

Technology for Teaching and Learning: A Case Study of Afe Babalola University

Lawal Yekini Olawaiye¹, Adeyemo Oluwaseyi A.², and Layefa Goodluck³

Abstract

Afe Babalola University, Ado Ekiti (ABUAD) is the first University in Nigeria that had introduced Information Communication Technology (ICT) facilities into teaching and learning. The purpose of this work was to examine the learning tools employed in the modern teaching and learning as practiced in Afe Babalola University (ABUAD), the problems and the challenges in the application and make recommendations to improve the effective application. The authors, who are teachers in various departments of the university and used the facilities to teach, collected data through personal observations, responses to structured questionnaires and personal interviews. ABUAD had a variety of ICT facilities which had improved teaching and learning in ABUAD. In spite of these facilities, the training programme, the technical support provided and the positive effect on teaching and learning, not all the lecturers have put them to effective usage for varied reasons. These were reviewed and recommendations were made to improve usage.

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1 Introduction

Afe Babalola University Ado Ekiti (ABUAD) was founded by Aare Afe Babalola. The appointment of Afe Babalola as the Pro-Chancellor and Chairman of Council of the University of Lagos, Nigeria brought him into the mainstream of university administration where he was exposed to the myriads of problems confronting university education in Nigeria. He therefore, decided to make a difference, hence, his decision to establish the Afe Babalola University, which was located in Ado Ekiti, in the South West

¹College of Social and Management Sciences, Afe Babalola University, Ado-Ekiti, Nigeria.

²College of Sciences, Afe Babalola University, Ado-Ekiti, Nigeria.

³College of Social and Management Sciences, Afe Babalola University, Ado Ekiti, Nigeria.

of Nigeria (Babalola, 2008). It started operation in January 2010 with the main objective of reforming education in Nigeria and for the university to lead by example. The philosophy is an innovation in the operation of the university system in Nigeria (Lawal, 2013).

Babalola's vision was to make the university stand up to the challenge of providing qualitative and affordable tertiary institutions as it was done in other nations of the developed world where the quality and performances of graduates produced would be at par with the competitive world. Since the mission of the university was to lead the reform of education by example, premium was placed on provision of facilities that would make teaching and learning easy, stimulating, efficient and effective. Consequently, the university started at its permanent site with all the infrastructural facilities such as lecture halls, laboratories, hostel accommodation, cafeteria, library and recreational facilities already provided, with built-in excess capacity for the subsequent years even before the government approved the take off of the university. Among the novel facilities provided were the special technology tools for teaching and learning.

2 Objective of Study

Application of technology tools for teaching and learning in Nigerian tertiary institutions is new. The purpose of this work was to examine the learning tools employed in the modern teaching and learning as practiced in Afe Babalola University (ABUAD), the problems and the challenges in the application by the lecturers and the students in their usage and make recommendations to improve the effective application of the facilities.

2.1 Materials and Methods

Since these authors are teachers in various departments of the university and they equally use the facilities to teach. They were in a good position to obtain first hand feedback from their students on the effectiveness of these tools for learning. As they also interacted with fellow teachers, it was easy for them to get information about their problems and challenges in the application of these tools for effective teaching. Personal observations were supported with responses to structured questionnaires and personal interviews.

3 Theoretical Frame Work

According to Lawal (2013), children in the past were exposed to the following fundamentally distinct education systems. They were;

- the learning and acquisition of the local skills by participating in the parents' and community vocation,
- the learning and acquisition of skills (apprenticeship) from professional masters,
- learning the western education within the formal western educational institutions.

Thomas (1969) argued that, reformers may build new school, make changes in the structures and the curricula, recommend or prescribe particular teaching methods or aids but in the end everything will depend on the teacher who will be responsible for applying them. Clarkman (1976) posited that, the availability of innovation, modern materials and

creative methodology are of little value except the classroom teacher has a comprehensive idea to reach the expected outcomes. He listed some of the outcomes to include the use of materials such as books, films, pictures, records, objects and others that will stimulate learning.

The goal of teaching is to establish a sound knowledge base and skill upon which students will be able to build as they are exposed to different life experiences. A teacher who is assigned this responsibility must understand a subject enough to convey its essence to students. He must play the role of course designer, discussion facilitator, and coach. He must be dynamic in his choice of method of teaching by adopting the evolving new instructional strategies. Reported studies from the United States by the erytmonline.com suggested that, the quality of teachers is the single most important factor affecting student performance, and that, countries which score highly on international tests have multiple policies in place to ensure that the teachers they employ are as effective as possible (Etymonline.com/index.php? Retrieved January 6, 2011).

3.1 Learning Modalities

There has been considerable academic work on learning styles in recent times. Dunn and Dunn (2011) focused on identifying relevant stimuli that may influence learning and manipulating the school environment. Temperament (2011) focused on understanding how people's personality affects the way they interact personally, and how this affects the way individuals respond to each other within the learning environment. It is currently fashionable to divide education into different learning "modes". The most common are:

- Visual: learning based on observation and seeing what is being learned,
- Auditory: learning based on listening to instructions/information,
- Kinesthetic: learning based on hands-on work and engaging in activities.

Barbe et al., (2011) held the view that, different teaching techniques have different levels of effectiveness depending on their preferred learning modality. Effective teaching should present a variety of teaching methods which cover all three learning modalities so that different students have equal opportunities to learn in a way that is effective for them.

3.2 Teaching Methods

Education is imparted in several ways including; lecturing, explaining, modeling, questioning, collaborating, demonstrating, learning by teaching and case study. Lecture helps the auditory learner through the speech of the teacher and when the teacher includes visuals in the form of overheads or slide shows, his/her lecture can have duality effect.

3.3 Teaching Materials

Presentation of teaching materials might take place using digital and analog tools, such as whiteboards, chalkboards, overhead projectors, document cameras, microphones, laptops, wired or wireless networks.

3.4 Learning Tools

These include; all Information and Communication Technologies (ICTs) gadgets comprising; computers, satellite, e-platforms, e-library, telecomputing, webcasting applications, multimedia, digital learning and other electronic equipment used in the generation, processing, transmission and management of information to achieve desired efficiency and goal attainment. Nweke (2001) and Adomi and Kpangban, (2010) referred to those technologies that are used to search and retrieve information as ICTs. They referred to radio and television as older ICT technologies which had for over forty years been used for open and distance learning. Modern technology offers many means of improving teaching and learning in the class room (Lefebvre,et.al., 2006). According to Grabe and Grabe (2007), technology can play a role in students' skills, motivation and knowledge. It was also stated that ICT has potential to enhance student achievement and learning.

4 Importance of ICTs application in Teaching and Learning

Although, application of technology in **teaching and learning** has been variously criticized by influential personalities in Nigeria for various reasons, it is none the less playing an increasingly influential factor in education. Mutala, (2002) argued that information technology supports multidisciplinary approach to learning by integrating different disciplines, helping students to combine their mathematical, logical, scientific, linguistic and social knowledge and making them interact with world teachers. He added that technology offered powerful learning tools that demanded new skills and understanding from students.

ICTs application has been known to affect education significantly in the areas of learning, teaching and research supports in higher learning, most especially at university level (Vajargah et al., 2010). It is playing an increasingly influential factor in education. Gulbahar (2008) opined that there was significant need for ICTs integration in schools as it offered powerful learning tools. Modern ICTs can however be said to provide a new learning paradigm from traditional and older ICTs based on its simplicity and interactivity and ability to integrate different media for teaching delivery.

It had been found that, teachers could use ICT for both academic and administrative services such as teaching, assignments, assessment, seminar presentations advertise a class, provide copies of academic materials, receipt of response and course registration as rightly observed by Wheeler (2000).

4.1 Requirements for Effective Use of Technology in Teaching/Choice of Technology

In spite of the importance of ICT in education several barriers have been identified to frustrate its application to learning. Ertmer (1999) classified these barriers into two distinct categories as extrinsic (first order) and intrinsic (second order) barriers. He listed time, support, resources and training as extrinsic. Those barriers in the intrinsic he listed as: attitudes, beliefs, practice and change. Bingimlas, (2009) identified some barriers to the acceptance of ICT for teaching and learning and noted that, effective use of any technology in teaching requires thoughtful consideration and planning. It was postulated

that a tool's learning benefits depended on when, where, how, why the tool is used and whether the specific technology would enhance student learning. Such decisions can be tricky. What decision taken must be that, which aligns with the user's goals and provides support and integrates solutions effectively into teaching.

Prensky (2008), reported that when some school authorities introduced technology to teaching by giving laptops to their students did not help the kids' learning dropped the laptops. Prensky found out that the authorities did not first get all the teachers to change the way they taught. He added that many teachers resisted being taught to use technology. He cautioned that before technology could be successfully introduced into schools, teachers must change from the old pedagogy.

Some of the requirements for effective use of technology in teaching are listed below.

Type of technology

- range of educational technologies and affordability,

Learning objectives:

- the intellectual skills and technical competencies that the students are expected to develop,
- the type of alternative appropriate tools that will help students to meet the learning objectives,
- the planned structure of the course to ensure effectiveness of the tool.

Students' role:

- the technical skills to learn the tool in the time available and use it effectively,

Teachers' role:

- the competence to use the new technology,
- the capacity and willingness of the teacher to learn the usage of the new technology.

Infrastructural Facilities

- availability of the resources (computer lab space, software, etc.),
- availability of uninterrupted power supply.

The use of ICT has both merits and demerits which are enumerated below.

4.2 Merits

- ICT tools offer a shy student an avenue for active participation in discussions without a face-to-face discussion session.
- They facilitate the bringing together of long distance learners without actually assembling at a common location, easy exchange of real-time information, from diverse geographical locations and students peer review and evaluation.
- They promote; group's attention, group and team learning, information sharing through internet and intranet communication, opportunity for immediate feedback, easy channel for student/lecturer communication and supply of assignments and display of results,
- They provide; easy access to e-books, journals and robust literature review.
- Electronic discussion tools such as e-mail, conferencing software, and on-line chat services provide opportunities for student/student or student/lecturer discussion of issues before the class meets.
- Lecture notes may be uploaded in advance for the students to access them ahead of time which makes it possible for more class discussion and questions.

- Digital collection can simplify the process, and make it easier for instructors to compare early and later drafts of academic work side-by-side without going scanning through large volume of paper work.
- Digital collection mitigates the need to carry and manage stacks of student work, saves paper and permits faculty to set submission deadlines outside of class time.
- Collecting and returning student work digitally allows lecturer to streamline the process of returning graded work while also ensuring that it is secure.
- There now exists ICT facilities which make it possible for instructors to insert pre-written margin comments digitally, which ensures that the comments are legible, while reducing the time it takes instructors to write the same comment over and over on multiple papers which makes the explanations easy for the students to understand the feedback and reduce extensive writing by the lecturer.
- There are other facilities that provide automatic check on students' written work against a database of student papers and online works for plagiarism, thus discouraging student from plagiarizing.
- Communication and sharing of information with students has become fast, easy and effective.
- ICT promotes collaboration with other resource persons within and outside the university environment to build on economies of scale for course offerings, professional development, infrastructure, and expanded learning opportunities.

4.3 Demerits

Many teachers have resisted the use of technology for teaching for various reasons. They argued that:

- Some ICT online assessment should not be given the same level of respect as the class room assessment because students could be aided without a way to check.
- Some popular social sites like MySpace, Facebook, Twitter and Bebo are subject to abuse in usage which lecturers may not have control over.
- Equipment set up cost is enormous and therefore not affordable, particularly for institutions that have not sufficiently been funded for the traditional method of teaching.
- Many institutions had been unable to provide efficient alternative electricity power and the government power supply available has been grossly inadequate and unreliable.
- The use of ICT requires ability to use computers and most lecturers and students were not computer literate and they did not have easy access to computers whether desk top or lap top.
- The use of online teaching and assessment of assignments had caused students to regularly absented themselves from attend classes.
- It had made some students very lazy by not taking notes during lectures.

Some State governments in Nigeria have adopted the use of technology in teaching through the distribution of laptops to their teachers and students in secondary schools. Even the Federal Minister of Agriculture had approved the supply of mobile telephones to farmers to provide a network for teaching and information dissemination among the famers.

5 Findings and Discussions

The findings are presented and discussed below.

5.1 ICT Facilities in ABUAD

Application of ICTs in ABUAD includes the use of megaphones, projectors, computer processing systems, multimedia electronics, electronics smart boards which provide virtual learning environment. In all the lecture rooms, smart boards, projectors and white boards are installed side by side as permanent structures for effective teaching. While the smart boards provided interactive web-based visual teaching tools, the white board and ink marker had replaced the chalk and black board. Most large lecture halls have been equipped with electronic smart boards which connected to online resources which link the classrooms with other resource persons anywhere in the globe.

ABUAD has an electronic-library, separate from the ICT laboratory. Each of which has two hundred and fifty personal computers which are all connected to the internet. The electronic-library computers are wired to both the internet and intranet services. All offices of the lecturers are equipped with personal computers which are also connected to the internet. The e-library has a large volume of e-books and e journal collections covering all strata of study. Free wireless internet services cover the entire university community and some close community around the university, thus providing some social services to the neighbouring youth.

The university employed technology communication through audio and video interactions to get foreign resource persons to share knowledge with the lecturers and students and also conduct appointment interviews for applicants in the Diaspora without having to bring them into Nigeria. Furthermore, CES industries in the United States had organized lectures and presentations for the junior engineering students in ABUAD using skype to teach Computer Repairs and other engineering modules.

Although, there is room for improvement, ICT application in ABUAD has been generally successful. The factors that facilitated the effective use of the ICT facilities are discussed below.

5.2 Factors that influenced successful ICTs Application in ABUAD

The study identified the following factors which had influenced effective ICTs application in ABUAD as:

The Founders personal interest and financial support

The founder had expressed personal interest in the use of ICTs and he had backed up his interest by continuous investment in the purchase of facilities and the training of staff in the use of the facilities.

University Teaching Policy

The university had established an annual workshop on teaching methodology for staff, where emphases had been placed on teaching pedagogy and use of ICT facilities. The policy made it mandatory for staff to teach with the facilities.

Students' level of computer Literacy

Most of the students at the point of admission were usually tested for computer literacy. In addition, all students are exposed to compulsory computer appreciation in their first semester in the university. Thereafter, they are further trained to acquire digital literacy

and certification examinations in Internet and Computing Core Certification (IC3) to fast track their knowledge of ICTs and their applications.

Orientation of the Teaching Staff

Some teachers had been observed to exhibit resistance and lack of confidence to change from the chalk black board technology. Consequently, testing of prospective new teaching staff members for ICT literacy had been introduced. Existing staff members were also exposed to regular training on latest ICT facilities to improve their confidence.

Globalization effect

The university had strived to be an active participant in the global village. Since the university has some resource persons outside the country, it had become imperative to have a strong ICT base to get those resource persons to interact with students and staff in the university. ABUAD had several virtual classrooms as part of its learning environment. It also had installed in its Senate and Council Chambers SKYPE technology for connecting remotely and interacting synchronously which were employed for job interviews of prospective staff members in the Diaspora and other very urgent and important global communications.

Good network

Robust network facilities for effective internet and intranet communications had been put in place. Staff members and students have free internet access via both radio transmission and local area network in and around the university campus.

Efficient and Uninterrupted Power Supply

Electricity power supply to the University had been regular and efficient because, the university had a well established power generation facility which provided adequate and sufficient alternative sources of electricity power supply which had kept the ICT infrastructure in good state of function.

Functional ICT Centre

The ICT centre of the institution was established even before the University commenced operation. It was fitted with modern computer repair shop, hardware and software laboratories and e-library facilities which were operated by qualified trained maintenance and support staff members who also conducted training, maintenance and repair services.

Lecturers' Reactions

In spite of the facilities provided in ABUAD and the above listed merits, not all the lecturers employed them for teaching. Thirty five percent do not use them for varied reasons. Some of which included;

- poor level of computer literacy,
- shyness due to lack of confidence in the usage of the ICT,
- poor attitude to change from the old method to the new,
- regular corruption of files through the use of common processor,
- laziness in preparing lecture notes in electronics form,
- the rigour to always update teaching materials to avoid being ridiculed by students who often went to the internet to compare to ascertain the quality of lecture materials provided by the lecturers,
- argument that, it makes student lazy as they often copied and pasted materials for assignment from the internet,
- that students misuse the media and subsequent exposure to the vices in social media networks.

Student' Reactions

The students agreed that ICT had improved teaching and learning in ABUAD and that, it had made learning interesting, increased their skills in the use of computer, literature search and advance study before class interaction with teachers. However, most of them complained that:

- ICT discouraged them from taking notes in class during lectures which was necessary as materials for quick examination revisions.
- Prior access to study materials using ICT made some classes uninteresting, particularly those classes handled by lazy lecturers who brought their old and obsolete school notes for teaching.
- Some lecturers have become very lazy by giving downloaded Pdf materials as lecture notes, which students were required to photocopy at costs to the students.

6 Recommendations

The recommendations were presented under three distinct headings that assigned responsibilities to the stakeholders for effective utilization of the facilities. These were; the lecturers, the educational institutions and the students since they need to work together harmoniously to produce the desired results.

Lecturers:

Lecturers should adopt the following;

- develop self to improve proficiency in the use of ICTs in order to secure personal confidence in their usage,
- promote ICT literacy through continuous training,
- establish partnership with students to appreciate that technology use in the classroom is new and exciting and that the success of its use as an instructional tool will depend on the combined efforts and cooperation of both students and lecturers,
- learn to integrate technology into teaching practices,
- organize and manage the use of ICT in the classroom,
- mix the new technology teaching tools and pedagogy for effectiveness,
- evolve collaborative and interactive teaching and learning,
- put in place appropriate feedback mechanism to ascertain the effectiveness of the methodology in teaching and learning,
- promote the use of electronic resources through giving of assignments on electronic information resources,
- avoid streaming courses which may encourage absenteeism,
- avoid abandoning the traditional method completely while using the new tools.

Educational Institutions:

The educational Institutions should provide the following;

- budget for the provision and installation of ICT facilities for teaching, learning and maintenance,
- ICT workshops, laboratories and computer terminals for teaching, learning and maintenance,
- efficient and sustainable electricity power supply since effective utilization of the facilities is dependent upon regular power supply,

- adequate training and retraining of lecturers on the usage of the tools with some well established pedagogical practices,
- instructional technology specialist to assist the lecturer when required,
- support services in the libraries for the teaching of lecturers and students on the use of information searching skills through its users' education programme,
- extra data cables should be provided on each processor attached to the smart boards to allow users to connect directly to the board to avoid file corruptions through flash drive sharing.

Students:

Students have roles to play to ensure effective teaching and learning by;

- making conscious effort to acquire computer literacy,
- making deliberate effort to avoid just lifting academic matters that would lead them to plagiarism,
- acknowledging academic works of others obtained from the networks,
- regular attendance in classes as online teaching is not replacement for class interaction.

Government should strive to improve electricity power supply to the universities since effective utilization of the facilities is dependent upon regular power supply. It should provide adequate training for the users of technology before the introduction of ICT in education to prepare them for change and the know how for the use. Else, the project could be frustrated through ignorance and lack of will to change.

7 Conclusion

The use of virtual platform allows for a variety of educational settings. Its use as a teaching tool has yielded very good results. It has been found to be superior in effectiveness compared to the standard teaching and learning tools. The role of technology in the classrooms is to support the new pedagogy of teaching and not a replacement.

ABUAD had a variety of ICT facilities which had been sufficiently put to effective teaching and learning.

Adequate ICT facilities had been introduced which had improved teaching and learning in ABUAD. In spite of these facilities, the technical support provided, and the positive effect on teaching and learning, not all the lecturers have put them to effective usage for varied reasons. That some students have been reported to abuse the use of lap tops by using it to watch films and do some unwholesome activities should not deter educational institutions and governments in introducing students to e-learning.

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