



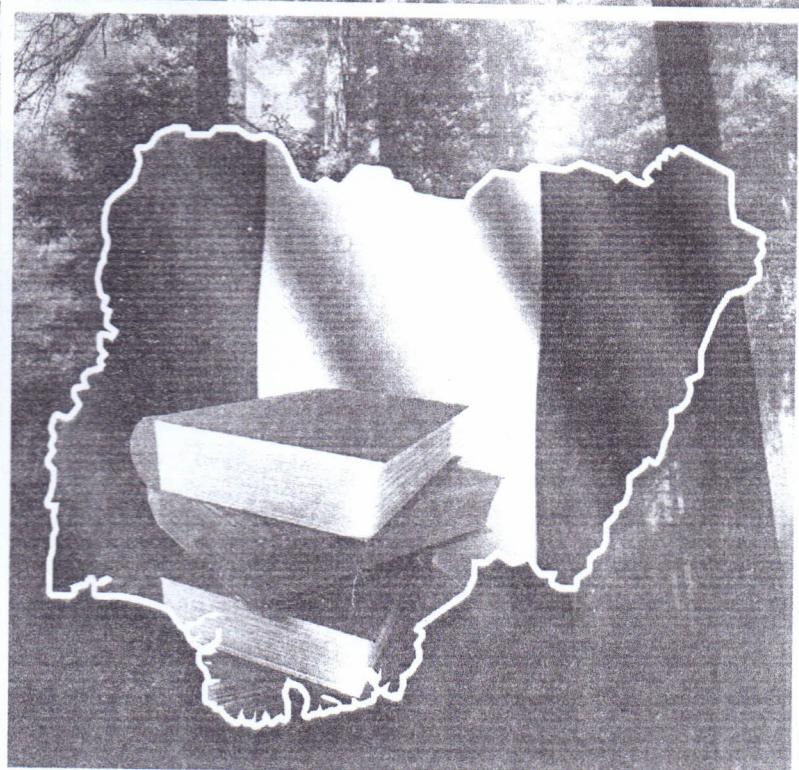
# **MANAGING EDUCATION FOR SUSTAINABLE DEVELOPMENT IN NIGERIA**

*(A Book of Readings in Honour of Professor A. O. O. Oguntoye)*

*Edited by*

**S. A. Oyebade, S. A. Bello, S. A. Oladipo,  
M. A. Oladejo & O. A. Thomas**





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University of Lagos, Akoka, Nigeria

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O.A. Thomas

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## FOREWORD

I felt highly honoured to write the foreword of this book of readings entitled: *Managing Education for Sustainable Development in Nigeria*. This book is a collection of papers in honour of Professor Anthony Olatunde Oladipo Oguntoye, a retired Professor of Educational Planning and Economics of Education in the Department of Educational Management, University of Lagos. Professor Oguntoye was born on July 29, 1946 in Epe, Lagos State. He attended St. Leo's Secondary Modern School, Eredo, Epe between 1957 and 1959 as well as St. Mark's Teachers Training College, Iperu, Remo between 1960 and 1961. Professor Oguntoye proceeded to the nation's Premier University, University of Ibadan, Ibadan in 1968 and bagged his Bachelor degree in 1971. He also attended University of Wisconsin, United States where he obtained his Master degree in Public Policy and Administration, and Ph.D in Educational Administration in 1978.

Professor Oguntoye's actual working experience started in 1962 with elementary teaching in various schools in the Colony and Ijebu Provinces of the then Old Western Region. He also taught at Christ's High School, Ibadan between 1971 and 1974. He joined the service of the University of Lagos, Akoka on February 14, 1979, when he was appointed as Lecturer II. On October 1, 1981, he was promoted to the rank of Lecturer I, and by October 1, 1985, he rose to become a Senior Lecturer. He later rose through the ranks and was appointed Professor of Educational Planning and Economics of Education on October 1, 2000.

He was appointed by the Lagos State Government as Provost, Michael Otedola College of Primary Education, Noforija, Epe



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between June 2007 and March 2011. He successfully retired from the services of the University in July, 2011. After his retirement, he served as Contract Professor till July 2015 when he finally disengaged from active public service.

Professor A.O.O. Oguntoye had contributed to humanity through him numerous academic publications in local and international journals. He had supervised numerous candidates at undergraduate and postgraduate levels in the University of Lagos. At some times, he had some brief strict of leadership at the Sandwich office as Coordinator, and as the Distance Learning Institute of the University. Professor Oguntoye has mentored several students and had become a highly respected reference point for friends, colleagues and junior workers in the Department of Educational Management and in the Faculty of Education, University of Lagos.

Professor Oguntoye is happily married to Mrs Deolu Denice, Omolola Oyeyemi Oguntoye, a one-time Vice Principal (Academic) of the International School, University of Lagos.

I hereby humbly present this book to all stakeholders in the education industry, especially the students and the practitioners in educational management.

**Professor Stephen Adebajo Oyebade**  
Head, Department of Educational Management  
University of Lagos, Akoka



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## NOTES ON THE CONTRIBUTORS

**ABARI Ayodeji, Ph.D** lectures in the Department of Educational Management, Lagos State University, Ojo.

**ABD-EL-AZIZ Abd-el-latif Adekunle, Ph.D** is a lecturer in the Department of Educational Technology, University of Ilorin, Ilorin.

**ABOLO Evuarherhe Veronica, Ph.D** is a Lecturer in the Department of Educational Management, University of Lagos, Akoka. He specialises in Educational Administration.

**ADEDEJI Elizabeth Aderonke** is a research student in the Department of Library and Archival Studies, University of Ibadan, Ibadan.

**ADEKUNLE Akeem Ayotunde, Ph.D** is a Lecturer in the Department of Educational Management, University of Lagos, Akoka. He specialises in Educational Administration and Quality Assurance in Education.

**ADENIYI Adetunji Akinwole** is a research fellow, National Institute for Educational Planning and Administration (NIEPA), Ondo.

**ADENIYI Samuel Olufemi, Ph.D** is a Lecturer in the Department of Educational Foundations (Special Education Unit), University of Lagos, Akoka.

**ADETORO Jeremiah Adeniran, Ph.D** is a Senior Lecturer in the Department of Educational Management, University of Lagos, Akoka. He specialises in Educational Planning.

**AIKOMO David Olaniyi, Ph.D** lectures in the Department of the Education of the Gifted and Talented, Federal College of Education (Special), Oyo.

**AJERO Joy, Ph.D** graduated from Department of Educational Management, University of Lagos.



---

**AJETUNMOBI Funmilayo Grace** is a research student in the Department of Educational Management, University of Lagos, Akoka.  
**ALABI Rafiu Olajide** is a research student in the Department of Educational Management, University of Lagos, Akoka.

**ALANI Ramoni Ayo, Ph.D** is a Professor of Educational Planning and Economics of Education in the Department of Educational Management, University of Lagos, Akoka.

**ALAWODE Timothy Olumide** lectures in the Department of the Education of the Hearing Impaired, Federal College of Education (Special), Oyo.

**AMAO Taiwo Bukola** is a research student in the Department of Educational Management, University of Lagos, Akoka.

**AMUSHIE Joy Ugomma** is a research student in the Department of Educational Management, University of Lagos, Akoka.

**AREWA Omolara Olubosede** is a lecturer in the Department of Educational Psychology, Federal College of Education (Special), Oyo.

**BELLO Solomon Adekunle, Ph.D** is a Professor of Educational Administration in the Department of Educational Management, University of Lagos, Akoka. He is one of the Editors of this book.

**EDU Marcellina Ibanga, Ph.D** lectures in the School of Education, Cross River State College of Education, Akamkpa.

**EDOZIEM Mary Chika** is a research student in the Department of Educational Management, University of Lagos, Akoka.

**EGBAGBARA Owhede Alexander** is a research student in the Department of Educational Management, University of Lagos, Akoka.

**EGERE Miriam Akpono** works at Sandwich office, University of





---

Calabar, Calabar, Cross River.

**EJIOGU, Aloy** is a Professor of Educational Administration in the Department of Educational Management University of Lagos, Akoka.

**EKPE-IKO Geraldine** is a research student in the Department of Educational Management, University of Lagos, Akoka.

**EYAREFE Ibitola Deborah, Ph.D** is a research fellow, National Institute for Educational Planning and Administration (NIEPA), Ondo.

**FAGUNWA, Adenike Omowunmi** lectures in the Department of Adult and Non-Formal Education, Federal College of Education (Special, Oyo).

**GYANG Theresa Stephen, Ph.D** is a Lecturer in the Department of Educational Foundations (Administration Unit), University of Jos, Jos.

**IKEDIFE Chizoba Gloria** is a research student in the Department of Educational Management, University of Lagos, Akoka.

**ITA Antigha** graduated from Department of Educational Management, University of Lagos, Akoka.

**JIMOH Jelili Adebayo, Ph.D** is a lecturer in the Department of Science and Technology Education, University of Lagos, Akoka.

**MADUMERE Sophia Chiadikobi, Ph.D** is an Associate Professor in the Department of Educational Management, University of Lagos, Akoka.

**MOHAMMED Mubashiru Olayiwola, Ph.D** lectures in the Department of Educational Management, Lagos State University, Ojo.



---

**MURAINA Monsuru Babatunde, Ph.D** lectures in the Department of Arts and Social Sciences Education Al-Hikmah University, Ilorin.

**NWAJIAKWU Chijioke Herbert** is a research student in the Department of Educational Management, University of Lagos, Akoka.

**OBADARA Olabanji Emmanuel, Ph.D** is a lecturer in, and currently, the Head, Department of Educational Management, Tai Solarin University of Education, Ijebu-Ode.

**ODULE Christopher Yemi**, is a lecturer in the School of Education, Federal College of Education, Abeokuta.

**ODUNIYI Tunde Alfred** graduated from the Department of Educational Management, University of Lagos, Akoka.

**OGBODO Chijioke Nwatu** lectures in the Department of Educational Psychology, Federal College of Education (Special), Oyo.

**OGUCHE Innocent Ojonugwa, Ph.D** is a lecturer in the Department of Technical Education, Kogi State College of Education, Ankpa.

**OGUH Joyce Ihum, Ph.D** is a Lecturer and Director, Continuing Education and Part-Time Studies, Imo State Polytechnic Umuagwo, Owerri.

**OJOGWU Patrick Ngozi** lectures in the Department of the Education of the Hearing Impaired, Federal College of Education (Special), Oyo.

**OKAFOR Ogechi, Ph.D** graduated from Department of Educational Management, University of Lagos.

**OKE Tunde Dayo, Ph.D** is a lecturer in the School of Education, Federal College of Education, Abeokuta.



---

**OKELEKE Queen Oluwatoyin** is a research student in the Department of Educational Management, University of Lagos, Akoka.

**OKOROMA Francisca Nwakaego** is senior staff at Kenneth Dike Library, University of Ibadan, Ibadan.

**OKUNOLA Phillips Olayide, Ph.D** is a Professor of Educational Administration in the Department of Educational Management, University of Lagos, Akoka.

**OLABISI, Adewale Olaosebikan** lectures in the Department of the Rehabilitation Education, Federal College of Education (Special), Oyo.

**OLABIYI Oladiran Stephen, Ph.D** is a lecturer in the Department of Science and Technology Education, University of Lagos, Akoka.

**OLADEJO Maruff Akinwale, Ph.D** lectures in the Department of Educational Management, University of Lagos, Akoka. He specialises in Educational Planning and Policy. He is the Coordinator, as well as one of the Editors of this book.

**OLADEJO Muhideen Adewale** is a research student in the Department of Educational Management, University of Lagos, Akoka.

**OLADIPO Simeon Adebayo, Ph.D** is a Senior Lecturer in the Department of Educational Management, University of Lagos, Akoka. He specialises in Educational Planning and Policy. He is one of the Editors of this book.

**OLATOKUNBO Christopher Olufemi** lectures in the Department of Educational Management, University of Lagos, Akoka. He is currently on his doctoral programme.



---

**OLATUNJI Saheed Olawale** lectures in the Department of the Education of the Learning Difficulty, Federal College of Education (Special), Oyo.

**OLISAEMEKA Blessing Uzoma, Ph.D** graduated from the Department of Educational Management, University of Lagos, Akoka.

**ONI Bolaji Felicia, Ph.D** is a graduated doctoral student in the Department of Educational Management, University of Lagos, Akoka.

**ORESAJO Nojeem Olasunkanmi** is a research fellow, National Institute for Educational Planning and Administration (NIEPA), Ondo.

**OSENI Isiaka, Abiola** lectures in the Department of the Education of the Learning Difficulty, Federal College of Education (Special), Oyo.

**OSHIONEBO Esther Emike, Ph.D** is a Lecturer in the Department of Educational Management, University of Lagos, Akoka. He specialises in Educational Administration.

**OSO Paul Kehinde, Ph.D** lectures in the Department of Educational Foundations, Federal College of Education (Special), Oyo.

**OWOYEMI Toyin Eunice, Ph.D** is a lecturer in the Department of Science and Technology Education, University of Lagos, Akoka.

**OYEBADE Stephen Adebajo, Ph.D** is a Professor and currently Head of the Department of Educational Management, University of Lagos, Akoka. He is one of the Editors of this book.

**OYEKAN Opeyemi Aderonke, Ph.D** is a research fellow, National Institute for Educational Planning and Administration (NIEPA), Ondo.

---

**RUFAl Musiliu Dada** lectures in the Department of Educational Management, Lagos State University, Ojo.

**SALAUDEEN Gafar Olaide, Ph.D** lectures in the Department of the Education for the Gifted and Talented, Federal College of Education (Special), Oyo.

**SALISU Rashidat Adedoyin, Ph.D** is a graduated doctoral student in the Department of Educational Management, University of Lagos, Akoka.

**SODIPE-LAWAL Fatimah Olasubomi** is a lecturer in the School of Education, Federal College of Education, Abeokuta.

**SOTANNDE Rabiw Adewale** is a lecturer in the School of Education, Federal College of Education, Abeokuta.

**SUBAIR, Sikiru Tayo, Ph.D** is a Lecturer in the Department of Educational Administration, Obafemi Awolowo University, Ile-Ife.

**SULE Sheidu Atokolo, Ph.D** is a Senior Lecturer in the Department of Educational Management, University of Lagos, Akoka. He specialises in Educational Planning and Administration.

**THOMAS Olusola Angelina, Ph.D** is a Lecturer in the Department of Educational Management, University of Lagos, Akoka. He specialises in Educational Administration and Management Information System. She is one of the Editors of this book.

**THOMAS-OLUFUWA Samuel Adelowo, Ph.D** is senior staff in Lagos State Ministry of Education, Alausa.

**UZOKA Ngozi Emelda, Ph.D** is a Senior Lecturer in the Department of Educational Management, University of Lagos, Akoka. She specialises in Educational Planning and Economics of Education.



## *Chapter Thirty-Two*

### UTILIZING EDUCATIONAL TECHNOLOGY TOOLS IN THE CLASSROOM: CHALLENGES AND PROSPECTS

NGOZI, Emelda Uzoka  
&  
ABOLO, Evuarherhe Veronica

Department of Educational Management  
University of Lagos

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#### **Introduction**

Educational technology is the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources (Allen, 2008). It is the effective use of technological tools in learning. It is concerned with varieties of tools such as media and networking hardware including theoretical perception with effective application. Educational technology is made up of various types of media that convey message, audio, images, animation, and streaming video. It also involves technology applications and processes such as audio or video tape, satellite TV, CD-ROM, and computer-based learning.

Educational technology and instructional technology are linked. Educational technology is a broad term that deals with the practice of using technological gadgets for instruction and facilitates access to



information of all types. Instructional technology, on the other hand, is involved in the development of teaching and learning. It applies theories of learning, behavioural and cognitive psychology to design, implementation, and evaluation of instructional materials. It is the use of technological processes as a device exclusively for teaching and learning which provides the means to information of all types. Instructional technology is the tool while educational technology is the procedure for using that tool. The difference between educational technology and instructional technology lies in the scope of the fields. Educational technology is made up of all the areas of technology in any field of education. Instructional technology covers a narrower field dealing with all types of teaching and learning such as acquisition, processing, storage and dissemination of information.

The Association of Educational Communication and Technology (AECT, 2008) viewed educational technology as "the theory and practice of design, development, utilisation, management, and evaluation of processes and resources for learning." As such, educational technology refers to all official and reliable applied education science, such as equipment, as well as processes and procedures that are derived from a given context. It may refer to theoretical, algorithmic or heuristic processes. It does not necessarily entail physical technology. Educational technology involves several aspects such as the theory and practice of educational approaches to learning; technological tools and media that assist in the communication of knowledge and its development and exchange and educational technology for learning management system such as tools for students and curriculum management. AECT in Adegite(2010) sees Educational Technology as a theory, field and profession. As a theory, it resolves problems relating to human learning; as a field, it is the application of the theory in the field and as a profession, it becomes a forum through which practitioners in the field plan and execute strategies for official purposes.,

Comprehensive technology adoption and integration can be an



other colleagues (Abbot and Fouts, 2001).

Abbot and Fouts (2001) found out that over half of the teachers they studied did not regularly use technology in teaching and learning. The authors noted that if an institution's stated policy is to promote the use of educational technology, that institution must establish an adequate framework to facilitate the successful use of technology. This includes not only formal motivational structures but also the development of a sufficient educational technology culture and environment. Okebukola in (Aduwa & Iyamu, 2005 ) found out in 1997 that computer is not part of classroom technology in over 90% of public schools in Nigeria. Thus, the chalkboard and textbooks continued to dominate classroom activities in most secondary schools in Nigeria. Teachers' incorporation of technology into teaching is also influenced by organisational factors, attitudes towards technology and other factors. There are two main types of technology in education known as product technologies and idea technologies ( Hooper and Rieber, 1995). Product technologies include: hardware or machine-oriented, technologies that most people often associate with such as the range of audio-visual equipment, both traditional and contemporary. Ideal technologies on the other hand, are print-based materials like books, worksheets, overhead transparencies and computer software, there are computer-assisted instruction. Thus, teachers must be abreast with both types for effective instructional delivering.

### **Utilising Educational Technology Tools in the Classroom**

Classroom teaching is a demanding job. It involves the integration of all the learning theories, teaching techniques, classroom management to actualise effective learning (Sugar, Crawley, & Fine, 2004). The actual teaching witnessed in the classroom must be preceded by thorough planning in order to effect meaningful changes in the learner. Most people outside education probably think teachers spend most of their time teaching, but teachers are responsible for many tasks that have little to do with classroom instruction. Besides planning and implementing instruction, teachers are also expected to be managers,



psychologists, counselors, surrogate parents and community ambassadors. Over the years, there have been numerous innovations in the act of teaching, which include the use of instructional materials, electronic devices in teaching (Guma , Faruque & Khushi ,2013). In order to meet up with global challenges and to ease teaching and learning processes, technology was introduced. The use of educational technology has been seen as a teacher's redeemer to help restore the role and value of the individual classroom teacher.

The inclusion of new technology into teaching-learning was seen as a teacher's catalyst which aided, supported and improved the activities of the individual classroom teacher (Park, & Ertmer, 2008). The outlook of the classroom must change to become learner centered as students and teachers enter into partnership with technology in order to create a community that nurtures, encourages, and supports the learning process to bring effective reform in the education sector, (Allen, 2008). The use of technology in the classroom *has been given different terms such as: technology integration, technology immersion and technology-enabled learning*. It involves the use of computers, online video, iPads, and other electronic aids in teaching. Educational technology can occur in or out of the classroom. It can be self-paced, asynchronous learning, instructor-led or synchronous. It is suited to distance learning and in conjunction with face-to-face teaching, which is termed blended learning. This is a situation where the traditional face-to-face teaching is combined with on-line, web- based learning and this might be in the ratio of 40% classroom and 60% online.

Application of educational technology involves applying ideas from various sources to create the best learning environment possible for students. It entails applying knowledge based theories, integrating computer into the curriculum and changing the classroom setting to adapt to the hard and soft ware's technology that are being introduced. Education has been slow at adopting ICT as a major reform irrespective of its acceptance by a large cross-section of society today as an entrenched characteristic of good administration in organisations,



(Guma , Faruque & Khushi ,2013). Though the pace of applying educational technology in education was slow, the acceptance has been met with tremendous innovations. Some of the prevalent innovations are in programmes like Khan Academic which tell teachers precisely which concepts their students are working on, their strength, and weaknesses. Also, we have Dreambox, a programme that runs problems based on how students are answering them by making them learn at a perfect pace. The social networking aspects of educational technology helps students connect to teachers, classmates and other mentors in order to get the desired help. Thus, we now have varieties of programmes in schools that are mainly technology driven. In Nigeria, the Distance Learning Package helps students assess their lecturers' notes online.

Most teachers now employ the aid of technological tools to make teaching/ learning more meaningful and easier. Several instruments have been used by teachers as technology aids in their classrooms. To be involved in the social set up, the power of the social media helps students learn and connect to teachers, some of them are: Edmodo, Grockit, EduBlogs , Whatsapp, etc. Also we have other tools used by teachers to make learning interesting such as Khan Academy, Educreations. Teachers also use lesson planning tools like Plainboard, Timetoast and Capzles. These tools help teachers to stay connected, organised, and increase the ease of building multimedia lessons and learning tools. Online learning opportunities and the use of open educational resources and other technologies can increase educational productivity by accelerating the rate of learning.

Some of these tools such as Edmodo are used by teachers to promote better learning. It is a social media platform acting as a Face book for schools. It facilitates online discussions and collaboration as the teacher develops a message board which creates a secure and open communication of students, monitored and controlled by the teacher. Teachers are privileged to post assignments while answers are electronically submitted and automatically graded. Also, other school



personnel can create professional groups, subject area communities, and other networks to broaden professional development. Edublog is used by teachers to get their students share their work and thoughts. It is used to glue together students' blogs which teachers can quickly create, co-manage, and even edit if need be. Students can simply respond to blog posts and discuss topics through comments as teachers also share their lesson plans through the blog. Through Edublog, teachers' lessons are instantly accessible to students from school and from home. These, however, can be controlled through passwords and privacy measures. This has been managed in the Distance Learning and Higher Degree Programmes in Nigeria through Group Chats.

Grockit is an online lesson designed for students to make revision for their upcoming examinations. It is an adaptive learning technology designed for students to compete and practice against past and upcoming examinations such as Scholarstic Assessment Test (SAT) and Positive Women Network (PWN). Timetoast is a lesson plan tool that allows students to create timeline for a story, project and other topics. The teacher uses it to create timeline in delivering the lesson. Plain boards are prototype circuit by which ideas are quickly and easily put into matrix board. Teachers used it to outline their lessons online with varied topics. It enables components to be uniquely designed through wood panel. Capzle, shares and creates online timeline interactive media through videos, pictures and audio. All these tools and programmes are designed specifically by the teacher online to be assessed by students for more effective and elaborate learning.

Some of the skills required for assessing technology education are ICT skills development approach, ICT pedagogy approach, Subject-specific approach and Practice driven approach (Elliott, 2004). The growing benefit of technology education could be found in the growing number of simulations, ranging from experimental revolution, supercharge, etc. Students can now manipulate whole virtual systems, from cities to countries rather than just handling manipulative. Also, the use of simulation by teachers have enabled students take on the person of



different professionals, experiencing those lives based on real world data. With these tools, students act like scientists and innovators, rather than serve as mere consumers. They arrived at their own conclusions through controlled experimentation and what scientists call enlightened trial and error.

### **Challenges of Technology Education**

Utilizing technology instruments, besides being so rewarding, could be herculean. The given complexity of computer-based teaching and learning pose great challenges to the institution and the teachers. One of the major challenges of promoting the use of technology tools is the development of a sufficient educational technology infrastructure and a satisfactory framework for educational technology support. This requires technocrats with their expertise together with the availability of adequate funds to purchase the necessary infrastructure. More often than not, funds along with knowledgeable technocrats are limited in institutions. Competent development is necessary for skill development in technology; the skill will integrate technology in a pedagogically sound way.

The use of ICT in the teaching-learning process is a relatively new phenomenon. The effective integration of this technology into classroom practices poses a challenge to teachers and administrators. Most teachers are used to the traditional method of teaching and will find it difficult to change. The fact being that the techniques of e-learning with the logistics of computer remain a great task that most teachers are yet to learn, practice and imbibe. For technology adoption to be successful, teachers must be willing to change their role in the classroom and when technology is used as a tool, the teacher becomes a facilitator and students take on a proactive role (Redmann & Kotrlik, 2009). These are quite difficult tasks for teachers as they can barely operate the computer and get use to most softwares that are associated with technology education. Thus, teachers basically have to contend with two factors in technology adoption- the psychological effect of change and learning to use microcomputer technology.



Teachers' beliefs toward technology play an essential role in successful technology adoption. Teachers' technology beliefs are influenced by their teaching philosophy (Elliott, 2004). Their rigid and stereotyped beliefs aimed at resisting any change in the existing status of teaching lead to a slow pace in the adoption of technology education. The resistance to adopting new technologies stems from teachers' existing teaching beliefs that the traditional method cannot be modified or even made better or different. When changes are resisted, little or nothing is achieved in the proposed field, hence, the challenge that is constantly being experienced in adopting technology education in schools. It is believed that successful integration of technology into teaching depends on transforming teachers' beliefs and philosophy concurrently (Wind-chill & Sahl, 2002).

Educational technology has a multi-faceted nature comprising a cyclical process. It is an arsenal of tools (both physical and conceptual), it consists of a multiple-node relationship between learners and facilitators of instruction, as well as among learners themselves. The British Educational Communications and Technology Agency BECTA, (2003) reported that teacher-level barriers are lack of time, lack of necessary knowledge, and lack of self-confidence in using technology. The time instructors invest in integrating educational technology into their courses inhibits its adoption. The level of time commitment depends upon the incentives provided and on the teachers' personal values, beliefs and goals. These challenges have made teaching with the new technology a huge task that some teachers are still grappling to surmount.

Following challenges faced by teachers in adopting technology education, are those faced by administrators of schools. Technology cannot be utilised if the equipment is not available. The non availability of up to-date software in technology is caused according to Charles (2012) mainly by administrators who find it difficult to fund the programme that is capital intensive. With lack of technological equipment, the technical support needed to give teachers some form of



tutelage is also lacking leading to the slow pace of adopting technology education in schools. Thus, administrators of schools constitute a major barrier towards the use of technology in schools. This is so alarming considering the task of administrators who are the major planners of policies and must be ready to give enabling environment for their execution (Guma , Faruque & Khushi ,2013) . Redmann and Kotrlik (2009) noted that technology unavailability was an important factor inhibiting the use of technology by teachers.

### **Prospects of Utilizing Educational Technology in Schools**

The transformative nature of technology offers tremendous opportunity to improve learning outcomes, improve access, and even reduce institutional overhead costs. This was attested to by Elliott (2004) that learning has been given a tremendous push through the involvement in educational technology as compared to the slow pace of assimilating classroom instruction. The fact that students can access teaching instructions through technology without going to the classroom has greatly increased the rate and number of those seeking education. The attendant challenge of students having to choose between work and study has been solved. Students can now have *access to the degrees of their choice as well as maintain their jobs. These improvements in learning and access to education have drastically reduced the direct cost on education by the students and the running cost of the institutions* (Wind-chill & Sahl, 2002). The use of ICT tools according to Aduwa & Iyamu, (2005 ), provides fruitful teaching and learning while the application of, text, multicolor images, graphics, motion, bring exceptional opportunities to the students to develop capacities for high quality learning and to increase their ability to innovate.

The rapid growth in ICT has brought remarkable changes in the twenty-first century, as well as affected the teaching process tremendously. Teachers can now impart knowledge more rapidly with the use of technology materials, thereby reducing stress and increasing productivity (Chapman, 2006). Some authors like Thomas, Adams, Meghani, and Smith (2002) maintained that technology has the power



to change the ways students learn and teachers teach. In the same vein, Park & Ertmer (2008) posited that technology can revolutionise the learning process because teachers and students capabilities are enhanced which can transform roles and policies in the classroom. The classroom is no longer viewed as the only place where learning can take place but a catalyst meant to boost students to more quests for knowledge. When technology is used as a tool, the teacher becomes a facilitator and students take on a proactive role in learning. With the accelerated pace in learning, teachers and learners now tend to enjoy the act rather than see it as a huge task or a burden.

Online learning opportunities and the use of open educational resources and other technologies can increase educational productivity by accelerating the rate of learning, reduce costs associated with instructional materials or program delivery, and improve the utilisation of teachers' time. This can be attested to through the multiple programmes now being offered in higher institutions (Sugar, Crawley, & Fine, 2004). More programme, courses are now available in schools due to the high turnover of students and accelerated learning process. Teachers' time can be more effectively utilised to achieve higher productivity. This competence, through more productivity, leads to quality course design and teaching expertise. With automation given to teaching and learning, teachers, students can now give time for personalised instructions which were lacking in the traditional methods of education.

The use of technology by teachers in secondary schools and tertiary institutions motivates students and offers a different mode of presentation. Instead of using computers for drill and practice, more confident teachers use technology as an instructional tool to enhance students' learning. The use of trustworthy infrastructure with a built-in support mechanism and a feedback loop lead to teaching effectiveness, better learning outcomes, and increased satisfaction—not only for students but for instructors. Also, school administrators are now more relaxed on regular personal supervision as supervision of teaching and



learning in schools can now be done online. Students' performance can be accessed online while feedback and other monitoring activities are done without so much stress as compared to previous times. Thus, there is no end to the gains of technology education in our educational institutions. Weighing the gains and prospects, one can only hope for continuous improvement, since the challenges would only spur personnel to put in greater efforts. This could be summed up with the view of Aduwa & Iyamu, (2005) view that for Nigeria to be a major actor in the global market place, she should prepare her citizens for the new environment of today and the future, by embracing ICT for the following reasons: ICT as aids to teaching and learning, tool for management, as instrument for economic development; as instrument of high technological development, and as a course of study. Educational Technology has gradually evolved in Nigeria. It has successfully metamorphosed from an idea to a full-fledged university programme whose functions have been widely acknowledged as indispensable and are highly needed for achieving the purposes for which education is designed. (Salawu, 2015).

### **Implications of Utilizing Educational Technology Tools for Education**

The involvement of educational technology tools by teachers and students, no doubt, bear greatly on education. This is reflected in policies and practices on education. Educational administrators should, as a policy, endeavor to create enabling access to educational technology tools and programmes in secondary schools and tertiary institutions. This will entail adequate provision of fund, personnel and necessary infrastructure that will ease the smooth running of institutions. Also for continuity of Educational technology in schools, government should, as a matter of urgency, embark on recruitment of teachers in the various fields while engaging the old teachers in training on the use of these educational technology tools and how to develop the various programmes.

Applying educational technology in secondary schools and tertiary



institutions has implications for educational software designers. It will entail designing new softwares to be used by teachers and students alike. Also, in integrating technology as an integral part of teaching and learning, government needs to develop as a policy the inclusion of educational technology into pre-service teacher training courses. This will fill the gap already experienced due to the unavailability of trained personnel to handle the new software and programmes.

For educational technology to be entrenched and imbibed by teachers and students, the educational sector needs to be overhauled in terms of being disposed to the changes that come with the programmes. The sector should be revamped to enable it take the programmes and tools meant for educational technology as mandatory for all secondary schools and higher educational institutions. Also, monitoring of the programmes in schools should be delegated to the supervisory arm of education ministry. This will act as a regulatory arm that will ensure compliance and continuity in the type of tools and programmes used by schools to conform with educational standards, morals and ethics.

### Conclusion

The utilisation of educational technology is a novel programme in secondary schools and tertiary institutions globally of which Nigeria is a part. Changes in educational sector, as in other organisations, are faced with challenges. The challenges in utilising educational technology though daunting as presented, are worth tackling to achieve the desired prospects. This will make teaching and learning to be less cumbersome and more rewarding in achieving the set objectives. Government, educational planners and administrators should give the necessary backing desirous of such laudable practice in the sector.



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