

EDUCATIONAL TECHNOLOGY – A PATH WAY TO QUALITY INSTRUCTIONAL DELIVERY IN NIGERIA

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Abstract

This paper reviewed the challenges faced by the institutions in developing countries, specifically the Nigerian context in order to recommend and suggest to policy makers, teachers and all concerned with teaching and learning, the best practices for the optimum deployment of educational technology. In Nigeria, there is a need for a paradigm shift from the existing teacher-centered learning environment to a learner-centered instructional environment where learning is enhanced and students acquire the necessary 21st century knowledge and skills. Lack of infrastructure is a major challenge in the deployment of educational technology in developing nations. Also, the lack of strategic plans for technology use also emerged as a challenge. It is therefore suggested that institutions should start formulating strategic plans such as creating specific set of training modules based exclusively on educational research and innovation, to cover the latest research trends in educational technology. In addition, a more supportive infrastructure needs to be developed to successfully implement technology in teaching and learning activities.

Keywords: Technology, Educational, Instructional Delivery

Education in the 21st century is the center from which most changes and developments arise. Presently, technology is restructuring education, and changing teaching and learning in ways that impact on all [educators]. Observers and proponents of educational technology suggest that our use of increasingly sophisticated and enabling technologies will continue, to the extent that technological literacy will become a basic functional requirement for our work, social and personal lives. Technology may be defined as the systematic study of techniques for making and doing things (Wikipedia). It can also be defined as the application of the arts, science, processes, ideas, tools and machines to solve human problems (Wikipedia). In essence, it refers to ways people use inventions and discoveries to satisfy needs and desires. Technology includes the use of both sophisticated (highly advanced) and non-sophisticated (simple) tools and methods to work effectively.

In the past, service delivery in educational settings has been done through numerous means; from verbal communication to prints and use of instructional materials like pictures and charts. As technology is creating changes in all aspects of our societal life, it is also changing our expectations of what students learn, how they learn it and where they will learn it so as to function in the new world order (Abimbade,2005). The advancements of digital technology have modified the fundamental activities of education, scholarship, research and service to society quite significantly, and have created new channels of communication throughout the university and with the broader society through electronic mail, chat rooms, Web site conferences, etc. as well as new training modalities (on-line training, on-site training, Blended-Learning, Instructor led Learning/Training, Classroom Training -C-training,

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etc.). Finally new virtual training settings aimed at facilitating tools and resources to favor communication and interaction and distributing teaching materials through the web will emerge in order to encourage and promote collaboration and co-operation among the participants in teaching and learning processes. Technology has profound impacts on teaching, freeing the classroom from the constraints of space and time, and supplementing the learning of students through access to original source materials. As a result, higher education has experienced significant changes from teaching to administration and management processes (Duderstadt et al., 2002). Technologies do not only support learning but also change how learning happens. Hence, the activities of learning are under increasing pressure of the developments of digital technologies (Säljö, 2010).

Learning principles transcend specific technologies. However, when carefully designed and thoughtfully applied, technology has the potential to accelerate, amplify, and expand the impact of powerful principles of learning. However, technologies can be useful in enhancing teachers and students freeing from traditional ways of teaching and learning if they are used in the right way (Kozma & Vota, 2014). According to Schwartz and Schmid (2012) and Kurt (2014) technology can significantly improve learning environments, but only when properly implemented and when certain criteria are met: teachers are skilled with, and comfortable in using, educational technology; sufficient resources are available; and workload requirements for teachers are reasonable, so that they have sufficient time to dedicate to using technology resources.

Nigeria, one of the developing countries in the African continent is striving to measure up with her counterparts in the area of technology. In every educational training, teaching - learning is inevitably involved in information passage; from the teacher or trainer who serves as the sender to the learner or trainee who serves as the receiver. In an average Nigeria classroom, especially in public schools, activities are still dominated with chalkboard and textbooks. Some private schools make efforts to integrate technology into their system, given the poverty level; very few people can access this opportunity. In some Schools, technological tools are purchased and kept for window dressing and exhibition but not used in teaching –learning situations.

The quest for development in Nigeria presently makes it imperative for trainers to shift from the existing method of teaching in schools to accommodate use of technologies. It is shocking to note that Nigeria, with her abundance of resources - human and non- human cannot boast of being among the countries utilizing technology in teachings, school administration and management. More and more studies now support the claim that technology has great potential to provide new kinds of instructional opportunities and to enhance the knowledge and learning experiences of both the teachers and students. To mention but a few of these studies, we have a number of compiled online language learning which has emerged with the use of audio in various published journals such as; Recall, Call, Calico and language learning technology (Belz & Thorne, 2015; Lamy & Hampel, 2017; O’Dowd, 2015; Thomas, 2014). These studies involved online language learning (via audio) among language facilitators and students (Coburn, 2012; Hampel & Hauck, 2014; Ryobe, 2018); among students and native speakers (Tudini, 2013); and among peers (Yilmuz & Granena, 2013). In Ryobe’s (2018) research, Skype was used as a video chat to improve the proficiency of French language students. There is therefore the need to prepare students for the information age since today’s students are to spend their

career life in a very dynamic technological environment (Mbwesa, 2003). Today, technology has become an integral part of our everyday world. Most jobs today require some type of technology use. More so, students and adults are using technology on a daily basis to communicate, get information in multiple ways. The prevalent daily use of technology in people's lives overall makes the use of technology very relevant to the students and provides a connection that will greatly benefit student learning. However, the transition from traditional educational approaches to technology-enhanced ones has been a great challenge for many countries (Kurt, 2014) including Nigeria. Sequel to this, it is essential that teachers are willing to learn to use the technology themselves, to incorporate it successfully into their interactions with students in the classroom. The successful integration of technology into the classroom, and the degree to which students can benefit from a technology-enriched environment depend almost entirely on teachers (Kozma, 2003). In addition, challenges related to infrastructure, maintenance, contents, and teacher training, etc. are common in the adoption and implementation of education technology in developing countries (Kozma & Vota, 2014). Cognizant to this, it is crucial to review the challenges faced by the institutions in developing countries, specifically in Nigerian context in order to recommend and suggest to policy makers, teachers and all concerned with teaching and learning the best practices for the optimum deployment of educational technology. This is the focus of this paper.

Concept of Educational Technology

Studies on technology have categorically stated that Information and Communication Technologies (ICTs) have brought changes in a range of sectors with extensive impact on contemporary society, and fundamentally changing the way that we communicate, work, and entertain. Education is no exception, where technological applications have been used extensively over the years (Karagiannidis et al., 2014). It is therefore argued that the education has changed in such a way that there is growing pressure on the teachers to adopt new technology requiring them to undergo new orientation and training (Khaniya, 2007). Thus, the use of educational technology is essential for enhancing both teaching and learning activities. This is because with technology, teachers can help to enhance classroom teaching and learning. They can use ICTs or technologies and provide students with structure and advice, monitor students' progress, and assess their achievements. Students, on the other hand can be provided new opportunities in working together in teams or groups and using technology to search for information (Kozma, 2003). Here, technology as an innovation can be an idea, practice, or object that is perceived as relatively new and helps individuals to form a network. Therefore, technologies having characteristics to communicate can enhance students and teachers in teaching and learning activities in higher education setting (Rogers, 2003). With the rapid advancement of computers, digital learning materials offer additional affordances over traditional print materials that can significantly improve the quality of education (Karagiannidis et al., 2014) as digital technologies can facilitate learning through interaction, construction, discussion and collaboration (Laurillard, 2010). As a result, initiatives around the world from ministries, educational organizations, companies, etc., emerged and digital learning resources and educational software were developed (Karagiannidis et al., 2014). Therefore, innovations or technologies can mediate activities of teaching and learning. For more than two decades, Nigeria has

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experienced a continuing, debilitating crisis in education, including limited access to educational opportunities and resources, large-class size, poor implementation of planned curriculum, inadequate funding, poor management, lack of interest in the endeavour of learning, low number of qualified teachers, and low level of literacy and basic education skills (Onasanya et al., 2012). This in turn leads to poor performance of students in examination and malpractices to have better results. Effective instructional delivery depends on the technique or method used by the teacher in teaching the concepts, means of communication or his language of expression, material or media used during the process and nature of the learners in the instructional setting.

Technology Integration in Education

Technology supported collaborative learning and learning management systems are rapidly gaining place in educational sector. As a result, new visions and ideas are entering educational practices. These technologies are introduced to support learning and the development of professional competencies (Jochems et al., 2004). Educational technology have further become resources for networking platforms and communications among teachers, giving the possibility to update them, share experiences, create informative materials and theoretical improvements. Further, educational technology allows teachers to work in a wider universe of data and information (Ferreira et al., 2014). The existing literatures on technology and education reveal that they can enhance teaching and learning considerably if they are used in the right way. Regarding the impacts of technology in learning, a study shows that technology allows students to learn gradually and autonomously at their own pace. As a result, this has a positive impact on their progress. Therefore, technology can facilitate positive results when they are used to understand content and concepts of the subject (López-Pérez et al., 2013).

A study by Rasiah (2014) revealed that social media like Facebook was indeed viewed as an effective tool in a student-centered learning environment that enriched students' educational experiences, increasing the relevance of the subject matter and encouraging students to collaborate with their peers. In addition, Facebook as a course management system has the potential to increase student involvement in discussions and out-of-class communication among teachers and students (Albayrak & Yildirim, 2015). More specifically, social networking sites open up the opportunity for class members to interact beyond the classroom, which as a result leads to additional learning opportunities and enhances participation in the face-to-face classroom (Hung & Yuen, 2010). Productive learning can be achieved by acquiring and operating with student-oriented educational strategies focusing on the development of a personal learning style, but also can be further supported by means of educational technologies ((Viorica-Torii & Carmen, 2013). When technologies are integrated into student centered classrooms, students become active learners, and the opportunities of interaction support this process (Ajjan & Hartshorne, 2008). Furthermore, it has been proved that technology is a valuable gift in life-long and distance learning, simply because it provides an effective delivery vehicle for course content where learners participate and work in a form of collaboration community (Crook, 2011). Kirkwood (2014) claimed that the adoption of technology helps students in constructive learning and knowledge building as technologies can create a context-free environment. Technologies can enhance

productive learning and supports the learning of how to communicate and argue in ways recognized and accepted, develop intellectual autonomy, and critical thinking. Moreover, technology facilitates e-feedback as a joint activity by sharing comments among teachers and peers (Dysthe et al., 2010). However, it is worthy of note that the utilization of educational technologies in teaching and learning differs in developing and developed countries. Despite the fact that studies have documented a long range of benefits of technology use in education, these efforts are not seamless.

Challenges in Adopting Technology in Education in Nigeria

In spite of the fact that studies have revealed that educational technologies can enhance teaching and learning processes, there are many challenges being faced while implementing them in practice, particularly in developing countries. Developing countries often represent contextual factors in organizational culture and societal structures which are very different compared to developed countries. Technological factors such as cost, usability and appropriateness of technology as well as management characteristics are more challenging in developing nations compared to developed countries (Andersson & Grönlund, 2009). While European countries use advanced technology in teaching and learning processes as an integrated part of societal structures, African countries have been unable to independently create and use new technologies in their education system due to various reasons surrounding societal premises (Hamidi et al., 2011). Regarding the underuse of technologies in developing countries, Malapile and Keengwe (2014) stated that some factors such as costs, low effectiveness, etc. are responsible. Similarly, lack of technology policy, insufficient technology equipment, lack of qualified teachers in technology integration, and maintenance and technical problems are the major challenges affecting integration of technology at the school level (Ramorola, 2013). Moreover, users in developing countries are not familiar technology users as in developed countries.

As a result, it is unlikely to see the importance of technology in teaching and learning (education). This has also resulted in the failure of technology implementation in institutions. Therefore, technology awareness, computer skills and knowledge are important short-comings of elearning success in developing countries (Bhuasiri et al., 2012).

In addition to these challenges, limited or lack of connectivity, equipment and relevance in other parts of society is also a challenge per technology integration in education of developing countries (Olutola & Olatoye, 2015). However, the first and foremost challenge in the context of developing countries refers to establishing ICT supported infrastructure which has been identified as one of the main barriers in technology adoption. To achieve this, vision and plans play important roles. Hence, lack of visionary plans hinder technology integration into teaching and learning processes (Khan et al., 2012).

Implementation of Technology in Developing Countries

Governments and non-governmental bodies funding education in developing countries advocate the use of technologies to reduce the cost of educating a large number of students who are missing out in education. It is therefore, widely suggested that technologies can help to address issues of educational equity and social exclusion, and open democratic and accessible educational opportunities

(Gulati, 2008). However, to gain optimum impact of technology in education, certain issues such as how technology implementation can be effective; what the requirements are to achieve it, etc. are to be addressed (Alam, 2016).

In developing countries, the adoption of technology in teaching and learning in higher education context has been affected mainly due to lack of sufficient and suitable infrastructures (Quimno et al., 2013). Moreover, individual motivation, time, technological confidence, etc. are also affecting it. In addition, content, design and delivery of courses pose challenges for successful implementation of e-learning. Furthermore, trainings for teachers and staff, funding, attitudes to soft skills and e-learning are important factors for technology use in education. More importantly, the access to/and cost for technology and its software are challenges for educational institutions in developing countries. Therefore, challenges related to individuals (teachers and students), course, context and technology is challenging (Andersson & Grönlund, 2009). The success of e-learning in developing countries has been influenced by various critical factors. For this to be accomplished, infrastructures, technology awareness, knowledge, motivation, computer training, etc. are prerequisites (Bhuasiri et al., 2012).

Role of the Teacher in Effective Use of Educational Technology

The impact of technology in education in the recent years fosters the vision of an open, global and flexible learning, leading to radical shifts in the teacher's role and competencies. Benefit from technology in the classroom are realized when teachers intervene where it will be most timely and impactful. According to (Kelly et al., 2002), the key persons in helping learners to access the capabilities of technology is the class teacher.

Teacher is the main person in helping learners to have access to technological capabilities. The teacher should have necessary expertise, content and learning activities management and try to change his/her class from a static to a dynamic status in learner-centered environments so that learners can be able to communicate with others, both in their classes and virtual classes around the world. In this case, teachers will participate in the knowledge created by others and his/her role as one of various knowledge sources will change. By facilitating learners process and timely feedback, the teacher provides good education results. She/he strengthens learners necessary internal motivation by creating a positive attitude towards lessons and providing motivational and spiritual; mode in the class (Aslani, E, 2003).

The authors added that the teacher's profile is shaped in three dimensions: cognitive-reflexive, active-creative and affective-communicative.

Role of the Student

Students have to be offered didactic and technical strategies for them to become competent users of new telematic tools and resources. They not only have to acquire skill and ability to cope with technological demands, but also they have to acquire the capacity to use them effectively at technical, rational and critical levels. Gisbert (2000) pointed out that student instruction would have to be articulated around three main areas: training to consume (ICT materials), training to use (telematic tools and resources) and training to produce (electronic materials).

Learners will be able to acquire new information in a shorter time. They will have enough time to classify their beliefs and participate in discussions in online and

offline mode, they will achieve educational resources proportional to its speed. They will communicate with their teacher and cohort at the right time, and they will have enough time to read, understand and respond to the questions. Fakhtech Mahini, 2012.

According to Fazeli, 2007, communication based on technology, refers to interact in real time motivational learners to participate in activities to increase and improve communication skills and ideas.

Fakhtech Mahini, 2012 in continuation indicated that the application of new technology in the classroom, whether throughout the group learning, or by video conferencing or the use of virtual education, will put the learners at the centre of the educational process

Again, the necessity of a trained teacher, familiar with the new teaching and learning scenarios, and ready to meet the challenges of teaching in the Knowledge Society emerges as one of the most outstanding points to be overcome in the educational field.

Conclusion

So far, it is evident that educational technologies can be tools to enhance teaching and learning, though with obvious challenges in their adoption, particularly or in developing countries such as Nigeria. Technology has the potential to improve the educational system. However, developing countries are far from reaping these benefits as a result of specific challenges. Some challenges identified in the context of developing countries include limited electrical or Internet infrastructure, limited availability of technically skilled support staff, and under qualified teaching staff (Kozma & Vota, 2014). Moreover, lack of vision and plans, lack of ICT supported infrastructure and resources, insufficient funds, lack of ICT knowledge and skills, etc. also pose challenges in technology use in education especially in developing countries (Khan et al., 2012). To harness the benefits and potentials of educational technology in Nigeria and other developing nations, institutions should create specific set of training modules based exclusively on educational research and innovation, to cover the latest research trends in educational technology. As technological advances appear often and give way to the so-called emergent technologies: mobile learning, portability, usage of mobile phones and other gadgets (PDAs, ipods), television... which open up this field to unexpected areas of research, it is expected of teachers to take all these new technologies into account and include them into educational research. Today, mobile phone technology emerges as a beneficial tool to enhance learning and teaching environment. This technology could be used more systematically to provide students and teachers with the opportunity to access information and engage interactively (Abachi & Muhammad, 2014). Hence, it is suggested that mobile technologies should be further explored for other possibilities to digitize the educational setting. The potential in these efforts is especially interesting since the technology is cheap, easily available and can draw on an existing and well-functioning infrastructure.

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