



The Emergence of Virtual Classrooms in Nigerian Education: Benefits and Challenges in Teaching and Learning for Sustainable National Development

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Abstract

Technology is rapidly reshaping our world, and the world today is witnessing a remarkable digital transformation in various aspects of life, and education is no exception. Virtual classroom has emerged as a game-changer, transforming how we teach and learn by eliminating physical boundaries, they open up endless education opportunities. Virtual classrooms have become widespread in many countries, including Nigeria, revolutionizing traditional teaching and learning techniques. Also, the emergence of virtual classrooms has become increasingly vital in modern education, particularly in sustainable national development. This paper aims to explore the emergence of virtual classroom: the benefits and challenges in teaching and learning for sustainable national development. Through an extensive research, emphasis is drawn on the effectiveness of virtual classrooms in facilitating education access by highlighting the benefits and challenges of in the teaching and learning In consideration of the emergence of virtual classroom in education some recommendations were given, It is important for governments, educators, and policymakers to continue to invest in and support the integration of virtual classrooms into the education system to reap the benefits for future generations and drive sustainable national development amongst others.

Keywords: Virtual classroom, teaching and learning, sustainable national development, technology, benefits and challenges

Introduction

In the fast-paced digital age, education systems around the globe are constantly developing to meet the new demands of the modern era. One of the most significant advancements in recent times is the emergence of virtual classrooms, which have revolutionized the way teaching and learning take place. A virtual classroom is an online teaching and learning environment where teachers and students can present course materials, engage and interact with other members of the virtual class, and work in groups together (Wang,2019).The integration of technology in education has become not just magnificence but a necessity for sustainable national development.

Virtual classroom has become widespread in many countries, including Nigeria, revolutionizing traditional learning techniques. Virtual classrooms, as an innovative



approach to education, have gained momentum in recent years due to their potentials in enhancing teaching and learning experiences. The key distinction of a virtual classroom is that it takes place in a live, synchronous setting. Online coursework can involve the viewing of pre-recorded, asynchronous material, but virtual classroom settings involve live interaction between instructors and participants. Traditionally, teaching and learning occurred in physical classrooms, where teachers impart knowledge and students absorbed it through direct interactions. However, this traditional approach is no longer sufficient in meeting the demands of the rapidly changing world. The advancements in technology, especially the internet, have led to the emergence of virtual classrooms, transcending geographical boundaries and time zones. Classrooms leverage digital tools and communication platforms to facilitate learning experiences beyond the constraints of physical classrooms.

Literature Review

The dawn of advanced technology has revolutionized education in recent years, resulting in the growth of virtual classrooms as effective learning platforms. The global adoption of virtual classrooms has been witnessed across multiple countries, each utilizing them to address specific educational challenges. From personalized learning in the United States to reaching geographically isolated communities in Canada, Many researchers in their studies revealed that the impact in the utilization of virtual classrooms indifferent countries around the world in education continues to revolutionize education worldwide. Countries like Australia, Singapore, Saudi Arabia and the United Kingdom have also demonstrated successful integration of virtual classrooms to enhance academic engagement, intercultural exchange, inclusivity, and student-centered learning experiences. Singapore embraced virtual classrooms to optimize learning outcomes and enhance educational quality. The Ministry of Education (MOE) in Singapore introduced the Singapore Student Learning Space (SLS), a virtual classroom platform that offers interactive lessons, multimedia resources, and self-directed learning opportunities (Singapore MOE, 2020). This initiative effectively aligns with developments in educational technology.

According to Graham (2019), the United States has been at the forefront of adopting virtual classrooms nationwide. Graham (2019) revealed that blended learning models incorporating virtual classrooms are increasingly popular, providing flexibility and personalized learning experiences. Valuable platforms such as Google Classroom and Blackboard Collaborate (Lynch, 2018) have played a crucial role in the virtual classroom landscape. In Canada, virtual classrooms have gained momentum as a means to enhance educational access, particularly in remote areas (Bower, Kennedy, Dalgarno, Lee, & Kenney, 2018). A study by Bower et al. (2018) revealed that virtual classrooms have the potential to bridge the education gap by reaching students who lack access to traditional schooling due to

geographical or personal reasons. In another development, Virtual classrooms have gained recognition as an engaging and immersive educational tool in Australia (Anderson, Griffiths, & Markauskaite, 2016). Research conducted by Anderson et al. (2016) showcased how virtual classrooms were utilized with success in providing authentic learning experiences, promoting intercultural exchange, and fostering collaboration among students. According to Childress, McCoy, & Campbell, (2017) virtual classrooms have gained prominence in the United Kingdom to cater to diverse student needs. A study by Childress et al. (2017) identifies virtual classrooms as an effective tool to promote inclusivity, ensuring that students with disabilities or health issues can actively participate in learning activities.

Emergence of Virtual Classroom

Traditional education method of teaching and learning in Nigeria has faced several challenges and barriers, such as limited access to quality education, scarcity of qualified teachers, inadequate infrastructure, high cost educational resources, pandemics, cultural and language barrier and few others. These obstacles have restricted educational opportunities for many students across the country. However, virtual classrooms offer a promising solution by leveraging technology to bridge these gaps. The emergence of virtual classroom in education offers the potential to overcome traditional barriers and limitations, improve access to education, and provide a more flexible, robust and convenient learning experience for student This paper aims to explore the emergence of virtual classroom: the benefits and challenges in teaching and learning for sustainable national development.

Programmes Delivered Through Virtual Classroom

There are a many different types of programs that are delivered through virtual classrooms, the most common of which are:

1. **Massive Open Online Courses (MOOCs):** MOOCs, or Massive Open Online Courses, are virtual classes that are available for anyone to enroll and participate in. MOOC providers offer different types of courses. Some are accredited and some are not, some are offered through universities and some are not, some are free and some require tuition, and some are offered with live virtual classroom work and some are not. Examples of MOOCs include courses offered through Courera and edX.
2. **Online Degree Programs:** Online degree programs are offered by colleges and universities to deliver their degree programs in a virtual environment. Using online program management companies or their own internal resources, schools can recruit online students for their degree programs that are delivered into a webcam instead of a lecture hall. Many different schools offer online degree programs.

3. **Bootcamps:** Bootcamps are another example of courses that can take place using virtual classrooms. Bootcamps for web development, graphic design, and data analytics (among many others) are offered in virtual or in-person settings and provide students with concentrated education and training in an industry they are trying to break into or advance in. Examples of bootcamp providers include Thinkful, General Assembly, and Galvanize.

Benefits of Virtual Classroom in Teaching and Learning for Sustainable National Development

There are several benefits of virtual classrooms in teaching and learning for sustainable national development. Some of these benefits are discussed below: Virtual classrooms allow students from remote or marginalized areas to access quality education without the need for physical infrastructure. This enables equal educational opportunities, leading to more inclusive and sustainable national development (Scripta, Kuzminska & Kharchenko, 2020). According to Smith (2017), traditional education in Nigeria has faced various challenges, such as limited access to quality education, Virtual classrooms offer several benefits over traditional classroom settings, particularly in promoting education access and addition have the potential to bridge geographical barriers and provide students with access to quality education regardless of their geographical location. With a stable internet connection, students in rural or remote areas can now access renowned tutors, educational resources, and a range of courses from prestigious institutions within Nigeria or abroad. This access to quality education ensures that no student's potential goes untapped due to their location. Virtual classrooms eliminate the need for physical classroom setup, reducing infrastructure costs. It also saves travel expenses for both students and teachers. This cost-effectiveness enables governments to allocate resources to other crucial sectors, contributing to sustainable national development (Rasher & Mahamood, 2017).

Virtual classrooms offer flexibility in terms of timing and location, allowing students to personalize their learning experience. This flexibility enhances student engagement and performance, leading to better learning outcomes for sustainable national development (Lombardi, Tonizzo & Redaelli, 2018). Virtual classrooms offer a greater level of flexibility and convenience for both students and instructors. Students can access the course materials, lectures, and assignments at their own pace and preferred time, allowing them to learn at their convenience (Huynh, Umesh, & Kankanhalli, 2019). This flexibility enables students to better balance their academic obligations with other personal and professional commitments. Virtual classrooms also promote communication and collaboration among students and teachers through online platforms. This fosters multicultural understanding,



teamwork, and global networking, essential for sustainable national development (Olaru, Litmanovitz & Zlateva, (2021). Virtual classrooms provide the opportunity to incorporate various multimedia resources, such as videos, audio clips, and interactive presentations. These multimedia elements enhance the content delivery, making it more engaging and appealing to students (Adams, 2020). The integration of virtual classrooms enhances instructional methodologies. Virtual classrooms provide diverse multimedia resources, such as interactive videos, simulations, and virtual field trips, which engage students and promote active learning (Carlson, 2018). These resources facilitate personalized learning experiences, allowing students to grasp complex concepts at their own pace (Jones, 2020). Additionally, the integration of multimedia resources caters for different learning preferences and aids in knowledge retention which is important for sustainable national development.

Virtual classrooms allow for personalized learning experiences tailored to individual students' needs and learning styles (Adams, 2020). With the help of adaptive learning technologies, instructors can provide targeted feedback and resources to address each student's strengths and weaknesses. This personalized approach fosters self-paced learning and promotes academic success. Virtual classrooms significantly reduce the carbon footprint associated with traditional classroom setups. It eliminates the need for transportation, reduces paper usage, and minimizes energy consumption, contributing to environmental sustainability and a greener future (Pendarovski, Dimirovski, & Marcincin, 2019).

Virtual Classroom and its Impacts on Sustainable National Development:

The incorporation of virtual classrooms into the education system can have significant impacts on sustainable national development. By providing equal education opportunities for individuals from various socio-economic backgrounds, virtual classrooms promote social inclusivity and reduce disparities in education attainment (United Nations, 2020).

Virtual classrooms equip students with valuable digital skills, such as information literacy, communication, and problem-solving abilities, which are crucial for succeeding in a technology-driven world (United Nation Educational Scientific and Cultural Organization, 2019). Developing a digitally skilled workforce is essential for promoting economic growth and innovation, thereby contributing to sustainable national development.

Challenges of Virtual Classrooms in teaching and learning for sustainable National Development

Virtual classrooms offer opportunities for teaching and learning for sustainable national development, they also present challenges and these challenges need to be addressed in order to maximize the strong benefits of virtual classrooms for sustainable national development. These challenges include:

1. One of the challenges of virtual classrooms in teaching and learning for sustainable national development is the limited access to technology and internet connectivity. This can hinder the ability of students in remote or rural areas to participate fully in virtual classrooms (Kallioinen, 2019).
2. Lack of personal interaction and physical presence, which can affect the engagement and motivation of students. Without the physical presence of a teacher, it can be challenging for students to ask questions or receive immediate feedback on their work (Johnson & Wisniewski, 2019).
3. Virtual classrooms may lack the necessary resources and tools for effective teaching and learning. For example, hands-on experiments or group activities that require physical materials may be difficult to replicate in a virtual setting (Miller, 2020).
4. Virtual classrooms may face issues related to security and privacy. There is a need to ensure that students' personal information and online activities are protected in order to maintain a safe and secure learning environment (Bryant, Bryant, Miller, & Miller, 2021).

Conclusion

The emergence of virtual classroom has proven to be an effective tool in teaching and learning for sustainable national development. It has provided access to education for individuals who may not have had the opportunity otherwise, breaking down barriers such as geographical distance and financial limitations. The virtual classroom has also allowed for more flexibility in scheduling, accommodating the needs of working adults and allowing them to further their education. In addition, the virtual classroom has fostered a more inclusive learning environment, where students from diverse backgrounds and abilities can participate and engage in discussions. This has promoted a sense of global collaboration and understanding, preparing students for the interconnected world they will be entering upon graduation. Lastly, the virtual classroom has been instrumental in promoting sustainable national development by reducing the need for physical infrastructure and resources. This has resulted in cost savings and a reduced carbon footprint, contributing to the overall sustainability of the education sector. However, addressing challenges related to limited access to technology and internet connectivity, teacher-student interactions, and monitoring will be crucial for the successful integration of full potentials of virtual classrooms to drive sustainable national development.

Recommendations

In order to successfully integrate virtual classroom to drive sustainable national development, the followings are recommended.



1. It is important for governments, educators, and policymakers to continue to invest in and support the integration of virtual classrooms into the education system to reap the benefits for future generations.
2. Policymakers need to prioritize infrastructural development and provide support to ensure equitable access to technology for all students.
3. Institutions must invest in training and professional development programs to empower teachers with the necessary skills to engage and monitor students effectively in a virtual environment

References

- Adams, L. (2020). Why virtual classrooms are the future of learning in 2020. ELearning Industry. Retrieved from <https://elearningindustry.com/virtual-classrooms-future-of-learning-in-2023>
- Bower, M., Kennedy, G. E., Dalgarno, B., Lee, M. J. W., & Kenney, J. (2018). Design and implementation factors in blended synchronous learning environments: Outcomes from a cross-case analysis. *Computers & Education*, 122, 185-200.
- Bryant, M., Bryant, B., Miller, H., & Miller, K. (2021). Challenges and opportunities for teaching in a virtual classroom environment. *Journal of Educational Technology Systems*, 49(1), 210-226.
- Carlson, D. (2018). Enhancing instructional methodologies in the virtual classroom. *Journal of Online Learning*, 22(3), 28-41.
- Childress, M. D., McCoy, A. P., & Campbell, C. (2017). Student perspectives on the blended classroom. *Journal of Educational Technology Systems*, 46 (1), 26-45.
- Graham, C. R. (2019). Blended learning systems: Definitions, current trends, and future directions. In T. Kidd (Ed.), *online education and adult learning: New frontiers for teaching practices* (pp. 57-78). IGI Global.
- Huynh, T. D., Umesh, U. N., & Kankanhalli, A. (2019). Integrated augmented reality: A review of the state of the art. In *Proceedings of the Fourteenth International Conference on Tangible, Embedded, and Embodied Interaction* (pp. 1-11). ACM
- Johnson, S. (2019). Virtual classrooms: The new frontier of education access. *Journal of Distance Learning*, 12(2), 150-167.
- Johnson, L., & Wisniewski, M. (2019). Challenges and Opportunities for Virtual Schools: A Review of the Literature. *TechTrends*, 63(5), 486-504.
- Jones, A. (2020). Personalized learning in virtual classrooms. *International Journal of Educational Technology in Higher Education*, 17(3), 1-16.
- Kallioinen, O. (2019). Digital Divide and New Learning Opportunities: A Cross-National Study of Students' Internet Use and Digital Skills in 31st Countries. *Journal of Education and Learning*, 8(5), 299-312.



- Lynch, M. L. (2018). A national study of K-12 online and blended learning. Digital Learning Collaborative.
- Miller, D. (2020). Advanced Technology in Classrooms, Meeting the Needs of Students. *International Journal of Educational Reform*, 2(2), 51-64.
- Olaru, G. C., Litmanovitz, J., & Zlateva, T. (2021). Virtual Learning as a Factor of Sustainable Regional Development. Case Study Romania. *Sustainability*, 13(13), 104.
- Pendarovski, G., Dimirovski, G. M., & Marcinèin, A. (2019). Virtual Classroom for Remote Learning and Sustainable Education. *Sustainability*, 11(2), 333.
- Rasher, G., & Mahamood, S. (2017). Impact of virtual education on knowledge economy: A case study of Saudi Arabian universities. *International Journal of Higher Education*, 6(1), 87-99.
- Scripta, I., Kuzminska, O., & Kharchenko, N. (2020). Smart Sustainable Development of Education in the Context of Digital Society Formation. *Journal of Information Technologies in Education*, 43(1), 127-133.
- Singapore MOE. (2020). Singapore Student Learning Space. Retrieved from <https://www.moe.gov.sg/singapore-student-learning-space>
- Smith, R. (2017). Bridging the gap: Virtual classrooms as a solution to education access. *Journal of Global Education*, 40(4), 78-93.
- United Nations. (2020). Sustainable Development Goal 4: Quality Education. Retrieved from <https://sdgs.un.org/goals/goal4>
- United Nation Educational Scientific and Cultural Organization (2019). Education for Sustainable Development: Learning Objectives. Retrieved from [https://unevoc.unesco.org/go.php?q=ESD learning Objectives](https://unevoc.unesco.org/go.php?q=ESD%20learning%20Objectives)
- Wang, Y. (2019). Virtual classroom application in colleges and universitiesteaching. *Eurasia Journal of Mathematics*,