COMPUTER EDUCATION IN THE 21ST CENTURY

Paper Presented at
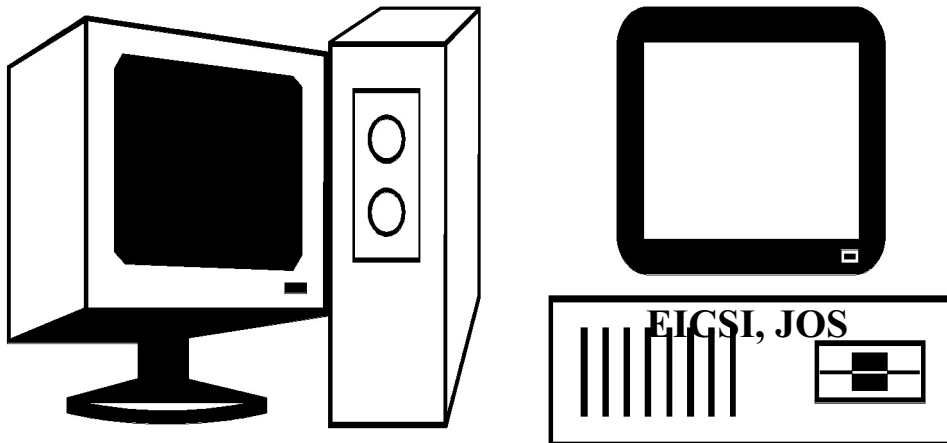
A CONFERENCE OF PRINCIPALS AND HEADMASTERS OF ECWA SCHOOLS

by

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ECWA Information & Computer Science Institute, Jos

24TH - 27TH AUGUST, 1998

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INTRODUCTION

When in the 21st century we look back at the 20th Century, we would probably remember it as an era when more than 90% of the worlds population could be said to be illiterates. Illiterates not because they have not been to school, but because they have could not compute. In the past, if a person could read and write, he is considered literate. Literacy has been redefined as the ability to read, write and compute. The implication of this redefinition is that even though a person has been to school, if he cannot compute, he is still considered an illiterate, including the professor who cannot compute. Many people cannot not compute because they were either not trained or have not received proper computer education. This does not include the many who never went to school at all.

This paper does not seek to discourse computers in education. So no mention of its implication as it relates to the virtual classroom is made. Rather it attempts to look at the trend of computer education in the past, present and the near future.

EDUCATION

Education is the bedrock of any nations development, more so in a technological age as today. Any nation that neglects the education of her people, neglects, not only her present but her future as well, and therefore, has no hope of survival.

Education, as defined by the Oxford Advanced Learners Dictionary of Current English, is the systematic training and instruction, especially of young ones in schools, colleges etc. I would like to look at Education as a process of learning that never ends, acquiring knowledge and skills of any kind, anywhere and by any means, be it good or bad, legal or illegal.

There are basically two forms of Education, formal education and the Non formal education.

Formal Education.

Formal Education started quite early, even before the 1st century. In Nigeria however, formal (western) education came in on September 24 1842, through the Weslyan Methodist Missionary Society (WMMS). They were followed by the Christ Missionary Society (CMS) in 1886 and the Baptist Mission in 1856. The Roman Catholic Mission (RCM) and Sudan Interior Mission (SIM) (now Society for International Mission) followed later. All these had a well defined goal - teach the people to read and write so they could read the Bible. They carried out their training through the establishment of schools, mostly primary and secondary schools. The tertiary institutions came in the 20th century, which is gradually winding up. Education received from such organized schools is formal education and are designed to train people who would work in fields that require maximum skill in the relevant area. Today, primary schools, Secondary schools, Colleges of Education, the Polytechnics and the Universities offer this form of Education. Each of these has a minimum entry requirements set by the school or a governing body . These requirement **must** be met for anyone to be admitted into these institutions.

Non Formal Education

Non formal education is the kind of education that takes place outside the classroom. Even within a formal education setting, non formal education could still take place. For instance, within the campus, a student could be trained (or initiated) into a cult or trained by his colleagues to preach the gospel, even though that is not his primary assignment in school. Parents teach their children various aspects of life at home, ranging from simple greeting and respect for elders, to table manners and general behavior in the society. The only requirement needed to get into non formal educational system is life, and perhaps, age. One might be required to attain certain age before commencement of a particular training.

Another form of education that, strictly speaking, might not be considered non formal - though in most cases it is - is vocational education. Vocational education has been defined as instruction in skills necessary for persons who are preparing to enter the labor market within the shortest possible time. This kind of education could also be organized for Professionals who need retraining in their profession to avoid obsolescence. Training in this form of education usually covers a wide range of occupational areas such as office skills, agriculture, various businesses and trades, and health services. It could also be in technical areas such as mechanics, electrical works, carpentry, tailoring, and most recently computer training. These jobs require minimum

training because most of the skills needed can be acquired on the job. Education of this form was designed for those who want to make a living while studying.

COMPUTER EDUCATION

Before we talk about computer education, we need to know a little about what the computer really is.

The computer may be defined in different ways by different people, depending on their background (or profession). But basically, a computer is just an electronic machine performs whatever function it is told to. This function could be as simple as performing 1+1 to give 2 or as complex as doing complex engineering design and analysis or get information from across the world. And as it is said, Information is power.

The use of computer cuts across every facet of life and therefore requires to be studied by all, as everyone if affected directly or indirectly by its use. In business, the computer is used to keep track of customers, inventories, budgeting and business forecast. Lawyers use it to keep track of their clients and cases and schedule themselves for different appointment and ask the computer to remind them of such appointment. Apart from serving as a reliable and efficient teacher or teaching aid in schools and homes, it is used to keep and monitor students' records as well as carrying out all forms of result analysis. Students' results that would normally take three to four weeks to prepare, would probably take three to four days maybe less, and with higher degree of accuracy.

The use of the computer is probably only limited by the human imagination. Ironically, not many people seemed to realize this until recently. This is why everybody is now clamoring for computer education.

Before the advent of micro-computers, computer education was limited only to the tertiary institutions, even then, as a theoretical course. At that time only students reading courses that were computer based or related - engineering, mathematics, statistics etc, were privileged to attend these theory classes. Students were taught the basic concepts and principles of computers and computing. At best, they could imagine what the computers looked like. They were taught to write simple programs that would solve certain problems. These students never had the chance to test their own programs. Only the teacher who had access to the computer could go and try the students' programs. Most of these students never saw what a computer looked like,

let alone laying hands on them. Reasons for this are not for fetched. Firstly, the computers were very expensive. Secondly, they were very large, too large to be taken into a class room or moved else where other than where they were installed. During this period, only very large organizations could afford a computer. The sophistication an operation (not the machine) demanded that the operators be highly trained in a formal setting, hence the need to be admitted into a technical institution to acquire computer education. Only few people did as the demand for operators was not high and people did not see a future for the profession.

Things started changing when in the 1980's the micro computers was introduced into Nigeria. These were cheaper and more powerful than earlier ones. As a result very rich organizations and schools could afford to acquire up to three or four computers as against the only one they had. More operators were needed and so the enrollment into schools were higher. More teachers (not students) could gain access to the computers and so were able to teach better. Students still didn't have the opportunity to use the computer they so well know theoretically. This was frustrating and damaging to our future computer educators but we didn't know it, perhaps, there was nothing we could do. By the mid 1980's to late 1980's, the prices of computers further came down, and so more schools (higher institutions that is) made more computers available so some students started having access to them. The ratio of students to computer then was about 50:1. Some students therefore, went through with their study of computer science, but never touched one. Some never saw let alone using them.

Heaven was set lose when in the early 1990's, prices of computer system further crashed. With this, more technical institutions were able to buy more computers for computer science department, engineering faculties and various administrative offices. Wealthy parents were able to buy a computer for their homes which were used mainly by their children for games. Through these games, their children picked up a few things about the computer. Smaller organizations too were able to buy one or two Personal Computers (PC's, for details type of computers, see the presenter). Some used them as part of office decoration while others who knew what it's all about, put it to use and made higher and faster profit from their businesses.

With all these, the demand for computer education rose, yet only few schools offered the training, and you needed the right qualification to get into such schools. When you get in, you spend four to five years to graduate, knowing more of theory than practical. Although many more institutions offer training in computer science today, the situation has not changed much. Many

of our graduates from the universities and polytechnics still come out more theory and little or practical knowledge.

It was suddenly discovered that with minimum practical training almost everybody, and anybody, could operate the computer. One does not need deep technical knowledge or proficiency in mathematics to learn to use a computer. This is because program manufactures have simplified its usage through high standard program by doing all the thinking and giving the instruction to the computer to carry out. People now want jobs done faster and better, and would go anywhere to get the services of a computer since they could not buy one. This brought about the establishment of business centers. These centers in turn needed more operators.

Due to the minimum training required and the fact that people wanted to start using their computers as soon as possible, the vocational aspect of the training was introduced. This broke computer education into three components; namely **Computer Applications, Computer Science and Computer Engineering.**

While various tertiary institutions or boards (like the NBTE) have set standards for computer science and engineering programs, no such standard exists for computer applications. This resulted to the proliferation of computer schools, where just anybody, because he has some money, goes ahead to establish a computer school. While this may be good to meet the increasing demand for computer operators, it has a major set back. The implication is that, because of the short periods spent to teach many things in order to maximize profit, these schools turn out student who know many thing but cannot put them to practice, thereby taking us back to the pre-micro computer era. This trend is likely to continue into the 21st century because of the falling cost of computers. Many more people would acquire computers and even attempt to teach themselves. The result is that we would end up having more computer users and possibly, half-baked computer professionals; and half education, they say, is dangerous, more so, with computers (for details, meet the presenter).

To check this trend therefore, there is need to offer a complete and comprehensive computer education, beginning from the very foundation of education; - the nursery/primary schools and then to the secondary schools. This cannot be achieved, even in the 21st century, if our public schools, where majority of our children go to, remain without the computers. Presently, only very few private schools owned computers, and even these school, computers are taught as

vocation rather than an examinable course of study to be taken seriously.

The Way Out

Unless the current problems associated with our present method of teaching computers is tackled properly, it would be very difficult for us to catchup with the rest of the world in this jet age, because the 21st century would even faster than the 20th century. Government should therefore immediately entrench computer education into our national curriculum and make it a compulsory examinable subject. In this way, because of the practical nature of the subject, children would grow into computers, and probably, would not depart from it when they are grown. The National Board for Technical Education (NBTE) should also set a standard for schools wishing to offer programmes in computer applications.

To achieve these goals by the 21st century, government should proceed immediately to equip our public schools with computers. Where this is difficult due to costs, the PTA, Old students Associations of such schools and other NGO's could and should be of assistance. Teachers in such schools (particularly science teachers for now) should be sent for training while they await the arrival of their computers. ECWA on her part should be a pacesetter by equipping **all** her schools with computers, including the EMS children schools. EICSI is available to provide the necessary consultation and training.

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