

INTEGRATING TECHNOLOGIES IN CURRICULUM DEVELOPMENT IN NIGERIA: THE ROLE OF THE TEACHER

By

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Abstract

Integrating technology in education is a very sophisticated, multifaceted process and just like any other innovation, it should not be introduced without piloting its different components. The design and implementation of curricula that are aimed at contributing to students' lifelong learning competencies is one of the major challenges of curriculum change and improvement efforts nowadays. In view of this, the idea of Education For All (EFA) arose to address how technological approach towards improving how curriculum content are accessed. This paper examined the concept of technology; concept of curriculum; technology integration; concept of curriculum development; need for technology in curriculum development; technology as innovative strategy in our overview of Education For All (EFA) and role of the teacher in the use of technology in schools. This study recommended that efforts should be made by government to post skillful teachers with knowledge of technology to teach in Nigerian schools so as to impact computer skills to the students and also stabilize electricity supply for effective teaching and learning of technology.

Keywords: Technology, Curriculum Integration, Role of the Teacher

Introduction

Technology plays a key role in shaping how individuals deal with the various spheres of private, social, and civil life. The knowledge and application of Technology made it fundamental to all facet of human endeavor. It is an expression of the human mind that reflect the active will, the contemplative reason and the desire for aesthetic perfection in sourcing of information. Therefore, integration of Technology in curriculum development and accessibility are essential for the full comprehension of technological and scientific advances, economic policies and business decisions, and other complexity of social and psychological issues which are the sole objectives of school curriculum (Lister, 2014).

Concern for the role of Information Communication and Technology in the overall Wellbeing of nations was at its climax at the formulation of the Education for All (EFA) initiative at the onset of the new millennium. The EFA efforts considered education as a human right, a means of fostering creativity and change, that is, propelling learners into the unknown. Over the years, the magnitude of change in the educational system especially in curriculum development has become tied particularly to rapid innovations (Agbo-Egwu, Abah, & Abakpa, 2018).

With the help of Technology and radical re-imagining of time and space, curriculum in education no longer have to adhere to the 'one size fits all' approach

characteristic of the traditional system (Hampson, Patton & Shanks, 2011). The power of technology is increasingly enabling people to learn and interact, even in the most remote areas of the developing world. Presently, the need for continuous access information and knowledge makes learning lasting, whereby making traditionally distinction between learning and work disappear. This paper will examine the concept of technology; concept of curriculum; technology integration; concept of curriculum development; need for technology in curriculum development; technology as innovative strategy in our overview of Education For All (EFA) and Role of the teacher in the use of technology in schools.

Concept of Technology

Technology according to Adeyemo (2010), is defined as a set of technological tools and resources used to communicate, create, disseminate, store and manage information. These technologies according to him include computers, the internet, broadcasting technologies (radio and television. Technology is a generic term referring to technologies, which are used for collecting, storing, editing and passing on of information in various ways. It is a term that includes any communication device or application such as radio, television, hardware and software etc, as well as services and applications associated with them (Yinusa-Afolabi, 2015) all levels. Technology may contribute to the creation of favourable environments for learning which are more powerful and in various forms (Joseph & Thinguri, 2017). This is because technology avails openings for accessing large volumes of information by the use of numerous information technological facilities like mobile phones, televisions and many others, and observing the information from numerous perceptions, thus emphasizing the authenticity of the learning environment. Through simulations, technology simplifies sophisticated jobs/tasks and instructions for learners hence making them to master them with ease.

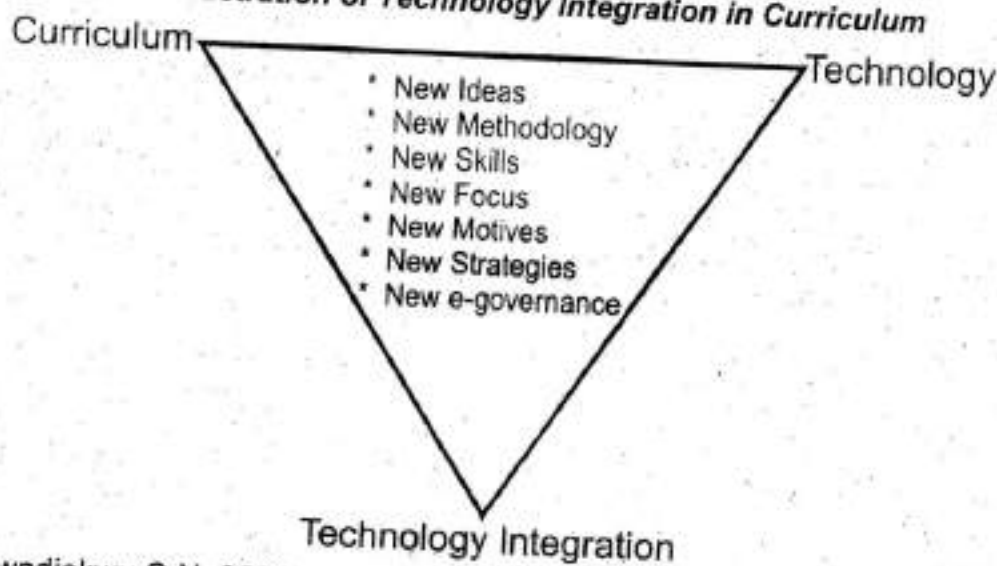
Technology Integration

Teaching is becoming one of the most challenging professions in our society where knowledge is expanding rapidly and much of it is available to students as well as teachers at the same lime (Panjeta& Aggarwal 2017). As new concepts of learning have evolved, teachers are expected to facilitate learning and make it meaningful to individual learners rather than just to provide knowledge and skills. Recent developments of innovative technologies have provided new possibilities to teaching profession but at the same time have placed more demands on teachers to learn how to use these technologies in their teaching (Olowoye, 2016). Use of technology within teacher-training programs around the world is being approached in a number of ways with varying degrees of success. These approaches are subsequently described, refined and merged into four primary approaches as follows:

- (a) **Technology Skills Development Approach:** Here importance is given to providing training in use of in general. Student-teachers are expected to be skilled users of technology in their day-to-day activities. Knowledge about various software, hardware and their use in educational process is provided.
- (b) **Technology Pedagogy Approach:** This approach emphasizes on integrating skills in respective subjects drawing on the principle of constructivism, pre-service teachers design lessons and activities that centre on the use of technology tools that will foster the attainment of learning outcomes. This approach is useful to the extent that the skills enhance technology literacy skills and the pedagogy allows student to further develop and maintain these skills in the context of designing classroom-based resources. Students who have undergone this type of training have reported significant changes in their understandings associated with efficacy implementation strategies, as well as their self-efficacy as to their technology competencies.

- (c) **Subject-specified approach:** Here technology is embedded into one's own subject area. By this method teachers not only expose students to new and innovative ways learning, but also provide them with a practical understanding of what learning and teaching with technology looks and feels like. In this way, technology is not an add on, but integral tool that is accessed by teachers and students across a wide range of the curricula.
- (d) **Practice-driven approach:** Here the emphasis is on providing exposure to use of technology in practical aspects of teacher-training also. Emphasizing on developing lessons, assignments and so on using technology and implementing these in their practical work experience at various levels, the students are provided with an opportunity assess the facilities available at workplace and effectively use their own skills in manipulate these facilities. Based on the concept that the pre-service teacher is a learner, manager, designer and researcher, he is expected to research their practicum school's technology facilities, design technology activities with their tutor-teach manage those activities in the classroom, and evaluate their effectiveness in terms of student learning. Ideally, an integrated approach is to be followed for developing technology skills in teaching. Whatever may be the approach followed in the institutions to develop knowledge about technology, it has its own limitations and coupled with other reasons, they are not making student teachers fully confident of using technology in their day-to-day classrooms and other situations. In the opinion of authors, all the four approaches are required to develop awareness of expert level skills student-teachers. Figure 1 shows the diagrammatic illustration of technology integration in curriculum

Fig 1: Diagrammatic illustration of Technology Integration in Curriculum



Source: Nwadiokwu C.N. 2020.

Need for Technologies in Curriculum Development

Technology is viewed here as broadly referring to the group of networks, devices, applications and digital content used to communicate with others and obtain, generate or share, information (Broadband Commission Working Group on Education, 2013). According to the education ministers of Organization for Economic Co-operation and Development countries (OECD, 2005), the concept of perpetual learning covers all purposeful learning activity in a person's life. A major feature of the concept of perpetual learning is developing the capacity of "learning to learn." The perpetual learning approach anticipates a coping with the increased pace of

globalization and technological change (OECD, 2005). Many students that are about to start their school career eventually will get a job that does not yet exist. It is therefore often argued that nowadays young children need to develop perpetual learning competencies. Society-through formal and informal schooling — needs to create opportunities for their citizens to develop perpetual learning competencies Hofmann (2014) distinguishes a number of educational elements that are considered important in learning environments that foster the development of these competencies. These elements are; Active, Collaborative, Creative, Integrative, and Evaluative. They guide the teacher in selection of pedagogical approaches in implementing curriculum. These elements are organized by the teacher in such a way that they show the characteristics of a pedagogical approach that is expected to be more dominant in an information society versus one that suits an industrial society.

Technology as innovative Strategy in our Overview of the Education For All (EFA)

The current revolution in knowledge is not about how much information is available. It is about how fast knowledge can travel through vast, connected networks of people and how it can grow exponentially (Speer III, 2012). This digital revolution is being fueled by increasing broadband penetration and ubiquity of smart phones, particularly among the new genre of teachers and learners' who are successfully imbibing the trendy culture of leisure and school work (Clement & Joshua, 2018). Technology is a game changer, changing the educational experience through simulations, games and haptic devices that allows users to feel, augmented reality, and more (Oblinger, 2012). Information technology administered in education can deliver content instantly, bring distant individuals together in a collaborative community, and make administrative process faster. Multiple areas of technology impact in education highlighted by Obliger (2012) include; change in the learning experience, guidance and personalization, learner-centered design, research, open solutions, and scaling. These impactful applications of technology in education are gradually closing the digital divide across the globe (Iji, Abah&Uka, 2013; Iji, Abah&Anyor, 2014). While essential, closing the digital divide alone will not transform learning. Efforts must be made to also close the digital "use" divide by ensuring all students understand how to use technology as a tool to engage in creative, productive, lasting learning rather than simply consuming passive content (U.S. Department of Education — Office of Educational Technology, 2016).

Active use of -technology involves the learner driving peer collaboration, design, global connections, interaction with experts, media production, and immersive simulation and coding. Specifically, 21st century skills as necessitated by the present knowledge society and economy, are expressed in ways of thinking, ways of working, tools for working and skills for living in the world. According to the Assessment and Teaching of 21st Century Skills (ATC21S).

Consortium (2013), skills expressed in ways of thinking include; creativity, critical thinking, problem solving, decision making and learning. Skills for living in the world include; citizenship, life and career skills and personal and social responsibility skill. Optimizing the outcome of technology usage in fostering these skills requires smart partnerships from within and across education that have shared purpose, a strategic and holistic approach, and facilitate change in organizational processes (Voogt&Knezek, 2016). Such smart partnerships aims to deploy technologies to

enhance the quality of education, harness technology smartly and recognize the role of technologies in emergent processes.

The reality then is the fact that education is no more a location but a teaching and learning activity. Innovative technologies have widened the reach of e-learning and online platforms. These new channels of teaching and learning foster compact and efficient course structure, - content presentation collaboration and interaction, and timely feedback (Lister, 2014) According to Lee (2016), Innovative technologies also lead to personal commitment to study and the resulting cognitive engagement with content often contribute to high degree of learning autonomy.

Concept of Curriculum

Curriculum according to Duru (2016), is vehicle through which the school strived towards the achievement of its educational objectives". According to Mezieobi (2013), Curriculum is planned and unplanned. Society approved educational experiences which the learners are provided with and exposed to in an outside the school for the accomplishment of specified educational objectives".

The above definitions did not consider the experiences of the learners outside the school environment. For this purpose, curriculum can be defined as the numerous experiences and exposures a learner gets in and outside of the classroom and school environment that equip him or her with reflective and critical thinking abilities targeted at achieving specified educational objectives.

Concept of Curriculum Development

Curriculum development involves the application of best methods and new curriculum materials selected during the planning stage to design learning experiences to ensure effective learning as well as effective ways of evaluating the process to ensure that specific learning has taken place (Duru 2016). Preceding the actual curriculum development is the planning stage where the decisions about all the materials, methods and evaluation procedures are reached. Basically, one cannot develop in a vacuum but can develop what has been planned; curriculum planning therefore comes first followed by curriculum development and implementation.

In curriculum development, a lot of curriculum materials are used. Such materials as enumerated by Duru (2016) include; textbooks, reference books, teachers' guides, students' workbooks, journals, logbooks, posters, etc. Curriculum development is usually guided by curriculum process or models. The elements of these models include; objectives, contents learning experiences and evaluation. The first one is broken down into situation analysis whereby the needs, problems and aspirations of the learners and the society are determined and then applied in stating the aims, goals and objectives of education which in turn are used in selecting learning experience of the learners. These are translated into the school curriculum using curriculum development model as guide. Curriculum development materials has to be circulated to schools where it is implemented using the stipulated or prescribed curriculum materials or instructional resources by well trained teachers. From the implementation, feedback information is given to curriculum planners and developers regarding the success or problems of the existing curriculum. Based on the report, it may become very apt to revise or reform the existing curriculum.

Role of the Teacher in the Use of Technology in Schools.

Teachers are seen as a major player in the implementation of curriculum in schools at all levels. Therefore, significant roles of guiding learners' academic achievement and of shaping their character as well as personal social roles are

bestowed on teachers. Hence, teachers are to bring about total and all round development of learners in the school system. With these huge and tasking expectations from the teachers, they are to be equipped so much that they can deliver on their expected onerous tasks of instructional delivery by using several strategies. This includes the deployment of technologies in their instructional activities particularly at this 21st century. According to Olson, Codde, DeMaagd, Tarkelson, Sinclair, Yook and Egidio (2011), international Society for Technology in Education (ISTE) has documented standards for teachers in the use of technology in school settings: that, teachers should be able to:

1. Facilitate and inspire student learning and creativity
2. Design, develop digital-age learning experiences and assessments
3. Model digital-age work and learning
4. Promote and model digital citizenship and responsibility and
5. Engage in professional growth and leadership

Looking at these standards and roles for teachers to perform; are Nigerian teachers equipped or skilled enough to advance and actualize them? It is evident and sufficient as experienced, that overwhelming majority of teachers at all levels in Nigeria are yet to become digital literate. The unskilled majority in the school system certainly may not have been able to play their roles meaningfully with the use of technology as documented. Therefore, Nigeria as a nation needs to purposefully with vigour, pursue and develop in technology as well regarding teachers' development. Nigeria needs to, must embrace and execute the technology policy documents to the letter for her teachers. But, the question is, is Nigeria ready embrace and fall in line with the international best practices in technology as stipulated? Teachers have the responsibility of nation building; no teacher, no nation. And in the light of this assertion, no nation should toy with the developments of her teachers if she must develop. Nigerian teachers must be trained and retrained very well in technology particularly, to actually be able to witness any meaningful development in all sectors of the nation.

Conclusion

Integration of Technology in curriculum development and accessibility are essential for the full comprehension of technological and scientific advances, economic policies and business decisions, and other complexity of social and psychological issues which are the sole objectives of school curriculum. In this information era, citizens must be able to access and use technology to meet their needs. The stability of the economy is heavily dependent on access to information as national development is very much influenced by the amount of available information. The quality of life as well as its prospects for social change and economic development, the living standards, leisure, patterns of work, the educational system and the market place depend largely on technology and its exploitation, as well as influence in advancing information and knowledge. Integrating technology in education is very sophisticated, multifaceted process and just like any other innovation, it should not be introduced without piloting its different components.

Students in the 21st century have no reason to be left behind in the present knowledge economy. Even among the poorest 20 percent of households around the world, nearly 7 out of 10 have a mobile phone. The emphasis for students is on optimum use of digital technologies to drive enriched learning. With the entire world at the beck and call, students at all levels can access curriculum contents to

augment their knowledge of education. Students should channel their energies into creative thinking and participate in the rising worldwide efforts to develop technological tools that will re-shape the landscape of learning. This paper examined the concept of technology; technology integration; need for technology in curriculum development; technology as innovative strategy in our overview of Education For All (EFA); concept of curriculum; concept of curriculum development and Role of the teacher in the use of technology in schools.

Recommendations

Based on the discussion, the following recommendations are made:

- Government should ensure that technology policy statements are translated into reality
- There should be suitable environment for the learning of technology in various schools
- Qualified educational technology teachers should be employed for effective teaching of the subject
- Workshops and seminar should be organized by the government for training and retraining of teachers.

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