EXPLORING THE POTENTIALS OF WEB TECHNOLOGIES IN EDUCATION, TRAINING, TEACHING, LEARNING AND RESEARCH IN EDUCATIONAL INSTITUTIONS IN NIGERIA

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Introduction

For ages, the classical way of education, teaching and learning in educational institutions has been through the face-to-face interactions where the students have direct contact with the teacher who is seen as the all knower of everything, and who the students must rely upon for everything related to the pursuit of their education goals. This teacher –centred methodology of education breads students' over dependence on the teacher such that, except for the few bright and exploring students, even the use of library information resources is contingent upon only the references given out by the teacher. In furtherance of this style of teaching, the students are mostly bombarded with hand-outs, books written and published by the teachers/lecturers and downloaded sites from the Internet. In this type of teacher-centred paradigm of education, teaching and learning, and indeed, research, you will need not agree more with me that it can have some negative consequences on the students' independent capacity and competence to explore, create, innovate, introduce, modify and improve upon what was taught by the teacher who may stylistically be autocratic and unwilling to accept from the students anything extra other than what was taught and discussed in the class. This state of affairs of teacher- centred approach to education teaching and learning is increasingly becoming untenable as fortunately or unfortunately, we are now in digital age where even the toddlers are being exposed to the use of varieties of technologies at the crèche and reception classes up to the nursery, primary, secondary, post-secondary and tertiary education institutions. Some of the shortcomings associated with teacher- centred approach to teaching and learning especially in densely populated classroom environment include:

- ✓ Difficulty in maintain effective discipline of unruly students;
- ✓ Difficulty in effective provision of needs of the varying potentials of the numerous students with different ages, socio-economic backgrounds, abilities and capabilities;
- ✓ Lack of enough time to attend to the individual students;
- ✓ Inadequate information and learning resources for all the students to use at the same time; and
- ✓ Difficulty in getting the students' attention at the same time.

Technology Potentials

The type of students in the educational institutions by the close of the 1980s and particularly since the 1990s, are corpus of what are sarcastically or stylistically called the 'Net (N) Generations, Yahoo(Y) Generations, Computer(C) Generations and Digital (D) Generation/Natives' born and brought up in the world of emerging Information and Communication Technologies (ICTs) especially the Internet which continually provides new horizons and opportunities for advancement in their daily affairs, education, learning and research. For the smart and innovative teachers, it affords them the opportunity to successfully and optimally meet up with their dual made of:

- serving as strategic agents of societal change through the provision of guidance, mentoring and motivation for pursuit of education; and
- principal actors in the application of relevant methodologies and technologies in teaching, learning and research in educational establishments for serene access and acquisition of education, training and information.

This points to the need to continually revisit approaches to education, teaching, learning and research in educational institutions to meet up to the expectations of the digital age where the 'N' thing is centred on the students and technology applications where teaching leads to formal and informal peer- group interaction in learning which consequently serves as stimuli for assured independent learning and research.

Conceptually, technology can be viewed as an instrument; equipment; device; infrastructure; and tool used to support, facilitate and sustain effective and efficient performance of a system, an operation; a duty; a task; and a function as well as provision of a varied service. In like manner, web technologies can be conceived as Internet based devices, tools, systems, and services used to support and facilitate easy retrieval, access, dissemination and utilisation of information online without barrier to user location, time of access and utilisation, especially in real-time network environment. In line with the dynamics of technology diffusion and advances, the web technologies have witnessed series of transformation from:

- **web 1.0** utilised for distribution and access to read only information resources,
- **web 2.0** useful for read and write communications;
- **web 3.0** employed for user collaboration by way of read, write and execution of variety of tasks and operations; and
- **web 4.0** explored for effective user integration by way of read, write, apply and confluence ideas.

However, extent of effective utilisation of web technologies such as web 3.0 is contingent upon dimensions related to the type infrastructure in use, the data at hand or in focus, the functionality of the system, and the social setting or socialisation of the operating environment. From the perspectives of effective provisions for education, teaching, training, learning and research, the application and utilisation of web technologies and other related ICTs, have variety of impacts on education, teaching, learning and research paradigms more especially when viewed within the context of:

- serving as assured viable platforms and sources of access to education and information;

- serving as veritable channels for education and information provision ;
- serving as instructional materials for teaching and learning;
- serving as tools for collaborative and individualised/ customised learning;
- serving as instruments for effective teachers' and students' performance assessment;
- serving as effective tools for skills acquisition and utilisation by teachers and students especially within the perspectives of information management, retrieval, access and networking; and
- serving as learning tools for students to effectively master concepts, skills and knowledge and also as tools necessary to facilitate such learning.

The need to embrace the application and utilisation of web technologies and other ICTs in the scheme of education, teaching, learning and research as a matter of necessity rather than for flamboyancy become obvious due to variety of factors which include:

- democratisation of education which consequent effect led to the establishment of Part time, long Vacation, Correspondence and Distance Learning Educational systems and programmes;
- over population of students enrolments in educational institutions at all levels in the face of dwindling education budgetary allocation and utilisation, over reliance on extra ministerial government agencies to fund educational commitments and projects, inadequate and dilapidating teaching and learning materials and other school infrastructure and a massive set of demotivated and demoralised teaching and laboratory staff;
- overstretched economic fortunes of the students making them increasingly unable to effectively cope with the socio-economic expectations of residency school systems; and
- the obvious capability of the technologies to effectively provide:
    - customised approaches and methodologies of teaching and learning,
    - provision of flexible teaching and learning environments and approaches,
    - promotion and sustenance of collaborative approaches to teaching and learning,
    - provision of diagnostic and intervention options for education, teaching and learning;
- provision of Interactive Remote Instruction(IRI) in line with the philosophy of student-centred paradigm where the student is an active participant in the class and informal and formal peer collaboration is an important component of the learning process;
- the need to effectively exploit the potentials of computer networks, communication and digital media technologies for enhanced virtual classroom for more active teaching and learning where the students willingly and pleasurably interact among themselves in learning activities using their personal and/or official desktop computers;
- the need to support and promote online courses and programmes as alternative schooling systems; and
- availability of updated/ current teaching and learning information resources.

From all dimensions and indications, it is a fact that the World Wide Web (www) technologies are essential factors which educational administrators, educators and teachers have to rethink and consider for assured effective teaching, learning and research in the educational institutions at all levels in the present digital age. Unlike the traditional mode of teaching and learning, the web based

approaches to teaching and learning generally free both the teacher and the students from the effects and restraints of classroom physical boundaries and contact time schedules- where educational pursuits and processes can be refocused from teaching parse (teacher-centred) to individualised and collaborated learning (student –centred). By exploiting the potentials of web technologies and other related Internet tools, learning is made easily accessible; learning process is optimally improved; novel methodologies are promoted; and the unit costs of education from the perspectives of both the students and the proprietors are substantially reduced.

Technology Acceptance and Utilisation

Arguably from both theoretical and practical perspectives, the extent of technology adoption and application to teaching, learning and research can greatly be affected by the consequences of the implications of the impact of psychology of and theories of learning, particularly, as it relates to behaviourism (human learning- characteristics/attitudes), cognitivism (brain-based learning- human memory/perceptions) and constructivism (learner's own construct of meanings- experience/perspectives). In like manner, technology adoption, acceptability and application to teaching, learning and research at all levels of educational and research processes can significantly be affected positively or otherwise by variety of factors such as:

- the peculiar predispositions of the lecturers, students and researchers;
- the prevailing circumstances surrounding the teaching, learning and research environments;
- the stakeholders' perceived usefulness, relevance, availability, adequacy and appropriateness of the technology being adopted/adapted; and
- the type and functionality of the technologies in use.

By and large, the application and/or non-application of technologies to teaching, learning and research can be influenced by:

- the lecturer's characteristics, skills and experiences in using the technology;
- the type of teaching and learning technologies available, adaptable and useable;
- the teaching and learning environments;
- the students' perceived usefulness and relevance of the technology in the learning and research process;
- the context of the subject area of study;
- the level of access and ease of use of the technology by the stakeholders for teaching, learning and research;
- the perceived attitudes, experiences and opinions of others on the usefulness, relevance and ease of use of the technology for teaching, learning and research process;
- the stakeholders' technology fluency and competence;
- the perceived levels of the stakeholders' communication , creativity, evaluation, analysis, problem-solving , task execution, and innovative skills and potentials;
- the perceived implications of the cognitive outcome of applying the technology; and
- the teaching styles and methods adopted.

The Challenges

There is no doubt in the fact that the web technologies have impacted on the lots of education provision and pursuits from all dimensions and perspectives. However, the effective exploitation of the web technologies and indeed other related ICTs are being affected by variety of challenges which include:

- Costs of computer hard ware and software acquisitions;
- costs of systems upgrades;
- systems malfunction and costs of maintenance;
- costs of course materials development and updates;
- heavy online access traffic jam especially on popular websites;
- information overload on thematic topical issues and search;
- costs of information resources updates and sharing;
- Lack of sustained sources of electric power supply;
- Moral issues on access to Internet based delinquent sites;
- Physical challenges to ICT systems usage especially when charging them;
- Preponderance of advertisements on the Internet sites;
- costs of Internet and related computer networks connectivity;
- dwindling budgetary allocations, access and utilisation;
- Internet/online information search difficulties and frustrations;
- staff and students' bankruptcy in information and computer literacy/ fluency;
- inadequate and sometimes absence of technical support from systems suppliers due to non-renewal of systems maintenance agreement contract;
- lack of adequate genuine spare parts
- inadequate expert technicians;
- human errors and inequities;
- Inadequacy of time to effectively access and utilise the Internet tools and services due users' other pressing commitments and engagements;
- environmental and other natural disasters;
- non-compliance with the terms of contractual agreements between the service providers and customers/ consumers; and
- oversubscription of inadequately available computer systems and bandwidth due to over populated students' enrolments; and
- Inadequate time for practical teaching and learning the application of the web technology potentials.

The way Forward

Needless to re-emphasis is the fact that the application and utilisation of web technologies and other related ICTs in education, teaching, learning and research in educational institutions in the contemporary digital age has come to stay for all intents and purposes. In addition to employing experts in ICTs applications and maintenance, who may not necessarily be experts in the subject areas of learning and research but can eventually be domesticated through trainings and tutelage in

line with the expectations of the institutions'/departments'' mission, goals, ideals and aspirations; educational institutions should continually have scheduled periods and provisions for education, training and practical application sessions on how to optimally utilise the potentials of the web technologies and other related ICTs so that::

- ✓ They can equipped with the relevant knowledge, skills and practical experiences to effectively exploit the potentials of the technologies in education processes;
- ✓ The staff and students can be equipped with better communication techniques and skills;
- ✓ They can be equipped with web technologies management skills;
- ✓ They can be acquire sufficient ICT literacy/fluency;
- ✓ They can serve as agents of change in the creation of awareness and utilisation of web technologies and other related ICTs in the education systems and processes; and
- ✓ Provision for uninterrupted and sustained electricity power supply especially by installing solar and invater powered energy.

The acquisition of the knowledge and skills on application and utilisation of the potentials web technologies and other related ICTs in education systems and processes should include knowing how to effectively utilise Social network tools such as:

- ➢ Jumpshare;
- ➢ Issuu
- ➢ Dropbox
- ➢ Zamzar;
- ➢ PlanBoard;
- ➢ Google Drive;
- ➢ Slideshare;
- ➢ Jesper;
- ➢ FaceBook;
- ➢ YouTube;
- ➢ LinkedIn;
- ➢ MyFace; etc.