

Integrating Emerging Technologies in Distance Education for a Results-Driven Educational System in Nigeria

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Abstract

The practice of distance education programmes in the colonial and post-colonial era was more of correspondence education which was predominantly dependent on print media and face-to-face contacts. The subsequent emergence of the computer, internet and World Wide Web (www) transformed distance education from correspondence study to a technologically driven educational enterprise. Therefore, the use of technology has become the fulcrum of contemporary distance education practice. Hence, the emergence of more modern technologies with capacities to easily connect teachers and learners around the world has become the desire and vision of distance education operators. This paper briefly x-rayed concepts of emerging technologies, distance education and result-driven educational system. The study also examined the process, relevance and benefits of emerging technologies integration in distance education programme. The challenges confronting emerging technologies integration in distance education were also considered. The study suggested amongst other things the need for distance education operators to integrate emerging technologies in the programmes for the purpose of enthroning a results-driven educational system.

Keywords: Emerging Technologies, Distance Education, Results-Driven Educational systems

Introduction

The emergence of the digital age has brought about a holistic transformation of human lives as a result of the technological innovations in science and communication. The transformational shift which is occasioned by scientific and technological innovations has impacted meaningfully on the educational sub-sector, which distance education is not left out (Rahman,2014). Due to these innovations and the emergence of new technologies the practice of distance education has experienced a migration from the old pedagogical approaches to a more modern and technologically enhanced teaching and learning process.

Emerging technologies include a variety of technological innovations that are employed for progressive advancement in human development. Emerging technologies generally refer to new technologies or the continuous transformation of old ones and they include robotics, artificial intelligence, educational and information technologies (Swavgiary & Roy, 2023).

Emerging technologies in education refers to technological innovations that extend the frontiers of knowledge and skill acquisition beyond the confines of geographical locations.

The expansion in the use of emerging technologies in distance education has improved drastically the learning process and the quality of outputs. The application of emerging technologies in distance education has closed the gaps between teachers and learners through the use of modern software, hardware and enables them to connect with other learners in remote locations (Ozman & Aliti, 2014). Integration of emerging technologies makes the process of teaching and learning in distance education easier, attractive and more flexible.

Emerging technologies integration in distance education programmes has redirected positively the process of achieving competency-based education, quality evaluation and assessment-based learning, collaborative-based learning, use of flexible learning materials, internet-enhanced learning environment, self-directed learning, leaning within a learning community and an improvement in group dynamics (Valetsianos, 2010). The redirection of learning in distance education through integration of emerging technologies holds the promise of enthroning a sustainable and result driven educational system in the country.

Distance education is a component of extension education in which there is normally a physical separation of facilitator and learners in time and space, whereby instructional delivery is carried out through the use of the mass media (Yusuf & Falade, 2015). In other words distance education is one learning programme in which a variety of communication technologies are used to bridge the physical gap between the facilitator and learners. This implies that distance education is an educational programme in which there is minimal face-to-contact or physical contacts between the facilitator and learners, but instructional delivery is usually through the use of the mass media. In the same vein, Yeboah and Awuah, (2012) asserted that distance education is the delivery of useful learning opportunities at convenient place and time to learners, irrespective of age, gender, type of programme and institution providing the learning opportunity.

Distance education represent instructional method that primarily concern with opening access to education and training for learners who are constrained by of time and space, while offering flexible learning opportunities to individuals and group of learners in different locations (Siddiqui, 2014). Distance education is a method of imparting knowledge, skills and attitudes which is achieved through the extensive use of mass media or instructional media especially for the purpose of instructing a great number of students in their remote locations.

Distance education can thus be seen as the teaching-learning process characterized by the non-contiguity of the facilitator and learners but facilitated through the use of a range of modern communication technology facilities (Selvam, 2019). It is also seen as an educational process in which a significant proportion of teaching and learning is conducted by someone removed in space and time from the learner.

Distance education is a mode of learning that uses a variety of media and technologies to provide and improve access to good and quality education to large numbers of people either because they missed the opportunity earlier in life or because their present socio-economic and family circumstances would not permit them to acquire education through the formal school system (Ofole, 2016). The above definition of distance education aptly captures the real essence of distance education which is centred on assisting learners who were earlier in life constrained by some circumstances from learning in their disperse locations and time, due to the non-availability of a variety of media and electronic devices. In summary it is a media based instructional mode of teaching and learning. (Patrick & Abaa, 2014).

Result driven education commonly refers to educational system places so much emphasis on clearly defined goals of the educational process that students or learners are expected to know or should be able to do. It is an educational system that place emphasis on knowledge gained and skill acquisition at the end of the learning process (Pradhan, 2021). It is also referred to as performance-based learning which measures learning effectiveness base on results and outputs rather than inputs. The curriculum of result driven educational system is designed based on the expected learning outcomes and it is the learning outcomes that is basis for selecting teaching methods and techniques, instructional aids or materials and the methods of assessments or evaluation (Vu, 2015). Results-driven educational system is more of competency-based education which emphasizes the restructuring of the curriculum, instructional, evaluation and reporting processes in order to monitor the acquisition of skills and knowledge.

Integrating Emerging Technologies in Distance Education for a Results-Driven Educational System in Nigeria

The era of advancement in digital technology has brought about unequal technological innovations that greatly improve all aspects o human life; education inclusive. The emergence and introduction of digital technologies to education has seriously transformed the entire process of knowledge acquisition, expansion and application. The rapid advancement in emerging technologies and its application to the concepts of education generally has brought about the needed transformation in education through such technologies as; artificial intelligence, virtual and augmented reality, gamification and game-based learning, data analytic and learning insights, cloud computing, assistive technology for inclusive education, e-learning, audio and video conferencing, digital libraries and virtual libraries (Godwin-Jones, 2003).

The integration of artificial intelligence technology in distance education programmes through AI-powered adaptive learning process through its ability to analyze learners performance data in order to help tailor learning activities towards individual learners' needs. AI integration in distance education programmes also allows learners to progress at their pace, grasp whatever they have learnt adequately before progressing to the next step (Arshad., Zamir & Bhatti, 2017). AI can also convert administrative tasks thereby allowing educators to concentrate in their interactions with learners.

Virtual and augmented reality (VAR) integration in distance education has the potentials to provide a platform that will bring about immersive learning experiences which can help convert abstract concepts to life. VAR as an emerging technology provides opportunities for learners to explore the benefits of historical sites, visits to other countries, participation in thoroughly researched virtual science laboratories from the comfort of their homes, classrooms or remote locations (Arshad *et al.*, 2017). Experiences gained from these interactions enhance learner's involvement in learning programmes, facilitate a better understanding of the learning activities and makes learning more impactful, meaningful and impactful.

The incorporation of gamification through elements of games like points, rewards and competition into distance education will help motivate learners to actively participate, while fostering a sense of achievement in learners. The introduction of gamification into distance education programmes will go a step further to create detailed and unambiguous educational games designed to teach particular concepts and skills. Gamification also encourages problem-solving, critical thinking and the spirit of teamwork or collaboration (Valetsianos, 2010).

Understanding learners' performance in any given task and learning patterns is simplified and attainable through an emerging technology known as data analytic and learning insights. This technological innovation is capable of analyzing datasets thereby providing educators insights into learners' individual and group learning trends. The insights can also be used as a basis for developing instructional strategies, identification of areas of weakness that need improvement and also make effective use of the learning experience for each learner. Integration of cloud computing in distance education programmes also enhances facilitators and learners' access to quality learning materials; promote teamwork in real time and equally store and retrieve information from the cloud. Integration of cloud computing into distance education programmes makes the teaching-learning process flexible, smooth and enjoyable by both facilitators and learners (Swavgiary & Roy, 2023).

The emergence of assistive technologies for inclusive education has opened up new dimensions and opportunities for inclusive learning in distance education programmes. Assistive technologies for inclusive education come with such learning incentives like; speech-to-text software (where verbal communication is translated into words), screen readers, and adaptive devices that are specially designed to cater for the learning needs of learners with disabilities in order to enable them participate actively in the learning process without difficulties (Swavgiary *et al.*, 2023).

The integration of virtual libraries into distance education programmes enhances learners' abilities to effectively access a collection of resource materials that are available in one or more computers through a simple interface or entry point provided. Virtual libraries also provide or organize links to documents, software images and databases on the network. The integration of emerging technologies like e-learning in distance education is capable of providing facilitators and learners avenues to actively participate in learning activities without having to attend formal school, thereby taking education to a large number of learners in remote

locations and eliminating the difficulties posed by time and space. E-learning application in distance education simplifies the entire learning process through the ability to make education readily available to learners in disadvantaged location without restrictions (Nair & Patil, 2012).

Integration of teleconferencing technology which is a telephone meeting two or more participants creates room for active interaction between learners and learners/facilitators and learners thereby creating an active classroom for learners to seek clarifications on issues and topics that they may need some degree of support (Vu, 2015). Other emerging technologies whose integration in distance education has the potentials to midwife the process of achieving a purposeful educational system include; video conferencing, internet learning, synchronous and asynchronous learning platforms, digital libraries and a host of others. These technologies allows learners in their remote and diverse location to interact in active classrooms where there is live streaming of instructions through a combination of audio and video. These technologies make the virtual classroom very real, attractive and interactive and it enhances effective instructional delivery and the attainment of the goals of the educational process. Learners are also provided opportunities for professional development, independent study and opportunities to combine work and study for the purpose of immediate application of knowledge as against the practice of postponed application of knowledge that is obtainable in formal school learning (where learners have opportunities to apply knowledge gained at the end of the learning programmes). Digital libraries also afford learners unrestricted access learning materials like text, visual materials, audio and video materials stored in electronic formats once the learners are connected or linked to the portal (Yusuf & Falade, 2015).

Integration of emerging technologies into distance will positively result in a paradigm shift from the old practice of physical face-to-face contact to a more digital, dynamic and interconnected learning systems. This transformation of distance education from the old and analogue system to a more digital approach comes too many benefits. Digitalizing distance education practices enhances learners' engagement and motivation by redirecting learners' attention due to the attractive and immersive learning experiences, which triggers internal motivation in learners. Distance learners also are motivated to learn by the artificial adaptive systems as they can follow a customized learning approach, thereby enhancing knowledge retention and comprehension in the learning activities (Patrick & Abaa, 2014). Integration of emerging technologies and other online platforms in distance education provide viable opportunities for learners inclusive learning as diverse learners will have access to quality learning facilities. As the integration of emerging technologies simplify administrative tasks performance by providing educators time to focus individualized instructional delivery and mentorship, its enhances teachers empowerment through assistive technologies.

Access to online resources and other learning platforms provided by emerging technologies encourages learners to up skill themselves by engaging lifelong learning in order to meet up with the demands of the rapidly changing world and the current job realities. Traditional methods of learners' assessment usually do not encourage economy of time and the feedback process also takes longer time. The automated process of assessment and grading

embedded in emerging technologies allows learners access to real-time feedback, which enhances learners prompt adjustments to their strength and weaknesses.

Emerging technologies integration in distance education creates avenues for teamwork and promotion of effective communication between learners involved in the learning programmes. Online platforms provided by these new technologies promote virtual exchange and group projects, break barriers of time and space and also foster the creation of a global community. The integration of empowers educators/administrators in making informed decisions because of the abilities to utilize emerging technologies in analyzing students' performance and identify areas of intervention and support. Data-driven decisions in distance education programmes that are technology driven are perfect and effective when it comes to instructional strategies and resource management for improved educational practices. Online platforms provided by emerging technologies for webinars, e-learning and workshops are effective avenues for enhancing teachers' professional skills and for connecting with other educators.

Contemporary distance education programmes are heavily dependent on multimedia and the integration of emerging technologies to enhance the process of instructional delivery to learners who are separated from the facilitators in time and space. Integration of emerging technologies with electronic, print and internet facilities in distance education will maximally facilitate the process of learning and bring about far reaching improvement in the process of instructional delivery, access to learning materials, learners registration, students orientation, addressing other numerous learning needs of learners and the provision of other support services to learners irrespective of the barriers of time and space, age and gender (Ouyang & Stanley, 2014). The paradigm shift in distance education driven by integration of emerging technologies with traditional approaches holds the promise of empowering learners, educators and ultimately creating a road map for a purposeful and sustainable educational system for the country.

Challenges of Integration of Emerging Technologies in Distance Education

Contemporary distance education programmes are driven by multiplicity of instructional media application in order to ensure effective, appropriate and timely instructional delivery to learners in their diverse locations. As society evolves technological advancement assume new dimension and the need to integrate these new technologies in distance education for quality instructional delivery and the enthronement of a purposeful educational system becomes inevitable. It is obvious that the integration of emerging technologies in distance education comes with benefits and a fair share of noticeable challenges (Oludayo., Omonijo., Uche. & Nwadiafor, 2014).

As operators of distance education programmes navigate towards integrating emerging technologies into the programmes they should also be cautious of the potentials challenges they are most likely to experience in the process. It is therefore pertinent to attempt an exploration of the challenges that are commonly associated with emerging technologies integration in distance education programmes. One of the major challenges of emerging technologies

integration in distance education is the provision of infrastructures and resources. Operators of distance education are usually faced with the challenge of providing adequate infrastructures and resources such as provision of internet connectivity to the under-privileged learners. Secondly, investing in emerging technologies integration in distance education programmes could be capital intensive in terms of acquisition and maintenance of facilities.

Another challenge of emerging technologies integration in distance education is the issue of disparities in access to technologies. Most times learners who are not financially strong to afford access to these technologies are under-served. This challenge usually deepens the already existing ravines of educational inequalities. Emerging technologies integration comes with collecting and analyzing large volumes of students' data and there is always the challenge of ensuring privacy and security to students' data. Data privacy and security is another area of concern in integrating emerging technologies in distance education as it could result in low participation or increase attrition levels (Oladele, 2018).

Another dimension to the challenges of emerging technologies integration in distance education is the issue of staff or employee's low literacy level in the use of the emerging technologies, which requires training and retraining programmes. Staff must exhibit a very high degree of proficiency in the use of the technologies and training and retraining programmes must be provided. Quality of educational content is also a challenge in emerging technologies integration in distance education. Therefore, for successful operation of distance education programmes there should a synergy between the content of the educational programme and technologies integrated in the programme.

Finally, monitoring students' engagements with the technologies is another challenge face by operators of distance education in the process of integrating technologies in the programmes. Programme operators should integrate a tech monitoring system in the programmes to ensure that students use the technologies for meaningful learning outcomes rather than using them as sources of distraction.

Conclusion

Emerging technologies integration in distance education has completely overhaul the practice of this educational system globally due to the immeasurable benefits and the ability to ferry learning to learners irrespective of age, gender, location and time. Emerging technologies in integration in distances closes the gaps of inabilities to study in formal school. These technologies afford learners opportunities to learning at a minimal cost, address the challenges of combining work and study, while providing learners equal access to quality education without restrictions. Emerging technologies in distance education is no doubt the fulcrum or pivot for achieving quality and results-driven education in Nigeria.

Suggestions

Arising from the outcome of this paper the following suggestions are made:

1. Government and private operators of distance education in Nigeria should ensure adequate integration of the relevant emerging technologies in the programmes to meet programme contents and the learning needs of learners. Despite the cost of integrating emerging technologies in distance education programmes government and other operators of the programmes should ensure that learners irrespective of location are connected to internet facilities.
2. Government and private operators of distance education programmes should ensure equal access the technologies irrespective of their socio-economic status in order not to widen the already existing educational inequalities.
3. Government and other operators of distance education programmes should ensure data privacy and security as a result of collecting and analyzing large students' data which is associated with emerging technologies integration distance education programmes.
4. Government and operators of distance education programmes should ensure that staff possess the requisite qualifications and abilities to handle these technologies effectively. Training and retraining programmes should be incorporated into staff developments programmes and recruitments requirements.
5. Operators of distance education programmes who have imbibed the culture of integration of emerging technologies should ensure the provision of adequate monitoring techniques in order not to create room for misuse of technologies for trivial purposes rather than for meaningful learning experiences.

References

- Arshad, M., Zamir, S. & Bhatti, R. U. (2017). Emerging technologies trends in distance education. *Pakistan Journal of Distance and Online Learning*. 3(2), 71-84
- Godwin-Jones, R (2003). Emerging technologies tools for distance education: Towards convergence and integration. *Language Learning and Integration*.7(3),18-22.
<https://lit.msu.edu/vol7number3/emerging/>. Retrieved 23/3/2024
- Nair, S. C. & Patil, R. (2012). A study on the impact of learning management systems on students of a University College in Sultanate of Oman. *International Journal of Computer Science* . 9(2),379-385.
- Oladele, K.B. (2018). Economics of open and education in the University of Ibadan. *International Journal of educational and Pedagogical Science*, 12(8), 381-393.
- Oludayo, O.A. Omonijo, D.O., Uche, O.C.O. & Nwadiafor, K.L. (2014). Evaluation of students work-study programme. The case study of a private (faith-based) high education institution, South-West, Nigeria. *British Journal of education, society and Behavioural science*, 4(6), 784-809.

- Ouyang, J. R. & Stanley, N. (2014). Theories and research in educational technology and distance learning instruction through blackboard. *Universal Journal of Educational Research*. 2(2), 161-172.
- Ozman, B. & Atici, B. (2014). Learners views regarding the use of social networking in distance learning. *The International Review of Research in Open and Distributed Learning*. 15(4), 362-375.
- Patrick, J.M. & Abaa, A.E. (2014). Barriers learning in open and distance learning in Nigeria: A study of National Open University of Nigeria. *Journal of Adult Education and Development*, 3(13), 184-198.
- Pradhan, D. (2021). Effectiveness of outcome based education toward empowering students performance in an engineering course. *Journal of Advances in Education and Philosophy*. 5(2), 58-65
- Rahman, H. (2014). The role of ICTs in open and distance education. *Turkish Online Journal of Distance Education (TOJDE)*. 15(4), 162-175.
- Selvam, S.K.P. (2019). *Distance education for national development*. New Delhi: A.P.H. Publishing Corporation.
- Siddiqui, M. H. (2014). *Distance learning technologies in education*. New Delhi: APH Publishing Corporation
- Swavgiary, K & Roy, K. (2023). *Empowering education: Expolring emerging technologies in the 21st century*. London:Scholars Press.
- Valetsianos, G. (2010). *Emerging technologies in distance education*. Edmunton:AU Press Athabasca University.
- Vu, V.T. (2015). Outcome-based quality management in higher education: An approach towards meeting societal needs. *International Journal of Development Research*. 5(8), 5870-5874.
- Yeboah, A. S. & Awuah, J. B. (2012). The perception of students on distance education: The case of distance education centers in Sunyani, Ghana, West Africa. *International Journal of Innovative Research in Management*, 1(2), 1-10.
- Yusuf, M.O. & Falade, A.A. (2015). Media in distance learning: The Nigerian National Teachers Institute distance education programme. *Turkish Online Journal of distance education*, 6(4), 23-30.