

ELECTRONIC LEARNING (E-LEARNING) AS A CATALYST FOR EFFECTIVE INSTRUCTIONAL DELIVERY IN NIGERIAN TERTIARY INSTITUTIONS

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Abstract— E-learning as a sub-system within information and communications technology (ICT), is the electronic process which enhances the delivery and administration of learning opportunities and support via computer, networked and web-based technology to help an individual's performance and development. The basic principle of e-learning is connectivity – the process by which computers are networked to share information which can connect people. Electronic learning technologies are becoming increasingly popular in tertiary institutions as they are used for tutoring, managing courses, providing simulations, enriching existing courses, programming and problem solving. The catalyst for growth in e-learning is its suitability for simulation and experiential learning through the internet and computer applications. E-learning technology has the potential to transform how and when learners learn. Learning becomes more integrated with work and uses shorter, more modular, just-in-time delivery systems via e-learning. This paper therefore, discusses the concept of e-learning, common e-learning terms/tools and attributes of e-learning. The paper also examines the concept of effective instructional delivery and the responsibilities of lecturer in using e-learning, the major problems identified and recommendations that will help in the effective utilization of e-learning to catalyse instructional delivery were also made.

Keywords: E-learning, Catalyst, Effective, Instructional delivery, Tertiary institutions

Background to the Study

It is quite unfortunate that the use of e-learning for instructional delivery in Nigerian tertiary institutions is still a mirage despite the fact that e-learning has become increasingly important in higher education institutions with its immensely usage in this era of technological advancement. E-learning is a hot concept in higher education which has been growing since the inception of the first web-based courses in the mid to late 1990s (Bichsel, 2013). In recent decades, the use of information and communication technologies (ICT) for educational purposes has increased, and the spread of network technologies has caused e-learning practices to evolve significantly (Kahiigi, Ekenberg, Hansson, Tusubira, & Danielson, 2008).

E-learning is an approach to teaching and learning, representing all or part of the educational model applied, that is based on the use of electronic media and devices as tools for improving access to training, communication and interaction and that facilitates the adoption of new ways of understanding and developing learning. E-learning involves the use of a computer or electronic device (e.g. a mobile phone) in some way to provide training, educational or learning material. (Stockley, 2006). It is the delivery of a learning, training or education program by electronic means. E-learning could also be considered a natural evolution of distance learning, which has always taken advantage of the latest tools to emerge in the context of technologies for structuring education (Albert, Dimitrios, & Nati, 2012).

The huge growth of computers, the internet and other electronic devices such as smartphones and tablets provide global opportunities for education, especially for learning outside the premises of the school (Ngwoke, 2011). They are powerful tools for the development of quality teaching and learning. They are also catalysts for radical change in existing school practices and veritable vehicle for service delivery in Tertiary Institutions. They have facilitated quick delivery of learning and dissemination of knowledge and information in a way that were not previously possible.

The recognition of these facts, has led to the Federal government of Nigeria to instruct the National Policy on Education (2004) to set standards, regulate framework for the deployment of ICT infrastructure at all levels of education in Nigeria. The federal government urged the state government to adopt the National Policy on Computer Education of 1998 which has its objectives as to encourage teachers to develop a sense of rapport with computer and appreciate its potentials for solving teaching and learning challenges and to entrench computer culture that permeates all activities in institutions of learning (Adeosun, 2010).

Statement of the Problem

Leonard (2013) carried out a study on the assessment of utilization of e-learning opportunities for effective teaching and learning of religion in Nigerian tertiary institutions. In his findings, it was revealed that Religion teachers are faced with a lot of challenges that hinder their effective utilization of e-learning. Some of these problems include lack of adequate ICT infrastructure, pauci-

ty of fund, irregular supply of electricity, lack of technical support from ICT professionals; inadequate training to teachers on how to integrate e-learning gadgets, etc. Moreover, there are some teachers who lack pre-requisite skills in e-learning applications, there are also paucity of fund, high cost of personal computer, irregular electricity supply and many other factors are hindering full optimization of e-learning in teaching Religion in Nigerian tertiary institutes. Also, Ochuku, Amakaino and Chamberlain (2013) carried out a study to find out the extent of utilization of e-learning technologies for instructional delivery in Colleges in Delta State Nigeria. The authors found out that various e-learning technologies and applications are available for utilization in education for instructional delivery but were little utilized. However, there is dearth of study investigating e-learning as a catalyst for effective instructional delivery in Nigerian tertiary institutions. Thus, the gap filled by the researchers.

Literature Review

• The Concept of e-Learning

It is difficult to find a commonly accepted definition of e-learning. However, any definition of e-learning must settle the issue of what is and what is not e-learning (Guri-Rosenbilt, 2005). Not only have different concepts been attributed to e-learning, but the term has also been substituted by others, such as computer-based learning, technology-based training, and computer-based training, which actually predate the first mention of e-learning in the mid-1990s or the more recent online learning. Moreover, some people confuse the concept of e-learning with the concepts of a virtual campus or online courses, which can be part of the e-learning universe but do not sufficiently define it (Albert, Dimitrios & Nati, 2012).

The definitions gathered from the literature review focus on different elements of e-learning. Specifically, four general categories of definitions were identified: 1) technology-driven, 2) delivery-system-oriented, 3) communication-oriented, and 4) educational-paradigm-oriented.

Technology-Driven Definitions

This category mostly includes definitions from private companies and a few academics that emphasise the technological aspects of e-learning, while presenting the rest of its characteristics as secondary. The definitions in this category portray e-learning as the use of technology for learning. Representative samples of this category include the following:

- "E-learning is the use of electronic media for a variety of learning purposes that range from add-on functions in conventional classrooms to full substitution for the face-to-face meetings by online encounters" (Guri-Rosenbilt, 2005).
- "E-learning is to take a course online using a modem, wireless, or cable connection to access academic course material from a computer, phone, or handheld device" (Governors State University, 2008).
- "E-learning is distance education through remote resources" (Marquès, 2006).
- "E-learning is the use of technology to deliver learning and training programs" (E-learning portal, 2009).

Delivery-System-Oriented Definitions

This category presents e-learning as a means of accessing knowledge (through learning, teaching, or training). In other words, the focus of these definitions is the accessibility of resources and not the results of any achievements. Representative samples from this category include the following.

- "E-learning is the delivery of education (all activities relevant to instructing, teaching, and learning) through various electronic media" (Koochang & Harman, 2005).
- "E-learning is an on-line education defined as the self-paced or real-time delivery of training and education over the internet to an end-user device" (Lee & Lee, 2006).
- "E-learning is the delivery of a learning, training or education program by electronic means" (Li, Lau, & Dharmendran, 2009).
- "E-learning is defined as education delivered, or learning conducted, by Web techniques" (Liao & Lu, 2008).

Communication-Oriented Definitions

This category considers e-learning to be a communication, interaction, and collaboration tool and assigns secondary roles to its other aspects and characteristics. Representative examples of these definitions, which come mostly from the academic and communication sectors, include the following.

- "E-learning is education that uses computerised communication systems as an environment for communication, the exchange of information and interaction between students and instructors" (Bermejo, 2005).
- "E-learning is learning based on information and communication technologies with pedagogical interaction between students and the content, students and the instructors or among students through the web" (González-Videgaray, 2007).
- "E-learning is defined as learning facilitated by the use of digital tools and content that involves some form of interactivity, which may include online interaction between the learner and their teacher or peers" (Ministry of Communication and Technology of New Zealand, 2008).

Educational-Paradigm-Oriented Definitions

This category defines e-learning as a new way of learning or as an improvement on an existing educational paradigm. The majority of the authors falling into this category work in the education sector. Some of the most representative examples of these definitions include the following.

- "E-learning is the use of new multimedia technologies and the Internet to improve the quality of learning by facilitating access to resources and services, as well as remote exchange and collaboration" (Alonso, López, Manrique, & Viñes, 2005).
- "E-learning is a broad combination of processes, content, and infrastructure to use computers and networks to scale and/or improve one or more significant parts of a learning value chain, including management and delivery" (Aldrich, 2005).
- "E-learning is defined as information and communication technologies used to support students to improve their learning" (Ellis, Ginns, & Piggott, 2009).

- “E-learning refers to educational processes that utilise information and communications technology to mediate synchronous as well as asynchronous learning and teaching activities” (Jereb & Šmitek, 2006).

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Common e-learning Terms/Tools

There are countless tools, techniques, people, acronyms and resources associated with e-learning. Below we cover some of the ones we think you are likely to come across.

Tool / Term	Description
Virtual learning environment (VLE)	An online space provided by the institution to support e-learning. All forms of digital media can be delivered using its various tools. There is a wide range of VLEs on the market.
Personal learning environment (PLE)	A concept of understanding that individuals utilise a range of networks – combining both institutional and personal networks and devices to learn.
Blackboard	Example of a VLE that is commonly used in the UK.
Moodle	An Open Source VLE that is commonly used in the UK.
Podcast, either video or audio	A method of delivering multimedia content. The video podcasts are sometimes called vodcasts/vidcasts.
RSS	A method used to push and pull content across the Internet. Particularly useful for subscribing to a podcast http://web2practice.jiscinvolve.org/rss-2/
Face-to-face teaching	A method of delivering teaching and learning that is normally used to distinguish between

	the classroom teaching environment and online.
Learning object	An object such as an audio file. Courses are typically made of many learning objects
Blended learning	A method of delivering teaching and learning that involves both face-to-face teaching and the use of technology together at the same time. For example the internet may be used to support a session that includes interactive tasks for the learner.
Distance learning	Delivering teaching and learning remotely, typically using technology and the internet Multimedia resource are often incorporated to provide context to text-based resources.
Discussion forum	A communication tool for posting messages/work/comments/opinions. Often text-based but some do offer the ability to use multimedia.
Blog	A way of posting educational material online, normally organised by date and topic category. Images, video and audio can be shared in this manner. Blogs typically allow commenting, which can be a useful feature for teaching and learning.
Wiki	An editable tool for working with others that has a trackable history of changes (wikipedia is the most popular example). Much like a blog, its strength is that can be used to share multimedia resource.
Web 2.0	Essentially leveraging some of the more recent developments to support better interaction including social features. Many of these web 2.0 services provide community tools for sharing and commenting on resources, such as video.
Web service	A web delivered service that can be used for many types of activity including the storage and delivery of multimedia. Examples of web services include YouTube and web storage.
Netbook	A laptop that is very lightweight, portable and is often cheaper than most laptops. In order to achieve this, typically size and power are sacrificed. They can be used to create, use, manage and deliver multimedia.
e-book reader	Used to read digital e-books. Many of these readers can play audio books and/or read text out loud.

Flash player	A plug-in piece of software that adds functionality to the browser. Many e-learning resources have been created using Flash and most web videos at present use this technology.
Mobile learning (use of mobile phones and other handheld devices)	Using mobile devices including mobile phones to facilitate teaching and learning.
Open-source software	Software that is provided under a license that permits the user to have access to the source code. Open source software can be used to create, consume and delivery multimedia. An example is the audio editing tool 'audacity' which is very popular for creating and editing audio podcasts.
Creative Commons licensing	A way to share copyrighted work within a documented license scheme. Creative Common licenses are increasingly applied to teaching resources that are typically made available using the internet.
HTML	The structural code that makes websites. Multimedia is typically delivered from websites that are built from HTML. Websites in turn allow us to produce e-learning for teaching and learning.
Scripts	Bits of code that add additional functionality to a website or service. Scripts can be created to support teaching and learning. For example, JavaScript is used to increase the functionality of the browser which can be used to create interactive based activity.
Web browser	A browser is a piece of software that allows us to interact with the web via a computer. Internet Explorer and Mozilla Firefox are two popular examples of web browsers that provide access to e-learning material and multimedia resources
Social media	Social media tools are used to communicate between people on the web and can be used to support teaching and learning. For example it is often desirable to use social media tools to facilitate online community opportunities including learner collaboration.

Attributes of e-Learning

- **It is economical and it saves time:**

By reducing the time taken away from the office, removing travel costs and doing away with printed materials, online learning helps you to save money and increase workplace productivity. Nwokike (2011) articulated that e-learning facilitates the task of the teacher by promoting performance and reduces the stress inherent in the conventional classroom work for both teachers and students.

- **Learning can take place anywhere:**

Many face to face courses only operate within normal office hours. By allowing staff to complete the course when and where they like makes disruptions to busy working schedule be minimised. This also means that your teaching staff will be happier because they do not need to travel to specific training centres, and if they have important work to catch up on mandatory training, it can be done outside of office hours in exchange for lieu time. Thus, e-learning is flexible because learning can take place anywhere and anytime (Nwokike, 2011).

- **It is discreet:**

It is not everybody who feels comfortable learning in a large group, especially if they find something hard to understand that co-workers have no problem with. E-learning allows each individual to tackle the subject at their own pace, with interactive tasks being set in place to ensure a thorough understanding throughout each module. E-learning enables individuals to learn when and where they want at their own paces (Nwokike, 2011).

Benefits of e-Learning

In tertiary Institutions, Elesionye and Okolo (2011) maintained that e-learning applications:

- enables students to have equal opportunity with their contemporaries in other parts of the world;
- could be used to introduce an interesting variety of the inventory of instructional materials in the school system such as lecture notes, diagrams, pictures and textbooks;
- exposes students and teachers to basic skills in computer education for the purpose of accessing the internet sourcing for information for effective learning.
- helps both academic staff and students to be comfortably entrenched in the global village.
- exposes the lecturers and learners to international best practices in information technology;
- facilitates teaching, research and knowledge creation and dissemination of information in the institutions of learning.

Effective Instructional Delivery

Teaching and learning being two faces of the same coin presupposes that teaching leads to learning. Many methods and strategies have been variously used in the learning situation to achieve the desired objectives of classroom instruction. Mostly used in Nigerian tertiary institutions is the traditional mode of delivery which is the face to face mode. This mode of delivery has been variously viewed as not being able to meet the challenges of learning in a technology driven age. The student in this learning situation is passive (Thiagarajan, 2005) as it is the job of the teacher to present the content. In this learning setting, what is promot-

ed is shallow learning in the sense that assessment is usually based on memorization and regurgitation of facts.

Effective instructional delivery embraces all human interactive skills employed by the teacher to promote/facilitate learning in the classroom situation thereby leading to improved performance on the part of the learner. It is a process in which teachers apply repertoire of instructional strategies to communicate and interact with the learners around academic content, and to support student engagement for better learning outcome (Leonard, 2013). For effective instructional delivery to be catalysed in Nigerian tertiary institutions, e-learning must be well utilized.

Responsibilities of Lecturers in Utilizing E-learning Applications

As the world is increasingly getting technologically driven, globalized, competitive and competent based, the roles of lecturers for e-learning programmes becomes critical. Just as the students need media competence to manage knowledge independently, lecturers on the other hand, according to Osuala (2009) have to be willing to structure content differently and really put the students at the centre of attention. Now lecturers act more as a resource person or facilitator, meeting such learners as continued contact with peers, increased guidance feedback and opportunities to apply acquired skills (Osuala, 2009). To perform these roles, enjoy the usefulness of e-learning and apply it efficiently and adroitly in teaching, lecturers should have mastering of operating educational hardware. They should have mastery of the keyboards, possess the ability to surf the internet in order to upload and download instructional materials, to access the back-end database, to handle all the learning materials and assessment, and also should possess the competencies of knowing where to apply e-learning.

Uzodimma (2006) however pointed out that the problem we have in the Nigerian Tertiary Institutions is lack of the competencies of utilizing the computer and operating other educational software using keyboard and connecting to the internet to surf information on education. Based on this, lecturers using e-learning applications have to be trained in ICT, administration and management of e-learning applications. The new role of lecturers as a facilitators, collaborators, coach and mentor according to Anderson (2005), requires that all the lecturers should be trained to be familiar with e-learning experience as part of ongoing professional development. No matter the stage development one has reached in the use of e-learning technologies, he/she still needs training. The reason is that there are new ways of storing and manipulating data/information that would necessitate further development of the lecturers (White,2003).

Thus, lecturers should be trained to acquire the skills that are pre-requisite for the e-learning application such as skills in the setting up computer, skill of application of Ms-Word, of application of MS-Power Point, of application of excel, of use of world wide web, of use of goggle search engine, skill of use of yahoo search engine, of mamma search engine, the skill of identification of web address, of use of e-mail, has the skill to download information, possess the skill of power point presentation, of the use of operating windows, of identification of computer periph-

erals. Ngwoke and Numonde (2011) added that lecturers should have the ability to design education software to meet the specific needs and choose the electronic text to match with student's needs. The development of these skills are necessary because according to the organization for Economic Co-operation and Development (OECD, 2006), e-learning is becoming increasingly paramount in tertiary education and every tertiary institution is increasing the provision of e-learning packages.

Problems of Utilizing e-learning in Tertiary Institutions

According to Ndume (2008) in many e-learning projects, students face some challenges of bad perception during their studies: Lack of resources, lack of user's touch and feeling in their learning platform (Ostlund, 2005). High cost that must be met by the learners which arises from connecting to internet is a challenge. Connecting to internet might be unreliable, slow or limited and might cause frustration and failure of learning outcome, and learning materials cannot be accessed and downloaded in time to support efficient learning. Gunga (2010) identified also the high cost of personal computer, laptop, software, internet and the technical support, and power instability, blackout in towns and unconnectedness in rural areas, as problems that militate against utilization of e-learning in Tertiary Institutions.

Alu (2011) posited that the issue of computer literacy among students and lecturers and availability of personal computer (PC) among lecturers and students is lacking. There is no rigorous computer training in the process of lecturers preparation to help lecturers usage. Thus many lecturers and learners are not computer literate. These problem and others, slow down the pace of e-learning utilization in Tertiary Institutions in Nigeria.

Conclusion

E-learning is vital for effective instructional delivery in tertiary institutions. Hence, e-learning technologies like e-lectures, e-examination, e-drill, e-books, e-library, among others are to be extensively utilized for catalysing instructional delivery in Nigerian tertiary institutions.

Recommendations

Based on the findings the following recommendations are made:

1. Government should provide ICT infrastructures for e-learning to be effective and efficient in Nigerian tertiary institutions.
2. Government should provide fund for running, maintaining and sustaining e-learning in tertiary institutions.
3. Government should introduce a workable ICT policy and liaise with other stakeholders in education sector to make internet connectivity and other e-learning resources such as computers, projectors, scanners, printer, etc, available to the tertiary institutions.
4. There should be adequate awareness creation on the importance of e-learning programme to the lecturers in Tertiary Institutions in Nigeria.
5. Seminars, training and workshops on e-learning should be organized for lecturers so as to help them improve their skills on effective instructional delivery.

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