



ACCESSIBILITY AND EFFECTIVE USE OF ICT/PHYSICAL RESOURCES FOR THE PROVISION OF HIGH-QUALITY SECONDARY EDUCATION IN ENUGU STATE

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Abstract: The study aimed to assess the availability and utilization of ICT/physical facilities for quality secondary education in Enugu State. A descriptive survey research design was used, with a sample size of 1,147 respondents. The study used a researcher-structured questionnaire called "AUPFQDSEQ" and was validated by three experts. The instrument had an overall reliability index of 0.80, indicating its reliability. The findings revealed that laboratory facilities, instructional facilities, infrastructural facilities, and sports facilities were not utilized to a high extent for quality secondary education in Enugu State. The study recommends that laboratory facilities be made available by school administrators and the government for meaningful teaching and learning, and vice principals and teachers should adopt a maintenance culture to prolong the durability of available physical facilities.

Keyword: physical facilities, secondary education, teaching and learning.

INTRODUCTION

Education is essential for a fulfilling life. According to Mlozi (2013), education is the main force behind the shift towards sustainable development since it gives individuals the tools they need to turn their ideas into reality. According to Alumode in Aja-Okorie and Usulor (2016), education is the means by which a country may progress quickly since it produces the future generation of economic managers. Secondary education is critical to the education of a child, being the bridge between primary and tertiary levels of education. Secondary education is meant for children between the ages of 11 and 16 years in Nigeria (Federal Republic of Nigeria, FRN, 2013). Secondary education is referred to as post-primary formal education offered to persons who have successfully completed seven years of primary education and have met the requisite entry requirements (Komba, 2013). Physical facilities are items that enable a teacher to achieve a level of instructional effectiveness. The term "physical facilities" refers to things like classrooms, buildings, labs, furniture for the classroom, chalkboards, machinery, audio and visual aids, etc. The aforementioned is consistent with Peretomede's assertion in Odey (2018) that physical facilities are the tools that allow a skilled teacher to reach a certain degree of instructional efficacy. The buildings, classrooms, labs, school furniture, chalkboards, tools, and machi are examples of physical facilities. The physical spaces in any educational

institution—classrooms, faculty housing, pit latrines, and furnishings—are the most important resources for ensuring that teaching and learning continue to proceed as intended. Clean, peaceful, safe, pleasant, and healthy surroundings are essential for effective teaching and learning, as noted by Schneider (2012). Schneider went on to say that it is extremely difficult for teachers to instruct and for pupils to pay attention in class at a school without sufficient and high-quality physical facilities; for this reason, physical facilities must be available.

The term "availability" describes resources that are prepared for usage. According to Ibrahim in Asogwa, Onu, and Egbo (2013), availability is the state of being able to be attained or accessed at any given time. Using something with intention and efficiency is referred to as utilization. Utilization was described by Amalu (2015) as the process of utilizing resources to enhance teaching methods. The act of utilizing physical school facilities—such as classroom blocks, staff room blocks, libraries, chemistry, biology, and physics labs—as much as possible to promote high-quality teaching and learning within the educational system is known as "utilization of physical facility" (Akinsolu, 2012). The purpose of this study is to determine the presence and use of the following physical amenities: sports facilities, instructional facilities, infrastructure facilities, and laboratory facilities. An additional facet of physical infrastructure comprises the educational facility. Instructional facilities,

according to Anyadiegwu (2018), are several kinds of educational resources that instructors and students may utilize to improve comprehension of ideas, abilities, and competences during the teaching and learning process. The educational facility is another facet of physical facilities. Anyadiegwu (2018) defines instructional facilities as different kinds of educational resources that educators and students may utilize to improve their comprehension of ideas, abilities, and competences during the teaching and learning process. Concerns about the high percentage of failure in both internal and external tests among secondary school pupils in Enugu State are the basis of the researcher's worry.

However, teachers accuse the government of failing to provide them with the physical resources necessary to support them in their role as educators, while the government holds them accountable for not being dedicated to their work. Thus, the researcher's investigation of the availability and use of physical infrastructure for the provision of high-quality secondary education in Enugu State is still essential.

Goal of the Research

Investigating the availability and use of physical infrastructure for high-quality secondary education delivery in Enugu State was the aim of the study. In particular, the study ascertained the following:

1. The degree to which laboratory facilities are available and used in Enugu State to provide high-quality secondary education;
2. The degree to which instructional facilities are available and used in Enugu State to provide high-quality secondary education.

Research Questionnaire

To resolve the research goal above, the following research questions were raised:

1. To what extent are laboratory facilities available and utilized for quality delivery of secondary education in Enugu State?
2. To what extent are instructional facilities available and utilized for quality delivery of secondary education in Enugu State?

Hypothesis

Tests were run using the following null hypotheses at the .05 level of significance in order to further address the study objectives mentioned above:

HO₁: There is no significant difference between the mean rating of principals and teachers on the extent to which laboratory facilities are available and utilized for quality delivery of secondary education in Enugu State.

HO₂: There is no significant difference between the mean rating of principals and teachers on the extent to which instructional facilities are available and utilized for quality delivery of secondary education in Enugu State.

REVIEW OF RELATED LITERATURE

Physical Facilities

Buildings, playgrounds, and movable constructions intended to improve the teaching and learning process are referred to as physical facilities. Physical facilities are tangible buildings that have an instructional purpose, according to Osahen in Uzoechina (2014). The plant amenities that the school provides to support the teaching and learning process are known as physical facilities. According to Khan and Mohammed (2012), it consists of the school building, having enough rooms, adequate lighting and ventilation, clean and safe drinking water, play areas, labs, whiteboards, and enough restrooms. Playgrounds, parking lots, buildings, and permanent equipment are examples of physical facilities. It has been noted that physical facilities play a significant role in providing high-quality education (Owoeye, 2011). Physical amenities are essential for improved student learning and accomplishment (Saeed). In a similar vein, Ehiamentor in Uzoechina (2014) asserts that physical infrastructures are operational components of all institutional programs. This was supported by Adeboyeje (2011), who defined physical facilities as the necessary elements that need to be in place and taken into account in order for the goals of the educational system to be achieved. Adeboyeje emphasized once more how the quality of education and student achievement in the school are determined by the availability of these amenities. Physical facilities were categorized by Odedeji (2014) into three categories: location, building, and equipment. The latter category comprises semi-permanent and permanent structures like machines, office assistant items like brooms and cleaning materials, and chalkboards. Facilities for education are essential resources for the better development of humans and their surroundings. Materials, buildings, and amenities are examples of educational facilities (Adamu, Baba-Gana, and Emmanuel, 2015). The land, buildings, furniture, and equipment that make up an educational facility all contribute to the learning environment. According to Ayeni and Adelabu (2012), most schools' classrooms lacked the necessary space, decency, and comforts. According to Hallak (2010), the primary element influencing academic success in the educational system is the facilities used for instruction. These consist of the school's physical space, its classrooms, its furnishings, its labs, libraries, and other learning resources. To make the school a welcoming, secure, and comfortable hub for community activities, effective management of the physical facilities is essential (Adeboyeje, 2011). 2019 saw Murungi's backing, Physical amenities are real, observable, and tangible. Teaching and learning can be aided by the use of physical

amenities. The economic rationalization of development planning in education cannot overlook physical facilities as they are the fundamental instruments used to carry out the operations and activities of the school (Enaohwo, 2019). In a more narrow sense, the term "educational facilities" can refer to goods or services that are either added to what is already available or acquired by rearranging an existing circumstance. When defining educational resources, different sectoral interests frequently give them even more narrower definitions. A school librarian may view resources as non-book objects used to expand his conventional function, an educational technologist as personalized learning tools, and an audio-visual enthusiast as audio-visual equipment and complimentary staff wars. Both teachers and students are stimulated by these amenities. This is the reason school plant planners have persisted in stressing the importance of careful planning, particularly in the years leading up to the opening of any school. This is to guarantee that the learning goals for which a school is founded are fulfilled (Enaohwo, 2019). School plants are viewed by planners as a regulated setting that facilitates teaching and learning. Every instructional tool need to be created with the intention of enhancing, promoting, and supporting instruction. As a result, the staff rooms, vice principals' offices, and principle's office ought to be resourcefully provided. A normal school should feature clerical offices, a store, conventional activities, and recreational resources to satisfy the demands of the teachers. Furthermore, To do schoolwork, physical facilities and equipment are necessary. Uzoechina (2014) proposed that educational goals and physical facilities should be seen as intimately intertwined and interdependent for a successful teaching and learning environment. These physical spaces serve as a learning environment that greatly influences students' comfort, security, and academic success. At the absolute least, an efficient physical facility should offer a physically pleasant, safe, secure, accessible, well-lit, well-ventilated, and aesthetically beautiful space that can adapt to the evolving programs of educational delivery (Adesua, 2016). Adequate provision of physical infrastructure is anticipated to establish a conducive learning environment. "Facilities enable students to acquire knowledge, skill, attitude which includes graphics, photographic electronics such as tapes or mechanical means of arresting, processing and re-consisting visual and verbal information," stated Edling and Paulson in Muyiwa and Quadri (2012:19), highlighting the significance of educational facilities. Nwagwu, Obanya, and Adeyemi concurred in Muyiwa and Quadri (2012) that the Nigerian educational system requires enough resources, such as classroom blocks and furniture, in order to achieve a strong educational foundation. According to Osuji in Amadi and Ezeugo (2019:15), physical amenities are important and should have the following features:

1. It creates conducive environment for teaching and learning.

2. It helps the learners to develop skills through extra-curricular activities.
3. It motivates the school teachers in the execution of their duties.
4. It helps in the retention of teachers through friendly teaching environment and good allowances.
5. It helps to reduce vices, truancy and drop-outs among learners.
6. It gives room for researchers to carry out research.
7. It enhances the activities of teaching and learning.
8. It makes room for continuity in education.
9. It helps to reduce the fear of insecurity in the school environment.
10. It gives job satisfaction to teachers and
11. It helps in the actualization of educational goals through learners' and teachers' high performance.

According to Taylor and Vlastos (2019), physical facilities can help or hurt teachers' ability to provide high-quality instruction. Poor infrastructure and crammed classrooms have a detrimental effect on educators' morale. According to Lawal and Kaegon (2021), the presence of physical facilities in any school system has little to no bearing unless they are used for activities that will improve the secondary education system's quality of delivery. But according to Ibrahim in Asogwa, Onu, and Egbo (2013), availability is the state of being reachable or available at a specific moment. It conveys the ease with which a substance may be obtained and used for a certain usage and duration. The frequency with which the available physical facilities are employed for teaching and learning, on the other hand, is known as facility utilization. According to Raghu in Asogwa, Onu, and Egbo (2013), utilization is the main technique used to assess asset performance and make business decisions. According to Subba in Asogwa, Onu, and Egbo (2013), it is the conversion of a set of input into commodities or services. The availability of physical amenities within the school determines how they are used. For instance, the delivery of practical teachings is made feasible by the use of the physical resources that are accessible in the school, making the lessons more practical than theoretical. The way that physical resources in the school are used determines how well the endeavor is measured.

Additionally, in order to make the best use of educational facilities, their provision must take into consideration both the current total enrollment in schools and the anticipated future enrollment. According to Okeke (2013), the number of students attending secondary schools and the number of staff members have expanded since the 1970s, but the school's physical plant and facilities have not kept up with this growth. Despite difficult modifications in the curriculum, the instructors' staff quarters and classrooms are still in poor condition. Any academic institution's physical assets, such as its classrooms and school buildings, are crucial components. Students' academic performance is positively impacted by the fundamental physical amenities of the school (Naz, 2013; Andrabi, Das, and Khwaja, 2017).

Availability and Utilization of Infrastructural Facilities for Quality Delivery of Secondary Education

Habiba (2012), Ogundele and Moronfoye (2013), and Marishane (2013) explored the idea of infrastructural facilities and agreed that they are the tangible resources required for a favorable and productive teaching and learning environment. Education and school buildings are intricately linked and interconnected. The achievement of educational goals requires the provision of suitable classrooms, school buildings, seats, desks, and other amenities. Each facility has to state explicitly what kind of educational activities it will host or have already begun doing so (Nduka, 2015). The public school system appears to be plagued by several issues, rendering it ineffectual. According to Ayeni and Adelabu (2012), a significant deficiency in the standard of the learning environment was caused by inadequate classroom space and badly maintained school infrastructure. Mutai in Wambua claims that Murungi

According to a research conducted by Naisujaki, Jackson, and Kirui (2017), schools lack basic amenities including desks, seats, and classrooms. Additionally, the classrooms that are provided are ill-built with insufficient space between them. According to Adeyemi and Adu's (2010) research, public schools in Ekiti State were severely lacking in physical infrastructure. In Odey (2018), Okpalaoka provided evidence in support of this viewpoint, stating that the majority of schools had dilapidated constructions with obvious symptoms of leaky roofs, blocked roofs, unappealing architecture, classrooms devoid of windows and doors, dusty floors, and few or no desks and chairs. He pointed out that students are observed taking classes under trees, demonstrating how the state of schools' infrastructure has deteriorated and rendered the setting unsuitable for learning. Studies indicate that the accessibility of the physical. In addition, Ohuche in Oruwari (2012) noted that there are several incomplete buildings, broken chairs, ruined classrooms, messy grounds, and neglected lawns. Where restrooms are available, they are insufficient, and elementary and secondary school instructors do not have pleasant offices or classrooms (Ohuche in Oruwari, 2012). Asiyai (2012) provided evidence to support this claim, stating that academics, researchers, administrators, and educational planners have all attested to the fact that Nigerian schools' facilities are insufficient and do not meet international standards. According to Hakielimu (2010), the great majority of the houses seen were in bad condition. It was also established that there were few and poor residences, as well as classrooms and chairs accessible for instructors and pupils. Academic attainment is influenced by the availability of pertinent educational facilities, as noted by Hallack (2018).

Comparably, Adeogun proposed in Ememe, Onwuchekwa, and Onuigbo (2012) that the proper use of classrooms, offices, and school playgrounds contributes to the success of education at all levels. According to Enaohwo and Eferakeya

(2019), there are several buildings or halls in various regions of Nigeria that lack the essential tools and resources needed for instruction. But according to Adesina (2011), the majority of school buildings are subpar and get worse when they are packed. In many cases, classroom education is nearly impossible due to poor circumstances. According to Khumalo and Mji (2014), the infrastructure of schools gives instructors and students access to a variety of resources, tools, and services that enhance teaching and learning. Enaohwo and Eferakeya (2019) made the following observations regarding the efficient use of infrastructure: either there are empty buildings or halls that lack the essential tools and resources for education, or there are tools and resources that are unused because most public secondary schools in Nigeria lack classrooms, workshops, or laboratories where they could be used. These contradictory studies' implications necessitate further investigation in this area.

Availability and Utilization of Sports Facilities for Quality Delivery of Secondary Education

Sports facilities are made of stationary, immobile, static, long-lasting materials. Sports facilities are any structures, buildings, or locations used for athletic events. In general, sports facilities include things like gymnasiums and training centers. Enclosed sections of sports pavilions, stadiums, gyms, health spas, boxing arenas, swimming pools, ice and roller rinks, billiard halls, bowling alleys, and other such locations where people congregate to participate in physical activity are known as sports facilities (Adebumiti, 2021). Sports complexes are a typical illustration of a sports facility. A collection of sporting facilities is called a sports complex. Stadiums for football, baseball, track & field, swimming pools, and indoor spaces are a few examples (Oladipo, 2019). Sports facilities have been crucial in encouraging people to engage in recreational sports and physical activity. The activities associated with sports are concerned with the total development of the students, which include their psychomotor development, together with the areas of cognition and emotion (Shuaibu, Mall, & Mall, 2020). Individual performance status can be advanced by effective use of sports facilities (Azjen, 2014). The results of Ugwuanyi's (2013) study showed that, out of all the physical amenities in schools, only soccer fields are available. Nonetheless, athletic fields, tracks, and volleyball courts are present in more than half of the institutions. There have been major initiatives to enhance the perception of recreational sports and work toward raising the standard of care provided by public sports facilities. Therefore, it is necessary to determine its availability and use in the provision of secondary education.

RESEARCH METHOD

The study employed a descriptive survey research approach with a representative sample of public secondary school

teachers as the focus. Because of the methodical data collection and description made possible by this methodology, conclusions and generalizations about the entire population may be drawn. Under the Post Primary Schools Management Board (PPSMB), 295 public secondary schools in Enugu State, Nigeria, were the subject of the research. Six school zones and 17 local government areas make up the state, which is in the southeast zone. The majority of the population is made up of businesspeople, craftsmen, and public servants. 8,816 principals and teachers, or 295 principals and 8521 instructors, from 295 public secondary schools in Enugu State. 1,147 respondents, including 852 instructors and 295 principals from Enugu State's public secondary schools. Ten percent of the instructors in each zone were chosen using the proportional sample approach. Based on their responsibilities for organizing, running, and making use of physical facilities, administrators and teachers were selected. To gather information on the availability and usage of physical facilities for high-quality secondary education, the researcher employed a structured questionnaire named the "Availability and Utilization of Physical Facilities for Quality Delivery of

Secondary Education Questionnaire (AUPFQDSEQ)". 52 items total, split into 4 clusters, were included in the questionnaire. Answers were graded on a 4-point scale. Respondents were given questionnaires by five research assistants, who made sure they were courteous and provided answers quickly. A 94.86% return rate was achieved out of 1,147 copies that were retrieved; principals and teachers supplied the majority of the copies. The replies were graded according to the actual limit of numbers, and the research employed mean and standard deviation to provide answers. At 0.05 significance levels, t-tests were used to assess the hypotheses, and the null hypothesis was rejected when sig. values were higher than 0.05.

DATA PRESENTATION, ANALYSIS AND RESULTS

Research Question 1

To what extent are laboratory facilities available and utilized for quality delivery of secondary education in Enugu State?

Table 1: Mean scores and standard deviation of principals and teachers on the extent to which laboratory facilities are available and utilized for quality delivery of secondary education in Enugu State

S/N	ITEMS	Principals 286		Teachers 802		Overall 1088		
		\bar{x}	SD	\bar{x}	SD	\bar{x}	SD	Dec
	The following laboratory facilities are available and utilized for quality delivery of secondary education:							
1	periodical charts.	2.52	.84	2.50	.80	2.51	.82	GE
2	measuring cylinders.	2.52	.82	2.48	.84	2.50	.83	GE
3	thermometer.	2.52	.80	2.51	.83	2.52	.82	GE
4	retort stands.	2.46	.82	2.54	.80	2.50	.81	GE
5	electricity supply.	1.58	.84	1.56	.84	1.57	.84	LE
6	water supply.	1.37	.82	1.39	.80	1.38	.81	VLE
7	accumulator.	1.54	.82	1.53	.83	1.54	.83	LE
8	volumetric flask.	2.48	.83	2.47	.81	2.48	.82	LE
9	evaporating discs.	1.50	.83	1.51	.82	1.51	.82	LE
10	pipettes.	2.51	.82	2.53	.81	2.52	.81	GE
11	laptops/desktop computers.	1.54	.83	1.53	.81	1.51	.82	LE
12	sand bucket.	1.37	.80	1.36	.81	1.37	.81	VLE
13	internet facilities.	2.29	.83	2.30	.81	2.30	.82	LE
14	burners.	2.51	.85	2.53	.83	2.52	.84	GE
15	fire extinguisher.	1.49	.82	1.51	.82	1.50	.82	LE

	Cluster Mean/SD	2.01	.82	2.02	.82	2.02	.82	LE
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The data analysis in Table 1 above displays the mean evaluations of instructors and principals about the availability and use of laboratory facilities for high-quality secondary school delivery. The mean for administrators and teachers in the preceding table varied from 1.37 to 2.52, and 1.36 to 2.54, respectively. Principals and instructors had cluster means of 2.01 and 2.02, respectively, with standard deviations of .82 and .82. They had a standard deviation of .82 and a cluster mean of 2.02, respectively, while their overall mean varied from 1.37 to 2.52. The study's conclusion indicates that there

exist laboratory facilities in Enugu State, but they are not widely used or available for high-quality secondary education delivery.

Research Question 2

To what extent are instructional facilities available and utilized for quality delivery of secondary education in Enugu State?

Table 2: Mean scores and standard deviation of principals and teachers on the extent to which instructional facilities are available and utilized for quality delivery of secondary education in Enugu State

S/N	ITEMS	Principals 286		Teachers 802		Overall 1088		
		\bar{x}	SD	\bar{x}	SD	\bar{x}	SD	Dec
	The following instructional facilities are available and utilized for quality delivery of secondary education:							
16	audio-visuals.	2.41	.83	2.38	.80	2.40	.82	LE
17	school radio.	2.08	.80	2.00	.80	2.04	.80	LE
18	computers.	2.27	.83	2.21	.82	2.24	.83	LE
19	photocopying machine.	2.16	.84	2.18	.81	2.17	.83	LE
20	chalkboards.	2.58	.82	2.52	.84	2.55	.83	GE
21	teacher made notes.	2.67	.85	2.63	.83	2.65	.84	GE
22	pictures.	2.54	.83	2.54	.83	2.54	.83	GE
23	textbooks.	2.58	.85	2.57	.85	2.58	.85	GE
24	crafts.	2.50	.83	2.49	.82	2.50	.83	GE
25	film projectors.	1.47	.82	1.43	.83	1.45	.83	VLE
26	technical equipment.	2.54	.82	2.53	.84	2.54	.83	GE
27	specimens.	2.51	.83	2.50	.81	2.51	.82	GE
28	interactive board.	1.49	.89	1.48	.89	1.49	.89	VLE
	Cluster Mean/SD	2.29	.83	2.27	.83	2.28	.83	LE

The data analysis in Table 2 above displays the mean evaluations of instructors and principals about the availability and use of instructional facilities for secondary school delivery that is high-quality. The mean for administrators and teachers in the preceding table varied from 1.47 to 2.67 and 1.43 to 2.63, respectively. Principals and instructors had cluster means of 2.29 and 2.27, respectively, with standard deviations of .83 and .83. Their cluster mean was 2.28, standard deviation was .83, and overall mean varied from 1.45 to 2.65. The study's conclusion indicates that there is a limited amount of instructional space in Enugu State that is available and used to provide secondary education in a high-quality manner.

FINDINGS

According to the report, Enugu State does not make substantial use of its laboratory, instructional, infrastructure, or sports resources for high-quality secondary education. The mean evaluations of administrators and teachers about the accessibility of these resources do not significantly differ from one another. Additionally, there is no discernible difference between administrators' and instructors' mean assessments about the use of sports facilities. In general, there are no appreciable variations in the accessibility and use of these amenities.

DISCUSSION

According to the report, Enugu State's laboratory and instructional resources are underutilized for providing high-quality secondary education. Water, electricity, and accumulators were not readily available or heavily used as laboratory facilities. This is consistent with other studies by Amuchie (2015), Adebisi, Tewogbade and Olajide (2017), Anyadiegwu (2018), and Mucai (2013). Additionally, not much use was made of instructional resources like computers, copier machines, radios in the classroom, and audiovisuals. The study backs up other studies by Amuchie (2015), Eze and Omeje (2018), Onajite et al. (2019), Dahiru, Akinpade, and Aluko (2021), among others, that indicate insufficient facilities exist in secondary schools to facilitate efficient teaching and learning.

RECOMMENDATIONS

According to the study, secondary schools should have laboratory facilities, vice principals and teachers should foster a maintenance culture, physical facilities should be provided by partnerships with NGOs and philanthropists, new classrooms should be constructed for areas with low staffing, and workshops should be used to train school administrators.

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