

INTEGRATING COMPUTER LITERACY - BASED EDUCATION INTO THE NIGERIAN PRIMARY SCHOOLS: A PANACEA FOR NATIONAL DEVELOPMENT

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Abstract

Computer technology has brought about an unprecedented revolution not only in the business world but also in education. This has necessitated its integration into (he Nigerian primary schools"" as a base for national development. For education to achieve its major goal of preparing learners for productive life in the society, there should be innovations in educational aims, content and implementation strategies which computer technology must be at the centre. These innovations should start at the primary level. This paper is therefore a contribution to the rationale and effective ways of integrating computer technology into the primary school curriculum. The paper highlighted the problems that can affect computer technology integration and discussed goals for computer literacy curriculum. Recommendations were put forward among which are compulsory Weekend Computer-Based Training Programmes (WCBTP) for teachers and supply of facilities and equipment to schools.

Introduction

The influence of computers on human life and on the development of civilization will continue to increase experientially in the years ahead. All students need to be educated to respond positively and productively to this growing influence. Computer literacy and education, therefore, are essential outcomes of contemporary education. Supporting this fact, Sotonwa (1998) stated that the twentieth century witnessed the beginning, development and expansion of information technology (IT) in education. The use of books and other print materials in the classroom were augmented by the introduction and use of other kinds of IT, such as over-head transparencies, slide, film strips, audio-tapes, language laboratories, radios, videos, televisions, computers and telecommunications (Collins, 1994).

It is essential that our educational system be modified in such a way that students begin learning about and interacting with computers from the time they first enter school. The use of computers, as both objects and instruments of learning, should be thoroughly integrated into the school programme. As students progress from kindergarten to primary school, they need to study the history of computing, the versatility and limitations of computers, the impact of computers on society, computer operation, problem solving, programming skills, and areas not yet envisaged. According to Becker (1984), Winders (1988), and Mecklenburger (1990), the educational uses of computers are as follows: easy access to information for both learners and teachers, individualization of instruction, presentation of vast learning opportunities for disabled students, makes learning to be more flexible, portable and interesting, facilitates distance education, promotes teacher productivity, improves instructional management and expands time for learning beyond the school period.

The transforming effect computers continue to have on society will have a lot of impact on our educational practices logically and directly. The study of computers can help to expand the power of the human mind and foster a much needed dimension to our intelligence. Such educational opportunities are absolutely vital for the students in our school system. In recognition of the preeminence of computers in information and communications technologies, many countries have

launched computer literacy programmes in their schools. Akindolu (2000:148) reported that, "in the mid 80s', the French government set up an education scheme called information for all (L' information Pour tous) while the Soviet Union launched "Fundamentals of Information, Science and Computer

Technology" (Vera, 1985 and Paramentier, 1988). The aim of these programmes is to provide the education of an internationally accepted standard that will cope with the challenges of modern technologies.

However, the situation seems not to be the same with the impact of IT in Nigerian education. In Nigeria, the federal government is yet to set up a computer literacy scheme at the primary schools. In this paper, attempts would be made to discuss on making decisions about computer literacy, goals for computer literacy curriculum, issues that affect computer technology integration and computer literacy rationale for national development.

Making Decisions About Computer Literacy

Defining computer literacy is a big challenge. One person thinks it means simply being able to turn on a machine. Another feels it means being a very competent programmer. A standard definition cannot even be found in the plethora of computer dictionaries. The American Heritage Dictionary of the English Language (1976:762) defined literate as being "able to read and write", but that does not help in search for a definition of computers literacy. Troutner (1983) stated that computer literate person can function comfortably and be productive citizen in a computer -oriented society.

Nwosu (2002:139) defined computer literacy as an awareness of computer as a system. It entails enlightenment on the computer system. Computer literacy is all about acquisition of general knowledge of computer. It includes reading computer pamphlets, textbooks, journals and magazines. Perhaps this description of computer literacy can help lead us to a definition. For the purpose of this write-up, the writer's working definition of computer literacy will be used.

Computer literacy can be divided into two segments: computer awareness and computer programming. (Computer programming is the art of conceiving a problem in terms of the steps to its solution and expressing those steps as instructions for a computer system to follow). Computer system encompasses the areas of computer history, the computer's impact on the society, applications of computers, knowledge of the various types of computers, computer languages, components of a computer system, data representation, files and data processing, and understanding computer's vocabulary. The areas covered under computer awareness can be taught effectively in a classroom without access to computers. Computer programming, on the other hand, must be taught when and where students have access to computers. According to this definition, computer literacy contains these concepts:

- Being knowledgeable about the history and development of a computer.
- Being knowledgeable about what a computer is and is not, what it can and cannot do.
- Being aware of the different types of computer.
- Being aware of the different types of computer in use today.
- Being able to describe the activities of a computer and correctly use the terms referring to the basic parts of a computer.
- Being able to read and write simple programming using simple programming languages.
- Being able to get information into and out of the computer.
- Develop problem - solving, decision making, flowcharting through interaction with computers.
- Being able to evaluate computer software.

The Concept of National Development

From the American Heritage Dictionary of the English Language, a nation is the aggregation of people organized under a single government. Further, it described it as a body of people united under a particular political organization and usually occupying a defined territory. According to Eke (1990), development pre-supposes a starting point and movement towards a final state, which presumably is more desirable, more mature, stable and better. Development can be seen as a process of transforming the physical, economic, political and social environment of a nation into a more viable and stable polity. It depicts the creation of society in which certain conditions prevail for human beings. These conditions include safety, sufficiency, satisfaction, and stimulus. The implication is that development from which ever dimension one looks at it requires capital investment and technological processes of which computer education is at the centre.

Richard (1980:15) noted, "national development is the ability and willingness of an individual in a society to contribute his best in any form to the collective output of service from those things that enrich him materially and culturally. It includes such things as education, health/medical services, social security as well as developing an appropriate value system that will last among children, youths and adults". Actually, nation's development is seen in the process of continuous positive change in the quality and span of life of a person or persons. From all these expositions therefore, one can regard a developed nation as one in which there is a high percentage of literacy, self-discipline, greater freedom, political stability, buoyant economy, all kinds of material goods and modern social justice. Individuals have to be well educated and equipped with the knowledge of computer for the development of their nation in a computer sensitive world like ours today. The teaching and learning of computers in Nigerian primary schools will help us to move along with the new technological wave in the world today. The force of computer revolution in education is too great. We cannot afford to ignore it educationally and otherwise. For any nation to achieve sustainable economic and national development, there has to be a highly functional and well coordinated system of formal education.

Need for Computer Literacy Integration

The need to integrate computer into the Nigerian Primary Education cannot be over-emphasized. More of our children need to be computer literate in order to contribute to the development of the nation. The major aim of education is to prepare pupils to be effective in their society. Therefore, the relevance of computer literacy based education to our youths are seen in the following areas: + Employment Opportunities

Computer technology has reshaped the way we think and behave. Every facet of our lives today has something to do with computers. Troutner (1983:15) reported that:

By 1985, 75% of all jobs will involve computers in some way and that people who are unfamiliar with their operation and uses will be disadvantaged - computer illiterate. Some universities now require freshmen to purchase their own computers as an entrance requirement.

Supporting the above mentioned fact. Onuigbo (2001) posited that computer education helps to prepare our students for job after school and even get them more acquainted with tertiary institution curriculum. This is because computer education is now becoming a general course in most institutions of higher learning. It becomes necessary therefore that if students are to prepare for jobs after leaving school, they must be acquainted with applications of computer information processing. No doubt, computer literate applicants have job prospects everywhere.

*** Self-Reliance**

By self-reliance, we mean the right, the necessity, the freedom, the capacity, the willingness, and the resolve of a people, collectively or individually, to define, articulate, programme and struggle tenaciously to achieve their own goals, community, and national development through their own indigenous efforts, indigenous institutions, indigenous personnel, and programmes designed, packaged and operated by the people themselves (Ukeje, 2000). Actually, self-reliance calls for absence of over dependence but at the same time it encourages inter-dependence. In this present age of information technology revolution, self-reliance implies technological revolution and productivity.

With computer education, computer graduates will not be waiting for government jobs. They could be self-employed. Onuigbo (2001:100) asserted that, "Nigeria is still far from an educational programme that adequately prepares its citizens for self-reliance for the task of nation building. To this end, computer education offers a relevant education by producing self-reliant individuals towards national development.

*** Access to Information and Research for Pertinent Literature**

One of the wonders of the 21st century is computer technology which has revolutionized the way we process, store and retrieve information especially when we are dealing with a large chunk of data. Dike (1998) posited that with computer, information that can take several hours to sort out and retrieve can

be accomplished in a split second depending on the capacity of the microprocessor, with the advent of network systems (Internet, E-mail), students can now browse for information all over the world and this will help in their literature review for research works.

* **Motivation and Help in Career Choice**

Through computer literacy education, students are shown and made to know the different areas they can direct their potentials. When they browse the Internet, they see new innovations, job opportunities, scholarships enjoyed by their counterparts in other parts of the world. Therefore, they are sensitized to develop their own nation.

* **Tools for Teaching**

Computers are today being used in an extremely versatile way to aid the understanding of a wide variety of subjects. The computer can guide a user through a course of instructions at a Video Display Unit (VDU) in such a way as to facilitate understanding of the subject matter. The student's learning process is speeded up, sometimes faster than when a human teacher is available. Unlike the case of a human teacher, the student can re-learn any portion of the subject matter as is necessary for total mastery, guiding himself by the type of choice he makes during interaction with the computer. This process is often termed Computer Assisted Learning (CAL). Computer Based Training (CBT) can improve efficiency and effectiveness. Effectiveness refers to improved learner achievement, while efficiency means achieving objectives in less time or at lower cost.

• **Technological Challenges**

Advancement technology requires a sort of change in the teaching/learning process (Reigeluth, 1994). Change can take two forms: piecemeal and systematic. Piecemeal change does not tamper with the structure of the system. It hovers on improving some aspects, satisfying the same needs. In contrast, systematic change requires a total overhauling of the whole system in response to the current needs (Reigeluth and Garfinkle, 1994) as cited by Olele (2001).

The integration of computer education at primary schools create awareness on the part of the pupils to the technological challenges of our time and helps them to be better equipped to address the issues when they must have progressed in it. They are made to know some aspects of computer usage in manufacturing (such as inventory control, linear programming, instrumentation). In addition, engineering design, manufacturing, and testing process in industry are all becoming increasingly computerized, hence the terms Computer Aided Design (CAD), Computer Aided Design, Manufacture, and Testing (CADMAT). These involve the use of specially designed software at an interactive computer terminal to speed up the design process by combining the intuitive understanding of the subject matter by the designer with the speed and "accuracy of the computer. From the ideas our youths will get from all these, our potential engineers and technologists will improve towards greater national development. Sanders (1988) stated that through computer education, we will be able to move along technologically with other nations.

• **Civic Responsibility**

In Nigeria, technology has become an inescapable part of life, and for the future generation, this will be increasingly true. Emphasizing on the advantage of associating computer literacy for civic responsibilities with the framework of primary education, the Holy Bible (Proverbs 22:6) asserted, "train up a child in the way he should go, and when he is old. He will not depart from it". The implication of this assertion is that if computer literacy based education is made the foundation of primary education in Nigeria, it will provide knowledge, develop skills and inculcate the right attitude required for the appreciation of one's rights, obligations and civic responsibilities in the society. Through the Internet browsing, our youths will see how committed the developed nations are to their civic responsibilities. They will then borrow a leaf from them. At that level, Nigeria will be the most envied of all the African nations.

At this juncture, it becomes pertinent to look critically at issues that can hinder smooth computer integration.

Problems that Affect Computer Literacy Integration

Several problems beset computer education at the primary schools in Nigeria. Some of these problems are discussed below;

- **Non Availability of Facilities and Equipment**

Most public schools do not have needed facilities and equipment. Some facilities include computers, computer laboratory, chairs, tables, uninterrupted power supply (UPS). In a survey carried by Ayoola (1994) cited by Mudasiru (1998:59), "most of the teachers in eight Federal Unity School sampled indicated the non availability of facilities and materials necessary for the implementation of computer education¹". Supporting this report, Mudasiru (1998) asserted that facilities, equipment and application software are inadequate in Federal Unify Schools and private secondary schools he sampled.

- **Quality of Teacher Education Programme**

The quality of teacher education programme especially for computer must be improved upon so that teachers can integrate technology in their teaching. Collins (1994:18) noted that, "if teacher education programmes,... are to meet their responsibility to prepare teachers for the 21st century, then we have a responsibility to help teachers employ technology in support of teaching".

- **Teacher's Incompetence**

The need for teacher's competence for their integration of computers into teaching and learning should not be over-emphasized. Teacher's competence, experience and ability are vital to implement computer education in schools. Unfortunately, most teachers are not computer literate. Akudolu (2000:11) reported that in her study involving 514 secondary school teachers, "only 0.58% or 3 teachers are computer literate". Since teachers who should help students learn computer literacy skills are not computer literate themselves, an alternative strategy should therefore be adopted to achieve teacher/student computer literacy. This issue should be viewed seriously by the federal government with the aim of finding a lasting solution to it.

- **Finance**

The implication of computer programmes in schools needs to assistance of the government. The drastic reduction in Nigerian economy at National, State and Local Government levels has impacted on governments' ability to provide needed equipment and facilities for school use. This has evaluated in competing priorities, like provision and preservation of social services, making it possible for computer hardware, software and other technological gadgets' provision in primary schools. The PTAs, non-government organizations among others, in Nigeria, are yet to support computer education in terms of finance.

- **The School Curriculum**

The present pattern of teaching and learning at the primary school seems not to be based in laying a sound basis for scientific and reflective as stated by the National Policy on Education (NPE:13). The school curriculum should be re-designed in such a way that it will be flexible and resourceful to integrate technology into teaching and learning.

In designing a computer literacy curriculum for primary schools, the under-listed goals according to Trolner (1983:41) are highlighted.

Goals for Computer Literacy Curriculum

The pupil will:

- Become aware of the historical background and development.
- Become familiar with correct computer vocabularies.
- Describe characteristics, uses, benefits and limitations of computers.
- Examine the current and projected impact of computer technology on society as well as the ethical issues surrounding computers.
- Write simple programming using simple programming skills and languages as QBASIC.
- Become familiar with the low level language (e.g. machine language and assemble language) and high level language (e.g. FORTRAN, PASCAL and BASIC).

- Become familiar with the location of the keys on the keyboard.
- Learn to interact with the computer and will acquire a simplified understanding of how a computer operates.
- Develop problem-solving, decision making, flowcharting through interaction with computers.

It is highly recommended here that computer professionals and policy makers should be involved in designing computer literacy curriculum.

- **Power Supply**

The state of electricity supply in Nigeria is nothing to write home about. The implication is that no technological education will be effective without steady supply of electricity. It therefore goes without argument that automatic standing generator will be installed in all the primary schools otherwise, the computer education will be rendered ineffective.

Recommendations

Awotua - Effebo (1999) opined that the primary education is the bedrock of the Nigerian educational system, and thus holds the key to the success or failure of the nation towards development. Therefore, to achieve successful integration of computer education, the following recommendations are put forward:

- 1) Teacher training programmes should emphasize training in computer education.
- 2) In-service training inform of compulsory Weekend Computer-Based Training Programmes (WCBTP) should be designed to improve practising teacher's competence in using computers:
- 3) The federal and state governments should supply at least 20 computers to each primary school in Nigeria depending on their population. The population of the school will determine whether to increase or reduce the number of computers in questions.
- 4) Teachers should be motivated to face the challenges of new technologies.
- 5) Automatic standby generators with security should be installed in all primary schools in case of power failure.
- 6) The primary schools headmasters/mistresses should involve members of PTA, Town Unions and Non Government Organization in the provision of accommodation and other CAI facilities.

Conclusion

Nigeria is a developing nation and needs computer technology education for her national development and growth. Computer is an indispensable tool in the execution and planning of education system. In this era globalization and advent of the knowledge - based economy, those nations which lack computer literate population will, with each passing decade, lose their abilities to compete in the international arena. While Nigeria has not yet caught up with the Western World in industrial age, she must not wait for too long to catch up educationally with the \cploding rate with which the computer technology is coming at her.

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