



New Millennium Technology: A Tool for Re-Branding Education in Nigeria

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ABSTRACT

Education is life-long venture and permeates all generations. It could be formal or informal depending on the approaches used. The approaches call for varied and appropriate technologies in an attempt to make teaching and learning easier and meaningful. Effective utilization of any technology is a function of technology education which Looney (2005) defined as a “study of technology that provides an opportunity for students to learn about the processes and knowledge related to technology”. Nigeria like every other developing country has not been faring well in technology education. As a result, the knowledge and techniques to develop technological literacy became elusive. Unfortunately too, technologies used before the present millennium to provide education to the populace can no more stand the taste of time hence the need for new technologies. In order to arrest the ‘negativity’ of the old technologies in providing education, this paper attempts to identify some new technologies and how they can assist in making education in Nigeria keep pace with the new millennium expectations – discovery of new technologies and their proper application or utilization in providing functional education.

Key words: Life-long, Re-branding, Education, Technology and Utilization.

INTRODUCTION

Education in Nigeria had over the years been provided with technology of one kind or the other. Technology, Hornby (2003) defined as “the systematic application of knowledge to practical tasks”. Technology used before the new millennium in the process of educating the populace left vacuum that has to be filled if the present global challenges in the field of education have to be squarely faced. Technology education provides an opportunity for students to learn about the processes and knowledge related to technology. It covers the human ability to shape and change the physical world to meet needs through technical manipulation of materials and tools. The goal is to teach the knowledge and techniques to develop technological literacy which is effected by exposing students to series of laboratory activities. Moreso, technology

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education assists learners in the exploration of various activities that have something to do with numerous areas of human undertaking or endeavour. Learners can develop methods and habits that they can use in solving problems and in being useful in their respective careers and occupations. Through technology education, learners can develop appreciative attitude for the work of craft workers and the skill required of that work. Nigeria education to some extent has fallen short of these expectations due to the effect of modernity in, and application of such technology on acquisition of knowledge. Re-branding education through the application of new technologies therefore becomes imperative as envisioned in (FGN, 2004). The policy recognizes the importance of technology and consequently introduces information and Communication Technology (ICT) into the Nigeria school system. In line with the importance attached to technology in education and national development FGN (2004) stipulates the following objectives for adoption in the school system.

1. To provide the child at the primary school level with basic tools for further educational advancement;
2. To provide secondary school students with the opportunity of using technology in form of manpower training to inspire them with a desire for self-improvement and achievement of excellence;
3. To provide youths and adults through mass literacy, adult and non-formal education with support services in form of television viewing, audio listening and studio-visual teaching and learning aids;
4. To provide science, technical and vocational education using technology as one medium to introduce students to the world of technology to:
 - a. Appreciate technology;
 - b. Acquire technical skill; and
 - c. Develop intelligent understanding of the increasing complexity of technology.

The recognition of the vital roles of new technologies in the National Policy on Education shows that no meaningful development can take place without their integration in education (FGN, 2006).

Different Types of Technology and Their Educational Applications

Teaching is demanding in nature. It is changing, and in many ways becoming a more difficult job because of increasingly numerous contradictory expectations (Fox, 2005). As the world becomes more complex, educational needs continue to shift from teaching and learning isolated skills and information with each content area, to teaching skills that enable students to solve complex problems across many areas. Educators therefore must prepare for a technology-rich future and keep up with change by adopting effective strategies that infuse lessons with appropriate technologies. Undoubtedly,

managing the changes in teaching as they affect the implementation of technology use in schools, means dealing with students, parents, and institutional high expectations in the students learning of high-level skills and content specifics.

Many different types of technology can be used to support and enhance learning. Everything from video content and digital moviemaking to laptop computing and handheld technologies (Marshall, 2002) have been used in classrooms, and new uses of technology such as podcasting are constantly emerging. Various technologies deliver different kinds of content and serve different purposes in the classroom. Typical examples are word processing and e-mail which promote communication skills, database and spreadsheets programs for the promotion of organizational skills as well as modeling software which promotes the understanding of science and mathematics concepts. These electronic technologies differ from each other and what characteristics make them important as instruments for education are worthy of consideration (Becker, 2000). Technologies available in classrooms in the new millennium range from simple tool-based applications like word processors to on-line repositories of scientific data and primary historical documents, handheld computers, closed-circuit television channels, and two-way distance learning classrooms. Even the cell phones that many students now carry with the can be used to learn (Prensky, 2005). Each technology is likely to play a different role in students' learning.

All technologies are not the same and their impact on learning process varies tremendously hence the need to know about what kind of technologies are being used in the classroom and for what purpose. Two general distinctions are evident: (i) students learning "from" computers, and (ii) students learning "with" computers. Learning from computers arises where technology is used essentially as tutors and serves to increase students' basic skills and knowledge while learning "with" computers takes place where technology is used as a tool that can be applied to a variety of goals in the learning process and can serve as a resource to help, develop higher order thinking, creativity and research skills (Ringstaff & Kelly, 2002).

The primary form of student learning "from" computers is what Murphy, Penuel, Means, Korbak and Whaley (2001) describe as discrete educational software (DES) programs. Examples of such programs are: integrated learning systems (ILS), computer-assisted instruction (CAI), and computer-based instruction (CBI). These software applications are also among the most widely available applications of educational technology in schools today, along with word-processing software, and have existed in classrooms for more than 20 years (Becker, Ravitz, & Wong, 1999). According to Murphy et al teachers use DES not only to supplement instruction, as in the past, but also to introduce topics, provide means for self-study and offer opportunities to learn concepts otherwise inaccessible to students. The software also manifests two key assumptions about how computers can assist learning. First, the user's ability to interact with the software is narrowly defined in ways designed specifically to promote learning with the tools. Second,

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computers are viewed as a medium for learning, rather than as tools that could support further learning (Murphy et al, 2001).

While discrete educational software (DES) remains the most commonly used approach to computer use in student learning, in more recent years, use of computers in schools has grown more diversified. Educators recognize the potential of learning “with” technology as a means for enhancing students reasoning and problem-solving abilities. In part, this shift has been driven by the plethora of new information and communication devices new increasingly available to students in schools and at homes. Thus, teachers and students alike are offered new affordances for improving student achievement and for meeting the demand of the new millennium skills. Technology access is increasingly centred on the learner experience. Tools, techniques and application of technology can support integrated, inquiry-based learning. Through technology, learners can explore, think, read, write, research, invent, solve problems, and experience the world in ways and manner hitherto unknown. the idea of technology is developed as media with four different focuses: media for inquiry, media for communication, media for construction and media for expression. Media for inquiry includes data modeling, spreadsheets, access to on-line databases, access to on-line observations and microscopes and hypertext while media for communication entails word processing, e-mail, synchronous conferencing, graphics software, simulations, and tutorials. Media for construction is concerned with robotics, computer-aided design, and control systems while media for expression deals with interactive video, animation software, and music composition. Marshall (2002) in reviewing existing evidence of technology’s impact on learning found strong proof that educational technology “complements what great teachers do naturally”, extending the students’ reach and broadening their experience beyond the classroom. To further underscore the role of technology in learning, Marshall (2002) suggested an unprecedented need to understand the recipe for success, which involves the learner, the teacher, the content, and the environment in which technology is used.

Re-branding Measures in Nigeria Education

Promoting technology use in schools is a vital aspect of re-branding activities Nigeria needs in her education system. Re-branding education in Nigeria to a greater extent depends on the degree of compliance with technology demands in vogue. Re-branding is a concept of renewal, modification or making some amendments to what has gone wrong or re-discovering the lost focus in a pursuit. Education in Nigeria needs such re-discovery as herein analysed under the following sub-headings:

- i. Placing computers for Equitable Access
- ii. Providing Technical Support
- iii. Determining Effective Goals for Technology Use
- iv. Accepting New Roles for Teachers in the Classroom

- v. Providing Time for Ongoing Professional Development
- vi. Coaching Teachers at Different Skills Levels
- vii. Offering Incentives for Teachers to Use Technology
- viii. Choosing Appropriate Software
- ix. Obtaining and Sustaining Funding e

Placing Computers for Equitable Access

Access to technology is an important issue to teachers, students and every user of computer. Although schools may have computers, one factor that determines their use is where they are located. If computers are connected to the internet but are not in a location that is convenient, their availability to the students and teachers will be limited. To make the best use of limited connections and equipment, schools can explore the following strategies for allocating computers:

- a. Provision of standard computer laboratories in schools;
- b. Provision of standard computer laboratories;
- c. Setting up of different workstations for students to use when working on a project; and
- d. Allowing students to use computer during free time or when they finish their class work.

Whatever decisions are made on allocation of equipment, it is imperative that all staff members are included in the decision making and that long-term plans are made for acquisition and upgrading of materials. Such collaborative decision making and planning helps ensure staff buy-in, equity of access, and effective use of technology in teaching and learning.

Providing Technical Support

Horror stories about equipment failure, software complexity, data loss, embarrassments and frustration are common when teachers are trying to use technology in their classrooms or learning environment. Without continuous technical support, technology integration in the classroom will never be satisfactorily achieved (Byrom & Bingham, 2001). Teachers need immediate help and support when they are trying to use technology in their classrooms. Helping technology users while they are actively engaged with technology at their work location is probably the most meaningful, essential and appreciative support that can be provided Barton (2002) opined. Timing is everything, particularly when it comes to technology. The best way to win widespread use of technologies is to provide just-in-time support, assistance and encouragement when needed. Infrastructure repairs or upgrades must be responsive and well timed. Frequent occurrences of a server being down, printers jammed, or insufficient computer memory for example will not only disrupt instructional and administrative activities but also may undermine the entire technology program. Thus, the need to hire a competent on-site

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technical specialist or technology coordinator arises. Haetel & Means (2003) described a technology coordinator as a “fearless soul who can find the answers to hundreds of questions, clear paper jams, install software, cajole the faculty into trying new ideas, team-teach, and wait on hold with vendors for countless minutes”.

Determining Effective Goals for Technology Use

New Technology can be an appropriate vehicle for promoting meaningful and engaged learning. Technologies also can be used to promote the development of higher-order thinking skills and allow opportunities for teachers to act as facilitators or guides and often, as a co-learner with the students. Effective technology application can support the engagement of students in authentic, complex tasks within collaborative learning contexts (Kleiman, 2000). Before technology can be used effectively for engaged learning, the school needs to ensure that the technology supports the educational goals of the students. The schools’ initial task is to develop a clear set of goals, expectations and criteria for student learning based on national and state education standards. The learning goals should drive the technology use. Rather than using technology for its sake, the school can develop a vision of how technology can improve teaching and learning.

Accepting New Roles for Teachers in the Classrooms

Technology integration brings changes to teachers’ instructional roles in the classroom. As students become more self-directed, teachers who are not accustomed to acting as facilitators or coaches may not understand how technology can be used as part of activities that are not teacher-directed. This situation may be an excellent opportunity for the teacher not only to learn from the student but also to model being an information seeker, lifelong learner, and risk taker. Painter (2001) noted that:

Teachers must become comfortable in letting students move into domains of knowledge where they themselves lack expertise; and they must be able to model their own learning process when they encounter phenomena they do not understand or questions they cannot answer.

The effect of technology on students’ access to knowledge is determined by the pedagogical knowledge and skill of teachers (Marshall, 2002).

Providing Time for Ongoing Professional Development

Teachers need time to acquire technology skills and develop new teaching strategies for integrating technology into the classroom. Learning the new roles and ways of teaching that go hand-in-hand with technology integration

requires that teachers have opportunities to participate in an extended process of professional development. Renyi (1999) underscored the importance of professional development time especially when teachers are learning new technology skills:

This time for learning is especially important as schools incorporate information and multimedia technologies into the classroom. When a school proposes to install these technologies, each teacher must become adapt at their use, identify appropriate hardware and software... Time to observe an experienced user model an application in his or her classroom, time to design a new hypermedia stack, or time for group reflection on a currently tried application...should be made available every day.

Strategies for professional development time include freed-up time, restructured or scheduled time, common time, better-used time, purchased time, and volunteer time.

Coaching Teachers at Different Skill Levels

Teachers learn at different rates and have individual needs when mastering new skills. Administrators and professional development staff therefore face the problem of providing adequate training to bring all teachers to an adequate level of technical expertise for learning goals to be met. Technology training should be flexible yet cover a comprehensive set of goals. Before professional development is designed, the current level of technology specialists enter into brainstorming exercise to determine what support and resources teachers need to advance in technology training. Teachers at the novice stage who need to develop basic computer skills require more individual attention and should be given ample time to practice their skills. If learning by doing is important for students, it is crucial for teachers (Haertel & Means, 2003). To adequately meet the learning needs of all students, every teacher, not just the computer guru must be able to go beyond basic computer functions to use technology as a springboard to engage learning in every classroom, Renyi (1999) stressed.

Offering Incentives for Teachers to Use Technology

Offering incentives is an important aspect of a technology professional development programs. Incentives help ensure that teachers who face escalating demands on their limited time receive the training they need to prepare their students for the technological learning station of the future. The incentives could be financial, security, approved conference, workshops and other professional development activities. Mini-grants can be used to reward teachers who develop innovative uses for classroom technology (Fullan & Stiegelbauer, 1999). Job securities can be as powerful an incentive as money.

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Incentives related to job security can include adding technological competence to teacher evaluation instrument through technology-related in-service credits to ensure continued employment. Teachers can be given credit for hours spent in technology professional development which they can use to acquire classroom technology, receive loads of hardware and software for use at home and negotiate discounts on personal equipment. They could be awarded a free interest account for their personal use after completing an internet workshop. Teachers could also be provided with laptop computers with the provision that they reach certain basic technology goals within a specified time frame. Similar incentives abound and can be developed to support a wide range of specific goals in technology use.

Choosing Appropriate Software

The difficulty faced by teachers in finding and using appropriate software for instruction is a major barrier to technology integration (Kakan & Stewart, 2004). Teachers at apprenticeship stages of technology integration need guidance in locating multimedia software and internet sites to support the schools learning goals. They are unfamiliar with the different media available and are sometimes overwhelmed by the profusion of software on the market and sites on the internet. Kakan & Stewart (2004) gave the summary of the challenge by asserting that problem exist with finding and using appropriate software or courseware for instruction. Nonetheless, teachers exposed to trainers who model the progressive nature of knowledge in educational technology often have their fears alleviated and are provided with the confidence to pursue the use of technology in their classrooms.

Obtaining and Sustaining Funding

Technology implementation is not simply putting computers in every classroom or linking every classroom to the Internet. It also means obtaining sustained funding for ongoing professional development, technical support, equipment upgrades and regular maintenance. Funding should be addressed at the beginning stages of technology planning. Consideration should be given not only to initial costs but also a means of providing a varied and constant source of revenue that will continue into the future.

Funding for technology should be treated as an individual line item in the school budget. According to Haertel & Means (2003), "A technology plan needs to address the amount of money that will be required to implement and maintain whatever the plan proposes: how matching money, if necessary will be sought; how leveraged money might be needed in the future: how finances will be managed; what the contingency plans might be if additional funding is secured or if a shortfall occurs; and how funds will be allocated to pay for the planned obsolescence".

CONCLUSION

Technology has become a very powerful instructional tool to enhance learning. When used appropriately it acts as a great catalyst for learning in the classroom. Technology, be it assistive or educational is generally education rebranding agent. Success in effective technology implementation is primarily based on the degree of promotion of its use in schools and other training stations. Promotion of technology use in schools calls for collaborative participation of administrators, technology coordinators, teachers, parents and community members in developing a technology vision and preparing for technology –rich future in education.

RECOMMENDATIONS

The following are some of the vital recommendations to be considered in re-branding education in Nigeria:

1. Education administrators should be aware of factors that affect the effective use of technology for teaching and learning.
2. They should develop strategies for ensuring equitable use of education technology for all students and teachers.
3. Administrators should involve teachers in identifying and pursuing technology professional development that is appropriate to their needs and skills.
4. Administrators should pursue funding strategies to provide the necessary technology, professional development, technical support, equipment upgrades, and equipment maintenance to achieve educational goals.
5. Technology coordinators should develop strategies for training teachers for using technology that will meet institution's educational goals for the use of technology.
6. They should develop the knowledge and skills to help teachers at all competency levels improve their ability to integrate technology to promote learning.
7. Teachers should develop an individual professional development plan that provides for acquisition of technology skills and integration of technology into classroom projects.
8. They should also develop strategies for using technology to enhance engaged learning for at-risk students and using technology to enhance literacy instruction.
9. Parents and community members should support technology implementation and the professional development it requires.
10. They should join in fundraising and lobbying efforts and help in identifying potential sources of technology funding.

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