

# ICT to improved Teaching And Learning Process in Omoku, Nigeria using VBSE

Oruan Memoye Kepeghom, Ph.D Scholar,  
Department of Computer Science, Jain University Bangalore India,

Madhu B.K. Research Guide,  
Jain University & Professor and Head, Dept. of ISE, RRIT Bangalore

**Abstract**—Teaching and learning has been and will live as one of the oldest industries world over. The academia during the industrial revolution contributed immensely to its development. Principles, theory, norms, ethnics and manpower were developed through the help of the academia. The industrial sectors are firmly rooted and established, it is a payback time through it established successes to the academia. Hence, a modification and hybrid of some widely used and acceptable model in the industrial sector is proposed for adoption and used in the academia due to it hug successes in the industries. This work improves and cross bird TAM, TOE and UTAUT in improving teaching and learning. This paper is a study about the different ICT techniques that can be adopted to improve teaching and learning process in Omoku, Nigeria. We also proposed a hybrid model which gives a productive usage of technical tools and increase its impact

**Keywords**—Information and Communication Technology (ICT), Value Based Software Engineering (VBSE)

## I. Introduction

There is no doubt that there is abundant evident that Information and Communication Technology (ICT) is the deriving tool for nation building and a vital tool in educational development. This is a clear view from the Nigeria National Information Technology Policy vision statement as it states that “To make Nigeria an IT capable country in Africa and a key player in the information society...using IT as the engine for sustainable development and global competitiveness. The mission statement expresses that “To Use IT for Education, Creation of Wealth, Poverty Eradication, Job Creation and Global Competitiveness. On this premises the general objective of the Government is to integrate IT or ICT into the mainstream of education and training and restructure the education system at all levels to respond effectively to the challenges and imagined impact of the information age and in particular, the allocation of a special IT development fund to education at all levels (National Information Technology Policy, 2000). Notably, Nigeria like many developing counties is still initialing fully the stages of integrating of ICT in the teaching-learning process. Many circumstances have led to the setback mostly in the higher institution of learning in Nigeria. ICT has been noted as an electronic means of capturing, processing, storing, and communication of information. Higher education is said to be the major organ for human resource development.

Teaching has been taught in the past through lectures and presentations interspersed with tutorials and learning activities designed to consolidate\*\*++ and rehearse the content. The 21<sup>st</sup> century curriculum stems on principles of constructivism promoting competency and performance. This approach views learning as the construction of meaning rather than as the memorization of facts, and requires adequate provision and support for resource based, student-centred settings within context and practice.

The use of ICT in teaching and learning cannot be overemphasized it gives opportunities for both teachers and students to effective teach and enhance learning.

There is indication that ICT has been utilized and implemented in schools across Africa. Notable there are tensions or contradictions that is hindering the implementation from advancing in enhancing effective teaching and learning process mostly in educational institutions of higher learning. From the teaching viewpoint, necessary questions pertinent to the relationships teachers develop with the use of ICT for instructional purposes.

- What are teachers’ attitudes toward ICT implementation?
- How do teachers utilize ICT in education?
- What is the perceived value/passion of the educational use of ICT?

The benchmark on both teacher and learner regarding study, teaching and learning perspective attitude and motivation generate *affect* concerning ICT and virtual learning conditions. The ICT is used to operate, store, manipulate, and retrieve information which facilitate effective teaching and learning within and outside the traditional learning settings. It promote individual learning, active, motivate, and encourage distance learning. Self-responsibility for learning outside schools hours, plan and prepare lessons and design materials such as course content delivery and facilitate sharing of resources, expertise and advice is paramount for instructors. ICT has the capability not only of engaging in instructional activities to improve and increase learning, but also helping them to solve complex problems to enhance their cognitive skills. Emphasis has been basically focused on using ICT to promote cognitive teaching-learning abilities. On this backdrop this research wishes to examine the effect of affect in using ICT for teaching and learning environment.

To achieve the objective three theoretical frame works is adopted to generate a hybrid model;

- A. Technology Acceptance Model (TAM).
- B. Technology-Organization-Environment Model (TOE).
- C. The Unified Theory of Acceptance and Use of Technology Model (UTAUT).

These models will help explain the impact of affective domain in teaching- learning environment with the available ICT facilities in the college.

The objective of the study is to investigate the availability and impact of ICT infrastructures on teaching and learning ability in Federal College of Education (Technical) Omoku;

- A. Adequacy of ICT infrastructures for effective teaching and learning in FCE(T) Omoku.
- B. The proficiency of the use of ICTs to facilitate teaching and learning in FCE(T) Omoku by lecturers and students.
- C. The role of positive emotions in continues use of ICTs for teaching and learning.
- D. Factors that inhibit the use of ICT infrastructures in FCE(T) Omoku.

A better way to understand these factors is the adoption of advance information system models such as the Technology Acceptance Model (TAM), Technological Organization Environment Model (TOE) and The Unified Theory of Acceptance and Use of Technology (UTAUT)

## ii. The Technology Model

The Technology Acceptance Model (TAM) is regarded as the most widely used theoretical framework for assessing the acceptance of technologies in the literature [1]. The TAM was developed by Davis; it posits that users’ acceptance or adoption of technological innovations can be predicted by the users’ views of the perceptions related to ease of use and usefulness of the system [4].

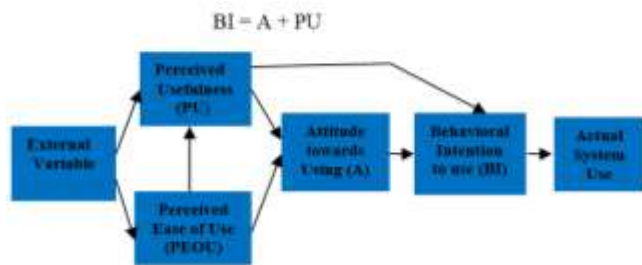


Figure 1: Technology Acceptance Model (TAM)

The Technology-Organization-Environment (TOE) framework posits that the adoption of innovations depends on organizational, environmental as well as technological factors [6]. In general, the TOE model is an integrative schema that incorporates the characteristics of the technology, contingent organizational factors, and other elements from the macro-environment. Prior studies that used the TOE framework to examine the antecedents of factors on e-business usage and acceptance in small firms elsewhere included such variables as

top management support, organizational Readiness, and financial resources. This has not been extensively used in the academia, to this view point this work adopt both model to x-ray the availability and impact of ICT in teaching and learning in FCE (T) Omoku.

The UTAUT model theorizes that four construct have a significant determination on user acceptance of IT innovations [4]. The model highlights the individual differences determine the acceptance and use of technology. The connection between PU, PEOU and usability can be moderated by age, gender and experience. A clear instance is that PU and intention to use varies with age and gender more significant for male and young workers. Likewise PEOU on intention is also moderated by gender and age such that it is more significant for female and older workers, and the effect decrease with experience.

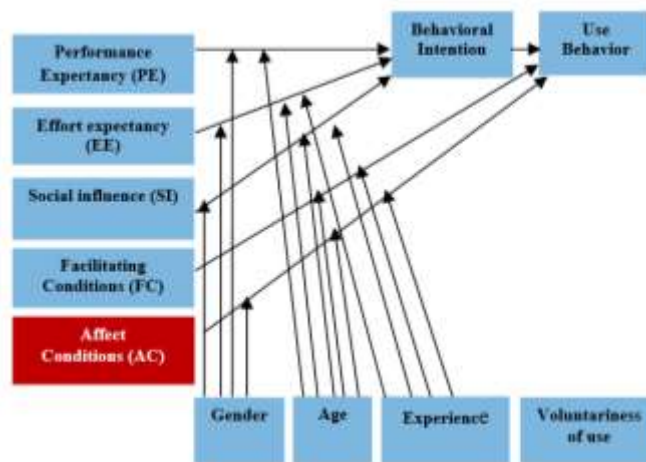


Figure 2: Unified Theory of Acceptance and Use of Technology (UTAUT)

## iii. Exploration on ICT in Omoku, Nigeria

It is no longer news that no nation can rise above it educational attainment, education is power, effective teaching is the foundation and learning is the key. Teaching and learning is drifting away from the traditional classroom to a global perception and dynamic in nature. What types of ICTs are in use in FCE(T) Omoku in teaching and learning? What prevents and facilitates the adoption and use of ICT in FCE(T) Omoku adequate capacity? How lecturers/students do perceived the use of ICTs systems and services? How easy and appreciative (affect) is using ICT systems and services to them? How lecturers/students do perceive the Cost of acquiring and using ICT systems and services? The benefits of ICT availability and impact by lecturers/students and the effectiveness in teaching and learning cannot be over-emphasized. Failure to adopt ICT has led to unproductive and effortless teaching and learning. It is always a research topic to improve the existing condition improvement and resulting in the productivity increase for the same. We conducted survey to know the impact of the subject on each teaching individual. The following hypotheses are proposed in this research work:

- A. To what extent are ICT infrastructures available in FCE(T) Omoku?
- B. Perceived impact of ICT has a positive effect on teaching and learning?
- C. How proficient are lecturers/ students in the use of ICT infrastructures to enhance their learning?
- D. What are the factors that inhibit the use of ICT infrastructure in FCE(T) Omoku?



Figure 3: The VBSE Hypotheses Model

## iv. The Approach & Methodology

The methodology employed in this study will be positivistic, quantitative and hypothetic-deductive, more so research and a control group will be experimented. Hypotheses were derived from the extent literature on Technology Acceptance Model (TAM), Technology-Organization-Environment Model (TOE) and The Unified Theory of Acceptance and Use of Technology (UTAUT).

To evaluate the availability and impact of ICT on teaching and learning ability in Federal College of Education (Technical) Omoku the study sought information in three areas: (a) respondent’s demographic profile, (b) availability of ICT infrastructure, (c) perceived ease of use of ICT, (d) perceived impact (Affect) of ICT in teaching and learning, (e) perceived inhibitors of ICT use in teaching and learning. The questionnaire will include a five-point Likert scale having the ratings of “strongly disagree” (1) and “strongly agree” (5) for use by respondents in indicating their response. The Figure 3 shows the Perceived Affect which results in the effective Teaching learning process.

### A. Data Collection and Survey

Primary and secondary data sources will be used. Primary databased on the questionnaire were used in this work. 200 questionnaires were distributed to students in the institution and 187 were collected from the respondents from a total of 177 questionnaires which were completely and correctly filled were therefore analyzed.

### B. Analysis and Results

The collected data were analyzed based on descriptive statistics (frequency, percentage, mean, standard deviation and correlation coefficient) using the statistical package for social sciences (SPSS version 20).

This study seek to investigate the availability and impact of learning using ICT facilities in FCE(T) Omoku in Rivers State, Nigeria. This study will contributes to an extends our understanding of the usage of ICT facilities such as computers, interactive boards, educational website, tablets/Handsets/Ipads in FCE(T) Omoku. The work establish that the following factors; Availability of ICT infrastructure, Perceived Ease of Use of ICT, Perceived Inhibitors of ICT use in Teaching and Learning and Perceived Pleasure/Arousal/Dominance of ICT facilities influence the availability and impact on student learning ability in FCE(T) Omoku. From the student point of view, the finding provide support for effective learning, fast asses of information. The research was done under theoretical framework developed based on the previous studies. The value of the mean of the study approximately above average shows that all of them are significant elements of ICT availability and effect (impact).

### C. Research Questioniar and Querries

The demographic profile and ICT usage of the respondent will be citically viewed. Moreso, reliability analysis of the vareiables as well as the descriptive statistics is given.

### D. Reliability Analysis of Variables

Measure of reliability determines to the degree to which the items that make up the scale **hang together**. The question is that are they measuring the same underlying construct? A vital measure is the Cronbach’s alpha coefficient. The Cronbach alpha coefficient of a scale of above 0.7 is accepted as reliable.

### E. Limitation, Constraints and Recommendation for Future Work

This work will be limited to FCE(T) Omoku, with survey in school of science education among other schools with sample size of approximately 200 lectures and 1500 students from school of science education, future research needs to be more elaborate in the use of more ICT infrastructure for teaching and learning including government policies and infrastructure.

## v. Conclusion

This study will seek to investigate the availability and impact of ICTs on teaching/ learning in FCE (T) Omoku in Rivers State, Nigeria. This study will contributes to extend our understanding of the usage of ICT facilities such as computers, interactive boards, educational website, tablets/Handsets/I-pads in FCE (T) Omoku. It will be also shown in our future study the productivity improvement because of our Model. This work will establish that the following factors; Availability of ICT infrastructure, Perceived Ease of Use of ICT, Perceived Inhibitors of ICT use in Teaching and Learning and Perceived Pleasure/Arousal/Dominance of ICT facilities influence the availability and impact on student

learning ability in FCE(T) Omoku. From the student point of view, the finding will support for effective learning, fast asses of information.

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### **References**

- [1]. Legris, P. Ingham, J & Collette, P (2003). *Why do people use information technology?: A critical review of the technology acceptance model*. Information and Management, 40(3), 191-204, 2003.
- [2]. De Vellis, R.F (2003), *Scale Development: Theory and Applications (2<sup>nd</sup> Edn.)*, Thousand Oaks, California, Sage.
- [3]. Ifinedo, P. (2011b). *Internet commerce and SMEs in Sub-Saharan Africa: Perspectives from Nigeria*, conference on Information Technology and Economic Development. Calabar, Nigeria, July 25-27, 2008, pp. 1-8
- [4]. Davis, F.D (1989), *Perceived Usefulness, Perceived Ease of Use and user acceptance of information technology*. MIS Quarterly 13(3) 318-346
- [5]. *National Policy On Education (Revised)*; Federal Republic Of Nigeria
- [6]. Tornatzky, L.G & Fleischer, M. (1990). *The Processes of Technological Innovation*. Laxington, MA: Laxington Books.
- [7]. J. Zhu and Z. Zhou, "Continuing education and training of teachers in rural area based on mobile learning and mobile services," presented at The 1st International Conference on Information Science and Engineering, pp. 3723-3725, 2009
- [8]. IEEE - Computer Society, "1484.1 IEEE Standard for Learning Technology – Learning Technology System Architecture (LTSA)," ed., Institute of Electrical and Electronics Engineers, Inc., 2003.
- [9]. "Initiatives to improve the quality of teaching and learning A review of recent literature" Education for All Global Monitoring Report 2008 , United Nations Educational, Scientific and Cultural Organization
- [10]. " What is happening in ICT in Nigeria – A Supply and Demand side analysis of the ICT sector" Evidence for ICT Policy Action, Policy Paper 6, 2012 by Fola Odufuwa

About Author (s):



Oruan Memoye Kepeghom is a PhD Scholar in Jain University Bangalore India. He is Faculty of Federal College of Education (Technical) Omoku-Nigeria. He is doing research on Value-Based Software Engineering and Studying to improve the Teaching and Learning Process



Madhu B K is Professor and Head in the department of Information Science & Engineering at R R Institute of Technology, Bangalore. He is also Research Guide at Jain University, Bangalore. His research topics includes SE, ST and Specifically on Agile Software Testing.