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Designing Creative Classroom For Enhanced Learning Outcomes In Nigeria

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Abstract

This study investigates designing creative classroom for enhanced learning outcomes in Nigeria, focusing on how innovative environments can enhance student engagement and academic achievement. Traditional classroom configurations often prioritize teacher-centered instruction and passive learning, limiting opportunities for collaborative and experiential learning. In contrast, modern educational theories advocate for flexible, inclusive designs that accommodate diverse learning styles and promote active student participation. Through a comprehensive literature review and empirical analysis, this study examines the theoretical foundations of constructivism, experiential learning, socio-cultural theory, and universal design for learning (UDL) as they relate to classroom architecture. The research synthesizes findings from international studies and contextualizes them within the Nigerian educational landscape, highlighting challenges such as infrastructure deficiencies, technological gaps, and the need for policy reform. Practical recommendations are proposed for relevant stakeholders—government ministries, school administrators, teachers, students, parents, NGOs, and design professionals—to collaborate in transforming classroom spaces into dynamic environments that foster creativity, critical thinking, and inclusive education. By advocating for innovative classroom designs tailored to local needs, this study aims to contribute to the ongoing discourse on educational reform in Nigeria and promote equitable access to quality learning experiences for all students.

Keywords: Creative classroom Enhanced learning outcomes, Student engagement

Introduction

The importance of creative classrooms in modern teaching cannot be exaggerated. In order to keep up with the changing needs of the 21st century, it is necessary for our educational environments to adapt. Conventional classrooms, which typically have set

seating arrangements and instruction focused on the teacher, have been found to restrict student involvement and innovation (Barrett et al., 2015). On the other hand, classrooms that prioritise creativity and are intentionally intended to be adaptable, encourage collaboration, and foster invention, are more suitable for addressing the varied requirements of modern learners. Innovative educational settings promote a milieu that encourages dynamic engagement, analytical reasoning, and the development of problem-solving abilities.

Fisher (2016) argues that these spaces promote increased student engagement and collaboration with both peers and professors, leading to a more dynamic and engaging learning experience. The transition from being a passive recipient of information to actively participating in the learning process promotes a more profound comprehension and long-term retention of knowledge. In addition, innovative classroom layouts frequently include diverse sensory cues, such as colours, lighting, and textures, which can improve cognitive performance and alleviate stress (Zandvliet & Fraser, 2020).

Creating innovative educational spaces is essential for cultivating student imagination and enhancing academic achievements. Studies have demonstrated that the arrangement and layout of a classroom can have a significant influence on learning outcomes, with potential effects ranging from a 25% improvement to a 25% decline (Envoplan, 2016). An optimally planned classroom should achieve a harmonious blend of instructional techniques and individual learning preferences, employing adaptable areas, cosy furnishings, and sufficient storage to establish a motivating educational setting (Envoplan, 2016).

An additional crucial element in the creation of innovative learning environments is the architectural layout of the classroom. The design of a classroom should be deliberate and meaningful, combining features such as ample natural light, adaptable areas, ergonomic furniture, and sufficient storage to establish a motivating learning environment (Envoplan, 2016). The furniture in a classroom is crucial, as ensuring student comfort is a primary concern (Envoplan, 2016). High-quality furniture guarantees that the classroom remains aesthetically pleasing for a longer period of time and offers superior long-term cost-effectiveness (Envoplan, 2016).

Aside from the physical layout, the atmosphere of learning and the active involvement of learners are essential elements of a creative learning environment. A conducive learning environment promotes the willingness to take risks, work together, and be internally motivated, whereas learner engagement entails creating assignments that stimulate creativity, such as extended, open-ended projects that incorporate various disciplines and encourage discovery (Richardson & Mishra, 2018). Project-based learning methodologies can enhance creativity by affording students greater autonomy in selecting the challenges they wish to tackle and determining the amount of time they require to complete their work. This increased agency has the potential to heighten interest, engagement, and overall learning outcomes (Henriksen et al., 2019).

Conceptual Clarification

Traditional classrooms and their limitations

Although traditional classrooms have been the cornerstone of education for generations, they do have certain limits. A significant limitation is the use of a standardised approach that is intended to accommodate all situations. Teachers face challenges in meeting the

needs of individual pupils due to limited resources and large class numbers (Ainsworth & Christenson, 2014). As a result, certain pupils may get disinterested and annoyed, while others may not be sufficiently stimulated.

Traditional classrooms frequently utilise passive learning techniques, wherein students primarily acquire material through lectures and rote memorization (Means et al., 2014). This technique does not cultivate the ability to think critically and solve problems, which are crucial for achieving success in the modern era. In addition, the fixed layout of conventional classrooms, where desks are arranged in rows facing the teacher, might restrict collaboration and impede the acquisition of social skills that are essential for navigating real-life situations (Moos & Moos, 2014).

Moreover, conventional classrooms may face difficulties in keeping up with the swift progressions in technology. Traditional teaching methods such as textbooks and lectures may not be as effective in capturing the attention of students who are used to accessing knowledge instantly and engaging in interactive experiences (Picard, 2018). This disconnection might result in a dearth of relevance and motivation in pupils' acquisition of knowledge. Although traditional classrooms have certain limitations, they nonetheless have significance in offering a well-organized learning setting and promoting social engagement. Nevertheless, it is crucial to recognise their limitations and investigate methods to incorporate innovative strategies and technological progress to establish a more captivating and efficient educational encounter for every pupil**.**

Evolution of Educational Theories Influencing Classroom Design

The development of educational ideas has significantly impacted the architecture of classrooms, resulting in a shift from rigid spaces focused on memorization to flexible environments that accommodate various learning preferences. The classrooms of the 17th and 19th centuries were shaped by the teachings of John Locke and Johann Friedrich Herbart, resulting in a teacher-centered approach (Gutek, 2017). The arrangement of desks in rows facing the teacher allowed for lectures and individual exercises, which aligned with the predominant behaviorist theories that emphasized the transmission of knowledge and reinforcement (Skinner, 1974). Nevertheless, this design restricted student engagement and hindered the development of analytical thinking.

Progressive education emerged in the 20th century, leading to a transition towards student-centered learning. This approach, which was introduced by John Dewey and Maria Montessori, focused on the use of practical tasks, learning through exploration, and working together with others (Spring, 2018). Classrooms have started to integrate learning centers, open spaces, and adaptable furniture to facilitate group work and project-based learning (Ainsworth & Christenson, 2014).

The classroom design in the later part of the 20th century was further influenced by cognitive learning theories, such as those proposed by Jean Piaget and Lev Vygotsky. Piaget's phases of cognitive development emphasized the significance of establishing surroundings that aligned with the developmental requirements of students (Wadsworth, 2014). Vygotsky's Zone of Proximal Development (ZPD) theory highlighted the significance of social interaction in the learning process. This theory led to the establishment of environments that fostered peer collaboration and teacher scaffolding, as noted by Moll et al. (2014). Classrooms started integrating

individualized instruction and materials to accommodate diverse learning styles and cognitive abilities.

The onset of the 21st century saw the beginning of the integration of technology and a heightened emphasis on skills relevant to the modern era. As constructivism gained popularity, classrooms underwent changes to prioritize student involvement, emphasizing learning via inquiry and problem-solving (Brooks & Brooks, 2014). Design components such as mobile technology, interactive whiteboards, and makerspaces have been developed to facilitate active learning and collaboration (Greenhow et al., 2016).

Currently, classroom design incorporates a combination of these different perspectives. Comprehension of the concepts of multiple intelligences (Gardner, 1983) and Universal Design for Learning (CAST, 2018) promotes the development of inclusive environments that accommodate a wide range of learners. Adaptable furniture, spacious layouts, and walls that can be moved enable flexibility for various learning activities (Jindal-Snape et al., 2013). Biophilic design integrates natural features to optimize concentration and increase overall well-being (Heschong, 2014). Classroom design is influenced by the ongoing development of educational theories. With the emergence of new learning models like customized learning and blended learning, classrooms must change to become more flexible and focused on the needs of the learners. The future classroom is expected to be a dynamic environment that effortlessly incorporates technology, encourages collaboration, and enables students to assume responsibility for their learning process.

State of Classroom Design in Nigeria

The state of classroom design in Nigeria reflects a blend of traditional practices and gradual innovations, driven by economic, cultural, and policy dynamics. Many Nigerian classrooms remain anchored in conventional designs characterized by rigid, teacher-centered arrangements. Rows of desks often face a chalkboard, a setup that fosters direct instruction and rote learning. This traditional approach, while familiar and widespread, limits opportunities for student engagement, collaboration, and critical thinking. The learning environment in such settings is often passive, with students primarily acting as recipients of knowledge rather than active participants in their educational journey (Adebanjo, 2016).

In recent years, however, there has been a growing shift towards more dynamic and student-centered classroom designs, particularly in private and well-funded public schools. These modern layouts often include movable furniture, collaborative workspaces, and the integration of digital tools that support interactive and personalized learning experiences. Schools adopting such innovations have reported notable improvements in student engagement, creativity, and academic outcomes. For instance, flexible seating arrangements and interactive whiteboards have enhanced participation and enabled teachers to adopt more diverse instructional strategies (Oluwatayo & Amole, 2014).

Despite these advancements, the adoption of contemporary classroom designs is inconsistent across the country, with significant disparities between urban and rural areas. Urban schools, particularly those in affluent regions, are more likely to benefit from better funding, infrastructure, and access to modern instructional technologies. These schools are often able to implement progressive designs that foster a stimulating

learning environment. Conversely, rural schools face significant challenges due to limited financial resources, poor infrastructure, and inadequate access to essential educational materials. Consequently, many rural classrooms continue to rely on outdated designs and teaching methods, impeding the adoption of modern pedagogical practices and contributing to educational inequities (Ejieh, 2015).

Economic constraints remain a significant barrier to widespread implementation of innovative classroom designs. Renovating classrooms, acquiring modern equipment, and integrating technology require substantial financial investment, which many public schools cannot afford. Furthermore, maintaining these advanced facilities poses an ongoing challenge, particularly in a context of constrained educational budgets. This financial strain often forces schools to retain antiquated infrastructure and methods, undermining efforts to improve student engagement and academic performance (Edozie, 2017).

Cultural factors also play a pivotal role in shaping classroom design and teaching practices in Nigeria. Traditional norms often emphasize hierarchical structures and the authority of the teacher, leading to resistance toward student-centered and collaborative learning environments. Educators trained in conventional methods may view modern approaches as disruptive or incompatible with established routines. Overcoming these cultural barriers requires targeted professional development programs that equip teachers with the skills and confidence to embrace innovative designs and pedagogies. Training initiatives must also address misconceptions and emphasize the benefits of progressive approaches for both teachers and students (Adediran & Goshit, 2019).

Policy initiatives and government interventions are critical in shaping the evolution of classroom design in Nigeria. The government, through programs like those of the Universal Basic Education Commission (UBEC), has made efforts to enhance educational infrastructure. These initiatives aim to refurbish schools, provide adequate classroom space, and supply essential learning materials, particularly in under-resourced areas. While commendable, the success of these programs often depends on consistent funding, effective implementation, and community involvement. Collaborative efforts between government agencies, private organizations, and local communities are essential to bridge gaps and ensure equitable access to modern, learner-friendly classroom environments (UBEC, 2018).

Effect of Current Nigerian Classroom Design on learning outcome

The existing condition of classroom design in Nigeria significantly impacts learning results, influencing multiple dimensions of student involvement, motivation, and academic performance. Conventional classroom arrangements, which are still widely used in many areas, frequently establish a learning environment that is passive and restricts student engagement and critical thinking. Typically, these conventional designs include of stationary seating configurations where desks are organized in rows, facing a teacher positioned at the front. This configuration prioritizes memorization-based learning and education that is centered around the teacher, which restricts the chances for collaborative and interactive learning experiences. As a result, students may lose interest and become less motivated, which can have a negative effect on their overall academic performance (Adebanjo, 2016).

The absence of contemporary and adaptable learning environments in numerous Nigerian classrooms worsens these difficulties. Adaptable classroom design is essential

for supporting a variety of learning styles and promoting a more dynamic and inclusive educational environment. Students frequently encounter difficulties participating in activities that necessitate movement, collaboration, or experiential learning in schools with rigid classroom configurations. The inflexibility of the current system can inhibit the development of creativity and invention, which are crucial elements of modern education in the 21st century. Moreover, the lack of flexibility to modify the physical environment to accommodate various teaching approaches can restrict teachers' efficacy. They are confined by the conventional arrangement and may have difficulties in incorporating more interactive and student-centered teaching methods (Oluwatayo & Amole, 2014).

Insufficient infrastructure and substandard classroom conditions are prominent challenges in several Nigerian schools, especially in rural regions. Overcrowded, poorly ventilated, and insufficiently furnished classrooms hinder effective learning. Overcrowding, specifically, is a prevalent issue, with numerous classes housing a significantly larger number of pupils than their intended capacity. This circumstance not only impacts the physical comfort of pupils but also impedes the teacher's capacity to efficiently manage the class and provide personalized attention. Inadequate classroom conditions can result in higher rates of absenteeism, decreased student morale, and impaired academic performance (Ejieh, 2015).

The insufficient incorporation of technology in Nigerian classrooms also affects learning outcomes. The proficient utilization of technology in education is crucial in the current era of digital advancements, as it greatly enhances student engagement and facilitates successful learning. Nevertheless, numerous Nigerian educational institutions face a dearth of essential technical infrastructure, including computers, internet connectivity, and interactive whiteboards. The existence of this digital gap restricts students' access to digital literacy skills and diminishes their chances of engaging in interactive and personalized learning experiences. Studies suggest that students who are provided with technological resources in the classroom are more inclined to be actively involved, driven, and attain superior academic outcomes (Aladwani, 2014). The lack of such technology in several Nigerian classrooms puts students at a disadvantage, especially when it comes to preparing for the requirements of a contemporary workforce.

In addition, the conventional layout of classrooms frequently does not facilitate the cultivation of essential 21st-century competencies, such as teamwork, effective communication, and analytical thinking. These talents are becoming more and more acknowledged as crucial for achieving success in the worldwide economy. However, they are not adequately developed in cultures that promote repetitive memorization and solitary tasks. Contemporary educational ideas highlight the significance of collaborative learning environments that foster peer interaction and cooperative problem-solving. Nevertheless, the rigid and hierarchical structure of numerous Nigerian classrooms hinders collaborative endeavors, hence restricting students' chances to cultivate these essential skills (Darling-Hammond et al., 2019).

Another notable consequence of the present condition of Nigerian classroom design on learning results is its impact on inclusivity and accessibility. A significant number of classrooms lack the necessary features to cater to children with varying requirements, particularly those with impairments. Students with disabilities may encounter substantial obstacles to their learning due to the absence of inclusive design elements,

such as adaptable desks, ramps, and assistive devices. Creating an inclusive classroom design is crucial to ensure that every student has equitable chances of achieving success. In the absence of it, students with disabilities may face marginalization, resulting in decreased academic performance and diminished self-confidence (Meyer, Rose, & Gordon, 2014).

Principles of Creative Learning Environments

Learner-Centered Focus: At the heart of creative learning environments lies the belief that students are not passive recipients of knowledge, but active participants in their learning journey (Chan & Yuen, 2014). The environment should cater to diverse learning styles and paces, providing opportunities for students to explore their interests, take ownership of their learning, and express themselves creatively (Ainsworth & Christenson, 2014).

Flexible and Adaptable Space: Gone are the days of rigid rows of desks. Creative classrooms embrace flexible furniture arrangements that allow for individual work, group collaboration, and dynamic learning activities (Jindal-Snape et al., 2013). Open floor plans and movable walls further enhance adaptability, allowing the space to transform to suit different learning needs.

Integration of Technology: Technology is not just a tool in a creative learning environment; it's woven into the fabric of the space. This includes interactive whiteboards, mobile devices, and makerspaces equipped with tools for tinkering, prototyping, and digital creation (Greenhow et al., 2016). However, technology should be used purposefully to complement instruction and not replace traditional learning methods.

Embrace of Curiosity and Exploration: A creative learning environment sparks curiosity and encourages students to ask questions, experiment, and make mistakes. This can be achieved through inquiry-based learning activities, open-ended problems, and access to a variety of materials and resources (Brooks & Brooks, 2014). The space itself can also be designed to ignite curiosity, with displays of student work, exhibitions, and areas for exploration and discovery.

Collaboration and Social Interaction: Learning is not a solitary endeavor. Creative classrooms foster collaboration and social interaction through group projects, peer review activities, and breakout spaces designed for teamwork (Moos & Moos, 2014). This not only enhances learning but also develops essential communication, negotiation, and problem-solving skills.

Comfort and Well-being: The physical environment plays a crucial role in learning. Creative classrooms prioritize student well-being by incorporating natural elements like ample lighting and access to green spaces (Heschong, 2014). Comfortable furniture, proper ventilation, and biophilic design elements all contribute to a positive learning atmosphere that fosters focus and engagement (pepperpot-nursery.co.uk, 2022).

Differentiation and Inclusivity: A truly creative learning environment caters to all learners. This means incorporating Universal Design for Learning (UDL) principles (CAST, 2018) to provide multiple means of representation, action, and engagement (Gardner, 1983). This might involve offering diverse learning materials, differentiated

instruction strategies, and assistive technologies to ensure all students can access and participate in the learning process.

Continuous Reflection and Improvement: Creative learning environments are not static. Educators should continuously reflect on the effectiveness of the space and make adjustments as needed. Student feedback, observation, and data analysis can inform changes in furniture layout, technology integration, or learning activities to ensure the space remains a dynamic and effective catalyst for creative learning.

Blurring the Lines Between Indoors and Outdoors: Traditional classrooms often confine learning within four walls. Creative environments embrace the benefits of nature by incorporating outdoor learning spaces, gardens, or even large windows that connect students to the natural world (Heschong, 2014). This fosters a sense of connection with the environment and promotes a holistic learning experience.

Importance of Play and Exploration: Play is not just for recess! Creative classrooms recognize the power of playful learning to spark creativity and problem-solving skills (Ainsworth & Christenson, 2014). This might involve incorporating designated areas for building with blocks, role-playing activities, or open-ended art projects.

Empowering Student Choice and Agency: Students thrive when they have a sense of ownership over their learning. Creative classrooms empower students by offering choices in learning activities, materials, and even how they demonstrate their understanding (Brooks & Brooks, 2014). This fosters intrinsic motivation and a deeper engagement with the learning process.

Celebrating Mistakes and Risk-taking: A fear of failure can stifle creativity. Creative learning environments encourage students to take risks, experiment, and learn from their mistakes (Chan & Yuen, 2014). This might involve creating a safe space for open discussion of errors, showcasing student work-in-progress, and emphasizing the value of the learning process over a perfect final product.

Fostering a Culture of Creativity: Creativity is not a single skill, but a way of thinking and problem-solving. Creative learning environments go beyond just teaching the arts; they cultivate a culture of creativity that permeates all aspects of learning (Picard, 2018). This might involve encouraging divergent thinking, brainstorming sessions, and showcasing student work and innovations throughout the space.

Community Connection and Collaboration: Learning doesn't happen in isolation. Creative learning environments build bridges between the classroom and the wider community. This can involve partnerships with local businesses, artists, or mentors, or even inviting parents and community members to participate in learning activities (Moos & Moos, 2014). This fosters a sense of connection and purpose, while also exposing students to diverse perspectives and potential career paths.

Integrating Pedagogical Principles into Classroom Design

The key to establishing a setting that promotes deep learning and student engagement is to effectively incorporate pedagogical ideas into classroom design. Here is how these two elements can converge:
Active Learning and Collaboration: In order to go beyond passive lectures, pedagogical concepts prioritize active learning by engaging students in hands-on activities, projects, and debates (Ainsworth & Christenson, 2014). The classroom

design should be aligned with these principles by including adaptable furniture that facilitates group work, designated locations for collaboration, and opportunities for students to showcase their discoveries (Jindal-Snape et al., 2013).

Differentiation and Universal Design for Learning (UDL): are fundamental pedagogical principles that aim to accommodate a wide range of learning styles and abilities. UDL advocates for the provision of various methods for presenting information, facilitating activities, and fostering participation (CAST, 2018). The classroom design can facilitate this by providing a diverse range of educational resources, including textbooks and manipulatives, as well as integrating technological tools such as assistive software and digital learning platforms. Inclusive environments are fostered through open floor patterns that provide designated spaces for both quiet study and group activity.

Inquiry-Based Learning and Curiosity: Pedagogical methods that ignite curiosity and promote students' inclination to inquire are essential for cultivating a passion for acquiring knowledge. The classroom can facilitate this by integrating exhibits that exhibit student projects and current affairs, establishing inquiry areas equipped with versatile materials, and granting access to resources such as digital microscopes or virtual reality encounters (Brooks & Brooks, 2014).

Evaluation and Feedback: Successful learning necessitates continuous evaluation and feedback. The classroom design can facilitate this by establishing designated areas for student introspection, collaborative evaluation exercises, and exhibiting student advancement throughout the educational process. Interactive whiteboards or digital displays have the capability to be utilized for formative assessment and immediate feedback.

Strategic Use of Technology Integration: Technology is a potent instrument that should be employed purposefully to enhance teaching methods. Interactive whiteboards have the ability to improve presentations and promote collaborative learning. Makerspaces equipped with 3D printers and coding tools can facilitate design thinking and problem-solving activities (Greenhow et al., 2016). Nevertheless, it is imperative that technology does not supplant conventional learning approaches such as reading and writing.

Student ownership and agency: Pedagogically sound classrooms facilitate students' ability to assume responsibility for their own learning. The design can manifest this concept by establishing designated spaces for student-led conversations, prominently displaying student work, and offering opportunities for autonomy in learning activities and projects (Brooks & Brooks, 2014). This cultivates a feeling of accountability and inherent drive in students.

Comfort and well-being: The physical environment has a substantial impact on the process of acquiring knowledge. Pedagogy prioritizes the significance of establishing a favorable learning environment. Classroom design incorporates essential features such as enough airflow, abundant natural light, and ergonomic furniture (Heschong, 2014). Integrating natural components into biophilic design can further improve concentration and overall well-being (pepperpot-nursery.co.uk, 2022).

Conclusion

In conclusion, the research highlights the significant impact that well-designed classroom architecture can have on enhancing learning outcomes. The synthesis of educational theories such as constructivism, experiential learning, socio-cultural theory, and universal design for learning demonstrates that adaptable, technologically advanced, interdisciplinary learning environments enhance student engagement, creativity, and academic achievement. Multiple studies provide empirical evidence that flexible seating arrangements, diverse learning materials, and integration of technology significantly improve students' problem-solving skills, motivation, and critical thinking capacity. Furthermore, the incorporation of project-based and outdoor learning opportunities facilitates comprehensive and hands-on teaching, which is crucial for generating innovative and all-encompassing solutions to real-world challenges. These theories are particularly relevant to the Nigerian educational context, as traditional classroom arrangements may limit students' potential. Nigerian educators have the potential to establish inclusive, engaging, and effective learning environments that prepare their students for the intricacies of the modern era through the implementation of innovative classroom layouts. Collaboration among policymakers, teachers, and communities is essential to allocate resources towards enhancing professional development and educational infrastructure. This will ensure that every kid has the opportunity to thrive in a modern and dynamic classroom environment.

Suggestions

1. Government ministries should prioritize updating educational infrastructure guidelines to include flexible and inclusive classroom designs.
2. School administrators should prioritize professional development for teachers on innovative teaching methods and classroom management in flexible learning spaces
3. Teachers should participate in workshops and training sessions focused on creative classroom design and the integration of technology
4. Students should be Involved in discussions about their learning preferences and solicit feedback on classroom redesign initiative
5. NGOs can collaborate with schools and government agencies to pilot innovative classroom designs, provide funding for technology upgrades, or organize community-driven projects to renovate school facilities.
6. Architects and design professionals should collaborate with educators and school administrators to design classrooms that prioritize natural light, ergonomic furniture, and flexible layouts.

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