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Abstract

The digital age has transformed knowledge construction, dissemination and acquisition skills in modern system of teaching and learning process. This paper explores epistemological approaches to digital teaching and learning in the Nigerian education, examining constructivism as new learning Basic Education in line with Nigerian policy on information communication and technology spelt out inside her policy blueprint, emphasizes the importance of digitalization of educational programs and activities. The applications of ICT-based facilities strategies in her school system. This paper argues that, this approach can enhance teaching and learning process, promoting critical thinking and foster inclusive, collaborative knowledge construction. In the Nigerian context, for instance, with the current policy and program of most Nigerian for instance, in basic education academic activities is far from being adequate. Nigerian education system even before now is beclouded with issues of infrastructural decay, outdated instructional facilities, lack of trained teaching staff, under funding of educational matters among others. This paper conclude with good recommendations that, the federal government should review and setup a workable committee to look into issues of infrastructural decay in public basic schools across the nation

Introduction

The digital revolution has disrupted traditional knowledge transmission models, necessitating a re-evaluation of knowledge foundations globally. Nigerian education system significantly welcomes the use of digital tools in teaching and learning process in the present age. Nigerian education for instance, the current programme and activities of Universal Basic Education (UBE) is faced with challenges of inadequate infrastructure and outdated curriculum materials and associate pedagogies need innovation.

The Federal government of Nigeria during her implementation of basic education activities re-emphasized the role of ICT based-facilities in teaching and learning in all her basic schools. ICT facilities in basic schools would help to reduce tensions which the traditional methods of teaching could not address. Federal government further recommended that these facilities will transform all the traditional acquired information which learners acquired directly from the teacher note books, textbooks and chalkboard to be replaced by electronic format for easy manipulation.

However, the use of digital tools in school system, especially at this moment of democratic system, left so many issues unresolved and these has eventually delay the attainment of aims and objectives of education to some extent. Borrowing a leaf from Chinua Achebe, who stated that ‘the trouble with the Nigerian education is the nature of teaching and learning in schools without adequate instructional facilities that support¹. This issue explained above mean that Nigerian school leavers’ most especially basic learners, acquired limited skills with which they cannot cope in their respective societies. Nigerian education even with the use of technologies in teaching and learning most of these facilities are nowhere to be found in schools.

In more sense, this paper seek to discuss constructivist’s principles of knowledge construction in Nigeria education system, through digital teaching and learning has a greater implications in Nigeria basic schools.

What is Constructivism?

Constructivism is viewed as an appropriate theory to meet the needs of the present educational programme with reference to Nigerian education as it explores learner’s progress by indicating between the previous knowledge and the given information, highlights how learners can use different types of knowledge to conceptualize into a real life practice towards specific task. Constructivism is founded with the belief that one can construct knowledge from one’s own experiences and mental structures².

Constructivist principles in education is not a specific pedagogy but it is basically a theory which asserts that through experiencing on things and reflecting on those experiences learners construct their own meaning and understanding about the universe. Constructivism is often associated with pedagogical approaches that promote active learning or learning by doing. This suggests that constructivist’s views on education can help the learners to make their own sense by constructing meanings that matched their existing ideas.

It is argued that constructivists view on education has a direct links with progressive view on education that stresses the importance of the child as against the teacher centered approach of the past system³. These views by scholars if appropriately implemented will equip learners with a lot of educational ideology and approach to select the most relevant teaching and learning strategies for attaining the certain objectives and structuring instruction according to educational demands

Hence, constructivist's approaches are vital to learner centered education in the digital age, Nigerian educational policies and program was formulated in such that has direct influences focusing on the 21st century educational vision.

Considering the modern education teachers as the back-born of any educational practice ensure that teaching and learning process is running smoothly and effectively and create such type of learning environment that welcomes, supports and entertains learner innovative, ideas and problem solving skills. Successful implication and effectiveness of constructivist views has direct link with digital approaches to teaching and learning with functional infrastructural facilities and learning environment that encourage them to learn systematically.

Knowledge construction through digital teaching and learning process

Digital teaching and learning process in academic environment stresses the importance of virtual learning environments, collaborative projects and interactive simulation⁴. This principle of teaching and learning process receives wider attention of educationalists across the globe. It is at this point that Naylor and Keogh defined digital teaching and learning as the central principles of approach that learner can only make tools within sense of new situations in terms of their constant practice with digital the classroom⁴. Digital learning involves active process in which learners can construct meaning from what they were taught as well as they link new ideas with existing knowledge.

Scholar's views on integrating digital technologies in teaching especially in the Nigerian context believed that basic school learners can actively create their own meaning and understanding about something from their own experience. Dewey being a member of constructivism says, rely on its epistemological approaches that stressed on subjectivism and relativism, and the concept that which reality may exist separate from experience⁵. Therefore, from the above premises, digital teaching encompasses various epistemological approaches in line with constructivists views that stress the importance of learner centered in knowledge construction and recognizes the importance of network connection and connections in knowledge formation.

Why we need Digital technologies in teaching and learning process

Information and communication technology refers to all the technological tools that are useful in creating, accumulating, sharing of information, editing and disseminating of information in various forms⁶. Information and communication technology facilities in education are revolutions in the educational practice that involves the use of computers internet and other related technologies in every aspect of teaching and learning in schools.

These facilities needed in education include, internet access, electronic email, CD-ROM, telephones, on-line databases, e-library for research among others needed facilities for acquiring of knowledge and skills in the present age of science technology. ICT facilities to be used in teaching and learning process were grouped as follow;

1. Synchronous media. This type of facilities required all participants to be together at the same time even though they are from different location. For instance, using synchronous tools in teaching and learning will help learners to interact with each other. These digital tools include, audio-graphics, broadcasting radio and television, teleconferencing tools, audio-conferencing, computer conferencing such as chat and internet telephony among others.
2. Asynchronous tools include, audio and video CDs, computer files transfers, virtual conferences and multimedia products, off-line web-based learning format. Teleconferencing is used in both formal and non-formal learning context in order to promote teacher-learners and learner-learners relationship in school.

Other facilities like radio, internet services are used in both radio broadcasting and computer internet are also use to facilitate the sharing of information and provide educational opportunities to all irrespective of parent positions. For instance, in order to achieve the goal of free and compulsory education in Nigeria as one of the aim of universal basic education in line with global called on education demand the use of technologies to explain some major themes for easy understanding.

For instance, in the current educational practice especially, basic education activities nationwide, there are some recognized international organizations namely, World Bank and United Nation Children Education Funds (UNICEF) programs and activities in Nigeria education has helped in the implementation of basic education policy and program in some states using digital technologies in implementing strategic programs in most Nigerian schools. Therefore, integrating ICT tools in teaching and learning process is necessary.

United Nation Education Scientific and Cultural Organization (UNESCO) opined that the field of education has certainly been affected by the penetrating influence of digital technologies worldwide and in particular developed nations⁷. UNESCO further stated that ICT in education and their accessibility has made an impact in knowledge construction in both quality and quantity of teaching and learning process⁸..

Nwosu asserted that ICT tools in any given school regardless of its location will greatly facilitate the acquisition and absorption of knowledge, offering developing nations unprecedented opportunities to enhance educational sector, improve policy formation and execution as well as widen the range of opportunities for business⁹.

In view of the above, integrating digital technologies into academic program will help to provide learners with an engaging learning experiences that would help to lay down basic foundations of skills acquisition. It will also help in allowing learners to remain more

interested in subjects without being distracted. For instance, the use of projector, computers and audio-visual tools in classroom teaching will enhance group participation. Parven stated that digital technologies in education plays multifaceted role in school environment, it is being integrated into school curriculum implementation, serve as a delivery system, supports educational structures and enhances the overall learning process¹⁰

Digital technologies make complex things simple for easy understanding. Digital technologies in education is growing fast especially in developed nations. Digital tools are used in education in every level, from early childhood care and education, primary, secondary and tertiary institutions. Digital technologies enable to us to meet up with global challenges for instance, in circulation of information and delivery of products services to some extent. But with the integration of digital tools in knowledge construction in the Nigerian context, there are problems of teachers without digital knowledge and many schools are without digital facilities. It is essential that each teacher acquired the necessary skills and talent of using these facilities in classroom setting. When learners in schools see technology they become curious and feel interested in teaching process. Kapur, stated that digital technologies in schools plays big part in contemporary education system¹¹. With the above, the aims of using digital in education is as follow

- Digital technology is used to engage learners in class
- It teaching methods easier for teachers
- It helps learner to understand difficult concepts
- It communicates quickly and transmit essential information
- It helps in sharing of information
- It also improves social communication.

Implication of digital technologies in teaching and learning in Nigerian schools

The Federal Ministry of Education has in 2019 recognizing the need to reposition education sector in Nigeria to meet with global standards and competitiveness. With this view, the Federal Republic of Nigeria formulated and developed the National Policy on Information Communication Technologies, (ICT) to address education challenges nationwide. The policy after several reading from the National Assembly was signed into action across the states. The policy aimed at ensuring qualitative education at all stages for the enhancement of sustainable socio-economic development, global competitiveness and the individual to survive in the contemporary era¹².

The introduction of Information and Communication Technology in education especially, in teaching and learning process at all stages of Nigerian schools has great fundamental importance in the implementation of academic programs nationwide. Apart from the above, the Federal Republic of Nigeria noted in her policy document that, it will provides comprehensive approaches that will ensure standards in the implementation of ICT policy at all levels of Nigerian education system. It is based on this that the federal government spelt out the objectives of ICT in education as follow.

1. To facilitate the teaching and learning processes
2. To promote problem-solving, critical thinking and innovative skills
3. To promote life-long learning and advance knowledge
4. To enhance universal access to information
5. To widen access to education and the range of infrastructural options and opportunities for where, any pace and any path learning¹³.

The ICT Acts, on education is an important enunciation of the intentions of the Federal Government to achieve all her visions on education. These policies and programs are well designed and constitute an important step in the advancement of education. Reading from Nigerian educational blueprint compared with other African policies and programs on education, imply that Nigerian had a defined policy on education worth emulation.

Admittedly, it is important for a statement of educational policy to be made in such terms that are free of ambiguities and contradictions, particularly on such issues that relate to theoretical assumptions. This is significantly so because teachers who are the implementers of the policy in classrooms, are very important, more often than not, are not involved in drafting such policies. Aims of education therefore need to be stated in clear terms that the right or correct interpretations can be given to them, especially in the areas of training and re-training of teachers using ICT resources and their application in teaching and learning processes.

For instance, the digitalization in Nigerian education from basic to the tertiary education, basic education is one of the educational programs of the Nigerian government targeted at reducing the number of out of school and to increase access to quality education. Nigerian blueprint on education (NPE 2013), spelt out the goals of Universal Basic Education as follow;

- i. To provide the child with diverse knowledge and skills for entrepreneurship, wealth generation and educational advancement
- ii. Develop patriotic young people equipped to contribute to social development and the performance of civic duties
- iii. Inculcate values and raise morally upright individuals capable of independent thinking and who appreciate dignity of labor
- iv. Inspire national consciousness and harmonious co-existence, irrespective of difference in endowment, religion, ethnic, color, and socio-economic background
- v. Provide opportunities for the child to develop manipulative skills that will enable the child function effectively in the society within the limits of the child's capacity¹¹

From the above provision, the federal government further stated that human and material resources shall be deployed to achieve the set goals, such resources include technological and digital tools in their number to be distributed to all basic schools regardless their location.

Emphatically, one of the basic step adopted by the Nigerian government to realize the goals of Universal Basic Education nationwide, is through digitalization programs of digitalizing all education with basic education inclusive. Despite formulation of different policies and programs to ensure free digitalization of all educational institutions in Nigeria, it seems that there are many problems militating against the digitalization of basic education program across the states.

The National Implementation Guidelines for ICT in Education could not address basic issues in the National Policy on Education. As Fajana argues that , the attempts in defining the 'Philosophy for Nigerian Education' with ICT policy as tool in two pages of the opening chapter, is an ambiguous venture whose brevity has done much damage to the document¹⁴. First, it can be pointed out that the document is laden with empty concepts, such as 'freedom', 'democracy', 'dignity' and 'responsibility', all are used without clear definitions. The failure to define precisely these terms which are central to the philosophy opens it to various interpretations as argued above, and presents it as a hollow, empty philosophy. For example, one might ask what meaning has "a free and democratic society" or "shared responsibility of the common good of society"? Unless and until these terms are clarified and it will be difficult to use the propositions to guide the thinking of Nigerian educators and layman alike at this present era without technologies.

Secondly, it can be argued that impression is given that the five ICT aims and objectives and national goals of basic education slated in paragraph one stated the same thing as the philosophy of Nigerian education if they say anything at all. There is need, therefore, to discuss the basis of the propositions, as the original impression is contradicted by the expression "for the philosophy to be in a harmony with Nigerian national objectives" in paragraph four of her educational blueprint. .

Thirdly, there are elements of contradictions inherent in the policy as stated. For instance, to promote lifelong education, promote problem solving, critical thinking and innovative skills in line with the goals of basic education, I would like to argue further, implies free enterprises which results in capitalism and unequal distribution of resources and which can hardly be the basis for achieving these goals due to some reasons. In the same way,

Admittedly, the country has taken a giant effort in providing a succinctly prescribed and subsequently reviewed the National Policy on Education and ICT policies and programs which entails some of the rudiments of a sound education if adequately implemented. It's nevertheless recommended that section (1) dealing with the philosophy of Nigerian education, if and only if implementation is to be meaningful, because a sound education cannot be built using opaque and blurred terms. When such terms are clarified the concepts involved would receive sequentially adequate methods giving rise to contemplation, critical thought, experimentation, inquisitiveness all of which are the bedrock of a education at all levels.

In view our discussion, are the implications of digital teaching on Nigerian education

1. Curriculum review. Integrate constructivists principles into national curriculum
2. Teachers training. The federal government should provide professional training for teachers at all levels of education continuously
3. Infrastructural development. Invest in technological resources. This will help in promoting quality education at the grass .

Challenges of digital teaching in Nigeria education

There are many factors that have continuously hampering the use of digital technologies in Nigerian education, these problems include,

- Poor funding of educational matters at the basic education levels
- Shortage of digital facilities in general the entire program
- Power problem has contributed to the slow pace in the digital education of basic education in Nigeria
- Poor internet connection is common problem to most teachers in Nigerian
- Higher cost of digital learning materials
- Poor implementation problem has eventually rocked some strategic aspect of UBE program across the states
- Shortage of digital experts
- Poor digital skills and knowledge

Conclusion

Epistemological approaches and digital teaching and learning process in school system refer to various software and gadgets meant to help learners with particular accessibility needs. The most effective teaching and learning in modern educational practice demand digital technologies into various teaching strategies. These technologies provide learners with virtual world and the freedom to access digital knowledge according to their level of education. From our forgoing analysis it implies that Nigerian government welcome the application of ICT facilities in teaching and learning process. In fact, corruption in the administration of basic education has affected the digitalization process of basic education entirely. Many government allocation meant for the infrastructural facilities development in schools are encroached with issues such corruption, politics, malpractices in the sharing of resources and so forth.

The way forward

1. The federal government should implement all policies in regard to digital education in all of education especially the basic education level as it will help to lay solid foundations of learning process
2. The federal should organize training for teachers and school administrators on the relevance of digital technologies in education
3. Nigerian government should address the problem of power generation and distribution across the states.

4. The federal government should conduct special training program on constructivist pedagogy
5. The federal government should invest in educational infrastructure and technology for easy accessibility
6. The federal government should develop constructivist-based curriculum and assessment framework for their delivery in schools

End notes

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