

# Computer Science Education in Universal Basic Education (UBE): Problems and Prospects

Lawal Haruna

Department of Mathematical Science and Information Technology, Faculty of Science and Education, Federal University Dutsin-Ma, P.M.B 5001, Katsina State-Nigeria.

Email:lawalharunak@yahoo.com / lharuna@fudutsinma.edu.ng

## Abstract

Computer Science Education is very vital in the development of any society, as such no nation hope to develop without embracing Computer technology. In this paper aims and specific objectives of Universal Basic Education (UBE) in Nigeria were stated, the problems and prospects of Computer Science Education in UBE were outlined, some of the problems of computer science education are; inadequate and lack of qualified teachers, poor implementation and management strategy of computer programme, inadequate computer laboratories and insufficient computers in most schools, inadequate supply of electricity, insufficient schools and classrooms to enroll school aged children and drop-out among others. While some of the prospects are; the inclusion of Computer education as one of the core subject is a milestone toward achieving the objective of UBE, many states has began the computer education pilot programme in some selected schools such as in Katsina state, development of UBE new curriculum, interest shown by government in incorporating information and communication technology in administration and education and, offering of computer science as a course in most of the tertiary institutions in Nigeria, so as to provide enough and qualified teachers among others. Conclusively, recommendations/suggestions were provided in which if followed will ameliorate these problems and plan for future development.

**Keywords:** Computer Science Education, Problems, Prospects, Universal Basic Education,

## 1. Introduction

Every nation invests in education because it can produce unquantifiable benefits for individuals, organizations and the society as a whole [10]. Computer Science Education is very vital in the development of any society, as such no Nation hope to develop without embracing Computer technology. Computer Science as a discipline is relatively new discipline compared with Chemistry or Biology, and unique because of its relevance and wide application in many areas of study i.e Physics, Biology, Engineering, Law, and many more. [4] Opined that Computer Science has strong connections to other disciplines. Many problems in Science, Engineering, Health care, business, and other areas can be solved effectively with computers, but finding solution requires both Computer Science expertise and knowledge of the particular application domain.

Computer can be viewed in two ways; as an area of study and as a tool, computer science as an area of study, Tucker in [7] defined Computer Science as the body of knowledge dealing with the design, analysis, implementation, efficiency and application of process that transform information. Computer Science is discipline that spans theory and practice. It requires thinking both abstract terms and concrete terms [4]. The fundamental question underlying all Computer Science is what can and cannot be automated Denning in [7]. Computer as a tool can be defined as the general purpose electronic machine for processing and storing data. It can provide very large amount of information in different forms such as text, sound, graphics and video as well as manipulating such information.

In some of the developing nation computer science has not gotten deep root to some extent more especially in primary and secondary schools, like in Nigeria, thought computer science has national standard curriculum in Federal Secondary Schools (Federal Government Colleges) in the early 90's and just recently in primary schools, where the foundation of education started. Even in Federal schools where computer has begun since are facing many challenges such as inadequate computers, laboratories and inadequate and qualified teachers. According [2] the challenges of Computer Education are both educational and administrative. The prominent among the administrative problems is high cost of buying computers and software's for instructional purposes in most Nigerian secondary schools, the cost of installation, maintenance and replacement of Computers is very high. Some states have their own Computer curriculum, like in Katsina State where they designed and began to implement Computer Science pilot programme scheme in some selected Secondary schools at the beginning of fourth republic in Nigeria and lately in some primary schools. But recently the National Educational Research and Curriculum Development (NERCD) have developed a new UBE curriculum (Computer Science Education inclusive) for distribution to Primary and Junior Secondary schools.

It is disheartening to note that not all tertiary institutions offered computer science or computer studies as a course, thought all the tertiary institutions in Nigeria (both Universities, Polytechnics and Colleges of Education) offered computer general studies (computer appreciation) as a compulsory course in year one and/or two to all students but most of them with no practical classes.

It is very clear that no educational system can afford to stay outside the information age in a world that is now run by knowledge. To overcome these, the answer is the full introduction of computer science into all level of education (Primary, Secondary and Tertiary institutions). The importance of studying computer science cannot be over emphasized; some of the importance includes the following as outlined by [7].

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 program and process data with speed and accuracy.
5. To be able to translate ideas to construct and design computer system.
6. To give you firm foundation for further studies.

Computer plays an important role in the development of any society, such as; it is playing a major role in banking industries, commercial sectors, education (teaching and learning), government and other non-governmental agencies. In Banking industries Computer is use to deposit/withdraw money while in commercial sectors is used for transaction within and between organizations. In government agencies it helps in keeping record, transaction with other organizations, government programs through internet etc., also in education Computer is used for teaching and learning by both teachers and students, it is also used in keeping staff and students' record.

Considering the above, to prepare pupils to face these challenges there is need to start from the foundation level which is primary level of education for adequate and efficient knowledge of computer science education.

## **2. Universal Basic Education (UBE)**

### **2.1 A Short History of Universal Basic Education (UBE)**

Universal Basic Education (UBE) was launched in Nigeria in September 1999 by Chief Olesegun Obasanjo at Sokoto to serve as a catalyst to the dearth of the entire Nigerian education system, but most specifically the basic education sub-sector. The Universal Basic Education (UBE), comprises of six years of Primary Education and three years of Junior Secondary School Education.

According to Oga in [5], the Universal Basic Education (UBE) was launched in Nigeria in response of the global trend of providing education for all by the year 2002. He enumerated a number of global efforts that were made in that direction to include such declarations as:

- i. New Delhi 1990 declaration on Education of E.9 Countries;
- ii. Ougadougou 1992 Declaration on Education of Women and Girls;
- iii. Amman 1996 affirmation on the pursuit of goals of Jomtien;
- iv. Durban 1998 statement of commitment of inter-African collaboration for the development on education;
- v. Organization of African Union (O.A.U) Decade of Education in Africa, 1997 – 2006.

The UBE Act (2004) which was signed into Law in May, 2004 provided the legal framework for the programme and an indication of its effective take off.

The present basic education (UBE) is almost the same as the old Universal Primary Education (U.P.E) scheme; it is free and universal like before, as mentioned by President Chief Olesegun Obasanjo in September 1999 during the launching of the programme in Sokoto. He further says in addition the UBE will be compulsory and broader focus on children from age six to age fifteen and it will accommodate from six year primary school to three years junior secondary school, likewise fund will be available for proper equipping of the schools.

### **2.1.2 Specific Objectives of the UBE**

- i. Developing the entire citizenry a strong consciousness for education and strong commitment to its vigorous promotion.
- ii. The provision is free, universal basic education for every Nigerian of school going age.
- iii. Reducing drastically the incidence of dropout from the formal school system.
- iv. Catering for the learning needs to young persons who for one reason or the other, have had to interrupt their schooling, through appropriate forms of complementary approaches to the provision and promotion of basic education.

- v. Ensuring the acquisition of the ethical, moral and civic values needed for the laying of a solid foundation for lifelong learning etc [8].

### 2.1.3 Aims of UBE

- a) Ensuring an uninterrupted access to nine (9) years formal education by providing free, compulsory basic education for every child of school aged (6-15 years).
- b) Reducing school dropout and improving relevance, quality and efficiency.
- c) Acquisition of literacy, numeracy, life skills and values for lifelong education and useful living among other aims [8].

### 3. Computer Science Education in UBE

The Universal Basic Education (UBE), comprises of six years of Primary Education and three years of Junior Secondary School Education. Primary Education is the education given in primary schools for children aged 6-11 years plus (FRN, 2004) in [5]. This is where the foundation of education starts. The junior secondary education (upper basic education JSS 1-3 ) is given in Junior secondary schools. Computer education is one of the core subjects in both primary and junior secondary schools. The objectives of primary education specifically include:

- a) Inculcate permanent literacy and numeracy and ability to communicate effectively;
- b) Lay a sound basis for scientific and reflective thinking;
- c) Give the opportunities for developing manipulative skill that will enable him to function effectively in the society within the limit of his capacity; and
- d) Provide the child with basic tools for further educational advancement including preparation for trades and crafts of the locality.

### 3.1 Problems of Computer Science Education in Universal Basic Education (UBE)

It is obviously known to everybody that computer science discipline is relatively new subject compared with long established subjects like mathematics, chemistry, physics etc though they too face a lot of problems in Nigeria. Therefore computer science as a new discipline could not be left out.

Below are some of the problems of computer science education in UBE.

- 1) Poor implementation and management strategy: the poor implementation and management strategy hinder the success of computer education in UBE. According to Omotayo, Ihebereme and Maduwesi in Alaba [1] identify poor implementation strategy, management and lack of quality assurance as responsible factors to realize the goal of UBE.
- 2) There is problems of setting-up and management of computer science laboratory in our primary and junior secondary schools. Being computer as a practical subject, therefore requires laboratory(ies) for conducting practical classes but the cost of setting up laboratory is very high, also the management of such labs is very formidable task because there are no adequate and well trained personal to manage the labs.
- 3) Inadequate and well trained computer science teachers: there are no adequate and qualified computer science teachers in our primary and junior secondary schools, most of the schools that offered computer as a subject it is the mathematics teachers that teaches computer and majority of them are not specialist in computer. The few professionals are attracted to banking and other sectors of economy. Thus there is gross inadequacy of enough and well trained computer teachers in UBE.
- 4) Inadequate supply of electricity: there is acute shortage of electricity supply in Nigeria in which computer depend on, though there are other alternative source of power such as generators and solar but they are very costly, in addition most of the primary and secondary schools are located in the rural areas where there is no electricity.
- 5) Inadequate schools and classrooms: there are no enough schools and classrooms available to enroll the school going children in UBE, all the three tier of government neglected education sector with no facilities and other infrastructures in schools, no new establishment of schools, those available their buildings were dilapidated. Pupils received lesson under the tree in many schools. There is poor attitude of government towards computer science education more especially in UBE, the government is not showing its concerns in primary and junior secondary schools compared to tertiary institutions where computer centers are establish neglecting the primary and secondary schools which are the foundation of education.

- 6) Lack of motivation: there are no enough remunerations and incentives to computer science teachers to motivate them to stay and develop their career in the profession; this is why majority of them are attracted to banking industries and other sectors that paid well.
- 7) Lack of computer library in primary and secondary schools: most of the schools do not have computer library for teachers and pupils to have access to reading materials and many schools even the general library.
- 8) Inadequate furniture for both pupils and teachers: there is acute shortage of sitting and writing furniture for both teachers and learners in most schools in Nigeria. In some schools the pupils received their lesson on a mat or on the floor. According to [5] though the federal, state and local governments are providing furniture for the classrooms, he said the furniture is not adequate considering the number of pupils admitted each academic session.
- 9) Primary and junior secondary school drop-out: there is high percentage of school drop-out in UBE. Oghuvbu in [6] says the percentage of drop-out at primary and junior secondary school is high especially in the rural areas.

### 3.1.2 Prospects of Computer Education in UBE

1. The introduction of UBE programme is one of the step-forward towards the computer education in the country more especially at basic level of education.
2. There is hope for computer education in UBE due to the ample career and job opportunities especially in the future ,for the Nigerian school learners with skill in computer science and education such as word/data processing operators, system analyst, programmers, website designers, and engineers etc.
3. Some public and private schools in some states such as Katsina state started to offer computer science or studies as a subject in some selected junior and senior secondary schools level and established computer laboratories in these schools.
4. The interest shown by government in the development of information and communication technology like Global System for Mobile Communications (GSM) will arouse government interest to embrace computer education in UBE and also in line with the aims and objectives of the UBE.
5. The offering of computer science as a course by tertiary institution is another way of tackling the problem of no enough and well trained teachers to teach in primary and junior secondary schools.
6. The development of UBE curriculum minimum standard (computer education inclusive) by National Educational Research and Curriculum Development (NERCD) will ameliorate the problem of no uniformity in the primary and junior secondary schools curricula.
7. Private individuals and organization are in the forefront in providing computer training centers or institutes in most of our urban cities. These centers engaged in massive training of the young and old in computer appreciation and applications.

## 4. Conclusion

It is clear that no human endeavors that have not being touched either directly or indirectly by rapid development of computer field. The progress of any nation in this era is its dependent on its ability to embrace and utilize information technology. Here in Nigeria as a right our children should be taught computer science and technology, so as to face the challenges ahead.

As a matter of urgency, federal, state and local government should ensure proper implementation and management of computer policy programme in the nation. In addition to that the National computer center should be established as we have mathematical centre.

Therefore, to achieve all these, there must be proper planning, research, evaluation and staff development. As such it is now the task of government, educational planners/administrators and private organization to play major role in developing computer curricular and its implementation more especially in UBE so as to meet the challenges in the country and world at large.

## 5. Recommendations

- 1) There should be adequate funding for computer education from government and private individuals.
- 2) Government should put effort in developing computer curricular in primary and secondary schools.
- 3) There should be campaign for the awareness of the use and importance of computer education so as to achieve the technological development in the society.
- 4) Pilot schools should be established and to includes computer education as a subject.

- 5) Government and private individuals should established computer science laboratory throughout the federation for the proper take up of the computer education in UBE programme.
- 6) Government should address the problem of power failure in the country so as to improve the power supply in the country.
- 7) Government should encourage colleges of education to graduate better trained and enough computer teachers for the new UBE programme through better funding.
- 8) Government should intensify effort in supervising schools to make sure proper management of the laboratories of established or to be established. Also schools should ensure proper management of computer laboratories in their schools.
- 9) To reduce the shortage of computer science teachers, incentive packages should be given to them and practicing mathematics teachers could be engaged in regular week end, vacation, and long term courses in computer studies. Such teachers, while teaching mathematical will also teach computer science.

## References

- [1] Alaba, S.O (2010) Improving the Standard for Quality of Primary Education in Nigeria: A Case Study of Oyo and Osun State. International Journal of Cross-disciplinary Subject in Education (IJCOSE), 1(3) : pp156-160
- [2] Bada, T., Adewole, A., and Olalekan, O. (2009) Uses of computer and its Relevance to Teaching and Learning in Nigerian Education System. Journal of Education Research and Review Vol. 4(10); PP 443-447.
- [3] Danmole, B.T (2011) Emerging Issues on UBE Curriculum in Nigeria: Implication for the Science and Technology Component. Med-well Journals, Pakistan Journal of Social Sciences Vol. 8(1): pp 62-68.
- [4] Department of Computer Science, What is Computer Science? Michigan technological university, united state of America retrieved on 09/07/2014 from <http://www.cs.mtu.edu/~john/whatiscs.html>.
- [5] Odu, K. O. (2011) Universal Basic Education and Human resource Development and Utilization in Technical Education in Nigeria. Kamla-Raj 2011, International Journal of Education Science 3(2): 145-150.
- [6] Oghuvbu, E.N (2009) Analysis of ICT Resources for qualitative Universal Basic Education in Nigeria's Delta State. Trans-campus, Journal of Research in National Development. 7(2)
- [7] Shehu, M. (2002) Prospects and Problems of Computer Education in Nigeria. A paper presented at the 39<sup>th</sup> Mathematical Association of Nigeria (M.A.N) annual National Conference held University of Calabar, Cross River State.
- [8] Tahir, G. (2006) UBE programme. Issues and Challenges: Implication for teacher Education Institution. A paper delivered at the convocation lecture at F.C.E, kano
- [9] Tucker, A.B.(1994) Fundamental of Computing 1:Pascal revised
- [10] Yusuf, M.O. (2006) Problems and Prospects Open and Distance Education in Nigeria. Turkish Online Journal of Distance Education, 7(1), 22-29

The IISTE is a pioneer in the Open-Access hosting service and academic event management. The aim of the firm is Accelerating Global Knowledge Sharing.

More information about the firm can be found on the homepage:  
<http://www.iiste.org>

## CALL FOR JOURNAL PAPERS

There are more than 30 peer-reviewed academic journals hosted under the hosting platform.

**Prospective authors of journals can find the submission instruction on the following page:** <http://www.iiste.org/journals/> All the journals articles are available online to the readers all over the world without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. Paper version of the journals is also available upon request of readers and authors.

## MORE RESOURCES

Book publication information: <http://www.iiste.org/book/>

## IISTE Knowledge Sharing Partners

EBSCO, Index Copernicus, Ulrich's Periodicals Directory, JournalTOCS, PKP Open Archives Harvester, Bielefeld Academic Search Engine, Elektronische Zeitschriftenbibliothek EZB, Open J-Gate, OCLC WorldCat, Universe Digital Library, NewJour, Google Scholar

