Online Learning Essentials: A Prerequisite for Productive Learning and Sustainable Development in Higher Education

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ABSTRACT

Online learning is one of the learning modes that provide open access and flexibility for students who may have various commitments such as work, family, or other responsibilities. It provides students with the opportunities to learn at their own pace and time, making education more inclusive and adaptable to individual needs. The importance of this mode of learning to ensuring sustainable development in Nigeria cannot be overemphasized. Hence, the need to see online learning essentials as critical components for the effective integration of information and communication technology in higher education for sustainable development. This era is a technology era with daily advancement and transformation in both processes and products of all operational systems in the world, and the education system is not exempted. Both the learners and the facilitators need training for professional development when it comes to promoting open access and equal flexible learning as prescribed by United Nations Educational, Scientific and Cultural Organization (UNESCO) for sustainable development in the African continent. Therefore, the core essential components of online learning discussed in this article are accessibility and connectivity, learning management systems, courseware development, self-regulation, communication and engagement, system usability and maintenance, robust learning management systems, and the provision of technical support systems. Among other recommendations put forward are providing training and orientations for online students and facilitators for the optimization of learning outcomes; adequate digital and technical skills are highly required for the attainment of efficiency and effective course delivery.

Keywords: Online Learning Essentials, Productive Learning, Sustainable Development and Higher Educations

INTRODUCTION

The educational sector is charged with the responsible of providing knowledge, skills and attitudes that can solve societal problems in all facets of human endeavor. Many thanks to technological revolution and advancement in the educational sector for the provision of open access and flexible learning experiences through smart classrooms and open source learning content, massive open online courses (MOOCs) and other technological driven platforms thereby making online learning more flexible and adaptable. In contrast to traditional classroom learning, which is centred on the teacher, online learning is student centred both in the content design and delivery; it is targeted at providing education to a larger population, breaking all distance barriers with high flexibility which is tandem with the UNESCO Sustainable Development Goal (SDG4). The SDG4 prescribes and demands for access to inclusive and equitable quality education and lifelong learning opportunities for all by 2030 and as such higher education should optimise opportunities for the effective integration of technological tools and platforms to promote sustainable development in education.

The notion of sustainable development arose in reaction to increased concern about the influence of human society on the natural environment. The Brundtland Commission (formally the World Commission on Environment and Development) defined sustainable development in 1987 as "development that meets the needs of the present without jeopardizing future generations' ability to meet their own needs" (Brundtland, 1987).

Annan-Diab and Molinari (2017) defined sustainable development as integrating various disciplines, including the environment, biology, medicine, nutrition, agronomics, geography, engineering, architecture, citizenship, sociology, psychology, political science, history, law, economics, and business.

Raphael and Secundino (2023) described sustainable development as the pursuit of meeting present needs without compromising the ability of future generations to meet their own needs. This concept recognizes that while development may be required to meet human needs and increase the quality of life, it must occur without eroding the natural environment's capacity to meet present and future requirements. Sustainable development requires a multidisciplinary approach, recognizing the interdependence of social, economic, and environmental factors (UNESCO, 2022). The sustainable development movement has grown and campaigned on the principle that sustainability preserves both future generations' interests and the earth's ability to renew its natural components. Sustainable development requires a long-term perspective, considering the needs of future generations. In recent times, it has moved beyond the environment to include access to equal education, social justice and poverty alleviation, green and renewable energy, and more towards attaining the UNESCO goals for sustainable development. Education for sustainable development (ESD) facilitates the development of the knowledge, skills, understanding, values, and actions necessary to create a sustainable world that protects and conserves the environment, promotes social fairness, and encourages economic sustainability.

Draghici (2019) described education for sustainable development as "education that enables learners to make informed decisions and take actions that promote environmental integrity, economic viability, and a just society, considering both present and future." According to UNESCO (2020), integration of education for sustainable development should cut across all fields of study, not just in dedicated sustainability courses. Sadaf Taimur (2019) identified that education for sustainable development should promote critical thinking and values like tolerance, respect for diversity, and social responsibility. According to Berchin (2021), there is a need for higher education institutions to prioritize sustainable development in their policies, procedures, and curricula to foster necessary knowledge and skills.

Paulo (2019) opined that higher education institutions should lead by example by undertaking courses and programmes with implications for sustainable development. A study conducted by Donath et al., (2020) on e-learning platforms as leverage for education for sustainable development investigated the conceptual approach to education for sustainable development using an e-learning platform. It starts from the observed reality that all education stakeholders need a learning environment where they can have access to knowledge, collaborate, and share their experience, as a survey conducted among students and companies in Timisoara, Romania, shows. The proposed multi-stakeholder environment accommodated two sections: the learning environment, which was mostly dedicated to students, trainees, tutors, and mentors, and the virtual sustainability center, which was dedicated to online meetings, workshops, counseling, etc. During the study, learning was supported by a range of written digital and multimedia resources, including pre-recorded online tutoring, videos, and games. To engage online learners, various gamification techniques were deployed in the course design phase, such as recording and presenting the learner's progress, role-playing, and similar. All these were delivered through Moodle, a designed learning management system with all components and features to enhance communication, collaboration, and learners' active engagement. The study revealed that online instruction was made productive and realistic through the incorporation of some essential components such as connectivity, self-regulation, flexible and dynamic learning management systems, system usability and maintenance, engagement, and technical fluency.

Statement of Problem

The process of knowledge acquisition and transmission is not difficult but can be made difficult and challenging for the learner, instructor or facilitator whether in the traditional delivery method or virtual mode. In a traditional classroom, the instructor or teacher considers certain components such as listening skills, non-verbal messaging, students participation, suitability of learning experiences, tone and more others as critical for effective communication. The process of knowledge transmission and acquisition in virtual settings should also see to it that the essential components are provided and integrated to produce successful interaction and learning outcomes. Hence, how can accessibility, connectivity, learning management system, technical

support, course content design, communication and self-regulations promote productive learning and sustainable development in higher education?

Aim of paper

The aim of this paper is to make bare the very essential components for productive online learning outcomes for sustainable development in higher education. Basically, the following areas are of utmost concern:

a) Accessibility and connectivity,

b) Learning Management System (LMS)

c) Courseware/course content development

d) Self-regulation

e) Communication and learners engagement

f) Technical support,

Accessibility and Connectivity

Students' ability to have open access and strong connectivity to the internet and courseware is an important determinant for successful online learning. Some of the components of online learning comprised live streaming of lecture sessions where both learners, e-tutors and facilitators participate. To enable this, they must have access to a functional computer or mobile device, accessibility to an uninterrupted electricity supply, and a stable internet connection. Access to high-speed internet enables a broader audience to receive education (Kanchana et al., 2021). However, online learning has been proven to be challenging for students residing in areas with poor internet connectivity and unreliable power supply (Rahman, 2021). In order to effectively engage in online learning, a consistent power supply and stable internet connection are essential prerequisites for any region, district, or country (Mishra, Gupta, & Shree 2020).

E-tutors and facilitators ability to upload lecture materials during live sessions is critical as digital literacy and competency are required to drive student's active participation in online learning. However, the lack of the technological devices and digital competency most times can hinders effective lesson delivery in online learning. In addition, ensuring access to reliable power and a stable internet connection, functional computer equipment are critical factors that can help improve the effectiveness of access and connectivity for online learning.

Courseware/Content Design Interphase:

The simplicity and design interphase of the courseware go a long way to promote learners and facilitator usability. A good design instruction is usually broken down into smaller units for easy understanding (Octaberlina & Muslimin 2020). Providing lecture recordings in both video and audio formats also provides learners with varied mode of instructional resources on their preferred devices as well as catering for their learning styles (Vazquez-Cano, 2014).

Self-directed and Regulated Component

In the online learning programmes, learners are mostly responsible for their own learning, and therefore, they need to possess self-regulated attributes and behaviors that reinforce self-regulations such as self-discipline towards studies, persistency, sustained motivation, and must be self-directed to achieve optimal productive learning outcomes. Self-regulation is an essential characteristic of humans for achieving objectives (Bandura, 1988). Students with greater self-regulation identify ways to optimize the learning outcomes (Zimmerman, 1986).

Self-discipline is the ability to manage and regulates one's own conduct and overcome distractions, temptations and urges that may obstruct goal attainment. Self-motivation can lead to the development of self-discipline behaviors, which are necessary for success in online learning as well as other aspects of life.

Communication and Engagement Component

Communication tools such as email, discussion forums, video conferencing platforms (e.g., Zoom, Microsoft Teams), and chat applications should be embedded into the LMS for effective real-time and off-site communications. Learning is a two-way process, and interactions with peers, e-tutors and facilitators are crucial in facilitating learning outcomes. These tools will not only enhance communication but promote active engagement and participation between the students and the facilitators since there is high peer interactivity and the discussion forum which caters for the human component.

Students level of engagement during online learning can be enhanced by integrating other components such as gamification, design of some asynchronous assignment, allowing them to carry out some form of self-assessments, building a community, adopt other materials that can move beyond the classroom activities, listening to live online lectures while engaging in other activities. It is also reasonable to question whether continuous assessments are being completed by students or third parties. Course satisfaction rises as students interact more with their instructors and classmates (Martin & Bolliger, 2018). Students in traditional classroom environments have the opportunity to connect with their classmates and teachers face-to-face, which fosters a sense of community and teamwork. Discussion forums, video conferencing, group tasks, and social media platforms can all let students connect while learning and teaching online.

Learning Management Systems (LMS), System Usability and Maintenance Component

As the setting of higher education continues to evolve; the role of learning management systems (LMS) has become increasingly crucial in facilitating effective teaching and learning. LMS offers opportunities for learners and instructors by enabling personalized e-learning and integrating online resources with traditional face-to-face teaching techniques (Aljawarneh, 2020). These digital platforms serve as a central hub for various educational activities, from content delivery and assessment to student engagement and collaboration (Mpungose & Khoza, 2022). Maintaining the quality and usability of LMS is a significant challenge, given the complex and diverse user base they cater to (Song & Luan, 2020).

According to Valamis (2019), a modern Learning Management System (LMS) is designed to integrate various add-on applications. This applications support the development, delivery, assessment, and administration of courses in blended or online learning environments. Learning Management Systems (LMS) include tools for online learning, virtual classrooms, and distance learning; It is a web based software used to facilitate the delivery of online courses. Various institutions are able to create, deliver, and manage training reports and programmes through the deployment of a LMS. These systems are electronic tools for managing, implementing, and measuring online learning and training. Examples include proprietary systems like Blackboard, WebCT, Desire2Learn, and Angel, as well as open-source systems like Sakai, Moodle, Canvas, Blackboard, OLAT and etc,

Learning Management Systems (LMS) can be used for different purposes. For example, in educational institutions, they benefit the planning and implementation of courses and facilitate assessing and monitoring students' activities. Due to the rapid growth of technology in education, LMSs, also known as learning platforms, play an important role in simplifying various processes in e-learning globally. Recently, there has been an increase in the integration of LMS to support e-learning activities due to their numerous benefits, making the market for LMSs highly competitive. The development and deployment of an appropriate LMS is a complex task, requiring huge financial investment, experts consultation and time. There are many other factors to consider when choosing a learning management system (LMS). The most important factors are LMS type, price, licensing and copyright, add-on application integration, support and updates, usability, and security. Understanding these factors in relation to the company's platform is necessary for achieving effective and productive programme outcomes.

The deployment of LMS involves considering managing the logistical aspects of learning, such as content management and student enrollment; in recent time, the emphasis has now shifted towards enhancing the student experience and the overall efficacy of the tools used. Usability criteria are important for evaluating quality learning management systems. According to International Organization for Standardization (ISO), standards and usability is the degree to which a system can be used by specified users to achieve specified goals effectively and efficiently. Usability includes several sub-characteristics: users should be able to determine if the system meets their needs, the system should help users achieve their learning goals effectively and efficiently, it should simplify operation processes, the user interface should facilitate good user interaction, and the system should work well in a wide range of contexts to help users achieve their goals (ISO 25000, 2019).

Technical Support

The delivery of online lectures requires digital literacy and competency to optimize institutional learning goals. However, e-tutors and facilitators may encounter challenges ranging from connectivity, ease of courseware uploaded into the LMS and seamless navigation around the LMS. Facilitators and e- tutors are advised to have full grasped of the content of the courseware, prepare additional learning experiences to overcome any technical issue that may arise during course delivery. It is important that institutions make available technical supports to allow seamless communication and lessons delivery. Additionally, e- tutors may require several practice sessions to become proficient on camera during live sessions

E-tutors and facilitators must get proper training before beginning online-based teaching (Ramadani & Xhaferi 2020). They should be proficient and successful at posting multimedia contents, exchanging notes, assignments, and other learning resources on the LMS. During a live online lecture session, this includes the option to navigate around the LMS, presenting different learning resources and writing on an online whiteboard. They should also be able to send emails to individual students or other academic staff or to the full class (El-Zawaidy & Zaki, 2014). During online lectures, the e-tutors and facilitators   must maintain good posture and offer camera views that do not demotivate learners. In online learning, facial expressions and eye contact play an essential role in sustaining learners interest.

Online instructors requires digital competency to ease the transfer of screen sharing between multiple digital teaching resources. Video lectures are the major technique of providing students with learning materials in MOOCs. Some video lecture material shows the professor speaking in front of a camera while the whiteboard or blackboard is projected on students' computer. The use of short clips of two to six minutes in length is more preferable for online lessons delivery, this is because it enhances easy comprehension and assimilation. Videos are useful learning resources because they have both the visual and audio components, However, studies have shown that 80% of the video lecture materials were accessible to most learners who finished MOOC courses and got certificates.

CONCLUSION

In conclusion, technological advancements have made online learning more accessible and flexible, emphasizing student-centered approach,self-directed learning and effective time management. Sustainable development in higher education involves integrating various disciplines to ensure present needs are met without compromising future generations. Designing online courses to promote education for sustainable development is an attempt to equip learners with the knowledge and skills by promoting open access and equitable education to a larger populace without distance barriers. Therefore, higher institutions of learning should leverage on the various e-learning platforms, provide technical support and training for instructors; and the learning management systems designed for this purpose should be robust enough to address learners assessments, progress reports, courseware uploads and usability for effective and result oriented programmes.

Suggestions

Some of the suggestions put forward for the successful integration of information and communication technology are:

1. Providing training and orientations for online students and facilitators for the optimization of learning outcomes,

2. Provisions of adequate digital and technical skills are highly required for the attainment of efficiency and effective communication.

3. Online learning requires students to develop self-discipline, time management, and digital literacy skills. These skills are increasingly important in the modern workforce, making online learning a valuable component of higher education.

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