

# **“INFORMATION TECHNOLOGY (IT) – A TOOL FOR SUSTAINABLE CHRIST-CENTERED EDUCATIONAL SYSTEM”**

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## **Abstract**

*Information Technology (IT) in effect is and will remain a major player in the Sustainable Education Movement (SEM). This is not to say that IT is the ‘cure-all’ for the tarrying problems facing the educational system especially in Nigeria. Instead it is a tool if fully adopted for curricular and co-curricular design will emboss a four-dimensional harmonious development model for integrating Faith into Learning and enhance greater access to the everyday person towards partaking in the SEM initiatives and goals. This paper will cover and outline some recent technologies and applications that will contribute to SEM, along with examples and uses, transformative shift principles, practices, domain and programs that can serve as models and case studies in monitoring and evaluating IT education impacts and learning capacity building amongst categorized users across disciplines.*

**Keywords:** Information Technology (IT), Pedagogy, Continuum Approach, SEM, Sustainability

## 1.0 Introduction

It has been twelve (12) years since the Federal Government of Nigeria established the National Information Technology Development Agency (NITDA); but till date we are yet to witness the full integration of IT/ICT into the Educational System. Unfortunately, the current educational system is reinforcing the current unhealthy, inequitable and unsustainable path which has slowed down the pace of achieving the mandatory aims and objectives for IT integration at all Nigerian educational levels as published in National Policy 2001. Information and communication technology (ICT) has become, within a very short time, one of the basic building blocks of modern society. Many countries now regard understanding ICT and mastering the basic skills and concepts of ICT as part of the core of education, alongside reading, writing and numeracy.

This paper specifies an ICT as tool for sustaining education and outlines an accompanying programme of teacher and student' development to implement such a program.

### 1.1.0 AIM

The three key purposes of this paper are:

- i. To outline transformative shift principles, practices, domain and programs that can serve as models for integrating faith into learning*
- ii. To outline a programme of professional development for staff and faculty towards partaking in the SEM initiatives*
- iii. Provide insights on IT education impacts and learning capacity building amongst categorized users*

### 1.2.0 Background

**Education** is discipline that is concerned with methods of teaching and learning in schools or school-like environments as opposed to various non-formal and informal means of socialization (e.g., rural development projects and education through parent-child relationships). Education is

the act of imparting or acquiring general knowledge, developing the powers of reasoning and judgment and generally of preparing oneself or others intellectually for mature life (Collins, 2013). Education can be thought of as the transmission of the values and accumulated knowledge of a society. In this sense, it is equivalent to what social scientists term socialization or enculturation.

Education can be applied to primitive cultures only in the sense of enculturation, which is the process of cultural transmission. A primitive person, whose culture is the totality of his universe, has a relatively fixed sense of cultural continuity and timelessness. The purpose of primitive education is thus to guide children to becoming good members of their tribe or band. There is a marked emphasis upon training for citizenship, because primitive people are highly concerned with the growth of individuals as tribal members and the thorough comprehension of their way of life during passage from pre-puberty to post-puberty.

### **1.2.1 Sustainable Education**

Sustainability is the careful and efficient stewardship of the resources by business, communities and citizens; it is the practice of meeting our needs in ways that are respectful of future generations and restorative of natural, cultural and financial assets (Hunter, 2013).

Rapidly nearing the final crisis in this world's history, E.G white highlighted importance of understanding that the educational advantages offered by Seventh - Day Adventist schools are to be different from those offered by the schools of the world. (Ellen G.W, 2009) In the highest sense, the work of education and the work of redemption are one; for in the education, as in redemption, "other foundation can no man lay than that is laid, which is Jesus Christ".

**SUSTAINABILITY EDUCATION** according to Mckeown (2000), is Education for sustainability (EFS), and Education for Sustainability Development (ESD) are interchangeable terms describing the practice of teaching for sustainability. True education means more than the perusal of a certain course of study. It means more than a preparation for the life now is. It has to do with the whole being and the whole period of existence possible to man. It is the harmonious development of physical, the mental and the spiritual powers. It prepares the student for the joy of wider service in the world to come.

### **1.3 IT STARTS HERE:**

Children actually participate in the social processes of adult activities, and their participatory learning is based upon what the American anthropologist Margaret Mead has called **empathy, identification, and imitation**. Primitive children, before reaching puberty, learn by doing and observing basic technical practices. Their teachers are not strangers but, rather, their immediate community. Bearing that in mind E.G White in her work reemphasized that the energy and learning abilities of the young people must channeled early towards a practical Christ-like education where bible is the highest and most important textbook. (Ellen G.W, 2009)

### **2.0 Informatics (Computing Science)**

Informatics as the science dealing with the design, realization, evaluation, use, and maintenance of information processing systems, including hardware, software, organizational and human aspects, and the industrial, commercial, governmental and political implications of these.

**Informatics technology-** Informatics technology is defined as the technological applications (artifacts) of informatics in society. **Information and communication technology (ICT)-** Information and communication technology, or ICT, is defined as the combination of informatics

technology with other, related technologies, specifically communication technology<sup>5</sup>. This definition implies that ICT will be used, applied, and integrated in activities of working and learning on the basis of conceptual understanding and methods of informatics.

## **2.2 Using Information Technology to sustain a true Christian education**

### **2.2.1 IT EDUCATION**

It was *Einstein* Albert who said “*we cannot solve today’s problems at the same level which they were created*” Information Technology (IT) in effect is and will remain a major player in the Sustainable Education Movement (SEM). It is a tool if fully adopted for curricular and co-curricular design will emboss a four-dimensional harmonious development model for integrating Faith into Learning and enhance greater access to knowledge

This is not to say that IT is the ‘cure-all’ for the tarrying problems facing the educational system especially in Nigeria. The role of Information and Communication Technologies (ICTs) in the 21st century education system, the world over, has been described as vital to keeping abreast with rapidly changing technologies. The importance of ICTs has also been translated into huge potentials in terms of positive outcomes, although investments in ICTs in Nigerian’s education system have not yielded much when compared to similar investments made in telecommunications. Although the mode of delivery of knowledge and curriculum are not yet ICT enhanced, Nigeria is predictably a step in the right direction: with the establishment of the *National Information Technology Development Agency (NITDA)* and development of a National Policy on ICT in Education in 2001. Respect for the rule of law, basic human rights, improvement of the environment, peaceful coexistence across nationalities and communities, reduction of poverty, combating HIV/AIDS pandemic and economic restructuring are some of

the global issues that transcends national boundaries. Nigeria's response to these global emerging issues was the development, adoption and implementation of a *National Economic Empowerment and Development Strategy (NEEDS)* in 2004 and a New Vision 20:2020 for Education.(Godswill, 2011)

### **3.0 So far not fair**

The Federal Government of Nigeria established the National Information Technology Development Agency (NITDA) over 12 years, but till date we are yet to witness the full integration of IT/ICT into the Educational System. At present there are discernable gaps in the ICT initiatives at all levels in the context of using education to empower the people. In order to sustain the culture of reform, the ICT curriculum should undergo systematic strategic transformation to ensure integration of technological innovations in education. (Goodswill, 2011). The use of ICT cuts across all aspects of economic and social life. Technological developments in ICT are very rapid requiring new skills and knowledge to be mastered frequently. Adaptation is only possible when based on a sound understanding of the principles and concepts of ICT

#### **3.1 A state-of-the-art curriculum**

This curriculum offers to schools and countries where ICT curricula are evolving the foundations from which to advance rapidly. It is not effective to repeat the development process with respect to ICT education that has already taken place elsewhere since to do so only slows down development and keeps institutions and countries from closing the gap.

##### **3.1.2 A modular curriculum**

The curriculum has been designed in modular form so that education authorities can select appropriate elements to meet their objectives at the phase of development reached in their countries. (UNESCO, 2008)

### 3.2 ICT Curriculum models

#### Model 1. CONTINUUM OF APPROACHES TO ICT DEVELOPMENT

This model conceives ICT development as a continuum along which an educational system or an individual school can pinpoint the approach that relates to the growth of ICT for their particular context.



Figure 1: Adopted UNESCO Model depicting a continuum of approaches to ICT development

#### Model 2. STAGES OF TEACHING AND LEARNING WITH AND THROUGH ICT

This model depicts different stages in the way that those who are most involved in the use of ICT in schools – teachers and students – discover, learn about, understand, and specialize in the use of ICT tools.

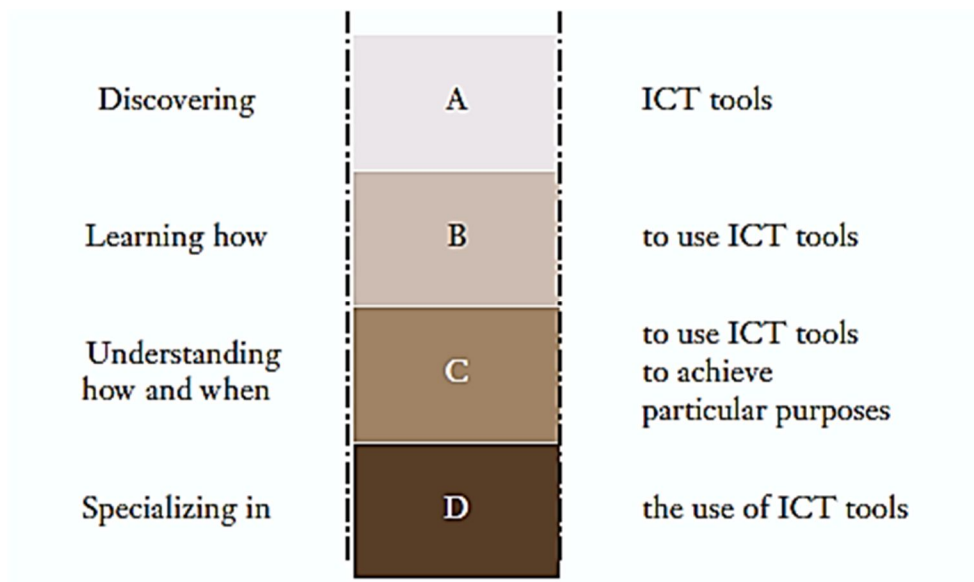


Figure 2: Adopted UNESCO Model depicting stages of teaching and learning with and through ICT

### **3.3 Babcock University and Networked Readiness Index**

The World Economic Forum's **Networked Readiness Index** (NRI) measures the propensity for countries to exploit the opportunities offered by information and communications technology. The NRI seeks to better comprehend the impact of ICT on the competitiveness of nations. The NRI is a composite of three components:

1. The **ENVIRONMENT** for ICT offered by a given country or community (Market, political and regulatory, infrastructure environment);
2. The **READINESS** of the community's key stakeholders (individuals, businesses, and governments) to use ICT;
3. The **USAGE** of ICT amongst these stakeholders.

### **3.4 SUSTAINABLE EDUCATIONAL MOVEMENT (SEM)**

In order to check mate how Babcock University has through its equilateral triangle development model sustained the education system in Nigeria, IT development and capacity building must be drawn against the NRI components

#### **3.4.1 IT Environment for SEM**

**Babcock University following the modular curriculum has provided so far an averagely conducive IT-enabled environment initiating the Sustainable Education Movement (SEM).**

Aside the availability of Internet, *Okoro et al (2013)* took a closer look at the present IT environment and highlighted transformative shift to providing a sustainable education for all stakeholders.

- **The emerging approach.** Before 1999, Babcock (the Adventist Seminary for West Africa ASWA) began to purchase, some computing equipment and software with focus



on laboratories and administrative offices. In this initial phase, administrators and lecturers were just starting to explore the possibilities and consequences of using ICT for school management and adding ICT to the curriculum and office workflows.

- **The applying approach.** Early 2004, Babcock University had gotten a new understanding of the contribution of ICT to learning and administrators and lecturers use ICT for tasks already carried out in school management and in the curriculum. This was evident in the shift made from the manual way of paying school fee at the bursary which saw to the birth of E-transact and Interswitch. The student registration process underwent a serious restructuring as the online registration via UMIS linked to the school website was introduced.
- **The infusing approach.** 2006 saw the usage of a range of computer-based technologies in laboratories, classrooms, and administrative offices. Lecturers underwent different trainings on how to explore the potentials of ICT for their personal productivity and professional practice.
- **The transforming approach.** Babcock promised a renewed school's organization in creative ways at this transforming approach. ICT becomes an integral, though, invisible part of daily personal productivity and professional practice. The focus of the curriculum is now learner-centered and integrates subject areas in real-world applications. ICT is taught as a separate subject at the professional level and is incorporated into all vocational areas.(UNESCO, 2008 and Okoro et al. 2013)

Okoro et al (2013) focused on digitization of Babcock University Environment, starting with student's records, Library, and administrative paper-based office work flows. 'Softcabin' was

developed and recommended to as an interim stage between **infusing ICT approach** and the **promised transforming approach**.

### **3.4.2 THE READINESS**

The Federal Ministry of Education and its agencies have initiated many ICT-driven programmes. These Programmes include the SchoolNet Nigeria, the National Open University of Nigeria (NOUN), and the virtual Library project. The NUC is implementing a number of ICT projects including Library Automation Project, Nigerian Universities Management Information System (NUMIS), Nigeria University Network (NUN), and Virtual Institute for Higher Education Pedagogy (VIHEP), the Virtual Institute for Higher Education in Africa (VIHEAF) and other e-learning projects.(Oyelakan, 2008). Most of these projects have commenced in order to network and provide direct access as well as coordinate data from all tertiary institutions, through agencies like NUC, National Board on Technical Education (NBTE) and the National Council on Colleges of Education (NCCE). (The Punch, 2006)

Babcock University has been trending on the right path towards using IT as a tool to emboss a four-dimensional harmonious development model for integrating Faith into Learning and enhancing greater access to the everyday person towards partaking in the SEM initiatives and goals. **Examples:**

1. The introduction of the N-Computing Lab which has made the entrance examination into Babcock University a 'hands-on' exercise
2. The availability of online digital book labyrinth-Ebscohost ([search.ebscohost.com](http://search.ebscohost.com))for research
3. The introduction of Smart Boards and Projectors

#### 4. E-learning and Distance Education Project

Although some of the afore mentioned projects are faced with ‘curtained’ challenges such as: availability of a steady internet access, IT laboratory spaces, Office space system, and above all the utilization and orientation level of users, Userware etiquette and netiquette. Babcock has not relented in its pursuit to using IT/ICT to transform its community by developing an IT curriculum with emphasis on creative thinking, entrepreneurial skills, and positive social and cultural values.

### 3.5 ACHIEVING THE FOURTH DIMENSION WHILE INTEGRATING FAITH USING IT SERVICE-LEARNING

In order to broaden our scope of education as advocated by E.G white in 1903, a true education embraces a harmonious development of the physical, mental and the spiritual powers (Adventist Education Equilateral Triangle Model) but much more prepares the student for the joy of SERVICE in this world and for the higher joy of wider service in the world to come’



Figure 3: The four-dimensional Model (JAE,2013)

#### 3.5.1 Components of Service Learning

Service Learning is a form of experiential education where students apply what they are learning to community problems, seeking to strengthen the community as well as acquire a deeper for themselves<sup>11</sup>. Service Learning is a flexible pedagogy that is organized with three underlying elements: **1. Clear Learning goals** **2. Service Activities to address community needs** **3. Critical thinking opportunities**. Mark 10:45 made it clear that the Son of man did not come to be served but to service and to give his life as ransom for as many. Jesus demonstrated clearly the fourth dimension when he washed his disciples’ feet (John 13:4-17) demonstrating not just an

**Explicit Knowledge** but the **Tacit Knowledge** which guarantees a **Life-long learning (LLL)/Sustainable Education** (Goodswill, 2011 and Oyelakan, 2008).

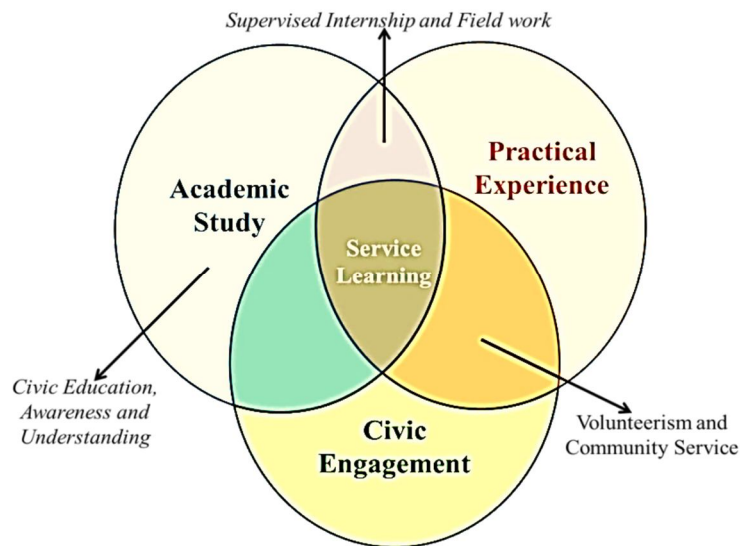


Figure 4: Intersecting Components in Service Learning (Janet and Dwight, 1999 and Whitforth, 2013)

### Computer Science Department and Service-Learning Scale

DEPARTMENT	Very Good	Good	Fair	Bad	Very Bad
Curriculum Design		✓			
Civic Education Awareness	✓				
Practical Experience		✓			
Civic Engagement			✓		
Volunteerism and Community Service				✓	

Figure 5: A Chat showing Service-Learning Status for Computer Science Department (Okoro etl 2013, JAE, 2013, Janet and Dwight 1999)

**3.6 Sustainable Educational System: (SES):** Although Service Learning has proven more difficult to implement, there are 4 components (if fully adopted) that guarantees the success of SEM using IT:

1. A Community that affords opportunities for service and learning: This partnership should identifies needs and coordinate projects that links service-learning staff with faculty, students and community within a service-learning paradigm and frame work.( SHYC,2013)

**Project Sample:**

- ✓ **Cloud Computing** Infrastructures, Platform and Applications- e.g. *Babcock Hybrid or Private Cloud Service Centers (BHCS/BPCS)*
  - ✓ **Living Online such as** E-learning and Distant Education online Portal, blogs(Ukonu and Idowu, 2013; Troy 2012)
2. A Teacher who identifies community needs supervises students efforts and connects service experiences and teaching objectives

**Project Sample:**

- ✓ **Continuum Approach** to Curriculum implementation
  - ✓ Evaluate **Course Advisors**
  - ✓ Use of media and **IT communication tools** [slide presentation, educational gaming] in classrooms. NO MORE DICTATION!(UNESCO,2008; Troy 2012, and Magdalyn, 2012)
3. Students who provide a service and learn both content and application

**Project Sample:**

- ✓ Best IT group awards: **SoftCabin®** for digitizing paper-based Recording Keeping (Okoro et al 2013),**Website for Courses, BBM Chat groups, online eduPortal for Tutorials**
  - ✓ Interschool **Entrepreneur Competition for real world Problems**
4. A Supportive School Administration

**Project Sample**

- ✓ Enforce full Modular Curriculum adoption [IT integrated Lesson plans]
- ✓ Staff Support and Skill Acquisition Trainings. On Office Apps such as *Mailing Systems, Lotus, Instant Messaging Systems, Search Engines, SharePoint and Workspaces Cloud drives, Internet Security, simulation tools* (Ukonu and Idowu, 2013)
- ✓ Userware Etiquette and Netiquette Policies e.g. *Network Intrusion Detection Systems, Wireless Networks, Campus Area Networks*

- ✓ Staff and Faculty Community Service IT Projects e.g.: Best IT Userware Awards for staff and faculty across disciplines [BU admission photo-share on Facebook Instagram and LinkedIn] (Janet and Dwight, 1999; Magdalyn, 2012)

### 3.7 Conclusion

IT Education as an instrument for economic and social transformation plays a key role in the reform context through systematically growing and sustaining the culture of reform. Babcock University should broaden its scope in terms of sustainable design, construction, and building operation and maintenance and other IT related plans as an essential element towards a Sustainable Educational System (SES). Presently in terms of Service-Learning initiatives, there are discernable gaps in the ICT initiatives at all levels in the context of using education to empower the students, staff and faculty. In order to sustain the culture of reform, the ICT curriculum should undergo systematic and strategic transformation to ensure integration of technological innovations in education that embraces not just the physical, mental, and spiritual development but and stretches out even unto to a ‘Service-to-humanity’ interceptions.

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