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Need for technology integrated curriculum for adult and non-formal education in colleges of education in Nigeria

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Abstract
The aim of this study is to explore the importance of technology in educational curriculum. The concept of curriculum was clearly explained. The paper went on to discuss the different forms of technologies that could be integrated into curriculum in the colleges of education in Nigeria. The benefits of technology integrated curriculum were also highlighted. This paper concludes by recommending that the federal government of Nigeria should fund education adequately to enable it acquire necessary technologies that could transform education in Nigeria.

Keywords: technology, curriculum, adult education, colleges of education

Introduction

There is no one accepted definition of curriculum as it concerns education. Curriculum has been used in various ways at various times. In some cases, it has been used to mean a school's written course of study, the subject matter taught to students, the courses offered in a school and the planned experiences of learners under the guidance of a school. According to Bilbao, Luado, Irrigan and Javier (2008) [1], curriculum can be defined as the total learning experiences of individuals, not only in school but society as well. This is in line with the view of Tricia (2010) [12] who saw curriculum as the content of a subject concepts and tasks to be acquired, planned activities, the desired learning outcomes and experiences, products of culture and agenda to reform society. From the viewpoint of Tricia, curriculum may be seen as the totality of all the learning experiences that students are expected to acquire either intentionally or unintentionally, for the purpose of achieving desired goals, mainly, for the betterment of the society.

A curriculum is considered as the "heart" of any learning institution. This means that schools or universities cannot exist without a curriculum. Curriculum for adult and non-formal education in colleges of education should not be limited to teaching skills only, but practical skills as well. Adult education is a discipline that prepares individuals for adult life. Adult and non-formal education should expose its recipients to real practical and technological skills which will enable them to be self-reliant after school, and help them to fit in the 21st century world of work.

The term curriculum was derived from the Latin word 'currere' which means 'race course' or a course through which people have to run in order to get to a set goal. By implication, a curriculum in our education system is supposed to be a planned sequence of learning experience through which specific be havioural changes will be achieved for students within a given learning setting. If curriculum is what it is supposed to be as explained above, it follows, therefore, that curriculum should be a dependent variable, changing with the needs of the learners. According to UNESCO (2017) [13], some people see curriculum as entirely in terms of subjects one taught in schools and as set out within the set of textbooks, and forget the wider goals of competencies and personal development. Continuing further, UNESCO maintained that clear, inspired and motivational curriculum documents and materials play an important role in ensuring education quality. In addition, Purdue (2018) [8] stressed that involvement of different forms of technologies can support and enhance learning. These technologies such as e-instruction, PowerPoint, flipped classroom among others can be integrated in a curriculum for teaching and learning effectiveness.

Sharpe (2013) [9] stated that there are three types of curriculum: Explicit or stated curriculum, Hidden or unofficial and Absent/Null curriculum. Explicit or stated curriculum is what is intentionally presented as the basic materials of schooling. It consists of the courses, lessons and learning activities students participate in, as well as the knowledge and skills educators intentionally teach to students. Hidden curriculum is the side effect of an education. It includes lessons which are learned but not openly intended, such as transmission of norms, values and beliefs conveyed in the classroom and social environment. Hidden curriculum is the unintended outcomes that occur as the explicit curriculum is implanted. Absent/Null curriculum is those subject matters that are not taught. It is the curriculum aspect that is excluded either intentionally or unintentionally for classroom instruction. But, in present education system, technologies are used to facilitate teaching and learning.

Technology is the application of scientific knowledge for practical purposes. In education, technology may be seen as any device or devices that aid and make learning easier. Technology changes society by changing the environment which people in turn adapt. Humans use technology to learn. According to Clark (2005) [2], technological changes do not only occur in education, it affects the economy, industry, communication, among others. But in education industry, technological changes have created opportunities for teachers to maximize teaching and learning. Students enjoy enhanced learning environments that often include research,

computer-based lessons or virtual classroom interaction. Society is not static, it is dynamic. As society changes due to technological changes, curriculum should integrate technological changes in the society to make teaching and learning easier and result oriented. What is right today may be wrong tomorrow. That is why curriculum needs to be integrated with technologies to reflect those current technological changes in the society so that learners and teachers will teach and learn within the ambit of the best global practices and methods in education. It is true that technological changes in the society is opening up new door of learning with every student, for example, previously, students make do with paper and pencil test, but today, technological advancement in education has brought in computer-based-test, electronic textbooks, flipped class room, video-conferencing, computers, laptops, social media and PowerPoint, thereby enhancing learning. Despite these technological changes in education, the researchers observed with dismay, the ugly situation in the colleges of education in Nigeria; the lecturers and students still made do with paper and pencil tests. Many of the lecturers do not own laptop talk less of knowing how to operate computer. How could they help students learn effectively with this scenario? In addition, many lecturers in the colleges of education have no functional e-mail addresses. They cannot give online lectures and online assignments to their students as a result of computer illiteracy. This is embarrassing. Equally, many of the colleges of education in Nigeria have no adequate expansive lecture halls. Many of the lectures are conducted under mango trees or in the open spaces or corners around the school. Many lecturers have no befitting offices, no tables, no chairs to sit and work. Some of the offices are as small as a kitchen without cross ventilation, no fan to cool the body. Some of the lecture halls are like poultry houses, no proper lightening, no adequate siting arrangement. Students stand up to receive lectures. All these have created gap in education that needs to be bridged. In most of the departments of adult education in colleges of education in Nigeria, one can hardly see functional Televisions, radios, tape recorders or even relevant instructional materials. Yet the essentiality of these resources in teaching and learning in the colleges of education cannot be compromised. The use of the statistical packages for social sciences (SPSS) for data analysis, PowerPoint in teaching and learning, online lectures and online assignments, video conferences, flipped classroom, digital books and classroom clickers to mention but a few, are alien in the curriculum for adult and non-formal education in the colleges of education in Nigeria, hence, the need for this study. The integration of technologies in the curriculum of adult and non-formal education in the colleges of education in Nigeria will boost learning and help graduates of adult education in the colleges of education in Nigeria compete globally with their peers.

Technologies that can be integrated into the Curriculum of Adult and Non-formal Education in the Colleges of Education in Nigeria.

There are different forms of technologies that can be integrated into curriculum for efficiency and effectiveness in the areas of education in Nigeria. Some of the technologies, according to, Purdue (2018) [8] include: Digital books, Classroom Clickers, Interactive whiteboard and tablets, E-instruction and flipped classroom.

1. **Digital Books:** Digital books are electronic books or e-books. They are publications made available in digital forms, readable on the flat-panel display of computer or other electronic devices. E-books help students to read faster with less time.
2. **Class room Clickers:** Classroom clickers or audience response system are instructional technologies that enable teachers/facilitators to readily collect and analyze learners' responses to questions during class. When designing curriculum, educators must always consider ways in which to keep the class engaged in the material. Classroom clickers, sometimes called e-clickers allow instructors to get immediate feedback from the classroom during lessons or lectures. In addition to being able to test the students, this technology allows an instructor to receive an accurate picture of who in the classroom might need more attention and assistance (Purdue, 2018) [8].
3. **Interactive Whiteboard:** An interactive whiteboard (IWB) is a large touch sensitive (thus interactive) board that when used with a combination of a computer and digital projector, facilitates interactive ICT engagement. It resembles a traditional whiteboard and can be used similarly. This type of technology is an excellent way for the teacher to visually demonstrate points on a large scale. This type of technology is especially wonderful for mathematics and science curriculum as it allows the teacher to save whiteboard notes for students and quickly clean the slate for the next lesson. Goli (2011) [4] submitted four key advantages of an interactive white board to include (1) it improves learning: while some learners are auditory learners, absorbing information efficiently through the spoken words, others are visual learners (2) increase in participation and collaboration. Lastly, it brings convenience and flexibility to education.
4. **E-instruction and Distance learning:** E-instruction and distance learning is an e-learning or online learning form of education in which the learners and facilities are physically separated during instruction. This form of learning uses technologies to facilitate learner-facilitator and learner-learner communication. E-learning curriculum are designed with the distant learners in mind, making it possible for many students to obtain education without disrupting professional or family lives. Initially, it was available for higher education only, e-learning is presently helping students receive high school education and elementary students to connect with students from around the globe in online classroom settings.
5. **Flipped Classroom:** A flipped classroom is an instructional strategy and a type of blended learning that reverses the traditional educational arrangement by delivering instructional contents often online outside of the classroom. It moves activities, including those that may have traditionally been considered home work into the classroom. In a flipped classroom, students watch online lectures, collaborate in online discussions and carry out other educational activities with the guidance of a mentor (Topp, 2014) [11]. Flipped class is learner-centered unlike traditional class which is subject centered. The flipped classroom is a blended learning strategy and technology with the aim to improve students 'engagement and outcome (University of

Queensland, 2018) [14]. The colleges of education in Nigeria are encouraged to integrate technologies and facilities used for blended learning in their curriculum. Nwana (2008) [7] added that digital microteaching laboratory, educational computers such as computer assisted Instruction (CIA) and Computer managed Instruction (CMI), video conferencing, radio, video cassette recorder (VCR) and Television are the list of technologies needed to be integrated in the curriculum of adult and non-formal education in the colleges of education in Nigeria. Digital microteaching laboratory is an innovation in teacher education which uses e-technology. It was designed by Dwight Allen in 1963 with a team of teachers and researchers at Stanford University California USA (Nwana, 2008) [7]. It was designed to help student teachers acquire teaching skills under controlled laboratory condition. Such teaching skills include- Set induction, use of examples, stimulus variation, pacing, questioning, planned repetition, verbal clues, reinforcement and closure, among others. Microteaching implies teaching on a small scale where only one or two teaching skills are practiced at a time. The following may be found in a digital microteaching laboratory- closed circuit television (CCTV), video cassette recorder (VCR) monitor. Computer Assisted Instruction (CAI) is an automated instructional technique in which a computer is used to present an instructional programme to the learner through an interactive process. It is designed to arouse the interest and gain the attention of the learner from the beginning of the learning process to the end. Also, Computer Managed Instruction (CMI) has the primary function of assessment, scoring and grading of students' tests, quizzes and examinations. According to Nwana (2008) [7], Educational computers have the advantage of enhancing individualization of instruction. This means, designing learning experiences specially to meet the individual student's interest and needs so as to enable the student learn at his/her own pace.

6. **Video-conferencing:** Video conferencing refers to a type of technology where conferences and discussants stay in various places or different geographical locations to deliver and discuss their papers. It enables the conferences and discussants to see face-to-face and eyeball to eyeball as if they are physically sitting together.

Benefits of Technology in Educational Curriculum

There are many benefits of technology integrated curriculum to education. Purdue (2018) [8] listed them as follows: Students are more engaged, simplified materials, increased motivation and better developed collaboration skills, overall increase in student achievement.

1. **Students are more engaged:** Students take more interest in new technologies and find it more interesting when materials are presented through these new media, as against simple reading from textbooks. Technologies actively engage students via problem solving platforms, quicker study methods and unlimited potential for research.
2. **Simplified materials:** Technology can put a wreath of materials literally into the palm of a student's hand. Light weight new laptops and digital books can easily take the place of heavy, cumbersome books and notebooks.
3. **Increased Motivation and better developed collaboration skills:** Technology-based curriculum has the tendency of increasing students' motivation and cause a sense of teamwork within the class.
4. **Overall increase in students' achievement:** The use of technology in education has shown to cause a significant rise in academic success of students. It has been suggested that because technology makes learning enjoyable, students are more likely to succeed academically.

In addition, curriculum design with technology in mind can be fundamental in many students' educational success stories. This seems to agree with Escoff (2015) [3] who stated that technology should be integrated into the curriculum. Escoff directed educators and students to utilize the SAMR methods. The SAMR model represents the stages of technology integration in which S stands for Substitution, A- Augmentation, M- Modification and R- Redefinition. The model challenges educators not only to integrate technology into the curriculum but modify, redefine and transform classroom through the use of technology. The author asserted that technology integration truly enhances learning experience. Supporting this view, Henson (2012) stated that technology is the key to curriculum development and alignment, to ensure that students get what they need in the way they need it to be successful. Still on the importance of technology to curriculum, Smith, Killen and Knight (2015) [10] agreed that curriculum should be agile and responsive to the diverse needs of the students, employers and society. This could be achieved only through technology. Grow (2007) [5] believed that technological based curriculum engages students in the class-room and helps them acquire skills they need to prepare for present and future job opportunities

Conclusion

Technology based curriculum is the roadmap to transformation of colleges of education in Nigeria, especially Adult and non-formal education. It is the answer to the acquisition of skills and competences necessary for adult life. Technology integrated curriculum will help the graduates of adult and non-formal education to work anywhere, any place in the world without intimidation and inferiority complex.

Recommendations

This paper strongly recommends the following for the improvement of colleges of education in Nigeria.

1. The federal government of Nigeria should adequately fund colleges of education in Nigeria. The 26% of the nation's budget to education, as recommended by UNESCO should be strictly adhered to. This will enable colleges of education in Nigeria to provide necessary facilities and technologies that are needed in the education industry.
2. Curriculum developers should take cognizance of new technologies in education when designing curriculum, they should know that curriculum should be developed to meet up with socio- technological changes in the society, especially now that the entire world is globalized and digitalized.

3. The cost of computers should be subsidized by the government so that it will be affordable and accessible to both the lecturers and students. This would be the first step towards increasing the level of computer literacy in the country.

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