
Computer Education in Tertiary Institutions: Challenges and Prospects for National Development

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ABSTRACT

The economic development of any nation is closely tied to the level of education of its citizens. A high level of education of citizens of a nation is an indication that the economy of that nation will be high positively. The reverse also speaks for itself. Education is the process of facilitating learning and acquiring knowledge or skills. Computer education is crucial for any society to be well developed as the world is now computer driven. Hence no nation can guarantee development without consciously embracing information and communication technology. In this paper, the scope and roles computers play in education are stated. Also despite the identified key challenges of the subject of discourse, outstanding benefits/prospects of computer education in tertiary institutions that can aid nation building were looked at.

Keywords: Computer Education, IT, Prospects, National Development

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1. INTRODUCTION

Education is one of the main key to economic development and improvement in human welfare. According to the concept of Chvalovsky (1978), Education in its broadest, general sense is the means through which the aims and habits of a group of people lives on from one generation to the next. As global economic competition grows sharper, education becomes an important source of competitive advantage, closely linked to economic growth and a way for a country to attract jobs and investment, thereby leading to national development Adu & Eze (2014). Nations consciously invest in all levels of education due to the fact that it can yield unquantifiable benefits for individuals, organizations (private and public) and the entire society. Computers are resourceful and versatile equipments that can function in virtually every other discipline. It greatly helps in the betterment of deploying techniques, processes, laws etc in various sectors (science and non-science based) of a nation that craves to improve the state of its nation economy. Haruna (2014) opined that using computers to solve problems effectively requires both the computer science expertise and knowledge of the particular application domain.

In addition, education appears to be one of the key determinants of lifetime earnings. Most countries frequently see raising educational attainment as a way of tackling poverty and deprivation. In most developing countries, education is linked to a whole batch of indicators of human progress. If we look at Asian economies, we will see the benefits that public investment in education can bring. Particularly in Malaysia, studies have shown that the government takes education not just as an economic policy but also a social policy as the government seeks to unify various racial groups in national building through education Loke and Hoon (2011) in Phan and Coxhead (2013).

Everyone recognizes the fact that education is important not just in the early years, but also in later life. As the pace of technological change quickens, education offers a way to improve and update the skills and capabilities of the workforce of a nation Edwards (2010).

Computers comprise mainly of software (application) and hardware. Computer applications cover a wide range of disciplines. They include statistical, desktop publishing, presentation, graphical, medical, CAL (computer aided learning), communication, and so on. The list is as long as the various areas of human endeavours. Using technology in isolation is not helpful, especially when technology changes quickly and dramatically. It is advisable that computer education be integrated in all levels of teaching and learning within the context of educational goals for it to be meaningful. But it is disheartening to note that some educational institutions at this information age still do not offer computer studies as a compulsory course at any level (primary to tertiary). Lack of Information Technology (IT) personnel, steady electricity supply, IT equipments, amongst others stand as great challenges to the implementation of computer education in the schools' curriculum.

Computers are not the only technological tools that can be used in offices or for teaching and learning. Amongst others are projectors, CDs, Radio, Digital white boards, etc.

According to Haruna (2014), it is very clear that no educational system can afford to stay outside the information age in a world that is now being run by knowledge. To overcome these, the answer is the full introduction of computer science into all levels of education. No pupil/student is too young to have a knowledge of computers and other Information Technology-based devices.

The importance of studying computer education cannot be over emphasized; some of the importance he stated are:

1. For computer literacy so as to live comfortably in a computerized society.
2. To prefer you to have insight on how to solve problems in general
3. To prefer you to use computer in choosing career
4. To be able to program and process data with speed and accuracy.
5. To be able to translate ideas to construct and design computer systems.
6. To give students firm foundation for further studies.
- 7.

In virtually every sector of the society, computers play a vital role. In education its for teaching and learning, in administration for record keeping, also in health/hospitals for diagnosing and prescribing drugs, and in banks used for deposit/withdrawal transactions.

1.1 Purpose of Study

The purpose of this study is

- to identify the relevance of computer education being taught as a course or as a subject in tertiary institutions.
- To identify how computers can help in national development in this information age
- To identify the challenges faced by tertiary institutions offering computer course

1.2 Importance of Computer Education to Students

According to Lewis (2015), exposing children/students to computers helps them hone their skills. Computer education enhances technological progress, which is a major determinant of the future of our country's economy, and can be an asset in improving students' overall learning ability. Find below more importance of computer education to students.

- ❖ **Improves Research:** Computer education improves students' research skills by encouraging them to look for information on the Internet. It enables them to research various topics by seeking relevant books that could be digitally available online. The Internet also contains search options, which expose students to diverse ways of obtaining information. Thanks to the speedy nature of the Internet, students can research their desired topics within minutes.
- ❖ **Influence Career Aspirations:** Incorporating computer education in schools can inspire students to undertake careers in technology and enhance their understanding of how computer technology impacts people's daily lives. The knowledge acquired in elementary and high school may increase their interest in computer-related fields during their college education. Furthermore, computer education provides students with a grounding in computer-related software and activities, such as using office suite, programming languages and creating data sheets. Students can apply these skills to a range of occupations later in life.
- ❖ **Enhanced Creativity:** Computer classes allow students to put their creativity to use. For example, classes can involve assembling and disassembling computer parts, which require students to think about and understand how parts function. Students can transfer their enhanced creativity to other activities in their lives, including memorizing scientific facts, historical information or mathematical formulas. Computer education also reduces the time needed to efficiently learn new material.
- ❖ **Improved Performance:** Computer education may influence student performance by enabling them to become more involved with their school work. Computers can potentially enhance students mathematical thinking, and improve scores in problem solving and critical thinking tasks. Computer education also plays a major factor in students' ability to score highly on their standardized assessment tests. Exposing 3- and 4-year-old children to computer education and supporting activities produces developmental gains such as abstraction, intelligence, nonverbal skills and long-term memo

1.3 Roles of Computer Education in Nation Building

A nation is a large body of people united by common descent, history, culture or language, inhabiting a particular state or territory. The integration of computer education into educational activities in Nigeria will play a great role in nation building particularly in this information age era. Computer is an electronic device used in almost every field even when it is most unexpected. We actually cannot imagine a world without computers. Nowadays, computers are not tools alone to engineers, but widely used by every discipline.

According to Kaka (2008), the roles can be stated as:

- To implement the principle of life-long learning/education
- To increase a variety of educational services and medium/method for learners
- To promote equal opportunities to obtain education and information.
- To develop a system of collecting and disseminating educational information
- To promote technology literacy of all citizens, particularly students
- To develop distance education with national and current contents
- To promote culture of learning at school (development of learning skills, expansion of optional education, open source of education, etc)
- To support schools in sharing experience and information with others across the country and other continent
- To improve research and prepare learners for the real world.
- To influence Career aspiration in computing

2. CHALLENGES OF COMPUTER EDUCATION IN TERTIARY INSTITUTIONS

In tertiary institutions lots of glaring challenges consistently abound and these have hampered the implementation of computer education in tertiary institutions, thereby delaying the nation from reaping from its enormous benefits economically, socially, and so on.

According to Ogwo et al (2015), some of these challenges are:

- There are negligible number of in-service computer training programmes for teachers in schools. Even when there are a few, resources to implement the training and push down knowledge to the learners is a problem.
- Government do not avail funds for computer procurement in most cases.
- Phobia of computers and other related resources is another significant factor for resenting the subject. Many fear to embrace change of teaching and learning with computers.
- Few qualified and trained teachers are available to teach the subject thoroughly to learners in tertiary institutions. Many computer professionals prefer offers in the banks and industries.
- According to Haruna (2014), poor supply of electricity in Nigeria is an acute challenge as computers totally depend upon it. Although there are alternative power sources such as generators, inverters or solar, but they are very expensive to purchase, and regularly maintain.
- Learning content and language are also challenges facing the integration of computers/ICT in education. Content development is a critical area that educators overlook. The relevance of the learning content to learners must be looked into carefully.
- Computer education requires clearly stated objectives, mobilization of resources and political commitment of the concerned body.

3. PROSPECTS OF COMPUTER EDUCATION FOR NATIONAL DEVELOPMENT

Education is a powerful tool of social, political as well as economic progress without which neither an individual nor a society can attain professional growth Yusuf et al (2013). Computer education when thoroughly handled by professionals and certificated teachers can in the long run enrich various sections of our economy as it enhances delivery of and access to knowledge.

The challenges stated above are very glaring in tertiary institutions but we can be optimistic that the prospects of computer education to building the nation politically, economically and technologically are enormous, especially following China's launch of a communication satellite for Nigeria. For the first time in an African country, China is providing both the satellite and the launch service. The Nigerian Communication Satellite (NIGCOMSAT -1R) is a super hybrid, geostationary satellite that will provide communication services for Africa and parts of the Middle East and Southern Europe. This indeed has helped some Nigerians with IT jobs, improve e-commerce and government efficiency by providing the development of a digital economy in the country and other parts of the continent of Africa. This effort by China, represents a progressive move towards bridging the digital divide, as there is no doubt that teachers and learners/students in tertiary institutions would have much broader resources available to them if they sort to secure reliable access to the Internet, Ololube et al (2009). Funny enough, this Nigeria satellite that the government spent so much to build is not been utilized as it ought to be as we still don't have faith patronizing our own products and services.

As the digital revolution continues to speed up, there are and will continue to be many challenges of technological inequality which need to be addressed. It is vital for children to be educated on all aspects of computer usage from a young age in order to stay on the right side of the digital divide and ensure that they have a bright and prosperous future. Computer have become an essential piece of equipment in the schools (tertiary institutions) of most developed and a few developing nations (that have embraced it), and are now an indispensable tool that can assist students/learners with the study of other traditional school courses.

Computer is a resourceful piece of equipment and has many versatile functions one of which is to provide aid in the teaching and learning of most courses in tertiary institutions. Many computer applications exist that intentionally help to provide express support to students studying mathematics, sciences, languages, engineering, medicine, office management, architectural design, fashion, etc. (ie e-learning). These equipment (computer) and their application software can be used to teach/learn practically oriented courses also. All of these help to create a march of our students with other students in the world, Edwards (2010).

The efficient use of computers in the university teaching hospitals cannot be over emphasized. It will greatly help all patients especially those in life threatening situation. Computers, mobile devices and internet facilities should be made available in teaching hospitals for easy communication in case of emergencies and access to current research information. This will boost the image and reliability of our health sector. Medical students need not leave the hospital premises to cybercafés to source for information regarding to their studies but right in the teaching hospital premises they can be connect to the internet for knowledge assistance and interaction with other medical personals in the world and even their patients.

4. CONCLUSION/RECOMMENDATION

For a gross national development that are various computer applications that can enhance the economy of a nation especially a developing one like Nigeria. Well equipped tertiary institutions will produce efficient and grounded computer science/ ICT graduates and computer literate graduands from other discipline. When these are employed as specialist in their various areas such as banking, engineering, ICT, hospitals, medical lab scientists, office technologist etc, we shall produce a refined set of workforce that will meet up with the technological advancement in various sectors of the country.

According to Olobube (2008) in Olobube et al (2009), our Nigerian government should embark on a comprehensive programme of tertiary education recapitalization and should move from its traditional position of paying lip service or shallow attention to empowering higher education programmes particularly computer education to proactively funding, monitoring and controlling ICT implementation as a way of ensuring that adequate standards are met. Taking computer education as a course/subject in all departments in tertiary institutions should be strictly adhered to. Computer applications as it applies to every field of study should be offered each year till graduation, provided adequate computer laboratories are in place to cater for practical operations of the computing devices. Also capable hands should handle this course as the stakeholders of tertiary institutions should conduct regular trainings for teachers to meet up with the demands of current trends in the computing field.

REFERENCES

1. Adu E.O. & Eze I. R. (2014), Using ICT to Enhance the “Talk and Chalk” in Education, 1st Edition of Proceedings of IAC-Tel 2014, Mac Prague Consulting Ltd.
2. Chvalovsky V. (1978), Computer Science Education at Universities: the Case of Developing Countries, ACM, doi>10.1145/990555.990574.
3. Edwards L. (2010) Time to End the Laptop Controversy, Newsday Magazine of Monday, September 27th, 2010, available at <http://www.newsday.co.tt/letters/print,0,128218.html>, accessed April 17th 2017.
4. Haruna L. (2014). Computer Science Education in Universal Basic Education(UBE): Problems and Prospects, Information Management Journal, vol 4, 9,ISSN 2224-5758.
5. Kaka S. (2008), The Role of ICT in Education Sector, Inside Magazine, Vol 2 July, 2008.
6. Lewis J. (2015) Importance of Computer Education to Students, available at <https://www.facebook.com/CitEducationalDevelopmentSystem/posts/955458767808198>, accessed April 23rd, 2017
7. Mannel R (2009), A Short history of Computers and Computing, Macquarie University, available at http://clas.mq.edu.au/speech/synthesis/history_computers/
8. Ololube N.P., Eke P., Uzorka M.C., Ekpeyong N. S. and Nte N.D. (2009) Instructional Technology in Higher Education: A case of Selected University in the Niger Delta, Asia-Pacific Forum on Science Learning and Teaching, Vol 10, 2 article 7
9. Phan D & Coxhead I. (2013), Education in Southeast Asia: Investments, Achievements and Returns, available at <http://www.aae.wisc.edu/hoseae/d11v1.pdf> accessed April 17th 2017.
10. Yusuf M. A., Afolabi F.O., & Loto A.B. (2013), Appraising the Role of Information Communication Technology as a Change Agent for Higher Education in Nigeria, International Journal of Educational Administration and Policy Studies, Vol 5(8), pp 177-183