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LEVERAGING SCHOOL PLANT MANAGEMENT FOR EFFECTIVE SERVICE DELIVERY IN PUBLIC SENIOR SECONDARY SCHOOLS IN RIVERS EAST SENATORIAL DISTRICT OF RIVERS STATE

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Abstract

This study examined leveraging school plant management for effective service delivery in public senior secondary schools in Rivers East Senatorial District of Rivers State. The study was guided by three research questions and one null hypothesis. The study employed a descriptive design with a population comprised of 115 principals in public senior secondary schools in Rivers East Senatorial District of Rivers State. The census sampling technique was adopted to determine the entire population of the 115 principals. A self-developed questionnaire, titled "Leveraging School Plant Management for Effective Service Delivery Questionnaire (LSPMESD)," was used as the data collection instrument. The instrument underwent face validation by an expert to ensure validity, and reliability testing was conducted using Cronbach's alpha, yielding a coefficient of 0.74, indicating high internal consistency. Descriptive statistics (mean and standard deviation) were used to answer research questions, while the Independent t-test was employed to test the null hypotheses at a 0.05 level of significance using SPSS Version 26.0. The study revealed regular maintenance and upkeep, effective utilization of resources, implementation of safety and security measures, adoption of sustainable practices and fostering community engagement and partnerships essential strategies and inadequate funding, lack of skilled personnel, poor infrastructure, corruption, and lack of community engagement are major obstacles to effective school plant management. The study concluded that effective school plant management is crucial for improving service delivery in public senior secondary schools. To achieve this, governments and educational authorities must address challenges and implement strategies, including funding, training, infrastructure development, anti-corruption measures, community engagement, and gender-sensitive approaches.

Keywords: Leveraging, School Plant Management, Effective Service Delivery.

Introduction

Effective service delivery is the backbone of any successful educational institution. In the context of schools, service delivery refers to the provision of essential services that support the teaching- learning process, foster a conducive learning environment, and ensure the overall well-being of students and staff (Amanchukwu & Ololube, 2015). These services include administrative support, facilities management, student affairs, and support services such as guidance and counselling, health services, and library services. The significance of effective service delivery in schools cannot be overstated. Firstly, it enhances the learning experience by providing students with a safe, comfortable, and well-equipped environment that promotes academic achievement and personal growth. Secondly, effective service delivery supports the instructional process by providing teachers with the necessary resources, facilities, and administrative support to deliver high-quality lessons. Thirdly, it fosters positive relationships among students, teachers, and staff by promoting a culture of respect, empathy, and understanding.

Moreover, effective service delivery is critical in promoting student retention, academic performance, and overall success. When schools deliver quality services, students are more likely to be motivated, engaged, and committed to their studies (Jacobson, 2011). This, in turn, leads to improved academic outcomes, reduced dropout rates, and increased graduation rates. Furthermore, effective service delivery in schools has a positive impact on the broader community. Schools that deliver quality services are more likely to attract and retain top talent, foster partnerships with local businesses and organizations, and contribute to the social and economic development of their surrounding communities. Meanwhile, effective service delivery is the cornerstone of a supportive, inclusive, and productive learning environment that fosters academic excellence, student success, and community engagement (Valarmathi et al., 2024). A critical component of this environment is the school plant, comprising buildings, classrooms, laboratories, libraries, and other physical assets. These physical spaces provide the foundation for teaching, learning, and student growth, making their management crucial for effective service delivery in schools.

Well-maintained and adequately equipped school facilities can significantly enhance the learning experience. Classrooms with proper lighting, ventilation, and technology enable teachers to deliver engaging lessons, while laboratories and libraries provide students with hands-on experience and access to resources, respectively. Moreover, safe and well-maintained playgrounds and sports facilities promote physical education and extracurricular activities (Nwamae et al., 2023) However, the mere presence of these physical assets is not enough. Adequate management is essential to ensure they support effective service delivery. This involves regular maintenance, timely repairs, and upgrades to maintain the quality and functionality of the facilities. Effective management also ensures that school

resources are allocated efficiently, minimizing waste and maximizing value. Effective school plant management also extends to environmental sustainability practices, such as energy-efficient lighting, waste reduction, and recycling programs (Altassan, 2023). These initiatives not only reduce the school's ecological footprint but also promote environmental awareness and responsibility among students and staff.

Furthermore, school plant management plays a critical role in ensuring student safety and security. Well-maintained facilities and effective emergency response plans can prevent accidents and minimize risks, creating a secure learning environment that allows students to focus on their studies (Amanchukwu & Ololube, 2015). In addition, effective school plant management can enhance community engagement and partnerships. Well-maintained facilities can host community events, workshops, and meetings, fostering relationships between the school and local stakeholders. This, in turn, can lead to collaborations, resource sharing, and mutual support, benefiting both the school and the community. In essence, effective service delivery in schools is deeply rooted in the management of the school plant. By prioritizing the maintenance, upkeep, and sustainable management of physical assets, schools can create a supportive, inclusive, and productive learning environment that promotes academic excellence, student success, and community engagement. As educational institutions strive to provide high-quality education, the importance of effective school plant management cannot be overstated.

Statement of the Problem

The effectiveness of service delivery in public senior secondary schools in Rivers East Senatorial District of Rivers State is a pressing concern. A critical aspect of service delivery is school plant management, which encompasses the maintenance, upkeep, and management of physical assets such as buildings, classrooms, laboratories, and libraries. However, many schools in the region struggle to manage their school plants effectively, leading to a myriad of challenges. Inadequate learning environments hinder teaching and learning, resulting in poor academic performance and reduced student achievement. Decreased student enrollment and retention rates further exacerbate the situation. Moreover, inefficient use of resources and budgetary constraints compound the problem. The negative impact on teacher morale and productivity is also a significant concern.

Despite the significance of school plant management, existing research has focused primarily on general school management practices, neglecting the unique challenges and opportunities presented by school plant management in the context of public senior secondary schools in Rivers East Senatorial District of Rivers State. This knowledge gap necessitates an in-depth investigation into the strategies for leveraging school plant management to enhance service delivery in these schools. The lack of research in this area is a significant oversight, as effective school plant management is crucial for creating a conducive learning environment that supports academic excellence and student success. By exploring the challenges

faced by public senior secondary schools in managing their school plants and identifying strategies for improvement, this study aims to bridge the knowledge gap and provide actionable insights for school administrators, policymakers, and stakeholders.

Aim and Objective of the Study

This study aims to explore the strategies of leveraging school plant management for effective service delivery in public senior secondary schools in Rivers East Senatorial District of Rivers State. The specific objectives are to:

1. Identify the various school plant management practices that can be leveraged for effective service delivery in public senior secondary schools in Rivers East Senatorial District of Rivers State.
2. Priorities strategies for leveraging school plant management for effective service delivery in public senior secondary schools in Rivers East Senatorial District of Rivers State
3. Examine and analyze the challenges and limitations of leveraging school plant management for effective service delivery in public senior secondary schools in Rivers East Senatorial District of Rivers State

Research Questions

The following questions were raised to guide the study:

1. What are the various school plant management to be leveraged for effective service delivery in public senior secondary schools in Rivers East Senatorial District of Rivers State?
2. What are the strategies to leverage school plant management for effective service delivery in public senior secondary schools in Rivers East Senatorial District of Rivers State?
3. What are the challenges to leveraging school plant management for effective service delivery in public senior secondary schools in Rivers East Senatorial District of Rivers State?

Hypothesis

This null hypothesis was formulated and statistically tested at a 0.05 level of significance:

HO: There is no significant difference in the mean rating between male and female principals on the strategies to leverage school plant management for effective service delivery in public senior secondary schools in Rivers East Senatorial District of Rivers State.

Theoretical Framework

One theory that can be applied to leveraging school plant management for effective service delivery in public senior secondary schools in Rivers East Senatorial District of Rivers State is the "Total Quality Management (TQM)" theory.

The Total Quality Management (TQM) theory has its roots in the post-World War II era when quality control and management began to emerge as a distinct field. Pioneers

like W. Edwards Deming laid the groundwork for modern TQM, emphasizing continuous improvement, customer satisfaction, and employee involvement (Talha, 2004). Deming's philosophy focused on creating a culture of quality, where every individual in the organization was responsible for delivering high-quality products and services. Building upon Deming's principles, other quality management experts contributed to the development of TQM. The evolution of TQM was influenced by various management theories, leading to its convergence with approaches like lean management, Six Sigma, and sustainability (Dahlgaard-Park et al., 2018). Today, TQM remains a comprehensive management approach that emphasizes continuous improvement, customer satisfaction, and employee involvement, with its core principles still relevant in modern business environments.

The concept of Total Quality Management (TQM) according to Talha (2004), is a management approach that emphasizes continuous improvement, customer satisfaction, and employee involvement. By adopting TQM principles, schools can identify their customers - students, teachers, and staff - and understand their needs. This involves setting clear goals and objectives for school plant management, aligned with the school's mission and vision. Establishing processes and procedures for maintenance, upkeep, and management of physical assets is also crucial. This requires a focus on continuous improvement, using data and feedback to drive decision-making. Employee involvement and empowerment are vital, achieved through training and development programs to enhance their skills and knowledge. Fostering a culture of continuous improvement, through regular communication, recognition, and rewards, is also essential. Talha (2004), further added that Total Quality Management (TQM) is a comprehensive approach to quality management that emphasizes continuous improvement, customer satisfaction, and employee involvement. TQM aims to create a culture of quality within an organization, where every individual is responsible for delivering high-quality products and services. Talha's overview of TQM highlights its key principles and benefits, including improved customer satisfaction, increased efficiency, and enhanced competitiveness.

In a more recent study, Dahlgaard-Park et al. (2018) explored the evolution and convergence of TQM and other management theories. The authors analyzed the development of TQM from its roots in quality control to its current status as a holistic management approach. They also examined the convergence of TQM with other management theories, such as lean management, Six Sigma, and sustainability. The study found that TQM has evolved to incorporate new concepts and approaches while maintaining its core principles of continuous improvement and customer satisfaction. The authors concluded that TQM remains a relevant and essential approach to quality management in today's business environment. By applying TQM principles, schools can ensure that their school plant management practices are customer-focused, efficient, and effective. This leads to improved learning environments, increased student satisfaction, enhanced teacher morale and productivity, better resource allocation and utilization, and increased community engagement and

support. Talha's (2004) work provides a foundation for understanding the importance of TQM in achieving excellence in school plant management, ultimately supporting academic excellence and student success.

The Total Quality Management (TQM) theory is highly relevant to the study of leveraging school plant management for effective service delivery in public senior secondary schools in Rivers East Senatorial District of Rivers State . TQM's emphasis on continuous improvement, customer satisfaction, and employee involvement aligns perfectly with the goals of effective school plant management. In the context of school plant management, TQM can be applied to ensure that the physical environment supports the learning process. By adopting TQM principles, school administrators can identify areas for improvement, set clear goals, and involve employees and stakeholders in the decision-making process. This leads to improved maintenance, upkeep, and management of physical assets, creating a conducive learning environment that supports academic excellence and student success. TQM's customer-focused approach also resonates with the study's emphasis on effective service delivery. In this context, students, teachers, and staff are the customers, and their needs and expectations must be met. By applying TQM principles, school administrators can ensure that school plant management practices are aligned with the needs of these customers, leading to increased satisfaction and improved learning outcomes.

Furthermore, TQM's emphasis on employee involvement and empowerment is crucial in school plant management. By involving employees in the decision-making process and providing them with the necessary training and resources, school administrators can tap into their knowledge and expertise, leading to more effective and efficient school plant management practices. The relevance of TQM to the study is also evident in its ability to address the challenges faced by public senior secondary schools in Rivers East Senatorial District of Rivers State. These challenges include inadequate funding, poor maintenance, and inefficient use of resources. By adopting TQM principles, school administrators can develop innovative solutions to these challenges, leading to improved school plant management practices and effective service delivery. In essence, the TQM theory is highly relevant to the study of leveraging school plant management for effective service delivery in public senior secondary schools in Rivers East Senatorial District of Rivers State. Its emphasis on continuous improvement, customer satisfaction, and employee involvement aligns perfectly with the goals of effective school plant management, making it an ideal framework for addressing the challenges faced by these schools.

CONCEPTUAL CLARIFICATION

School Plant Management

School plant management encompasses the comprehensive oversight and maintenance of a school's physical infrastructure, including buildings, grounds, and equipment. It involves a multifaceted approach to ensure a safe, healthy, and supportive learning environment that fosters academic excellence and student success. At its core, school plant management involves the planning, organization, direction, and control of physical resources to meet the diverse needs

of students, teachers, and staff. This includes routine maintenance and repairs, custodial services, groundskeeping, and management of utilities and physical assets. Effective school plant management also involves strategic planning, budgeting, and resource allocation to optimize the use of facilities and equipment. It requires collaboration with various stakeholders, including teachers, staff, students, and community members, to ensure that the physical environment supports the school's mission and goals.

Moreover, school plant management involves ensuring compliance with regulatory requirements, industry standards, and best practices in areas such as health, safety, and environmental sustainability. By adopting a proactive and preventative approach, school administrators can mitigate risks, reduce costs, and create a positive and productive learning environment that supports the well-being and success of all students. Managing school plants for effective service delivery, as defined by Amanchukwu and Ololube (2015), is a multifaceted approach that involves the strategic planning, organization, and supervision of physical resources to support the educational process and promote student learning. It is a holistic process that encompasses the effective utilization of facilities, equipment, and maintenance services to create a conducive learning environment that enhances teaching, learning, and overall academic achievement.

This approach recognizes that the physical environment plays a critical role in supporting the educational process and that effective management of physical resources is essential for delivering quality education. By ensuring the availability and functionality of physical resources, maintaining a safe, healthy, and clean learning environment, and providing adequate facilities and equipment for teaching and learning, schools can promote efficient use of resources to support academic programs and encourage a positive and supportive school culture. Ultimately, managing school plants for effective service delivery is about creating an environment that supports student success and achievement, and is critical for achieving academic excellence in public secondary schools.

School plant management, as conceptualized by Omosidi et al. (2015), encompasses the deliberate and systematic planning, organization, and maintenance of physical facilities, equipment, and resources to foster a conducive learning environment. This holistic approach ensures that all aspects of the physical environment support teaching, learning, and academic achievement. Effective school plant management involves providing and maintaining physical facilities such as classrooms, laboratories, and libraries, as well as managing equipment and resources like furniture, textbooks, and technology. It also entails ensuring the safety, security, and cleanliness of the school environment, thereby creating a supportive and healthy space for learning. Moreover, school plant management extends to providing adequate infrastructure for sports, recreation, and extracurricular activities, recognizing the importance of a well-rounded education. By prioritizing school plant management, schools can create an

environment that enhances academic performance, boosts student motivation, and ultimately leads to improved educational outcomes.

School plant management, as defined by Taglucop (2019), refers to the systematic and deliberate process of planning, organizing, and maintaining the physical environment of public secondary schools to ensure compliance with DepEd standards. This encompasses the effective management of physical facilities, equipment, and resources to create a conducive learning environment that supports teaching, learning, and academic achievement. Effective school plant management involves identifying courses of action and implementing best practices to address gaps and challenges in the physical environment. This includes ensuring the availability and functionality of facilities, equipment, and resources, as well as maintaining a safe, healthy, and clean learning environment.

Various School Plant Management

Here are various school plants that can be leveraged for effective service delivery in public senior secondary schools in Rivers East Senatorial District of Rivers State :

Buildings: The physical structures that house the school's facilities, including offices, and other spaces. Well-maintained buildings provide a secure and accessible space for students to learn, housing classrooms, laboratories, libraries, and offices. Example: A two-story building that contains administrative offices, classrooms, and an auditorium.

Classrooms: Rooms specifically designed for teaching and learning, typically equipped with desks, chairs, and educational resources. Classrooms are spacious, well-ventilated, and lit, equipped with desks, chairs, blackboards, and storage for educational resources.
Example: A well-lit and ventilated room with 30 desks and chairs, a whiteboard, and a projector for presentations.

Laboratories: These are specialized rooms designed for practical experiments and investigations in various subjects, including physics, chemistry, biology, computer science, and technology. These rooms are equipped with workstations, safety equipment, and storage for chemicals and supplies. Example: A chemistry lab with workstations, safety equipment, and storage for chemicals and supplies.

Libraries: Offer quiet and comfortable spaces for students to study, research, and learn, with shelves of fiction and non-fiction books, study tables, chairs, computers, and internet access. These resources provide students with a wealth of information and opportunities for exploration. Example: A library with shelves of fiction and non-fiction books, study tables, computers, and a separate section for quiet reading.
In addition to these core assets, schools also have auditoriums for assemblies, performances, and events, playgrounds for recreation, sports, and physical education, cafeterias for meals and socialization, and offices for administrative staff, counsellors, and teachers. Together, these physical assets create a supportive and inclusive environment that fosters academic excellence, creativity, and personal growth,

enabling students to reach their full potential and succeed in their future endeavours.

Strategies to Leverage School Plant Management

Nwamae et al. (2023) and Polycarp and Onele (2024), outlined a few strategies to leverage school plant management for effective service delivery in public senior secondary schools in Rivers East Senatorial District of Rivers State :

Regular Maintenance and Upkeep: Implement a regular maintenance schedule to ensure that buildings, classrooms, laboratories, libraries, and other physical assets are in good condition, safe, and functional.

Effective Utilization of Resources: Optimize the use of available resources, such as furniture, equipment, and facilities, to support teaching, learning, and academic achievement.

Safety and Security Measures: Implement robust safety and security measures to protect students, teachers, and staff, including emergency preparedness plans, access control, and surveillance systems.

Sustainable Practices: Adopt sustainable practices, such as energy-efficient lighting, waste management, and water conservation, to reduce the school's environmental impact and promote environmental awareness.

Community Engagement and Partnerships: Foster community engagement and partnerships to leverage resources, expertise, and support for school plant management, including collaborations with local authorities, private sector organizations, and community groups.

By implementing these strategies, public senior secondary schools in Rivers East Senatorial District of Rivers State can transform their learning environments, ultimately leading to improved education quality and student outcomes. A well-managed school plant provides a conducive setting for teaching, learning, and academic achievement, allowing students to thrive and reach their full potential. Effective school plant management ensures that facilities, equipment, and resources are functional, well-maintained, and accessible, creating an environment that supports academic success and personal growth. This, in turn, enhances student outcomes, as they can learn and develop in a safe, secure, and supportive setting. Moreover, efficient resource utilization and sustainable practices reduce waste, optimize budget allocation, and promote environmental awareness, contributing to a more responsible and eco-friendly school community. Community engagement and partnerships further enrich the learning experience, providing access to additional resources, expertise, and opportunities.

By prioritizing school plant management, public senior secondary schools in Rivers East Senatorial District of Rivers State can become beacons of excellence, attracting students, teachers, and partners who value quality education and facilities. Improved teacher morale and motivation also follow as educators are empowered to deliver high-quality instruction with the resources and support they need. Ultimately, the impact of effective school plant management is profound, driving systemic improvements in

education quality, student outcomes, and community engagement, and setting the stage for a brighter future for generations to come.

Challenges to Leveraging School Plant Management for Effective Service Delivery

Leveraging school plant management for effective service delivery in public senior secondary schools in Rivers East Senatorial District of Rivers State faces several challenges not limited to:

1. Inadequate Funding: Insufficient budget allocation for school plant maintenance, leading to neglect and deterioration of facilities.

2. Lack of Skilled Personnel: Inadequate training and expertise among maintenance staff, resulting in poor maintenance practices and reduced facility lifespan.

3. Poor Infrastructure: Inherited dilapidated buildings, inadequate classrooms, and insufficient facilities, make it difficult to provide a conducive learning environment.

4. Corruption and Mismanagement: Diversion of funds meant for maintenance, and mismanagement of resources, leading to ineffective school plant management.

5. Lack of Community Engagement: Limited involvement of stakeholders, including parents and community members, in school plant management, resulting in reduced ownership and support for maintenance efforts.

The challenges plaguing school plant management have a ripple effect, impacting the very foundation of education and ultimately, student outcomes. When schools grapple with inadequate funding, a dearth of skilled personnel, crumbling infrastructure, corruption, mismanagement, and limited community engagement, the consequences are far-reaching. Dilapidated buildings and facilities create an unsafe and unhealthy learning environment, hindering students' ability to focus and learn. Inadequate resources and equipment further exacerbate the problem, leaving teachers without the tools they need to effectively instruct and engage their students. As a result, teacher morale and motivation suffer, leading to a decline in instruction quality. Students, too, feel the effects, as decreased engagement and motivation lead to poor academic performance. The result is a distressing increase in dropout rates and reduced student outcomes, perpetuating a cycle of disadvantage. By addressing these challenges, schools can break free from this cycle, creating a well-managed learning environment that supports academic achievement, teacher effectiveness, and student success.

Review of Related Empirical Studies

Polycarp and Onele (2024) in a study investigated the availability, utilization and maintenance of school records in the management of public secondary schools in the Ogoja Education Zone. The study was guided by two specific purposes, two research questions and two null hypotheses. A descriptive survey was employed for the study. The population of the study comprised 1385 education personnel, which were made up of 305 principals, 1023 teachers, and 57 Officials of the Secondary Education Board, while the Taro Yamane Sampling Technique

was used to determine the sample size of three hundred and ten (310), representing 22.4 per cent of the total population. The instrument for data collection was a structured two-cluster questionnaire with 20 items. Data collected were analyzed using mean (X) and standard deviation (SD) with a rating scale of 0.25 acceptance, while a t-test was used to test the null hypothesis at 0.05 level of significance. From the findings of the study, it was observed that advanced knowledge of Principals enhances adequate management by ensuring the availability, utilization and maintenance of statutory and non-statutory records in secondary schools for quality implementation of educational goals in Public Secondary Schools in Ogoja Education Zone of Cross River State. Based on the findings, it was recommended that the government should ensure that the level of education and experience is considered in the deployment of Principals for proficiency in the availability, utilization and maintenance of statutory and non-statutory records in secondary schools for functional implementation of educational goals in Public Secondary Schools. The government should ensure adequate training and retraining of Principals on modern approaches to record keeping in the Schools. The government should ensure the advancement of record-keeping facilities by the provision of technological devices to meet the modern standard of quality education in our society. Ministry of Education should ensure that Principals adopt bureaucratic and prudential practices in the supervision and maintenance of statutory and non-statutory school records in Public Secondary Schools in Ogoja Education Zone of Cross River State.

Nwamae et al. (2023), examined school plant maintenance culture for effective administration in the public secondary schools in Port Harcourt Local Government Area (LGA) of Rivers State. This study adopted a descriptive survey research design. The population of the study consists of all 15 public senior secondary schools in Port Harcourt Local Government Area of Rivers State. Therefore, the census sampling technique was used to obtain a sample size of 45 principals (15 principals and 30 vice principals, of which 19 are males and 26 are females). The instrument for data collection used in this study was "the Plant Maintenance Culture Questionnaire (PMCQ)". The reliability coefficient of 0.73 was obtained using Cronbach Alpha. The research questions were answered using mean and standard deviation. The hypotheses were tested using a Z-test at 0.05 level. The results showed both male and female principals adopted a school plant maintenance culture for effective administration in public secondary schools in Port Harcourt LGA and that there are challenges facing principals in school plant maintenance culture for effective administration of the secondary schools in Port Harcourt LGA. It was recommended that principals should be encouraged by the government to continually coordinate material resources appropriately as a way of plant maintenance for their effective secondary school administration.

Taglucop (2019), delved into the realm of school plant management in public secondary schools, seeking to understand the existing characteristics of seven schools in Claveria, Misamis Oriental, Philippines, in relation to the Department of Education (DepEd) standards. Employing a descriptive research design, the study utilized a mixed-methods

approach, combining questionnaires, Focus Group Discussions (FGDs), and interviews with school heads, teachers, and student leaders. The Appreciative Inquiry Method was also integrated to uncover effective practices in school plant management. The study involved 73 respondents from the seven secondary schools, providing a comprehensive perspective on the state of school plant management. Primary data were gathered through interviews, questionnaires, and FGDs, while secondary data were obtained through documentation and scanning of existing records. Upon analyzing the data, the study revealed varying levels of compliance with DepEd standards among the seven schools. Effective practices in school plant management emerged, including regular maintenance, community engagement, and resource allocation. The study highlighted the significance of school plant management in creating a conducive learning environment and emphasized the importance of complying with DepEd standards. In conclusion, the study recommended that schools prioritize regular maintenance and community engagement to enhance school plant management. Furthermore, it suggested that DepEd provide adequate resources and support to facilitate compliance with standards. By addressing these aspects, schools can improve their physical environment, ultimately benefiting students and teachers alike.

METHODS

This study employed a descriptive design to examine the opinion of respondents on leveraging school plant management for effective service delivery. The population comprised 115 principals in public senior secondary schools in Rivers East Senatorial District of Rivers State (Emohua-24, Etche-18, Ikwerre, 15. Obio/Akpor-25, Ogu/Bolo-5 Okrika-8, Omuma-5 and Port Harcourt-20). The census sampling technique was adopted to determine the entire population of the 115 principals. A self-developed questionnaire, titled "Leveraging School Plant Management for Effective Service Delivery Questionnaire (LSPMESD)," was used as the data collection instrument. The questionnaire comprised 15 items, divided into two sections: Section A (demographic information) and Section B (Leveraging School Plant Management for Effective Service Delivery). The instrument underwent face validation by an expert to ensure validity, and reliability testing was conducted using Cronbach's alpha, yielding a coefficient of 0.74, indicating high internal consistency. Out of the 115 questionnaires distributed, 106 were retrieved and considered valid for analysis. Descriptive statistics (mean and standard deviation) were used to answer research questions, while an Independent t-test was employed to test the null hypotheses at a 0.05 level of significance using SPSS Version 26.0.

RESULTS

Answers to Research Questions

To answer the research questions, Mean and Standard deviation were used to analyze the data for the research formulated for this study. Furthermore, the research questions were formulated in line with the study's purpose and

offered answers to the questionnaire's specific items.

Research Question One: What are the various school plant management to be leveraged for effective service delivery in public senior secondary schools in Rivers East Senatorial District of Rivers State?

Descriptive Statistics of Mean score and standard deviation on the various school plant management to be leveraged for effective service delivery

	X_1	SD_1	X_2	SD_2	$X_1+X_2\backslash 2$	Remark
1. Buildings	2.588	.974	2.626	.835	2.607	Agree
2. Classrooms	2.567	.971	2.500	.930	2.534	Agree
3. Laboratories	2.626	.835	2.864	.998	2.745	Agree
4. Libraries	2.500	.930	3.184	1.016	2.842	Agree
Grand Mean					**2.682**	**Agree**

The first research question sought to identify the various school plant management facilities that are leveraged for effective service delivery in public senior secondary schools in Rivers East Senatorial District of Rivers State. The findings revealed a grand mean score of 2.68, indicating a moderate to high level of agreement among participants. This suggests that, on average, respondents concurred that buildings, classrooms, laboratories, and libraries are the key school plant management facilities that enhance effective service delivery in these schools. The finding implies that by leveraging these facilities, schools can create a conducive learning environment that fosters academic achievement, teacher effectiveness, and student success.

Research Question Two: What are the strategies to leverage school plant management for effective service delivery in public senior secondary schools in Rivers East Senatorial District of Rivers State?

Descriptive Statistics of Mean score and standard deviation on the strategies to leverage school plant management for effective service delivery

	X_1	SD_1	X_2	SD_2	$X_1+X_2\backslash 2$	Remark
5.Regular Maintenance and Upkeep	2.775	.976	2.910	1.017	2.773	Agree
6.Effective Utilization of Resources	3.192	1.102	3.107	.872	3.192	Agree
7.Safety and Security Measures	2.529	.872	2.882	.902	2.529	Agree
8.Sustainable Practices	2.841	1.282	2,502	.092	2.841	Agree
9.Community Engagement and Partnerships	3.012	1.042	2.891	1.091	3.037	Agree
Grand Mean					**2.874**	**Agree**

The second research question sought to identify the strategies for leveraging school plant management for effective service delivery in public senior secondary schools in Rivers East Senatorial District of Rivers State. The findings revealed a grand mean score of 2.87, indicating a strong consensus among participants. This suggests that the respondents overwhelmingly agree on

the importance of five key strategies in optimizing school plant management for effective service delivery. These strategies include regular maintenance and upkeep, effective utilization of resources, safety and security measures, sustainable practices, and community engagement and partnerships. By implementing these strategies, schools can ensure that their physical assets are well-maintained, resources are optimized, and the learning environment is safe, secure, and sustainable. Furthermore, fostering community engagement and partnerships can provide additional support and resources for school plant management in public senior secondary schools in Rivers East Senatorial District of Rivers State.

Research Question Three: What are the challenges to leveraging school plant management for effective service delivery in public senior secondary schools in Rivers East Senatorial District of Rivers State?

Descriptive Statistics of Mean score and standard deviation of challenges to leveraging school plant management for effective service delivery

	X_1	SD_1	X_2	SD_2	$X_1+X_2\backslash 2$	Remark
10. Inadequate Funding	3.080	.921	2.643	.944	2.861	Agree
11. Lack of Skilled Personnel	3.160	.880	2.510	.818	2.835	Agree
12. Poor Infrastructure	2.871	.950	2.882	1.004	2.876	Agree
13. Corruption and Mismanagement	2.543	1.062	2.706	.908	2.624	Agree
14. Lack of Community Engagement	2.826	1.125	2.989	1.329	2.907	Agree
Grand Mean					**2.820**	Agree

The third research question sought to identify the challenges to leveraging school plant management for effective service delivery in public senior secondary schools in Rivers East Senatorial District of Rivers State. The findings revealed a grand mean score of 2.82, indicating a strong consensus among participants. This suggests that the respondents overwhelmingly agree that five key challenges hinder effective school plant management in these schools. These challenges include inadequate funding, which limits the ability to maintain and manage school facilities; lack of skilled personnel, resulting in poor maintenance practices; poor infrastructure, characterized by dilapidated buildings and inadequate facilities; corruption and mismanagement, leading to diversion of funds and resources; and lack of community engagement, resulting in limited ownership and support for maintenance efforts. Overall, the finding highlights the significance of these five challenges in impeding effective school plant management in public senior secondary schools in Rivers East Senatorial District of Rivers State. Addressing these challenges is crucial to creating a conducive learning environment that supports academic achievement and student success. By acknowledging and tackling these challenges, stakeholders can work towards optimising school plant management and improving service delivery in these schools.

Test of Hypothesis

Hypothesis 1: There is no significant difference in the mean rating between male and female principals on the strategies to leverage school plant management for effective service delivery in public senior secondary schools in Rivers East Senatorial District of Rivers State.

Summary of independent t-test analysis on the difference between the mean responses of male and female principals on the strategies to leverage school plant management for effective service delivery in public senior secondary schools in Rivers East Senatorial District of Rivers State .

Students	N	$\bar{x}$	S.D	Df	t	t_{tab}	Sig.	Decision
Male principals	62	10.72	1.63	106	4.38	1.96	0.00	Significant
Female principals	44	8.43	1.84					

In the above table Hypothesis One, there is no significant difference in the mean rating between male and female principals on the strategies to leverage school plant management for effective service delivery in public senior secondary schools in Rivers East Senatorial District of Rivers State. The table shows that the calculated t-value (4.38) exceeds the critical t-value (1.96), the p-value (0.00) is less than the level of significance (0.05) and the null hypothesis was rejected. This indicates a significant difference in the mean rating between male and female principals on the strategies to leverage school plant management. In other words, the data suggests that male and female principals have different opinions on the strategies to leverage school plant management for effective service delivery in public senior secondary schools in Rivers East Senatorial District of Rivers State.

Discussion of Findings

In discussing the findings of this study, the researcher has followed the order of the data analysed using relevant literature to support the findings and results.

Research Question One Findings: The study identified five key strategies: regular maintenance and upkeep, effective utilization of resources, safety and security measures, sustainable practices, and community engagement and partnerships.

Research Question Two Findings: The study revealed five significant challenges: inadequate funding, lack of skilled personnel, poor infrastructure, corruption and mismanagement, and lack of community engagement.

Research Question Three Findings: The study found a significant difference in the mean rating between male and female principals, indicating that gender may play a role in shaping principals' perceptions and approaches to school plant management.

Leverage school plant management for effective service delivery

The findings of this study reveal a significant difference in the mean rating between male and female principals on the strategies to leverage school plant management for effective service delivery in public senior secondary schools in Rivers East Senatorial

District of Rivers State. This difference is statistically significant, as evidenced by the calculated t-value (4.38) exceeding the critical t-value (1.96) and the p-value (0.00) being less than the level of significance (0.05). The rejection of the null hypothesis indicates that male and female principals have differing opinions on the strategies to leverage school plant management. The finding of this study, which reveals a significant difference in the mean rating between male and female principals on the strategies to leverage school plant management, is consistent with the results of a previous study conducted by Taglucop (2019). The study identified effective practices and courses of action for improving school plant management. The alignment of the findings suggests that there is a growing body of evidence highlighting the importance of considering gender perspectives in school plant management. This consistency reinforces the need for gender-sensitive approaches to school administration and policy-making, as well as targeted professional development programs for principals. By building on existing research, this study contributes to a deeper understanding of the complex factors influencing school plant management and provides valuable insights for educators, policymakers, and researchers seeking to improve educational outcomes.

Conclusion

In conclusion, this study has underscored the vital importance of effective school plant management in enhancing service delivery in public senior secondary schools in Rivers East Senatorial District of Rivers State. The findings have highlighted five key strategies that can be leveraged to optimize school plant management, including regular maintenance and upkeep, effective utilization of resources, safety and security measures, sustainable practices, and community engagement and partnerships. However, the study has also revealed significant challenges that hinder effective school plant management, such as inadequate funding, lack of skilled personnel, poor infrastructure, corruption and mismanagement, and lack of community engagement. Moreover, the findings have shown that gender plays a role in shaping principals' perceptions and approaches to school plant management, with male and female principals holding differing opinions on strategies for effective school plant management.

Recommendations

Based on the findings, the following recommendations were made:

1. School administrators, government education agencies, and private sector partners should increase budget allocation for school plant maintenance and explore alternative funding sources (e.g., grants, partnerships).

2. School administrators, maintenance staff and professional development providers should provide regular training and capacity-building programs for maintenance staff, and consider hiring skilled professionals.

3. School administrators, government education agencies and architects/engineers should develop a

long-term infrastructure development plan, prioritize repairs and renovations, and explore funding opportunities.

4. School administrators, government education agencies, auditors/financial experts. should establish transparent financial management systems, conduct regular audits, and enforce accountability measures.
5. Task Carriers:
6. School administrators, parent-teacher associations and the community should foster partnerships with local communities, involve parents and stakeholders in decision-making, and promote ownership and support

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