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Influence of Secondary School Facilities Planning and Transformative Educational Management on the Utilization of Digital Tools in Bayelsa State, Nigeria

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Abstract. This study examined the influence of secondary school facilities planning and transformative educational management on the utilization of digital tools in public secondary schools in Bayelsa State, Nigeria. A correlational research design adopting an ex-post-facto approach was employed. The population comprised 3,699 teachers from 194 public secondary schools, from which a sample of 351 teachers was selected using the Krejcie and Morgan sampling technique. Data were collected using the School Facilities Planning and Utilization Questionnaire (SFPUQ), validated by experts in Educational Management and Measurement and Evaluation from Faculty of Education, University of Benin. A reliability coefficient of 0.85 was established using Cronbach Alpha. Descriptive statistics (mean and standard deviation) were used to answer research questions, while regression analysis tested the hypotheses at 0.05 level of significance. Findings revealed that instructional, circulation, and convenience spaces in secondary schools were planned to a low extent, and their utilization was equally low. However, significant relationships were established between facilities planning and utilization. Instructional space planning accounted for 38.3% of the variance in utilization, circulation space planning explained 41.1%, while convenience space planning exerted the strongest influence, accounting for 51.2% of the variance. The study concludes that inadequate planning of school facilities significantly undermines their effective utilization, including digital tools, in secondary schools. It recommends comprehensive, inclusive, and context-sensitive school facility planning, strengthened supervision, and integration of digital infrastructure to enhance effective utilization and educational outcomes in Bayelsa State.

Keywords: School Facility Planning, Instruction, Circulation and Convenience Spaces.

1. Introduction

Education is the important tool for social and technological change of any nation. The impact of quality education in the present-day society cannot be underscored as it is recognized as a critical factor for sustainable development. According to Madu and Kaegon (2018) education is seen as a catalyst that enables a nation to remain competitive in the global economy. Education equips the child with the required skills, knowledge, and attitude to function effectively in the society which makes it as an instrument par excellence for manpower development, and by extension, the development of the society. Secondary education contributes significantly in achieving this goal.

Secondary education is the education children acquire after primary school and before tertiary education (FRN, 2014). Secondary education in Nigeria is aimed at preparing and equipping individual for useful living within the society and for tertiary education. It is a suitable age for developing students' potentials. It is therefore critical to the education of a child. Thus, effective teaching and learning is crucial at this stage. This can only be achieved via adequate provision of well-planned and appropriate utilization of school facilities/plants. School facilities are synonymous with school plants, school infrastructures or school physical structures.

School facility has to do with all the materials and structures that expedite teaching and learning in the

school environment which include classrooms, laboratories, technical workshops, libraries, hostels, offices, water, visual and audio- visual aids, sporting facilities etc. School facility according to Adaja and Osagie (2015) consist of all the physical properties of a school which includes the ground, buildings and equipment located within the school. Wordu and Wehiuzo (2018) conceived that school facilities consist of the school land and all the physical structures on it such as the site, buildings, physical equipment, recreational spaces and books which promote the achievement of educational goals and objectives. Amanchukwu and Ololube (2015) maintained that school facilities is made up of machinery such as machines and tools used in the workshop, school site which comprise the landscape on which the school's permanent and non-permanent structures are built. The design and construction of the school facilities is usually determined by the school curriculum (Asiabaka, 2008). School plant therefore is the life wire of teaching and learning as well as other activities that are indirectly linked with the teaching-learning process within the school. To ensure the effectiveness of the school facility in the attainment of educational goals, they must be adequately planned.

The position of school facility planning in the development of effective/efficient secondary education cannot be under estimated. In order to have effective and efficient teaching and learning, school facilities should be seen as being closely interconnected and inter dependent. School facility planning is seen as the systematic and rational provision of educational facilities within the school system. National Open University of Nigeria (NOUN, 2021) posited that school plant planning involves construction of facilities/buildings that should sufficiently satisfy the present and future needs as well as promote favourable environment for effective teaching and learning. Iwerebor (2024) defined school facility planning as a systematic process that involves the development of educational programmes by choosing a suitable site, constructing relevant buildings using adequate resources to make teaching and learning efficient and effective for achievement of educational goals. School facility planning involves the planning of instructional space, administrative space, convenience space and circulation space. Kasali (2017) viewed educational facility planning as an all-inclusive process that begins with the identification of educational needs and ends in the completed buildings and facilities to house educational programmes. To Ajayi and Yusuf (2010) school plant planning is concerned with the choice of selecting a suitable site and instructional space, administrative space, circulation space and space of convenience which are designed to enhance the teaching and learning process in as school system. School facility planning has to be put in place for effective utilization of education facilities.

School facility planning which include instructional spaces planning (classroom, library, laboratory, workshops, art room, home economics laboratory, computer room, music room, multipurpose halls/rooms, acoustic comfort, assistive technologies, reliable power/charging etc.), administrative places planning (principal's office, staff room, guidance counselor's office, office assistants/clerk's office etc.), circulation spaces planning (corridors, lobby, ramps, staircases, recreational spaces), spaces for conveniences planning (toilets, cafeteria, kitchen, dormitories, custodian sheds, water sanitation and hygiene (WASH), sick bays, rest areas, water points, stores) and accessories planning (parks, fields, lawn, farms, courts etc.) are essential In teaching-learning process. The extent to which these spaces could enhance teaching and learning depends on their location within the school compound, their structure, and accessories. It is believed that a well-planned school plant in terms of location, structure and facilities will enhance expected outcomes of education that will facilitate good social, political and economic emancipation, effective teaching and learning process and academic performance of the students.

School facility planning should be inclusive to take care of persons with disabilities. Adetule and Ayodele (2019) identified inclusive planning as planning that take into cognizance disability as one of the essential elements while planning education with interest in the buildings, classrooms and curriculum structures. For effective and successful inclusivity in education, both the disabled and disability have to be thoroughly planned. School buildings should be planned in such a way for easy access for students with disabilities/disabled by making available access routes such as ramps, elevators, lifts, stairs,, bathrooms, toilets, entrances, doors, crossings, drinking facilities, detectable indicators for the blinds, fire safety, adaptive furniture, adaptive technology and resources such as text-to-speech software, speech-to-text software, and adaptive hardware etc. (Adetule & Ayodele, 2019).

Utilization of school facilities is crucial for effective teaching and learning activities in order for school goals and objectives to be achieved. Uguru and Abdullahi as cited in Morrison and Obata (2024) posited that when facilities are used optimally, they promote greater student interest in learning thereby enhancing their retention. Adequate resource provision according to Ugolo (2010) is a precursor to

effective utilization as there cannot be utilization without availability of resources. At times, these facilities may not be adequately utilized due to inadequate skills of the educators. According to Akinfolarin et al. (2012), overcrowding and overutilization of the facilities and spaces can bring about decline and breakdown of resources. Teaching and learning practices primarily are to bring about learners needed transformation in behavior through critical reasoning and this process does not take place in a vacuum but in an environment set aside to facilitate learning (Asiabaka, 2008). School facilities are space interpretation of the school curriculum (Amanchukwu & Ololube, 2015). Curriculum implementation will be hindered if the school physical facilities needed for teaching and learning are lacking. School facilities should be adequately maintained to give maximum service (Allen, 2015).

Studies have shown the influence of schools' facilities planning and its utilization which resulted to the attainment of school goals and objectives. Amongst these studies are those of Obasi (2019); Ibara (2018); Yusuf et.al. (2013) and Odufowakan (2011) who found out that facilities in secondary schools had high level of planning which they affirmed might be connected with thorough supervision, control, direction and monitoring by the inspectorate division of the Ministry of Education in charge of school facilities. Adetule and Ayodele (2019) in their study established that the level of utilization and maintenance of school plant planning determines students' academic performance and teachers' productivity in secondary schools. Ogolo (2010) observed inadequacies in physical and teaching resources among secondary schools in Bayelsa State. Morrison and Obata (2024) discovered a significant difference in the utilization of school facilities among various colleges of education in Delta State.

Bayelsa State which has eight local government areas lies within the rainforest zone, with a humid equatorial climate and mean annual rainfall ranging from 2,000 to 4,000. The maximum temperature averages 30^0C with a relative humidity between 55 and 90 percent, depending on season and location. Bayelsa State is drained by the tributaries of the Niger/Benue rivers system empting into the Atlantic Ocean. The state is mostly surrounded by water or wetland. The state has 194 public secondary schools. The nature of the land calls for adequate well-planned school facilities in terms of structures for inclusivity in education for the populace. It's against this back drop that the study seeks to investigate the influence of secondary school facilities planning and transformative educational management on the utilization of digital tools with focus on instructional, circulation and convenience spaces.

1.1 Statement of the Problem

Instructional, circulation and convenience spaces consist of the basic system and structure needed in schools so as to function effectively and efficiently for the maximal actualization of the goals and objectives of inclusive secondary schools. However, when these spaces are not well planned, this may hamper effective utilization and delivery of education. Bayelsa State been in a riverine area is often affected by flooding, planning and utilization of the secondary school facilities becomes imperative to enhance teaching and learning. Could it be that school facilities wrongly sited and lacks basic features that hinders inclusivity hence, resulting to inadequate utilization of the facilities? It is on this premise the study sought to find out the influence of facilities planning and it's utilization in secondary schools in Bayelsa State.

1.2 Purpose of the Study

The purpose of the study is to determine the extent of instructional, circulation and convenience spaces planning in secondary schools in Bayelsa State, their utilization and relationship between their planning and utilization.

1.3 Research Questions

The following research questions guided the study:

- To what extent are instructional, circulation and convenience spaces planned in secondary schools?
- What is the level of school facilities utilization among secondary schools in Bayela?
- Is there a significant relationship between instructional space planning and their level of utilization in secondary schools?
- Is there a significant influence between circulation space planning and their utilization level in secondary schools?
- Is there a significant influence between convenience space planning and their level of utilization in secondary schools?

1.4 Hypotheses

The following hypotheses were formulated and tested at 0.05 level of significance:

- There is no significant relationship between instructional space planning and their utilization in secondary schools.
- There is no significant influence between circulation space planning and their utilization in secondary schools.
- There is no significant influence between convenience space planning and their utilization in secondary schools.

2. Research Methodology

The study is a correlational and employed the ex-post-facto design. The population of the study comprised three thousand, six hundred and ninety- nine (3,699) teachers from one hundred and ninety- four (194) public secondary schools in Bayelsa State. The Krejcie and Morgan sampling table was used to randomly select three hundred and fifty-one (351) teachers as sample for the study from some primary schools in Bayelsa State. The instrument titled "School Facilities Planning and Utilization Questionnaire (SFPUQ)" was used to elicit data for the study. The questionnaire is divided into two sections: Section A is a 4 Likert scale of Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD) having 15 items addressing school facilities planning and Section B addressed level of facilities utilization with responses of Highly Utilized (HU), Moderately Utilized (MU),, Rarely Utilized (RU) and Not Utilized (NU with 15 items all segmented into their parts A, B and C. The instrument was validated by two experts in Departments of Educational Management and Measurement & Evaluation in the Faculty of Education, University of Benin. The questionnaire was administered to 20 teachers who were not part of the sample and Cronbach Alpha was used to test for the reliability, establishing a co-efficient of 0.85. A descriptive statistic of mean and standard deviation was used to answer the research questions while Pearson Product Moment Co-efficient was used to test the hypothesis. A mean score below 2.00 was regarded as very low extent, 2.00- 2.40 as low extent and above 2.50- 2.90 as moderately high extent, 3.0- 3.40 as high extent and above 3.50 as very high extent.

3. Results

Research Question One: To what extent are instructional, circulation and convenience spaces planned in secondary schools?

Table 1: The Extent to Which Instructional, Circulation and Convenience Spaces are Planned in Secondary Schools

Items of spaces planning	Mean	Standard deviation	Remark
Instructional spaces planning	2.21	1.00	Low
Circulation spaces planning	2.49	0.99	Low
Convenience space	2.21	1.09	Low
Grand mean	2.30	1.04	

Table 1 presents respondents' views on how well instructional, circulation, and convenience spaces are planned in secondary schools. The results show that instructional space planning, circulation space planning, and convenience space planning all fall within the low range, as indicated by their mean ratings. The grand mean of 2.30 implies that the extent of space planning in secondary schools was to a low degree.

Research Question Two: What is the level of school facilities utilization among secondary schools in Bayelsa?

Table 2: The Level of School Facilities Utilization among Secondary Schools in Bayelsa

School facilities utilization	Mean	Standard deviation	Remark
Instructional spaces planning	2.09	0.96	Low
Circulation spaces planning	2.43	1.04	Low
Convenience space	2.19	1.11	Low
Grand mean	2.24	1.04	

Table 2 indicates that utilization of instructional spaces, circulation spaces, and convenience spaces is low, with mean scores of 2.09, 2.43, and 2.19, respectively. The grand mean of 2.24 further confirms that the level of school facilities underutilization among Secondary Schools in Bayelsa was low. This suggests that even where facilities exist, they may not be adequately used for teaching, movement, or convenience purposes.

Hypothesis Testing

Hypothesis One: There is no significant relationship between instructional space planning and their utilization in secondary schools.

Table 3: Regression Analysis of the relationship between Instructional Space Planning and their Utilization in Secondary Schools

Model	Sum of Squares	Df	Mean Square	F	Sig.	Remark
Regression	9460.808	1	9460.808	155.245	.000	Significant
Residual	15113.388	248	60.941			
Total	24574.196	249				

R = 0.620; Adjusted R Square = 0.383

Table 3 reports an F-value of 155.245 with a p-value of 0.000. Testing at an alpha level of significance, the p-value is less than the alpha. Therefore, the null hypothesis is rejected. This implies that a statistically significant relationship exists between instructional space planning and utilization at the 0.05 level. The Adjusted R^2 of 0.383 shows that instructional space planning accounts for about 38.3% of the variance in facility utilization. This means that better planning of instructional spaces is strongly associated with improved utilization of school facilities.

Hypothesis Two: There is no significant influence between circulation space planning and their utilization in secondary schools.

Table 4: Regression Analysis of the relationship between Circulation Space Planning and their Utilization in Secondary Schools

Model	Sum of Squares	Df	Mean Square	F	Sig.	Remark
Regression	10168.447	1	10168.447	175.053	.000	Significant
Residual	14405.749	248	58.088			
Total	24574.196	249				

R = 0.643; Adjusted R Square = 0.411

Table 4 reveals an F-value of 175.053 and a p-value of .000. Testing at an alpha level of significance, the p-value is less than the alpha. Therefore, the null hypothesis is rejected. This implies that a circulation space planning significantly influences facility utilization. The Adjusted $R^2 = 0.411$, circulation space planning explains 41.1% of the variance in utilization. This indicates that properly planned movement areas contribute greatly to how effectively school facilities are used.

Hypothesis Three: There is no significant influence between convenience space planning and their utilization in secondary schools.

Table 5: Regression Analysis of the relationship between Convenience Space Planning and Its Utilization in Secondary Schools

Model	Sum of Squares	Df	Mean Square	F	Sig.	Remark
Regression	12621.741	1	12621.741	261.887	.000	Significant
Residual	11952.455	248	48.195			
Total	24574.196	249				

R = 0.717; Adjusted R Square = 0.512

Table 5 shows an F-value of 261.887 with a p-value of .000. Testing at an alpha level of significance, the p-value is less than the alpha. Therefore, the null hypothesis is rejected. This implies that convenience space planning significantly influences facility utilization. The Adjusted R^2 of 0.512 indicates that convenience space planning explains 51.2% of the variation in facility utilization, suggesting that planning of convenience spaces is a major determinant of overall facility use.

4. Discussion of findings

The study revealed that instructional, circulation, and convenience spaces are poorly planned in secondary schools in Bayelsa State. These findings contradict the expectations described by Adaja and Osagie (2015) and Wordu and Wehiuzo (2018) who emphasized that school facilities should include properly planned buildings, classrooms, and equipment that enhance teaching and learning. The low planning level also negates Asiabaka's (2008) position that the design and construction of school facilities must be guided by the curriculum to ensure a smooth teaching-learning process. Poor planning reduces the effectiveness of the

school environment as a "life wire" of instruction, as described by Amanchukwu and Ololube (2015). Being that Bayelsa is situated in a flood-prone terrain, lack of thoughtful planning suggests that schools are not taking environmental conditions, accessibility, and safety needs into consideration, despite recommendations for inclusive planning by Adetule and Ayodele (2019), who stressed ramps, assistive technologies, and accessible facilities for learners with disabilities. Thus, the poor planning of functional spaces hampers teaching, learning, inclusivity, and school resilience.

The low utilization of facilities supports Uguru & Abdullahi as cited in Morrison & Obata, (2024) who explained that facilities must be actively and efficiently used to improve students' interest, motivation, and retention. Underutilization indicates that existing facilities however fewer or inadequate, are not maximally deployed for instructional and administrative purposes. This is in line with Ogolo (2010) observation that inadequacies exist in physical and teaching resources among secondary schools in Bayelsa State It equally aligns with Akinfolarin et al. (2012) who reported that underutilization often occurs alongside inadequate teacher skills, overcrowding or poorly planned structures. The result contradicts those of Obasi, (2019); Yusuf et. al. (2013) who found high levels of facility planning and usage in some states due to strong inspectorate oversight. Such supervision appears weak or inconsistent in Bayelsa, contributing to ineffective utilization.

This finding shows that better-planned instructional spaces such as classrooms, libraries, laboratories, workshops, ICT rooms—directly influence how well teachers and students use them. Instructional facilities that are accessible, functional, and aligned with curricular demands encourage effective learning, consistent with Asiabaka (2008) and Amanchukwu and Ololube (2015). The strong predictive power (38.3%) confirms that schools cannot achieve optimal digital tool utilization without adequate instructional planning. This supports Adetule and Ayodele (2019) whose findings showed that planning and maintenance of school plants determine academic productivity. Thus, instructional spaces must be well-structured before digital tool integration can succeed.

Circulation spaces e.g. corridors, ramps, stairs, lobbies, walkways, recreation fields—affect how individuals move and use facilities. Poorly designed movement spaces impede access, reduce safety, and discourage facility usage. The moderate effect (41.1%) supports the view of NOUN (2021) and Ajayi and Yusuf (2010) that circulation spaces are key elements of school plant planning needed for smooth and safe operational flow of schooling activities. It also connects with Adetule and Ayodele (2019) who emphasized accessibility for learners with disabilities. Where circulation spaces are poorly planned, students with physical challenges struggle to access instructional areas, thus lowering utilization.

Convenience spaces like water points, toilets, cafeterias, rest areas, sanitation/WASH points exert the strongest influence on facility utilization (51.2%). Schools with adequate convenience facilities ensure safety, comfort, and hygiene, which enhances attendance and participation. This finding reflects Allen (2015) who argued that well-maintained facilities support optimal service delivery. Also, the positive influence aligns with Iwerebor (2024) who stressed that the planning of spaces such as conveniences improves efficiency and the achievement of educational goals. Conversely, absence of such spaces reduces digital tool usage, mobility, teacher comfort, and instructional productivity.

5. Conclusion

The study concludes that secondary school facility planning in Bayelsa State across instructional, circulation, and convenience spaces are generally inadequate. This poor planning directly contributes to low utilization of facilities, including digital tools. The strongest determinant of facility utilization is convenience space planning, followed by circulation and instructional space planning. This indicates that effective infrastructure planning significantly enhances school operations, teaching quality, inclusivity, and curriculum implementation.

6. Recommendations

Government and school administrators should prioritize comprehensive school facility planning. Facilities must follow curriculum needs, environmental realities, and inclusive standards as recommended by Asiabaka (2008) and Adetule and Ayodele (2019). Digital tools should be integrated into facility planning to ensure reliable power, security, and accessibility.

Teacher capacity building should be emphasized to address skill-related underutilization, in line with Akinfolarin et al. (2012). Regular monitoring and supervision by inspectorate divisions should be strengthened, similar to the situation noted by Obasi (2019) and Yusuf et al. (2013).

Instructional spaces should be redesigned or upgraded to meet modern teaching requirements and digital integration.
Circulation spaces should be restructured for accessibility, safety and smooth navigation to improve facility usage.
Convenience spaces should be expanded and improved, especially WASH facilities, toilets and rest points, since they have the strongest impact on facility utilization.

7. Implications for Educational Managers, Policy Makers and Curriculum Implementers

School heads must adopt a data-driven facility planning model inspired by curriculum demands (Asiabaka, 2008). They must ensure accessibility and inclusivity (Adetule & Ayodele, 2019). Poor planning leads to inefficiency, underutilization, and reduced staff productivity (Adetule & Ayodele, 2019).

There should be policies put in place to mandate minimum planning standards for instructional, circulation and convenience spaces. Investment guidelines should be aligned with environmental needs in flood-prone areas. Policy frameworks must enforce periodic facility audits similar to inspectorate activities highlighted by Obasi (2019).

Curricula requiring digital literacy, lab work, or collaborative learning cannot be effectively implemented without well-planned spaces (Amanchukwu & Ololube, 2015). Poor facilities impede the experiential learning approach emphasized in Nigerian secondary education. Curriculum implementation teams must advocate for physical environments that match instructional goals.

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