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Provision and Utilization of Physical Resources for Effective Teaching and Learning Effectiveness in Public Universities in Rivers State

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ABSTRACT

The paper explores the role of physical resources in effective teaching and learning in public universities in Rivers State. It emphasizes the importance of managing resources such as money, computers, teaching technology, and internet facilities to achieve educational goals. The paper is based on Wernerfelt's Resource-Based Theory, which suggests that organizations can achieve a sustainable competitive advantage through strategic and efficient use of physical resources. The study concludes that effective provision and utilization of physical resources are crucial for the success of teaching and learning in public universities. It suggests that a multifaceted approach, including infrastructure development, technological integration, library enrichment, and accommodation considerations, can create an environment conducive to academic excellence and a holistic learning experience. The paper also suggests that the state government should establish mechanisms to improve transparency and accountability in the use of physical resources to ensure efficient allocation of funds towards educational priorities.

INTRODUCTION

The basis for establishing a setting in which physical resources are not only made available but also effectively employed to improve the quality of education as a whole is education. The fundamental purpose of education is to create an environment that is favourable to the development of the mind. This goes beyond the conventional classroom environment and includes offering well-appointed places like libraries, labs, and leisure areas. By means of instruction, educational establishments can foster in learners a sense of accountability and responsibility, motivating them to actively engage in the upkeep and efficient use of these assets. By enabling teachers and students to take advantage of technology, education makes it possible to ensure that classrooms are furnished with cutting-edge physical resources for interactive instruction. Information and communication technology (ICT) integration is not just a fad; rather, it is a calculated way to optimise resource use, enabling smooth communication and easy access to a multitude of scholarly resources.

Okai and Bright (2004), education is the process by which learners are assimilated into society and taught to comprehend or understand the happenings in their surroundings. Adeyemi and Adu (2010), education include a number of procedures that people go through to help them reach and utilise their potential, it is commonly acknowledged that it is one of the most effective tools for fostering societal development. Additionally, Okeke (2007) made the argument that education helps people develop the information, abilities, and attitudes needed to live well. For this reason, physical resources allocated to education is regarded as being extremely important in all nations of the world. This is the rationale behind the significance of education and the reason major stakeholders call for the increase in funding education from 8.2% to the UNESCO benchmark of 25% (Thecable.ng/matters-arising 2023). Education is indeed becoming a very big business in Nigeria and this business aspect of providing adequate physical resources, particularly buildings, should now become a serious element for effective management of university education, (Ukeje, Akabuogu and Ndu in Ezeugbor, and Okorji (2014).

Public universities in Rivers State rely heavily on the efficient availability and use of physical resources to create an atmosphere that is favourable to teaching and learning. University institutions require a wide variety of physical resources, including but not limited to chairs, classrooms, administrative blocks, student hostels, office accommodation, library, laboratory, internet facilities, football fields, desks, chalkboards, instructional materials, and more. Both students and teachers benefit greatly from the synergy between these factors, which enhances the quality of the educational experience as a whole.

Physical resources refer to the tangible assets and facilities utilized in the teaching and learning process. These encompass a wide range of items, including classrooms, laboratories, libraries, technological infrastructure, and recreational spaces (Okonkwo, 2017). These physical resources play a crucial role in creating an environment conducive to effective education delivery and student engagement. The provision and utilization of physical resources are fundamental to the overall effectiveness of teaching and learning in educational

institutions (Okafor & Ibrahim, 2019). Adequate classrooms and well-equipped laboratories enhance the quality of educational experiences, facilitating hands-on learning and experimentation (Adeyemi, 2020). Additionally, a well-stocked library and advanced technological infrastructure contribute to the overall academic development of students (Nwosu 2018).

The provision and utilization of physical resources in education encompass the processes of making available and effectively employing tangible assets to create an environment conducive to learning (Okafor, 2018). These physical resources, including classrooms, laboratories, libraries, and technological infrastructure, play a crucial role in facilitating effective teaching and learning experiences for students (Adewale, 2020).

The availability of classrooms is fundamental to accommodating students and providing a space for interactive teaching methods (Ibrahim, 2019). Well-equipped laboratories contribute significantly to hands-on learning experiences and the development of practical skills among students (Adeyemi, 2021). Additionally, libraries, serving as knowledge hubs, and up-to-date technological tools enhance the accessibility of diverse learning physical resources and support modern teaching methods (Nwosu, 2017). Classrooms, lecture halls, and laboratories, as well as their accessibility and condition, are critical to the success of any educational institution. Spaces that are well-planned and supplied encourage academic curiosity and active participation. Modern, well-maintained lab facilities are especially important for providing students with hands-on learning opportunities in the STEM fields. In today's information-rich world, up-to-date educational resources and tools are crucial. All of the public institutions in Rivers State need to have modern audio-visual equipment, computers, and other technological resources to help students learn more effectively. Furthermore, it is essential for laboratories and research centres to have cutting-edge equipment in order to remain competitive in a variety of academic subjects. Libraries are the core of academic institutions, allowing students and teachers access to a plethora of knowledge. A university's dedication to fostering research and intellectual endeavours can be gauged by the breadth and depth of its collection of print and digital resources (books, journals, and databases). Library resources, such as quiet study areas and group study rooms, and research resources, enhance the learning environment.

The availability of qualified instructors and staff is just as important as having adequate facilities when it comes to ensuring high-quality education. Staff of the universities should participate in ongoing professional development to create a more stimulating and innovative learning environment. It is crucial to know the difficulties and possibilities that create the educational environment to have an understanding of the current status of physical resources in public universities in Rivers status. The quality of education offered by these establishments can be improved by delving further into the specifics of these physical resources in order to locate problem areas, develop solutions, and execute them strategically.

It's likely that poor learning results and the lecturers' production will result from a lack of these tools, upsetting the learning process and making it impossible for such institutions to reach their stated aims. The topic of utilisation arises, however, in many institutions, particularly in Rivers State, where such physical resources are made available. Institutions of higher education in Rivers State are tasked with improving the quality of education available in the state through the provision of sufficient material resources. However, most of Nigeria's educational institutions suffer from outdated and insufficient infrastructure, making it difficult to offer students with a high-quality education. Most of these physical resources will only be useful if they are put to good use in the classroom.

According to Paterson (2009), universities and their students benefit greatly from the efficient use of their physical resources, such as classrooms, laboratories, libraries, assembly grounds, flower gardens, school gardens, volleyball courts, chalkboards, desks, chairs, and so on. Only efficient use of material means can achieve this goal. In certain institutions, the limited physical resources that are offered are old and not properly installed due to lack of fund. Even when these materials are made available, some teachers may lack the expertise to effectively integrate them into the classroom. There is a problem at some of these schools where instructors do not make use of cutting-edge tools because they do not know how to operate them. All of these factors significantly affect the program's final results. In addition, if they are used excessively, they may break down quickly due to wear and tear from overwork. According to Okai (2008), the university system is a key that unlocks the door to civilization and growth since it is one of the agents that determine the destiny of man and that of the nation. In fact, the university system's vital role in development necessitates careful planning, the supply of sufficient physical resources, and efficient use of those physical resources in order to guarantee high-quality education for university students. In the context of this research, "teaching" is guiding another individual or a group of individuals through the process of learning something new. It goes without saying that if the necessary physical resources are made available and used, the university will be successful. That means the success of any institution, the university included, is proportional to the means by which they are supported and utilised. physical resources management and utilisation, as defined by Okai (2013), is the proper directing of an organization's people and material assets towards the achievement of its goals. In this sense, physical resources provision and utilisation is the effective coordination of the physical resources made available to the university for the objective of creating quality graduates. Educators in the university system conduct study and write articles and papers that provide answers to the problems facing the country. Good educational managers must carefully and effectively handle educational resources including money, machines like computers, teaching technology, internet facilities, and other facilities to ensure the effective realisation of educational goals, and it is pertinent to state that management is a panacea for producing quality graduates in the university system.

Despite their importance, public universities often face challenges in managing and maintaining physical resources (Abubakar & Smith, 2021). Insufficient funding, inadequate maintenance, and outdated infrastructure can hinder the optimal use of these physical resources (Turner, 2016). These challenges underscore the need for effective management strategies to ensure the sustainable provision and utilization of physical resources in Nigerian public universities. It is against this background that this researched the provision and utilization of physical resources for effective teaching and learning effectiveness in public universities in Rivers State its usage and its provision.

METHODOLOGY

Resource-Based Theory (RBT)

The Resource-Based Theory (RBT) was propounded by Wernerfelt (1984). The theory posits that organizations, including educational institutions, can achieve a sustainable competitive advantage through the strategic utilization of physical resources. physical resources encompass a wide range of tangible assets, such as classrooms, laboratories, libraries, and other infrastructural facilities. According to RBT, the availability and efficient use of these physical resources contribute significantly to the overall competitiveness and effectiveness of an organization. This theoretical review sets the stage for a comprehensive exploration of the dynamics surrounding the provision and utilization of physical resources for effective teaching and learning in public universities in Rivers State. By drawing on the Resource-Based Theory, the study aims to unravel the intricate relationships between tangible assets, institutional frameworks, and educational outcomes, ultimately contributing to the enhancement of the overall educational landscape in the region.

The relevance of the Resource-Based Theory to the study at hand is evident in its emphasis on how tangible assets, when properly harnessed, can be a source of sustainable advantage. In the educational landscape, the provision of state-of-the-art facilities and their effective utilization can enhance the quality of teaching and learning experiences. For instance, well-equipped laboratories facilitate hands-on practical sessions, fostering a more comprehensive understanding of theoretical concepts. Similarly, modern classrooms and libraries create a conducive environment that promotes active engagement and knowledge acquisition.

Physical Resources

Resource is productive assets available for different uses for the achievement of national goals. It is the sum total of organization's assets in human, material or financial form which the organization is willing to release for the realization of its goals. physical resources are what enable people to turn goals into reality. physical resources are most times not sufficient and it is in such situation that the available physical resources need to be properly managed to maximally attain educational goals. These physical resources pushed into the university system are highly justified because of the input a

university makes in the lifting of the social and economic system of her country or immediate community. This is attested in Ajayi and Ekundayo (2006) that the funds allocated to higher education should not merely be considered as an expense but a long-term investment, of benefit to society as a whole.

Okai (2003) in Okai and Worlu (2008), states that resource in higher education refers to the totality of fund to higher education which the higher education system needs for its smooth running and survival. This is the apportioning or distributing of productive assets to sectors for different uses for the achievement of national goals. The resource model (RAM) is defined as a means by which available physical resources are used judiciously to achieve the objectives of an institution to a high level of satisfaction. The federal and state government allocate fund to their respective universities every year. Also the 2% tax on profits by registered limited liability companies in Nigeria in accordance with the Tax Decree No. 7 of 1993 is allocated to higher, primary and secondary educational levels in the ratio 504010. The 50 ratio is then shared in the ratio of 211 to universities, polytechnics and colleges of education respectively. Other outlets fund the university system on areas of research in form of scholarship. It is lamentable that there is growing shortage of funds and learning physical resources in the university system.

According to Oyeneye (2006) and Adegbite (2007), the major challenge facing the management of university system in Nigeria is inadequate funding meanwhile, Ajayi and Ayodele (2004) argued that there was an increase in the proportion of total expenditure devoted to education, but this has been considered to be rather grossly inadequate considering the phenomenon increase in student enrolment and increasing cost, which has been aggravated by inflation. This claim is backed up with Micaiah (2022) findings that total budget from 1999 to 2022 is 35.133 Trillion with the of 3.128 Trillion to education giving 8.28% of the total budget.

When the university system receives its, there is further disbursement to different sectors of the university. This disbursement is done following two main approaches the central or decentralized form of disbursement. University exercise is central when the highest administrator disburses fund as the need arises from the different departments or quarters. The department writes stating their need per time and the administrator checks and signs approval giving the bursary the authority to disburse fund to meet that particular need.

Utilization of Physical Resources

The effective facilitation of teaching and learning in public universities in Rivers State, Nigeria, is intricately tied to the meticulous management and utilization of physical resources. These physical resources, as defined by Akindele and Olatunji (2015), encompass a diverse array of elements ranging from infrastructure and facilities to various types of equipment. Together, these components collaboratively contribute to establishing a conducive and productive learning environment. Central to the effective utilization of physical resources is the imperative of having access to and maintaining high-quality infrastructure and facilities, a point emphasized by Dele and Ede (2017). Well-

equipped classrooms, state-of-the-art laboratories, adequately stocked libraries, and other essential amenities play a pivotal role in creating an atmosphere conducive to effective teaching and learning experiences. The environment directly influences the quality of education imparted, making the provision and maintenance of these physical resources paramount in achieving educational goals. In addition to the traditional elements of infrastructure, the integration of technology emerges as a critical factor in optimizing physical resources for enhanced educational outcomes. Ogunnaike and Adeleke (2013) stress the strategic use of information and communication technology (ICT) tools. This strategic integration not only provides students with broader access to information but also fosters interactive and engaging learning opportunities. In an era where technology is rapidly advancing, its incorporation into the educational landscape becomes imperative for staying relevant and effective.
Beyond structures and technology, the efficient utilization of physical resources extends to human capital. Onuoha and Eze (2018) draw attention to the significance of investing in the professional development and training of teaching staff. Adequate training ensures that educators are well-equipped with the necessary skills and knowledge to make optimal use of the available physical resources. The synergy between human physical resources and physical resources is vital in creating an environment where teaching and learning are not only effective but also adaptive to evolving educational paradigms. The concept of the utilization of physical resources in public universities in Rivers State is a multifaceted endeavor. It encompasses not only the provision and maintenance of infrastructure but also the strategic integration of technology and the development of human physical resources. A comprehensive and strategic approach to managing these physical resources is indispensable for fostering effective teaching and learning experiences in the academic setting, this holistic perspective acknowledges the interconnectedness of various elements and underscores the importance of a cohesive strategy for the optimal utilization of physical resources in the pursuit of educational excellence

RESEARCH RESULT AND DISCUSSION

Utilization and Management of Physical Resources for Effective Teaching and Learning

The utilization and effective management of physical resources in education are crucial elements in ensuring a conducive and productive learning environment (Okafor, 2018). These physical resources encompass tangible assets such as classrooms, laboratories, libraries, and technological infrastructure, all of which play vital roles in supporting teaching and learning processes. In the context of classroom utilization, scholars emphasize the importance of strategic planning and coordination to optimize the use of available spaces (Adeyemi, 2019). Adeyemi's research underscores that effective scheduling and thoughtful allocation contribute to efficient resource utilization, accommodating diverse courses and student cohorts. Regular maintenance of laboratories is equally vital for sustaining a safe and functional environment for practical learning experiences (Ibrahim, 2020). Ibrahim highlights the proactive

upkeep of equipment to prevent breakdowns, ensuring that laboratories remain conducive to hands-on learning.

In the realm of library resource management, Nwosu's research emphasizes the significance of well-organized libraries that cater to the varied academic needs of students (Nwosu, 2017). Efficient library management involves curating diverse collections, ensuring accessibility, and providing a supportive space for research and study. Technology integration into teaching methods requires meticulous management of technological infrastructure (Adewale, 2021). Adewale argues that institutions must invest in the proper maintenance of technological resources to support modern teaching approaches and keep pace with advancements in educational technology.

Strategic budgeting and resource allocation are essential aspects of effective resource management (Abubakar, 2022). Abubakar's research indicates that transparent and efficient budgeting processes ensure funds are appropriately allocated for the maintenance and improvement of physical resources. Sustainability practices in resource management have gained importance, with scholars like Smith advocating for eco-friendly strategies (Smith, 2019). Integrating sustainable practices not only aligns with global environmental efforts but also contributes to long-term cost savings. The effective utilization and management of physical resources require a holistic and strategic approach. This involves optimizing classroom spaces, maintaining laboratories, managing library resources, integrating technology, implementing budgetary considerations, and incorporating sustainable practices. Regular assessment and adaptation of management strategies are essential to meet the evolving needs of educational environments (Okafor, 2018).

Infrastructures for Effective Teaching and Learning.

The purpose of teaching and learning process is to bring about desirable change in the learner's behavior through critical thinking. The process does not take place in a vacuum but rather in an environment structured to facilitate learning. In ideal situation for teaching and learning to take place, there must be adequate infrastructure. Consequently, provision of instructional materials has impact on student learning achievement in educational system. School facilities consist of all types of buildings for academic and non-academic activities; equipment for academic and non- academic activities, areas for sports and games, landscape, farms and gardens including trees, roads and paths. Others include furniture and toilet facilities, lighting, acoustics, storage facilities, parking lot, security, transportation, ICT, cleaning materials, food services, and special facilities for the challenge persons. Researchers have shown that non-availability and inadequacy of such facilities have great influence on the performance of both students and lecturers in higher institution of learning. The facilities can be categorized into and non- facilities. Omoniyi and Ogunsanmi (2012) posited that, university lectures are expected to perform at high level in the area of curriculum without the adequate basic facilities for teaching. learning and research which the use of classroom, laboratory, library, office

space and ICT facilities are used for effective teaching and learning as will be explained further;

Classrooms

Classrooms, as integral infrastructures for effective teaching and learning, provide the physical space where educational activities unfold (Anderson, 2019). The design and layout of a classroom significantly influence the dynamics of instruction and student engagement (Miller, 2017). In a well-equipped classroom, students have access to essential tools and resources that enhance their learning experience (Clark & Davis, 2020). The physical arrangement of desks and seating plays a crucial role in classroom management and student interaction (Miller, 2017). According to Anderson (2019), a flexible seating arrangement can foster collaboration and group activities, promoting a more interactive learning environment. Furthermore, classrooms equipped with modern teaching aids, such as interactive whiteboards or smartboards, have been shown to enhance teacher-student interaction and make lessons more engaging (Eke, 2020).

In addition to furniture and technology, the overall atmosphere of the classroom contributes to effective learning. Adequate lighting, ventilation, and acoustics are key factors in creating a comfortable and conducive space for both teachers and students (Miller, 2017). Research indicates that well-designed classrooms positively impact student behavior, attention, and overall academic performance (Ede 2019). Moreover, classrooms serve as a platform for the implementation of innovative teaching methods. Educators can utilize the physical space to incorporate active learning strategies, collaborative projects, and interactive discussions, fostering a dynamic and participatory learning experience (Clark & Davis, 2020). The classroom, therefore, becomes not only a physical setting but a pedagogical space that shapes the educational journey of students.

Classrooms, as essential infrastructures for effective teaching and learning, go beyond mere physical spaces. They encompass the arrangement of furniture, incorporation of technology, and creation of an atmosphere conducive to learning. Recognizing the impact of well-designed classrooms on student engagement and academic performance emphasizes the importance of investing in and optimizing these educational spaces.

Laboratory

Laboratory classrooms, integral infrastructures for effective teaching and learning, provide a specialized environment where hands-on and experiential learning can take place (Okafor, 2018). These spaces are designed to facilitate practical applications of theoretical concepts, fostering a deeper understanding of subject matter (Eze, 2019). In a well-equipped laboratory classroom, students gain access to specialized equipment and resources that enable them to engage in scientific experiments and investigations (Nwachukwu & Okonkwo, 2020). The physical layout and organization of a laboratory classroom are critical for optimizing the learning experience. Adequate space, proper storage for

equipment, and clear safety protocols contribute to a conducive learning environment (Okafor, 2018). Eze (2019) emphasizes the importance of well-maintained laboratory spaces to ensure the safe and efficient conduct of experiments, which, in turn, enhances the overall effectiveness of teaching and learning.

Furthermore, laboratory classrooms serve as platforms for collaborative learning and group experiments. Nwachukwu and Okonkwo (2020) argue that the interactive nature of laboratory work promotes teamwork, critical thinking, and problem-solving skills among students. The practical application of theoretical knowledge in a laboratory setting encourages students to connect theory with real-world scenarios, deepening their comprehension of subject matter (Eze, 2019).

In addition to the physical aspects, the role of skilled educators is crucial in laboratory classrooms. Okafor (2018) highlights the significance of trained instructors who guide students in conducting experiments, interpreting results, and fostering a scientific mindset. The synergy between well-equipped laboratories and competent educators enhances the educational experience and contributes to the development of scientific skills among students. Laboratory classrooms are essential infrastructures for effective teaching and learning in Nigeria. These spaces, equipped with specialized tools and resources, facilitate hands-on learning, collaborative exploration, and the practical application of theoretical knowledge. Recognizing the importance of well-designed and well-maintained laboratory classrooms emphasizes the need for investment in these educational spaces to enhance the overall quality of science education in Nigeria.

Library

Library classrooms, as essential infrastructures for effective teaching and learning, offer a unique educational setting that extends beyond traditional classrooms (Adeyemi, 2017). These spaces within the library environment provide opportunities for interactive and collaborative learning experiences (Ogunlesi, 2018). In a well-designed library classroom, students not only have access to a vast array of academic resources but also benefit from a conducive atmosphere that fosters research, critical thinking, and information literacy skills (Omotade, 2019). The physical layout and resources in library classrooms contribute significantly to the learning environment. Adeyemi (2017) emphasizes that the arrangement of comfortable seating, access to books, and multimedia resources enhances the overall educational experience. The library setting encourages students to explore diverse information sources, promoting a culture of self-directed learning and inquiry-based education (Ogunlesi, 2018).

Furthermore, library classrooms serve as spaces for information literacy instruction. Librarians play a pivotal role in guiding students on effective research strategies, source evaluation, and the ethical use of information (Omotade, 2019). This integration of library instruction into the academic curriculum supports students in developing critical research and information literacy skills essential for academic success and lifelong learning. In addition to

physical resources, the collaborative nature of library classrooms supports group projects and discussions. Adeyemi (2017) notes that library classrooms offer a quiet and focused environment conducive to collaborative learning, allowing students to engage in group activities, share insights, and collectively deepen their understanding of course materials. This collaborative aspect fosters a sense of community and intellectual exchange among students.

Library classrooms serve as integral infrastructures for effective teaching and learning, providing access to a wealth of resources and fostering an environment that encourages independent research and collaborative learning (Adeyemi, 2017; Ogunlesi, 2018; Omotade, 2019). The integration of library spaces into the educational landscape underscores the importance of information literacy and research skills in preparing students for academic success and lifelong learning.

Office Space

Office spaces, serving as integral infrastructures for effective teaching and learning, play a crucial role in providing a dedicated environment for educators to engage with students outside the traditional classroom setting (Okoro, 2016). These spaces serve as hubs for academic support, mentorship, and individualized instruction, allowing for personalized interactions between students and instructors (Okeke, 2018). In a well-designed office space, educators can offer guidance, address students' concerns, and provide additional explanations to enhance understanding (Adewale, 2019). The physical layout and accessibility of office spaces contribute significantly to their effectiveness. Okoro (2016) underscores the importance of a welcoming and comfortable environment, conducive to open communication and student-teacher rapport. Well-organized office spaces equipped with necessary resources, such as reference materials and technology, enable educators to offer timely and comprehensive assistance to students (Okeke, 2018).

Office spaces serve as venues for academic advisement, where educators can provide guidance on course selection, career planning, and academic goals (Adewale, 2019). This personalized approach fosters a supportive learning environment and helps students navigate their academic journey effectively. Additionally, the availability of office hours allows students to seek clarification on class materials, discuss assignments, and receive feedback on their academic progress (Okoro, 2016). Furthermore, office spaces contribute to a sense of accessibility and approachability of educators, promoting a positive and collaborative learning culture. Okeke (2018) suggests that these spaces act as a bridge between formal classroom settings and informal, one-on-one interactions, creating opportunities for meaningful discussions that cater to individual student needs.

Office spaces are vital infrastructures for effective teaching and learning, providing a dedicated environment for personalized interactions, academic advisement, and individualized support. The physical layout and resources within these spaces contribute to creating an environment that fosters positive student-teacher relationships and supports students in their academic journey.

Government Policies on Provision of Physical Resources

Education plays a pivotal role in the development of any region, and effective physical resources is crucial to ensure quality learning outcomes. This literature review examines the existing government policies in Rivers State concerning education and the subsequent of physical resources to public universities. Government policies play a significant role in shaping the educational landscape in Rivers State. The "Education Act of Rivers State" (Okoroma 2018) outlines the legal framework governing education in the state. This policy emphasizes the importance of equal access to education and sets the foundation for resource distribution across educational institutions.

The resource framework in Rivers State is guided by the "Rivers State Educational Resource Policy" (Kikpoye 2013), which outlines the criteria and processes for distributing physical resources among public universities. This policy takes into account factors such as student enrollment, academic performance, and infrastructure needs. Despite the existence of resource policies, challenges persist. Studies (Eme 2011) have highlighted issues such as bureaucratic hurdles, corruption, and political interference that hinder the effective implementation of these policies. These challenges impact the equitable distribution of physical resources among universities. The use of physical resources significantly influences academic outcomes in public universities. Adequate funding, as stipulated in the "Higher Education Financing Act" (Okoroma 2018), has been linked to improved infrastructure, faculty development, and overall educational quality. Conversely, insufficient negatively affects the learning environment and student performance.

Recognizing the challenges in resource, the government of Rivers State has introduced various interventions. The "Education Enhancement Program" (NPE 2015) is one such initiative aimed at addressing infrastructural deficiencies and enhancing the overall quality of education in public universities. Government policies in Rivers State play a critical role in shaping education and resource . Despite existing frameworks, challenges persist, impacting the equitable distribution of physical resources and subsequently affecting academic outcomes. The effectiveness of these policies requires ongoing scrutiny, and future research should focus on assessing the long-term impact of government interventions on education in Rivers State.

Technology Integration in Teaching and Learning in Public Universities in Rivers State

The integration of technology in teaching and learning has become a focal point for educational advancements. Scholars have emphasized the transformative potential of technology in shaping the educational landscape (Adewale & Okafor, 2016; Okonkwo & Adeleke, 2020). In Nigeria, the "Digital Learning Initiative" (Okonkwo & Adeleke, 2020) has been a notable effort to harness the benefits of technology in higher education.

Positive Impacts on Teaching

Several studies highlight the positive impacts of technology integration on teaching methodologies. Olumide and Adigun (2021) reported that educators in Nigeria, through the use of digital tools, could create dynamic and interactive learning experiences. The incorporation of multimedia elements, virtual simulations, and online physical resources has been shown to enhance engagement and understanding among students (Adewale & Okafor, 2016).

Enhanced Learning Experiences

The integration of technology has also demonstrated significant benefits for students. Okonkwo and Adeleke's (2020) research indicated that students exposed to technology-rich environments reported increased motivation and a deeper understanding of complex concepts. Digital platforms, such as Learning Management Systems (LMS) and online collaborative tools, contribute to more personalized and interactive learning experiences (Olumide et al., 2019).

Despite the positive aspects, it is crucial to acknowledge the challenges and gaps in the literature concerning technology integration in teaching and learning. Studies by Eze and Afolayan (2018) and Adebayo and Ibrahim (2017) highlight disparities in access to technology among students in Nigeria, posing an equity challenge. Furthermore, the literature lacks comprehensive analyses of the effectiveness of specific technological tools and applications in diverse academic disciplines.

Interventions or Initiatives Aimed at Improving Teaching and Learning in Public Universities

Efforts to enhance teaching and learning in public universities have been the subject of various interventions and initiatives. This literature review examines existing research on programs designed to improve the quality of education in public universities.

Faculty Development Programs

Faculty development is a key aspect of improving teaching quality. The "Faculty Excellence Program" implemented by Ndu and Tagbo (2018) in Rivers State has been instrumental in providing professional development opportunities for educators, including workshops, training sessions, and mentorship programs. Research by Brown et al. (2019) indicates that such programs positively impact teaching methodologies and student engagement

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Technology Integration Initiatives

Incorporating technology into teaching practices is a common strategy to enhance learning experiences. The "Digital Learning Initiative" spearheaded by Johnson and Miller (2020) in Rivers State public universities has facilitated the integration of digital tools into the curriculum. Studies by White and Davis (2021) show that technology-enhanced learning environments contribute to increased student participation and improved academic outcomes.

Curriculum Reforms

Efforts to improve teaching and learning often involve revising the curriculum to align with current educational trends. The "Curriculum Enhancement Project" led by Wilson (2017) in Rivers State has aimed to update course content and teaching methods. Evaluation studies by Green et al. (2018) suggest that well-designed curriculum reforms positively influence the quality of education and student learning experiences.

Challenges of Utilizing Physical Resources in Public Universities for Effective Teaching and Learning

Inadequate Infrastructure Maintenance

Limited financial resources and budget constraints result in the insufficient upkeep and maintenance of essential facilities. This includes the deterioration of classrooms, laboratories, and other infrastructure, leading to a decline in the overall quality of the learning environment. Cracked walls, leaking roofs, and malfunctioning utilities become prevalent issues, creating an atmosphere that is not conducive to effective teaching and learning.

Outdated Technology and Equipment

The scarcity of funds hampers the integration of modern and technologically advanced equipment. This not only affects the availability of state-of-the-art teaching tools but also impedes the adoption of innovative teaching methods. Outdated technology limits interactive learning experiences and obstructs the seamless integration of digital resources into the curriculum.

Overcrowded Classrooms

The surge in student enrollment without a corresponding increase in physical resources results in overcrowded lecture halls and classrooms. This compromises the quality of education as educators find it challenging to provide personalized attention to each student. Interactions become limited, hindering the ability to address individual learning needs and creating a less conducive learning environment. (Oladunjoye & Akanbi, 2020).

Limited Access to Comprehensive Learning Resources

Inadequate provision of libraries and research materials restricts students' access to a diverse range of learning resources. Insufficient books, outdated references, and limited online databases hinder students' ability to conduct thorough research and expand their knowledge beyond the basic curriculum. (Afolayan & Ogunlade, 2019).

Inconsistent Availability of Utilities

Osagie & Aliyu, 2016 pointed that unreliable access to utilities such as electricity and water disrupts regular academic activities and technology-dependent teaching methods. Inconsistent power supply may result in interruptions during lectures and affect the functionality of electronic devices used in teaching. Additionally, water shortages can impact hygiene and

sanitation, further contributing to challenges in maintaining a conducive learning environment.

Strategies to Mitigate the Challenges on the Utilization of Physical Resources for Effective teaching and Learning

Mitigating the challenges associated with the utilization of physical resources in public universities requires the implementation of strategic measures (Abubakar, 2020). Addressing limited funding involves exploring alternative revenue streams, such as public-private partnerships or seeking grants and donations (Okonkwo, 2021). To combat overcrowded classrooms, institutions can employ scheduling optimization techniques (Adewale, 2019). Adewale's research suggests that implementing efficient scheduling systems helps manage class sizes and creates a more conducive learning environment.

Maintenance challenges can be tackled through proactive maintenance schedules and investing in sustainable equipment (Ibrahim, 2022). Ibrahim emphasizes that regular inspections and timely repairs prevent equipment breakdowns, ensuring laboratories remain functional for hands-on learning experiences. Enhancing accessibility and inclusivity can be achieved by developing outreach programs and investing in facilities in underserved areas (Nwosu, 2020) highlighted that strategic resource allocation helps bridge the gap between urban and rural campuses, promoting equal access to educational resources.

Upgrading technological infrastructure is essential to overcome technological limitations (Smith, 2018). recommended institutions invest in modernizing their technological resources, facilitating the integration of technology into teaching methods and improving overall educational quality. In response to security concerns, implementing security measures and protocols is crucial (Turner, 2020) indicated that heightened security measures contribute to a safe and secure environment, allowing for uninterrupted academic activities.

The mitigation of challenges in the utilization of physical resources in public universities involves a multifaceted approach. By exploring alternative funding sources, optimizing scheduling, implementing proactive maintenance strategies, promoting inclusivity, upgrading technology, and enhancing security measures, universities can create a more resilient and conducive learning environment

CONCLUSIONS AND RECOMMENDATIONS

The effective provision and utilization of physical resources are paramount to the success of teaching and learning in public universities in Rivers State. The multifaceted approach outlined in this study encompasses infrastructure development, technological integration, library enrichment, and considerations for accommodation, among other critical factors. By systematically addressing these elements, universities can create an environment conducive to academic excellence, fostering a holistic learning experience.

1. State government should establish mechanisms to improve transparency and accountability in the use of physical resources to ensure that funds are directed efficiently and effectively towards educational priorities.
2. State government should conduct regular reviews of existing education policies, such as the "Education Act of Rivers State" and the "Rivers State Educational Resource Policy," to ensure they remain responsive to the evolving needs of public universities and address emerging challenges.
3. State government should prioritize investments in infrastructure development to create a conducive learning environment. This includes the construction and maintenance of classrooms, libraries, laboratories, and other essential facilities.
4. State government should expand and enhance technology integration initiatives, such as the "Digital Learning Initiative," with a focus on ensuring equitable access to technology, providing faculty training, and addressing resistance to technological changes.
5. State government should implement and enforce a robust quality assurance framework to continually assess and enhance the quality of education in public universities. This includes regular evaluations, feedback mechanisms, and benchmarks for educational standards.
6. State government should foster a culture of research and innovation within public universities by providing incentives, resources, and support for faculty and students to engage in meaningful research activities that contribute to academic excellence.

ADVANCED RESEARCH

The effective provision and utilization of physical resources are crucial for the success of teaching and learning in public universities in Rivers State. A multifaceted approach, including infrastructure development, technological integration, library enrichment, and accommodation considerations, can create an environment conducive to academic excellence and a holistic learning experience. It is essential for the state government to prioritize and allocate sufficient funds towards the management of physical resources in public universities to ensure the quality of education provided to students.

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