

Smart Learning Environment: An Access to Quality University Education in Nigeria

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Abstract - A well-liked method for enhancing access to quality university education in Nigeria is the Smart Learning Environment (SLE). Traditional classroom environments are no longer able to meet the needs of the expanding student body due to the rising demand for university education. Technology-assisted, individualized, and flexible scheduling are all features of SLE's novel approach to education. The potential of SLE to offer Nigerian students a quality education is examined in this research, with an emphasis on the benefits, strategies, challenges, and probable solutions to the challenges. However, for the SLE deployment to be effective, ample infrastructure, sufficient training, and cooperation from all stakeholders are necessary. The paper suggests that SLE is an effective way to improve access to university education in Nigeria.

Keywords: Smart Learning Environment, Smart Education, Access To Quality University Education, Nigeria

I. INTRODUCTION

University education is a crucial component of any nation's educational system, including Nigeria. Universities offer possibilities for advanced study and research, resulting in highly qualified professionals who can support the political, social, and economic growth of the nation. In Nigeria, higher education, according to Angib *et al.*, (2022), is the type of education that creates employees, scholars, and future leaders. Additionally, it is vital in the development of ground-breaking responses to societal problems including poverty, injustice, and health. It contributes to the creation of new knowledge and concepts that can be applied to the creation of interventions, technologies, and policies that can enhance people's lives. It gives students opportunities for research, critical thinking, and personal growth in addition to advanced knowledge and abilities in a particular subject of study. In Nigeria, universities are governed by the National Universities Commission (NUC), which makes sure that these institutions maintain high academic standards and provide their students with a top-notch education. The NUC is essential in ensuring that everyone in Nigeria has equal access to higher education.

The capacity of students to enrol in and complete a university education that meets strict criteria for academic achievement is referred to as having access to a high-quality university education. Njoku (2016) asserts that access to

higher education denotes the existence of opportunities for applicants to tertiary schools to get admitted. Access to higher education refers to ensuring fair entry to institutions of higher learning based on aptitude, capacity, perseverance, and merit. According to Asiyai (2013), a quality university education includes possibilities for research and innovation, highly qualified and experienced faculty members, demanding academic programs, contemporary facilities and infrastructure, and access to the most recent information and technology. For students who cannot afford tuition and other costs, access to a quality university education also entails the provision of financial aid and scholarships. It also entails offering a secure and encouraging learning environment, including counselling services, academic advising, and professional development opportunities. For a nation to prosper economically, socially, and politically, access to quality university education is essential. It makes it possible for people to get the skills and knowledge needed to contribute to the workforce, develop, and come up with fresh concepts. Giving young people from different origins the chance to achieve, also fosters equity, lowers poverty, and boosts social mobility. A vital component of each nation's educational system is access to quality higher education, which equips students with the abilities, knowledge, and morals they need to prosper and make contributions to their societies.

The National Policy on Education stated that every child should have equal access to education regardless of their tribe, religion, gender, or disability. Despite the significance of having access to quality university education, the Nigerian university education system is currently faced with several issues that are lowering its quality and accessibility (Odia & Odia, 2020). This can be linked several issues, including a limited budget, outdated facilities, a lack of teaching staff, and a lack of instructional resources. These difficulties have had a big influence on access to quality education, contributing to low enrolment rates and the annual denial of admission to a large number of applicants especially at the university level. To address these issues, the idea of a Smart Learning Environment (SLE) has been put out as a potential remedy to improve access to high-quality education in Nigerian universities. Learning

environments have recently undergone a considerable transformation as a result of the integration of new hardware and software technologies as well as online media (Shoikova *et al.*, 2017; Zhu *et al.*, 2016; Pallof & Pratt, 2002). By enabling students to learn at their own pace and according to their personal learning styles, these technologies have improved accessibility, interaction, and engagement in learning for students. Additionally, the use of technology has broadened the scope of learning beyond the confines of the classroom by giving students access to a variety of materials and allowing them to connect with classmates and professionals from across the globe. Technology enables students to explore novel concepts, work together with others, and acquire knowledge and skills that are pertinent to the evolving needs of the workforce in the twenty-first century.

SLE signifies a fundamental shift in how students access education (Demir, 2021). The term “SLE” refers to a technologically enhanced learning environment that makes use of digital technologies to give students access to educational resources, individualized learning opportunities, and chances for collaboration and communication with peers and instructors. According to the International Association for Smart Learning Environments, SLE uses cutting-edge tools and components to give students more adaptability, flexibility, and incentive (Spector, 2014). According to Zhu *et al.*, (2016), smart education aims to enhance students’ lifelong learning capabilities. The foundation of the SLE model is student-centred learning, which focuses on the requirements and passions of individual students. It gives students the freedom to learn how and when they want, at their speed, with a variety of multimedia tools like podcasts, movies, and interactive simulations. Additionally, it promotes collaborative learning by offering resources and venues for peer communication and group projects.

The introduction of SLE in Nigerian universities may also help higher education institutions in the nation overcome some of its difficulties. For many Nigerian universities, the absence of adequate facilities, such as classrooms, laboratories, and libraries, has been a significant problem. SLE can assist address this issue by giving students access to high-quality digital resources that might not be available in conventional classroom settings and anytime, anywhere online learning environments. This is crucial in a nation like Nigeria where access to materials like textbooks and journals may be constrained by a lack of funding.

The lack of qualified instructors is another issue Nigerian universities must deal with. Through the use of SLE, teachers can reach more students without the use of physical classrooms or face-to-face interaction, which can assist solve this problem. The lack of adequate resources and facilities in many Nigerian institutions may otherwise discourage qualified instructors, making it difficult for colleges to recruit and retain them. SLE can also lessen the workload on teachers by offering automated feedback and

assessments as well as individualized learning routes for students. Instead of spending time evaluating papers or giving lectures, this may enable lecturers to concentrate on offering specialized support to each student.

Furthermore, by utilizing cutting-edge technologies like artificial intelligence, machine learning, and big data analytics, the application of SLE can improve education quality. These technologies enable more individualized and efficient education by analysing student data to reveal insights about learning preferences and patterns. Additionally, SLE can aid in boosting children’s access to education who may be excluded or disadvantageous because of elements like geography, a handicap, or socioeconomic position. SLE can help level the playing field and guarantee that all students have an equal chance to succeed in their academic endeavours by giving them access to online resources and tools.

SLE is a way to deliver quality higher education in Nigeria because it has the potential to improve student access, affordability, flexibility, personalization, and efficiency. Universities in Nigeria can support the provision of more equal and better educational opportunities for students all around the nation by utilizing SLE. Smart technology can greatly enhance education in Nigerian institutions and contribute to the realization of the country’s national philosophy of education. The overall goal of this study is to examine the viability and potential advantages of implementing SLE in Nigerian universities to raise educational standards and enrich students’ learning opportunities.

It’s crucial to keep in mind that technology cannot completely change education. The pedagogical goals and objectives of the course or curriculum must be linked with the intelligent and intentional use of technology in learning. Additionally, educators need to be open to changing how they teach and implementing fresh approaches that meet the demands of today’s students. Also, it calls for experienced and skilled teachers who can effectively use technology in their classrooms and guide students in doing the same.

II. CONCEPT OF SMART LEARNING ENVIRONMENT

The term SLE refers to a cutting-edge educational system that makes use of technology to help and improve the learning process. According to Hwang (2014), a SLE is a technologically advanced learning system that may encourage students to learn in the actual world while providing them with access to resources from the digital world. It is a particular kind of learning environment made to adjust to the requirements of each student and offer them personalized educational opportunities customized to their learning preferences and styles (El-Sabagh, 2021). A variety of technologies, including artificial intelligence (AI), machine learning, natural language processing, virtual and augmented reality, and Internet of Things (IoT) devices, can

be included in a SLE. These technologies can be used to gather and analyse information on students' learning styles, preferences, and performance to offer them individualized feedback, learning materials, and suggestions. Smart education represents a significant change in the way education is accessed by students. It goes beyond just changing the delivery method of education and aims to provide students with a comprehensive education that utilizes modern technology to prepare them for a rapidly evolving world where adaptability is key. Smart education is the utilization of smart devices to enhance the effectiveness of traditional education (Dua, 2018).

A SLE has advantages such as better learning outcomes, enhanced motivation and engagement, and increased flexibility and accessibility (Spector, 2014). Automating some procedures, like grading and evaluation, it can also serve to lessen the workload of instructors. Online learning environments, adaptive learning software, and intelligent tutoring systems are a few examples of smart learning environments. In many schools, universities, and other educational institutions throughout the world, these systems are already in use, and it is anticipated that they will be utilized more frequently in the years to come. In a SLE, the learning process is personalized to the learner's unique needs and preferences. The student's performance is analysed using data analytics and machine learning algorithms, and then customized suggestions and feedback are given to help them learn more effectively. The device also enables teachers to monitor student development in real-time and pinpoint areas in which further help is required. In general, a SLE can completely change the way we approach education by making it more interesting, efficient, and open to all students.

III. BENEFITS OF A SMART LEARNING ENVIRONMENT IN UNIVERSITIES IN NIGERIA

Universities in Nigeria can gain a lot from a smart learning environment. Here are a few of them:

1. *Improved Learning Outcomes:* Students can access interesting learning tools such as films, simulations, and other interactive learning materials through the use of technology, which can help them better understand difficult subjects. Additionally, individualized learning experiences can support students in learning at their rate, which can improve learning results.
2. *Increased Access to Education:* For students who cannot attend traditional institutions owing to financial restrictions or geographic hurdles, smart technology can provide access to education.
3. *Increased Flexibility:* As long as they have an internet connection, students can access learning tools and materials in a SLE from any location at any time. Students who have other obligations, such as jobs or families, may find this to be especially helpful.
4. *Enhanced Collaboration:* Collaboration between students and teachers, as well as among students

themselves, can be facilitated by SLE. For instance, online discussion boards, group assignments, and virtual classrooms can give students the chance to communicate and share knowledge.

5. *Efficient Management:* Universities can manage administrative chores like registration, grading, and attendance tracking with the aid of SLE. This can lessen the workload for academic staff and office workers, allowing them to concentrate more on research and teaching.
6. *Access to Global Resources:* Students can access educational materials from around the globe, such as online courses, journal articles, and instructional videos, by using a SLE. This may expose students to a wider variety of viewpoints and concepts.
7. *Cost-Effective:* In the long run, a SLE can save money since it can lessen the demand for physical classroom space, textbooks, and other learning resources. This can lower expenses for universities and improve resource allocation.
8. *Increased Engagement:* Students' motivation and engagement can be increased by giving them engaging and interactive learning opportunities in SLE. This may result in improved academic performance and a more upbeat attitude about learning.
9. *Personalized Learning:* Students may receive personalized learning opportunities that are catered to their unique needs and interests in a SLE. By doing this, teachers can make sure that students are learning at a speed that is suitable for them and are getting the support they require to succeed.
10. *Improved Assessment:* SLE can help with more rapid and accurate student learning assessment. Online tests and assignments, for instance, can be automatically graded to give students timely feedback on how they are doing.
11. *Enhanced Accessibility:* Students with disabilities or other special needs may find learning to be more accessible in SLE. For instance, technology can be utilized to make learning materials accessible in alternate formats like braille or large print or to provide closed captioning or audio explanations for videos.

A SLE can benefit universities in Nigeria in several ways, enabling them to better educate their students and position them for success in the twenty-first century.

IV. STRATEGIES FOR IMPLEMENTING A SMART LEARNING ENVIRONMENT IN UNIVERSITIES IN NIGERIA

Careful planning and execution are necessary for the implementation of an SLE in Nigerian universities. Here are some methods for creating a SLE:

1. *Conduct a Needs Assessment:* Conducting a needs assessment to determine the precise requirements and objectives of the university is the first step in putting in place a SLE. This can assist in determining the kind of technology and resources required as well as how to

incorporate them into the current educational infrastructure.

2. *Develop a Plan:* A strategy, including the objectives, timetables, and resources needed to construct a SLE, should be created based on the needs assessment. The strategy should also contain methods for educating teachers and staff as well as for keeping track of and assessing the implementation's success.
3. *Provide Training:* It is crucial to train faculty and staff on how to use the tools and resources that make up the SLE. This can make sure that they are at ease with the technology and can successfully include it in their teaching methods.
4. *Start Small:* Starting small and expanding gradually is crucial because putting in place a SLE can be a difficult process. This enables adjustments to be made as necessary and can assist in identifying any difficulties or problems that need to be resolved.
5. *Partner with Technology Providers:* A SLE can be implemented by Nigerian universities in collaboration with technology companies. When choosing and putting resources and technology into use, technology providers can provide knowledge, direction, and assistance.
6. *Foster Collaboration:* A SLE cannot succeed without collaboration between academics, staff, and students. Online discussion boards, team projects, and virtual classes can help with this.
7. *Monitor and Evaluate:* To ascertain whether the SLE is fulfilling the predetermined goals and objectives, it is critical to monitor and assess its performance. This can point to opportunities for development and direct decision-making in the future.

It takes careful planning, training, and cooperation to implement an SLE in Nigerian universities. These techniques can help universities in Nigeria create an SLE that improves student learning and positions them for success in the twenty-first century.

V. CHALLENGES IN IMPLEMENTING SMART LEARNING ENVIRONMENTS IN UNIVERSITIES IN NIGERIA

Nigerian universities may encounter several difficulties when implementing an SLE, such as:

1. *Poor Power Supply:* The inconsistent power supply in Nigeria is well-known, and this factor may have an impact on the availability of the electricity needed to run digital devices and other SLE-related equipment.
2. *Lack of Funding:* SLE implementation may be hampered by the Nigerian government's insufficient financing for institutions. Modern technology purchases, infrastructural improvements, and staff training necessary for SLE can all be impacted by this lack of funds.
3. *Insufficiently Trained Personnel:* In Nigeria, there is a lack of qualified professionals who can implement and

sustain SLE. This includes a lack of skilled instructional designers, curriculum developers, and IT staff.

4. *Inadequate Infrastructure:* University facilities in Nigeria may not be adequate for SLE. This includes a lack of access to contemporary technology, the internet, and other resources required to adopt SLE.
5. *Insufficient Access to Digital Resources:* Lack of access to digital resources like computers and cell phones among many students in Nigeria can make it difficult for them to take part in SLE.
6. *Resistance to Change:* Many teachers and learners will be reluctant to adopt new technology and modify their conventional approaches to teaching and learning. This may delay the spread of SLE in Nigerian universities.
7. *Access and Equity:* Nigeria, whose access to technology is not uniformly spread, faces a big problem from the "digital divide." Lack of access to technology among students from low-income families and rural locations may deepen the educational divide.
8. *Policy and Regulatory Framework:* The implementation of smart learning may be hampered by the absence of defined norms and regulations controlling the use of technology in education.

VI. PROBABLE SOLUTIONS TO THE CHALLENGES OF IMPLEMENTING SMART LEARNING ENVIRONMENTS IN UNIVERSITIES IN NIGERIA

There are several potential remedies to the problems with SLE implementation at Nigerian universities, including:

1. *Improving Power Supply:* A dependable and sustainable supply of energy for SLE can be provided by investing in renewable energy solutions like solar panels and energy storage systems. To guarantee continuous power supply during blackouts, universities may also want to consider purchasing backup generators.
2. *Increasing Funding:* For universities to have the resources they need to implement and maintain SLE, the government can enhance financing for them. This can entail increasing the national budget's allotment for education, requesting financing from foreign organizations, and promoting private sector involvement.
3. *Technical Expertise:* To ensure that technical staff members have the skills needed to administer and maintain SLE, universities can offer training and development programs. Technical competence can also be increased through collaboration with tech firms and the creation of research and development facilities.
4. *Improving Infrastructure:* By supplying cutting-edge technology, high-speed internet connectivity, and other resources needed for smart learning environments, universities can invest in enhancing their infrastructure. This can entail collaborating with businesses in the private sector to deliver infrastructural and technological advancements.

5. *Providing Access to Digital Resources:* Students from low-income households and rural locations can receive digital tools from the government, including laptops and smart phones. Universities can work with businesses in the private sector to give their students access to digital resources.
6. *Promoting Change Management:* By launching awareness campaigns, offering rewards for implementing new technologies, and offering assistance and instruction to lecturers and students, universities may encourage change management. As a result, more intelligent learning settings may be adopted, and resistance to change may be lessened.
7. *Ensuring Access and Equity:* A multifaceted strategy is needed to close the digital divide, one that includes securing internet connectivity, granting access to technology, and developing laws and initiatives that support educational parity.
8. *Developing Policies and Regulations:* To offer a clear framework for the adoption of SLE, the government can create policies and regulations that govern the use of technology in education. Universities and other educational institutions may benefit from this in terms of providing direction and support.

All parties concerned, including the government, institutions, technology companies, and students, must work together for the successful adoption of SLE in Nigerian universities.

VI. CONCLUSION

A SLE may be a crucial component of a plan to increase access to quality university education in Nigeria. Universities may improve student learning outcomes and equip them for success in the twenty-first century by utilizing technology to offer them flexible, individualized, and engaging learning experiences. A SLE offers more flexibility, stronger collaboration, better assessment, and access to worldwide resources. However, putting an SLE in place calls for thorough preparation, instruction, and cooperation between teachers, staff, and students. Universities in Nigeria may give their students the resources

they require to flourish and contribute to the economic growth and development of the nation by working cooperatively to implement an SLE.

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