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ASSESSMENT OF INFRASTRUCTURE AND EFFECTIVENESS IN CURRICULUM IMPLEMENTATION IN SECONDARY SCHOOLS IN THE FEDERAL CAPITAL TERRITORY, ABUJA

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ABSTRACT

Curriculum includes the contents, learning experiences, resources, techniques, and evaluation contained in the official document for effective teaching and learning in schools. It aims at the transformation of the learner and for national development. Content implementation is what makes a designed curriculum meaningful. It is at the implementation stage that the objective, whether general or specific, of a curriculum is achieved. Teachers are saddled with the responsibilities of curriculum implementation, but today, many teachers in public schools cannot discharge their duties effectively due to infrastructural decay in most public schools. The state of school buildings, furniture, equipment and instructional materials is cause for concern. Hence, this study assesses infrastructure and effectiveness in curriculum implementation in secondary schools in the Federal Capital Territory, Abuja. Three research questions guided the study. A descriptive survey research design was adopted for the study. The population for the study was all the science teachers in all 15 public secondary schools in the Gwagwalada Area Council. A sample size of 105 science teachers was used for the study, drawn purposively from 7 science teachers from each of the 15 public secondary schools. The questionnaire titled "Infrastructure and Effectiveness in Curriculum Implementation in Secondary Schools Questionnaire (IECISSQ)" was used to generate

data for the study. A pilot test was conducted to determine the reliability of the instrument, and an obtained reliability index of 0.99 was obtained. Descriptive statistical tools were used to analyze the demographic data and to answer the research questions. The findings revealed, among others, that overcrowded classrooms, inadequate instructional materials and equipment, an ill-equipped staff room, inadequate furniture, and dilapidated school buildings hinder effective curriculum implementation in public schools in the Federal Capital Territory. The study recommends, among others, that the government should provide enough funding for school infrastructural development and that teachers should undergo training and workshops on curriculum implementation. It concludes that adequate infrastructure in schools enhances effectiveness in curriculum implementation in secondary schools in the Federal Capital Territory, Abuja.

Keywords: Assessment, Infrastructure, Effectiveness, Curriculum, and Implementation

Introduction

Qualitative education is an important factor that could speed up national development and social change. Every citizen, regardless of their socio-economic status, gender, ethnicity, religion, or location, ought to have easy access to qualitative formal education. One of such formal educational systems is the secondary education. According to Kamkwis and Zumo (2019), they opined that secondary education is a post-primary school. It is an educational institution that gives training to students at the post-primary level. It prepares students for higher education and also trains students' some basic scientific and entrepreneurship knowledge and skills. Secondary education in Nigeria is a six-year training programme that consists of three years junior secondary education and three years senior or post-basic secondary education.

The secondary education system is, however, designed for a formal curriculum to be implemented. Curriculum is an organized experience that is meant to be executed in the school system. Formal curriculum refers to a well-defined and prescribed course of studies, which students must fulfill to a certain level of education. That is, curriculum is being constructed as learning activities that make up a particular system of education (Ogundele, Okunlola, Damilola & Godfrey, 2020; Mirici & Uzel, 2019). In addition, the curriculum could be seen as a document, plan, or blueprint for instructional guidance for teaching and learning, to bring about positive and desirable learners' behavioural change. It describes the teaching, learning materials, and assessment strategies available for a given subject/course of study (Janehilda, Christopher, Bianca, & Ndifon, 2022). Basically, the curriculum is intended to provide all students with an education that will serve them well regardless of their choices after leaving school, and this can be achieved when there is an effective curriculum implementation.

Curriculum implementation is the process of putting the planned curriculum into action in the classroom. It involves executing the curriculum as outlined in the curriculum document, translating educational objectives into practical teaching and learning experiences (Ohiare-Udebu, 2023; Ohiare-Udebu, 2024). Basically, curriculum implementation is the transformation of the theoretical aspects of the curriculum into the operational or functional curriculum used by teachers in the classroom. According to Ohiare-Udebu and Chukwuemeka (2024), effective curriculum implementation requires teachers to engage in various activities such as lesson planning, using reinforcement and motivational strategies, maintaining classroom control, building positive relationships, applying educational theories and principles, utilizing appropriate evaluation techniques, and considering the learners' cognitive styles. The process of curriculum implementation however involves not just the teachers and students' but also school administrators, parents, and the educational environment itself.

Effective curriculum implementation in Nigerian secondary schools hinges on factors like teacher quality, resources, infrastructure, and effective teaching methods, all of which are essential for achieving educational goals. But among these factors, the role of infrastructural facilities in curriculum planning, development, and most importantly, implementation, cannot be overstated. Infrastructure supports the effective execution of teaching and learning activities in schools (Ohiare-Udebu & Chukwuemeka, 2024). The successful implementation of the curriculum is closely tied to the availability of adequate infrastructure in secondary schools. Without these facilities, educational programs cannot be delivered as intended, resulting in gaps in student learning outcomes. According to Monity and Abam (2024), schools with adequate infrastructure, such as well-equipped classrooms, functional laboratories, and stocked libraries, provide students with the resources they need to succeed academically.

According to Ogunode and Agwor (2021), school infrastructural facilities refer to social capital within the school environment. They include school buildings/complexes such as classrooms, tables, exam halls, chairs, auditoria, desks, staff offices, seminar/conference/board rooms, laboratories, workshops, studios, farms, gymnasia, central libraries, specialized/professional libraries, faculty libraries, departmental libraries, etc., Institute/centers' specialized facilities e.g. ICT infrastructure, special laboratories, conference facilities, etc., and Boards e.g. interactive, magnetic, screen and chalk, etc., ICT that is computer laboratories and services, network connectivity, multi-media system, public address system, slide, and video projectors, and Ergonomics furnishing in laboratories, libraries, and lecture rooms/ theaters, moot courts, and studios, among others. Students' hotels or accommodation include Boys and Girls hostels; municipal/physical infrastructure i.e. power supply, water

supply, good road networks, sports, health and sanitation, staff schools, security facilities, etc. Anang and Udik (2020) add that infrastructure in education is a facility that supports the learning process to run optimally, especially in achieving learning objectives.

In the implementation of curriculum, especially science curriculum, school infrastructure facilitates the delivery of the teaching and learning process in the schools. The school offices provide a conducive working environment for teachers, the classrooms help the learners to learn while the school fence protects students, the teachers, and school administrators from criminals. Many research findings have highlighted a positive correlation between the availability of infrastructure and successful curriculum implementation (Ohiare-Udebu, Jacob & Sarafadeen, 2021; Ogunode & Ohiosumua, 2023). Infrastructure plays a crucial role in both curriculum planning and implementation in Nigerian schools. Ogunode and Akpakwu (2023) found that the presence of adequate infrastructure significantly enhanced academic staff job performance in Nigerian schools. This means that infrastructure is a fundamental component of educational institutions, directly supporting the effective delivery of curricula.

The availability of functional school infrastructural facilities is essential for successful curriculum implementation. Jokodola (2021) found that students'attending schools with better physical facilities tend to perform better in examinations and are more engaged in their studies. Research by Ofor-Douglas (2024) also shows that the physical environment in which students learn is a critical determinant of their academic success. Well-designed schools, with ample space and up-to-date facilities, promote active learning and help reduce stress among students, leading to better academic outcomes (Umeora, & Ogunode 2020). Elujekwute et al, (2021) found that students' attending schools with modern laboratories and libraries scored significantly higher in science and language exams than those in schools without such facilities. Without such infrastructure, skill-based curricula, particularly those focused on science and technology will be rendered ineffective.

It is quite unfortunate that most public secondary schools in Nigeria do not have adequate infrastructure facilities to support the implementation of curriculum in their respective schools. What is found in most public secondary schools in Nigeria are dilapidated buildings, leaking roofs, lack of chairs and desks for students' and teachers to use. This has negative effect on effective implementation of secondary school curriculum as it reduces the morale of teachers in service delivery. Ogunode and Ahaotu, (2021) argue that shortage of school facilities in Nigerian schools have hampered curriculum implementation in the schools. Effective curriculum implementation may not be guaranteed where instructional space such as classrooms, libraries, technical workshops, and laboratories are

structurally defective or not available and adequate. Ihebom and Uko (2020) lament that in Nigeria, many schools, especially in rural areas suffer from poor infrastructure, contributing to the widening gap in academic performance between schools in different regions. Kamkwis and Zumo (2019) argue that the public sector of education has witnessed stagnation and decay. Most schools are a caricature of what schools should be in a modern state.

According to Ogunode (2020), the availability of infrastructure in sufficient quantities is crucial for effective administration of educational institutions and curriculum implementation, but infrastructural inadequacies hinder curriculum implementation effectiveness. Teachers in schools lacking essential facilities struggle to execute skill-based science and technical courses effectively, thus limiting students' practical exposure and hindering their development of problem-solving and critical thinking skills. However, to ensure that the curriculum is effectively implemented, Ohiare-Udebu, Jacob, and Sarafadeen (2021); Ogunode and Ohiosumua (2023) agree that infrastructural facilities, equipment, tools, and materials must be provided sufficiently. Ifarajimi (2023), advocates for the need to establish a national framework for curriculum evaluation and feedback that aligns with the educational goals and policies of Nigeria and the provision of adequate funding and resources for curriculum evaluation and feedback activities at all levels of education in Nigeria. John and Umar (2024) also suggest increase funding for rural schools to improve infrastructure in rural schools, focusing on building classrooms, laboratories, and libraries as well as establishing a national task force to monitor the condition of school infrastructure and ensure timely maintenance and upgrades. The point remains that the quality of education that students receive bears direct relevance to the availability and lack of physical facilities and the overall atmosphere in which learning takes place.

Statement of the Problem

Objectives of any level of education cannot be achieved if the planned programme for such a level of education is not well implemented. Curriculum implementation has been noted to involve the interaction of human and material resources with methods and content. But the researchers observed that the implementation of curriculum in public secondary schools in Nigeria at present leaves a lot to be desired. Implementation of the curriculum is grossly undermined by gross underfunding, lack of modern instructional materials and equipment, lack of adequate laboratories, and poor staff and students' motivation. The non-availability of the curriculum materials to teachers and learners, due to inadequate funding, distribution, and access, is very obvious. Availability of modern ICT infrastructure, such as high-speed internet and digital laboratories/libraries, is very scarce in these public secondary schools. The researchers also observed that many teachers who are saddled with the

responsibilities of curriculum implementation cannot discharge their duties effectively due to infrastructural decay in most public schools. The state of school buildings, furniture, equipment, and instructional materials is a cause for concern. These problems necessitated this study on the assessment of infrastructure and effectiveness in curriculum implementation in secondary schools in the Federal Capital Territory, Abuja

Purpose of the Study

The study intends to find out the assessment of infrastructure and effectiveness in curriculum implementation in secondary schools in the Federal Capital Territory, Abuja. Specifically, the study sought to:

1. ascertain the adequacy of infrastructure for effective curriculum implementation in secondary schools in the Federal Capital Territory, Abuja
2. assess the impact of infrastructure for effective curriculum implementation in secondary schools in the Federal Capital Territory, Abuja
3. proffer possible measures to solve the negative impact of infrastructure for effective curriculum implementation in secondary schools in the Federal Capital Territory, Abuja

Research Questions

The following research questions guided the study:

1. How adequate is the infrastructure for effective curriculum implementation in secondary schools in the Federal Capital Territory, Abuja?
2. What is the impact of infrastructure for effective curriculum implementation in secondary schools in the Federal Capital Territory, Abuja?
3. What are possible measures in solving the negative impact of infrastructure for effective curriculum implementation among secondary schools in the Federal Capital Territory, Abuja?

Research Methods

A descriptive survey research design was adopted for the study. The population for the study was all the science teachers in all 15 public junior secondary schools in Gwagwalada Area Council. A sample size of 105 science teachers was used for the study, using a purposive sampling technique to select 7 science teachers from each of the 15 public junior secondary schools. Fifteen (15) items structured questionnaire titled “Infrastructure and Effectiveness in Curriculum Implementation in Secondary Schools Questionnaire (IECISSQ)” was used to generate data for the study. A pilot test was conducted to determine the content reliability of the instrument, and obtained reliability coefficient of Cronbach's Alpha 0.986 was obtained. Out of the 105 questionnaires administered, 93 were returned valid, representing a 89% success rate. Data collected was imputed into the SPSS (25) software package. Descriptive statistical tools (mean and standard deviation) were used for the analysis of the data collected. The researchers used 2.50 as

the cut-off mean score to take a decision on whether to agree or disagree with the questionnaire items. A mean rating of 2.50 and above indicated agreement with the questionnaire items, while a mean score of 2.49 and below indicated disagreement with the questionnaire items. Discussions of findings were done immediately after data analysis.

Results

Research Question One: How adequate is the infrastructure for effective curriculum implementation in secondary schools in the Federal Capital Territory, Abuja?

Table 1: Mean and Standard Deviation Response on the infrastructure for effective curriculum implementation in secondary schools in the FCT, Abuja; N =93

S/n	Variables	Mean	Std. Deviation	Decision
1.	There are adequate conducive classrooms for effective curriculum implementation in my school	2.01	.827	Disagree
2.	Furniture like tables, chairs and desks are adequate for effective curriculum implementation in my school	1.49	.669	Disagree
3.	There are well-equipped science laboratories and libraries for effective curriculum implementation in my school	1.52	.760	Disagree
4.	My school is well equipped with auditoria, staff offices, seminar/board rooms for effective curriculum implementation	1.76	.839	Disagree
5.	My school is well-equipped with ICT infrastructure like interactive boards, internet connectivity for effective curriculum implementation	1.61	.860	Disagree
6.	My school has an adequate power supply and security facilities to facilitate effective curriculum implementation	2.23	.782	Disagree
	Average mean score and Std. Dev.	1.77	.789	Disagree

Source: SPSS version 25

Table 1 revealed the level of respondents on the adequacy of infrastructure for effective curriculum implementation in secondary schools in the FCT, Abuja. It revealed that infrastructure like conducive classrooms, tables, chairs and desks, science laboratories and libraries, auditoria, staff offices, seminar/board rooms, ICT infrastructure, power supply, and security facilities are inadequate for effective science curriculum implementation in public junior secondary schools in the FCT. The conclusion was reached because the average mean of 1.77 is greater than the benchmark of 2.50 upon which decision is taken.

Research Question Two: What is the impact of infrastructure for effective curriculum implementation in secondary schools in the Federal Capital Territory, Abuja?

Table 2: Mean and Standard Deviation Response on the infrastructure for effective curriculum implementation in secondary schools in the FCT, Abuja; N =93

S/n	Variables	Mean	Std. Deviation	Decision
7.	Infrastructural inadequacies hinder curriculum implementation effectiveness.	3.79	.405	Agree
8.	Teachers in schools lacking essential facilities struggle to implement science curriculum contents	3.72	.539	Agree
9.	Students in schools lacking essential facilities struggle to comprehend implemented science curriculum contents	3.62	.588	Agree
10.	Infrastructure deficit hinder curriculum implementation by limiting students' practical exposure	3.79	.405	Agree
11.	Without school infrastructure, teachers' morale in Curriculum implementation is reduced	3.56	.616	Agree
	Average mean score and Std. Dev.	3.69	.511	Agree

Source: SPSS version 25

Table 2 revealed the level of respondents on the impact of infrastructure for effective curriculum implementation in secondary schools in the FCT, Abuja. The table revealed that infrastructural inadequacies hinder curriculum implementation effectiveness. Teachers in schools lacking essential facilities struggle to implement science curriculum content, students in schools lacking essential facilities struggle to comprehend the implemented science curriculum content, and infrastructure deficit hinders curriculum implementation by limiting students' practical exposure, and teachers' morale in curriculum implementation is reduced without school infrastructure. The conclusion was reached because the average mean of 3.69 is greater than the benchmark of 2.50, upon which the decision is taken.

Research Question Three: What are possible measures in solving the negative impact of infrastructure for effective curriculum implementation in secondary schools in the Federal Capital Territory, Abuja?

Table 3: Mean and Standard Deviation Response on the Possible measures in solving the negative impact of infrastructure for effective curriculum implementation in secondary schools in the FCT, Abuja; N =93

S/n	Variables	Mean	Std. Deviation	Decision
12.	Increase funding for schools by government to improve infrastructure	3.60	.768	Agree
13.	Regular supervision and monitory of school infrastructure by relevant government regulatory agencies	3.77	.492	Agree

14.	Providing teachers with a well-furnished staff room and equipment to boast their morale for effective curriculum implementation	3.72	.451	Agree
15.	Sanctioning of school principals who mismanage available school infrastructure	3.38	1.073	Agree
	Average mean score and Std. Dev.	3.62	.696	Agree

Source: SPSS version, 25

Table 2 revealed the responses level of respondents on the possible measures to solving the negative impact of infrastructure for effective curriculum implementation in secondary schools in the FCT, Abuja. It revealed that increase funding for schools by government, regular supervision and monitory of school infrastructure by relevant government regulatory agencies, providing teachers with well-furnished staff room and equipment to boast their morale and sanctioning of school principals who mismanage available school infrastructure will improve the present condition of public secondary school infrastructure for effective curriculum implementation in the FCT. The conclusion was reached because the average mean of 3.62 is greater than the benchmark of 2.50 upon which decision is taken.

Discussion of Findings

Table 1 presents responses on the adequacy of infrastructure for effective curriculum implementation in secondary schools in the FCT, Abuja. The average mean of 1.77 on a four-point Likert scale indicates inadequacy of infrastructure for effective science curriculum implementation in public junior secondary schools in the FCT, with each statement receiving an average rating below 2.50, suggesting general disagreement. Key findings from the table show that furniture like tables, chairs and desks are inadequate for effective curriculum implementation (mean = 1.49), science laboratories and libraries are inadequate for effective curriculum implementation (mean = 1.52), there is inadequacy of well-equipped ICT infrastructure like interactive boards, internet connectivity (mean = 1.61) and the schools are not well equipped with auditoria, staff offices, seminar/board rooms for effective curriculum implementation (mean = 1.76). Additionally, there are inadequate conducive classrooms (mean = 2.01) and inadequate power supply and security facilities to facilitate effective curriculum implementation (mean = 2.23). These findings are consistent with existing literature on conditions of public schools' infrastructure in Nigeria. According to Kamkwis and Zumo (2019), the public sector of education has witnessed stagnation and decay. Most schools are a caricature of what schools should be in a modern state. Ihebom and Uko (2020) lament that in Nigeria, many schools, especially in rural areas suffer from poor infrastructure, contributing to the widening gap in academic performance between schools in different regions. Ogunode and Ahaotu (2021) argued

that effective curriculum implementation may not be guaranteed where instructional space such as classrooms, libraries, technical workshops, and laboratories are structurally defective or not available and adequate.

Table 2 presents responses on the impact of infrastructure for effective curriculum implementation in secondary schools in the FCT, Abuja. The average mean of 3.69 on a four-point Likert scale indicates that infrastructural inadequacies hinder curriculum implementation effectiveness, with each statement receiving an average rating above 2.50, suggesting general agreements. Key findings from the table show that infrastructure deficit hinder curriculum implementation by limiting students' practical exposure (mean = 3.79), teachers in schools lacking essential facilities struggle to implement science curriculum contents (mean = 3.72), students in schools lacking essential facilities struggle to comprehend implemented science curriculum contents (mean = 3.62) and without school infrastructure, teachers' morale in curriculum implementation is reduced (mean = 3.56). These findings corroborate the earlier study by Ofor-Douglas (2024) that the physical environment in which students learn is a critical determinant of their academic success. Well-designed schools, with ample space and up-to-date facilities, promote active learning and help reduce stress among students, leading to better academic outcomes (Umeora, & Ogunode 2020). Jokodola (2021) found that students attending schools with better physical facilities tend to perform better in examinations and are more engaged in their studies compared to students operating in unconducive learning environment. Research by Ofor-Douglas (2024) adds that the physical environment in which students learn is a critical determinant of their academic success.

Table 3 presents responses on the possible measures to solving the negative impact of infrastructure for effective curriculum implementation in secondary schools in the FCT, Abuja. Key findings from the table show that the present decay condition of public secondary school infrastructure in the FCT could be improved to facilitate effective curriculum implementation. Key findings suggest regular supervision and monitory of school infrastructure by relevant government regulatory agencies (mean = 3.77), providing teachers with well-furnished staff room and equipment to boast their morale (mean = 3.72), increase funding for schools by government (mean = 3.60), and sanctioning of school principals who mismanage available school infrastructure (mean = 3.38). These findings are in line with the suggestions by Ohiare-Udebu, Jacob and Sarafadeen (2021); Ogunode and Ohiosumua (2023) that infrastructural facilities, equipment, tools and materials must be provided sufficiently. It also agree with John and Umar (2024) who suggest increase funding for rural schools to improve infrastructure in rural schools, focusing on building classrooms, laboratories, and libraries. It however contradicts the suggestion of Ifarajimi (2023) who

rather advocates for the need to establish a national framework for curriculum evaluation and feedback that aligns with the educational goals and policies of Nigeria.

Conclusion

Availability of functional school infrastructural facilities is essential for successful curriculum implementation. It is at the implementation stage that the objective, whether general or specific, of a curriculum is being achieved. Drawing from the findings of the study, conclusion can be drawn that: There is inadequate infrastructure for effective science curriculum implementation in public junior secondary schools in the FCT and infrastructural inadequacies hinder curriculum implementation effectiveness in public junior secondary schools in the FCT, Abuja.

Recommendations

Based on the findings and conclusion drawn from the study, the researchers recommended the following to improve the state of school infrastructure to facilitate effective curriculum implementation:

1. The government, through its relevant regulatory agencies, should conduct regular supervision and monitory of school infrastructure to ensure that the available infrastructure is properly utilized and maintained.
2. Government and donor agencies should provide teachers with well-furnished staff room and equipment to boost their morale in curriculum implementation
3. Government at all levels should increase funding for schools to provide the necessary infrastructure that will enhance curriculum implementation effectiveness.
4. Relevant government agencies and monitory officials should apply necessary sanctions on school principals who mismanage available school infrastructure.

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