural areas is normally fraught with the following difficulties and problems; qualified teachers refuse appointment in isolated villages; villagers refuse to send their children to schools because they are dependent on them for help; parents hesitate to entrust their daughters to male teachers; some villagers have few children for an ordinary primary school; lack of roads or satisfactory means of communication makes it difficult to get books and teaching materials to the school which place difficulties in the way of organizing school transport among others.

Writing on the improvisation of science teaching equipment in line with the location, Owens et al., (2019) lamented that unfortunately in Nigeria, where there is a preponderance of poverty among us populace and a wide gap between the rich and the poor disparity in the distribution of resources and social amenities on the part of the government, the population has polarized into two –of those who favorably affected and those who are disfavored. These two groups have been forced on economic reasons and levels of education to organize themselves into two different sub-geographical locations to a very large extent determine what amenities and or facilities are made available to each.

The above findings were corroborated by Marginson (2018) when he affirmed that teachers are differentially distributed to schools. According to him, apart from the tendency of qualified teachers to seek deployment in Army schools located in urban towns, particularly in the state capitals, more school facilities and services tended to be concentrated in urban schools. In the words of Adeosun et al., (2009), observed that teachers with the highest training are posted to the largest cities, and even more noticeably to the capital. This and more findings abound on the disparity in the quality of teachers in urban schools compared to those in rural areas, which consequently affects students' academic attainment.

Akmal and Pritchett (2021) observed that teachers in urban secondary schools in Ondo State tended to be better qualified to point out that there was no deliberate government policy supporting such lopsided resource allocation. In his conclusion, he said rural schools probably become progressively poorly staffed arising from the personal refusal of teachers to serve in remote locations. In such locations, their pattern of school lives is characterized by dilapidated buildings, which form an extension of old ones thus forming a sort of patchwork, with others growing too old and no longer viable.

According to Berdugo et al., (2019), some of the schools apart from the fact that they are too costly to run, have been deserted by their pupil teachers in the development of a stereotype about rural schools. Salau et al., (2020) reported that rural schools were inferior and lacking in the range of facilities with high staff turnover and suffered from a lack of continuity in their curriculum. He pointed further that they are staffed by young, beginning, and often inexperienced staff who regrettably, would not conform to the socio-cultural ethos and above all, offered are striated curriculum, especially to secondary school students. They were also staffed by teachers who accepted their appointment because either; there was no better appointment available, or it was regarded as a quickset up to the promotional ladder.

Adeosun et al., (2009) also asserted that when they stated that most colleges of education are faced with inadequate infrastructural facilities and this has greatly affected the teaching and learning of Agricultural education programs. Both respondents (lecturers and students) were very objective in their responses to the questionnaire items. The truth of the matter of what is happening was brought to light by both parties thus making the results of this study reliable for generalization. From the study, the results have shown that the inadequacy of the infrastructural facilities arises from the existence of some bottlenecks like lack of capital, attitudes, mode of operations of state organizations, lack of technical know-how, lack of extension personnel, and government refusal to invest.

Various studies have been carried out on the factors that affect students' academic performance or achievement in schools, colleges, and universities. Some of the factors identified and reported to have affected the academic performance of students in these different settings are student effort, previous or prior educational performance, self-motivation, the social-economic status of the student's parents, the student's age, number of hours of study per day, admission points, different entry qualifications, tuition trends and the student's area of residence that is rural or urban (Dearden et al., 2017; Obiero et al., 2017; Varghese & Mandal, 2020). This study seeks to determine the relationship between infrastructural facilities and students' academic performance among NCE students in Borno State College of Education Maiduguri, Borno State, Nigeria.

Materials and Method

A survey research design was adopted in this study to achieve the stated objective. Survey design is a potentially useful technique in education research, and it is a valuable means of gathering data. According to Kerlinger (1981), survey design involves the collection of data from a defined population to describe the present condition of the population using the variables under the survey. The target population of this study was 3,357 NCE graduates and one-thousand six-hundred and seventy-five (1,675) staff across the three colleges of education in Borno State. The study was conducted using a sample of 359 staff of the three colleges. The Cumulative Grade Point Average (CGPA) of four (4) years was used for each college. The present study used a probability sampling technique. The use of the probability sampling procedure precludes the drawing of a conclusion that the sample is representative of the target population where every member of the population has an equal chance of being selected to participate in the study. This type of sampling procedure tends to have a concern about generalizability (Sekaran, 2001). Therefore, a simple random sampling technique was employed in the present study.

The research instruments for this study consisted of a questionnaire and pro forma. The questionnaire consists of two parts: Demographic information and questions on funding. The questionnaire has a 5-point Likert scale, the anchors ranging from strongly disagree (1) to strongly agree (5) with higher scores indicating higher levels of the construct being measured.

For the funding, all the 11 items measured were developed by the researcher based on existing literature on the funding of schools. To obtain college students' academic performance, the researcher used pro forma to collate the cumulative grade point average (CGPA) of the NCE graduates. The NCE graduates' CGPA includes the course/results from the 2009 to 2012 academic sessions. The instrument was validated by an expert and it was also pilot tested to determine the reliability coefficient of the instrument the reliability coefficient was found to be 0.941 which shows that the items of the questionnaire are reliable. Data collected were analyzed using frequency counts, simple percentages, and Pearson Product Moment Correlation Coefficient

Data Analysis and Results

Research Question One: What is Opinion of the staff on the availability of infrastructural facilities in the colleges of education in Borno State?

Table 1: Opinion of the staff on the availability of infrastructural facilities in the colleges of education in Borno State

S/N	Items	RESPONSES					Mean
		SD	DA	UD	A	SA	
1.	Buildings fulfill the instructional requirement of the students in the college.	26 (7.24%)	52 (14.48%)	33 (9.19%)	155 (43.18%)	93 (25.91%)	3.66
2.	Repairs and maintenance are conducted regularly.	25 (6.96%)	110 (30.64%)	36 (10.03%	160 (44.57%)	28 (7.80%)	3.16
3.	College lecture halls and classrooms are sufficient and well equipped.	28 (7.80%)	120 (33.43%)	35 (9.75%)	112 (31.20%)	64 (17.83%)	3.18
4.	Laboratories in the college are equipped with all necessary instruments.	42 (11.70%	133 (37.05%)	46 (12.81%	113 (31.48%)	25 (6.96%)	2.85
5.	College library is well furnished and equipped with books and journals.	20 (5.57%)	107 (29.81%)	35 (9.75%)	149 (41.50%)	48 (13.37%)	3.27
6.	Schools of the college are complete with professionals in line with the criteria.	21 (5.85%)	84 (23.40%)	32 (8.91%)	169 (47.08%)	53 (14.76%)	3.42
7.	Computer facilities in the college are available to students and members of staff.	58 (16.16%)	101 (28.13%)	53 (14.76%)	110 (30.64%)	37 (10.31%)	2.91
8.	College hostel facilities are efficient and available to students.	60 (16.71%)	95 (26.46%)	44 (12.26%)	127 (35.38%)	33 (9.19%)	2.94
9.	The college transport facilities for students and staff are efficient and accessible.	47 (13.09%)	94 (26.18%)	37 (10.31%)	115 (32.03%)	66 (18.38%)	3.16
10.	Instructional multimedia is available to students and staff for use in classroom.	73 (20.33%)	132 (36.77%)	48 (13.37%)	81 (22.56%)	25 (6.96%)	2.59
11.	Research facilities are available and obtainable in the college to staff and students.	30 (8.36%)	107 (29.81%)	36 (10.03%	154 (42.90%)	32 (8.91%)	3.14
	CUMULATING MEAN						**3.12**

Mean of less than 1.50=SD, 1.50-2.49=DA, 2.50-3.99=A, 4.00-5.00=SA

Result from table 1 revealed that 93 (25.91%) strongly agreed and 155(43.18%) agreed that buildings fulfill the instructional requirements of the students in the college. 28(7.80%) strongly agreed and 160 (44.57%) agreed that repairs and maintenance are conducted regularly. 64 (17.83%) of the respondents strongly agreed and 112 (31.20%) agreed that College lecture halls and classrooms are sufficient and well equipped. 25 (6.96%) of the respondents strongly agreed and 113 (31.48%) agreed that laboratories in the college are equipped with all necessary instruments. 48 (13.37%) of the respondents strongly agreed and

149 (41.50%) agreed that College library is well furnished and equipped with books and journals. 53(14.76%) strongly agreed and 169(47.08%) agreed that schools/faculties of the colleges are complete with professionals in line with the criteria. 37(10.31%) strongly agreed and 110(30.64%) agreed that computer facilities in the colleges are available to students and members of staff. 33(9.19%) strongly agreed and 127(35.38%) agreed that Colleges hostels facilities are efficient and available to students. 66(18.38%) strongly agreed and 115(32.03%) agreed that the college transport facilities for students and staff are efficient and accessible. 25(6.96) strongly agreed and 81(22.56%) agreed that instructional multimedia is available to students and staff for use in classroom. 32(8.91%) strongly agreed and 154(42.90%) agreed that research facilities are available and obtainable in the colleges to staff and students. Based on the decision set in this study, the grand mean of 3.12 indicated that participants agreed with the said factors.

Hypothesis One: There is no significant relationship between the availability of infrastructural facilities and students' academic performance in colleges of education, Borno state.

Pearson Product Moment Correlation Coefficient was used to determine the nature of relationship between funding and students' academic performance of colleges of education in Borno State and the summary of the analysis is presented in table 2:

Table 4.8: Summary of the Pearson Product Moment Correlation on the relationship between infrastructure and students' academic performance in colleges of education, Borno State

Variables	N	Mean	SD	r	p-value	Remark
Infrastructural facilities	12	258	12.50			
				0.502	0.029	Reject H_{02}
Students' Academic Performance	12	2.7267	0.48745			

Results from table 2 revealed that there was moderate positive relationship between infrastructure and students' academic performances in colleges of education, Borno state with Pearson Product Moment Correlation Coefficient $r = 0.502$. The results also revealed that, the relationship between infrastructural facilities and students' academic performance is statistically significant as indicated by the p-value of 0.029 which is less than the level of significant (0.05). Therefore, infrastructural facilities have significant influence on students' academic performance. Hence the null hypothesis is rejected.

Conclusion and Recommendations

Based on the findings of this study, the following conclusion was drowned: the study established that one College was provided with adequate infrastructural facilities which enhanced the academic performance of the students because the school is located within the city center while the two of the Colleges were not provided with adequate infrastructural facilities which may eventually result in poor curriculum implementation and consequently leads to students' low academic achievement.

Findings also revealed that the provision of adequate infrastructural facilities influenced students' academic performance in colleges of education. The study recommended that: government and relevant stakeholders should provide the necessary infrastructural facilities to the Colleges of Education to achieve the main aim of establishing the Colleges of Education in the state and the country at large.

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