# METHODS OF TEACHING SCIENCE, BASIC TECHNOLOGY AND COMPUTER STUDIES

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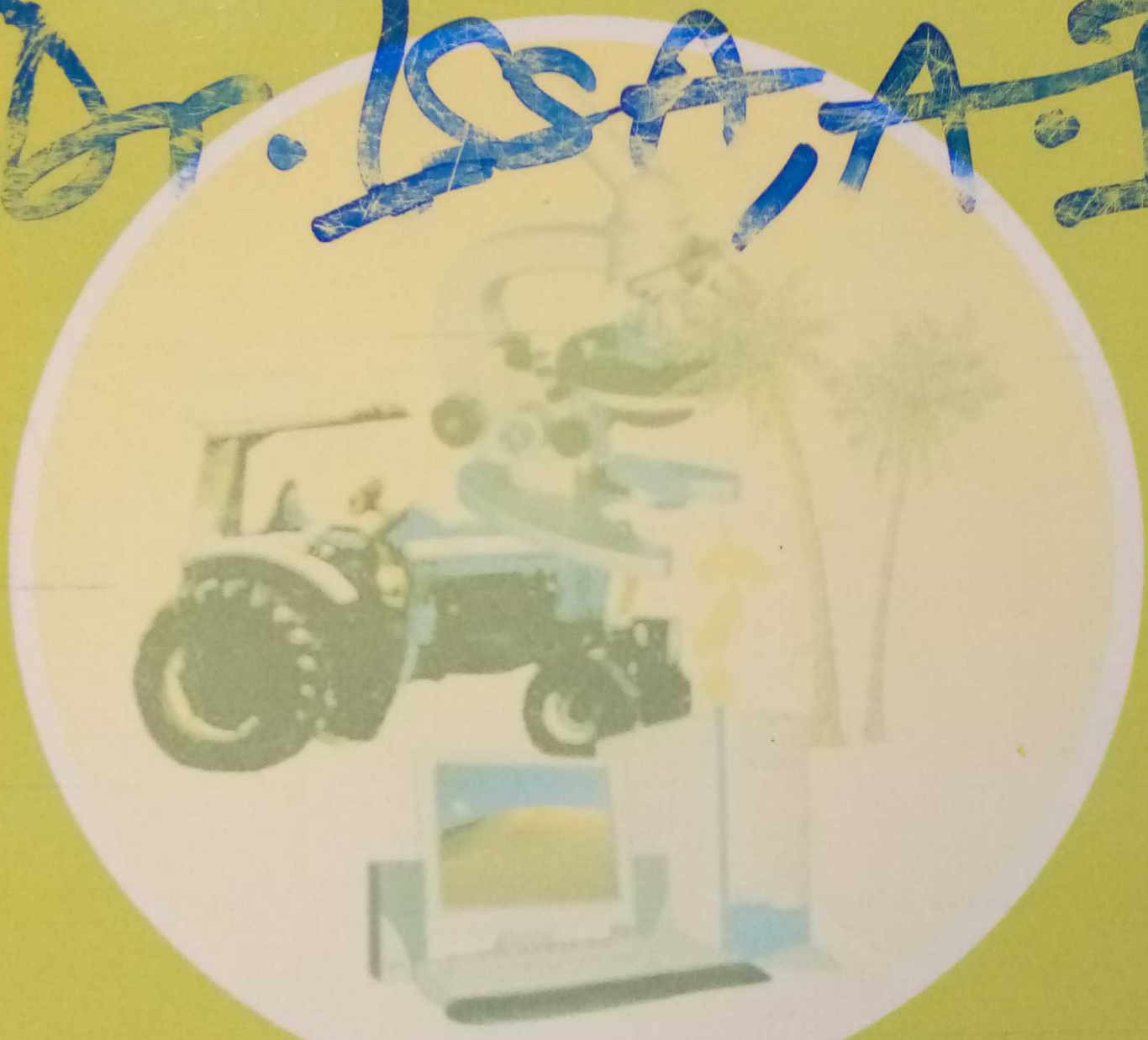

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# CHAPTER 6

## PROBLEMS AND PROSPECTS OF COMPUTER SCIENCE EDUCATION

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**Learning Outcomes:**

After reading this chapter, you should be able to:

i. explain the concept of computer education;
ii. highlight the prospects of computer education;
iii. enumerate some of the problems facing the implementation of computer education and;
iv. discuss solutions to the problems facing the implementation of computer education;

**Concept of Computer Education**

The goal of Information and Communication Technology (ICT) in education is to familiarize students with the use and operations of computers. ICT has also allowed learning through multiple intelligence, thus it has introduced learning through simulation games; this enables active learning with all senses. Therefore, ICT in education can be categorized in the following ways; ICT as a subject - i.e., computer studies; ICT as a tool to support traditional subjects – i.e, computer-based learning, presentation, research, and ICT as an administrative tool - i.e., education management information systems/EMIS **(Saha & Upadhyay, 2015)**.

Ogunlade, Ogunlade, Owolabi and Amosa (2014) reported that ICT enhances students' educational, social and cultural experiences and enrich learners' horizon of knowledge. It was also submitted that ICT has a vital role to play in facilitating the learners' understanding and to disseminate complex information in the process of teaching. Thus, ICTs are all forms of computer-based tools to record, store, preserve, transmit or retrieve information for the purpose of teaching and learning. Therefore, schools need sufficiently equipped laboratory with computer desktops or laptops which can be used to implement computer education in institutions.

The need to have a standardized and harmonized development of ICT in education informed the development of the National Policy on ICT in Education in 2010. The policy defines a broad vision for ICT integration encompassing engaging, empowering, enriching and enabling ICT-furthered education (FME, 2010).

The policy objectives of ICT in Education are:

- To facilitate the teaching and learning processes.
- To promote problem-solving, critical thinking and innovative skills.
- To promote life-long learning.
- To enhance the various teaching/learning strategies required to meet the needs of the population.
- To foster research and development.
- To support effective and efficient education administration.
- To enhance universal access to information.

- To widen access to education and the range of instructional option s and opportunities for any-where, any-time, any-place and any-path learning.

In order to implement ICT in Education agenda the policy thrust is to:

- Encourage the development of ICT manpower required for ICT-furthered education,
- Establish ICT infrastructure platform for Education and
- Encourage development of a national Education and research infrastructures,
- Ensure and encourage ICT Research and Development (R&D)
- Provide appropriate legal, regulatory and security frameworks to ensure ICT-furthered Education

Computer education is the process of learning or teaching about computers. It has become an indispensable tool in our society. Computer can be integrated into the teaching-learning process at all levels of education and for all categories of learners. Computer education caters for learning experiences where learning is based on the utilization of computers for instructions. Computer based instruction is an interactive and individualized learning strategy which allows students to work at their own pace individually or in group with immediate feedback. Computer creates learning communities of education and learners who use computers to enhance education within and beyond Nigeria, and contribute to the transformation of the education system into one which participates in and benefits from the knowledge society (Jibril, 2006).

According to the National Policy on Education (FRN, 2013) computer science is classified as one of the pre-vocational subject. It was stipulated that all pre-vocational subjects are taught alongside the basic subjects such as English language, mathematics, among others. It was recommended that prevocational subjects should not be made elective in order to achieve effective teaching and learning. Therefore, if the aim of pre-vocational subjects is to be achieved, there is need for effective teaching and learning of computer studies. For an enhanced teaching and learning of computer science, the method of teaching should not be theoretical alone but also practical-based. Teaching theoretical aspect of computer science and no practical sessions will not aid quick understanding of the subject that is being taught. However, students lack interest in computer science because they don't have hands-on opportunity.

**Prospects of Computer Education**

The utilization of computer in a computer education is beyond a tool used only in the classroom. Integration of computer in teaching-learning process provides motivation and enthusiasm to achieve various skills irrespective of areas of specialization. Computer being brought into the system is an innovative technology which has come to improve the traditional methods involved in the teaching and learning processes. Therefore, there is the need for proper integration of computer in instructional delivery for purposeful learning to take place.

Computer education has been incorporated in all teachers training programme. Therefore, all lecturers have access to possess adequate knowledge of computer utilization for instruction to harness the advantages of educational

delivery. Computer education gives enlightenment to more information faster and in an efficient manner. Teachers have to be familiar with the type of technology that will allow students to be connected more than ever before. The manners through which computer education students relate, interact and share learning experience in their daily learning endeavours cannot be underestimated. Computers can be used as tools to connect learners to an advance level of thinking and provide a productive learning environment to assist the learners actively build up their own knowledge and improve their understanding. Students' engagement in the utilization of computer prepares and assists to be computer literates and competent for future success in their places of work.

**Problems Militating against the Implementation of Computer Education**

There are problems militating against the implementation of computer education, which has made the exercise to be less productive. These problems arise from; inadequate supply of computer laboratory, insufficient computers in the laboratory, inadequate supply of information and communication technology facilities, inexperienced computer science teachers, parents' attitude towards computer studies, lack of adequate motivation among the instructors, among others.

**Lack of Computer Laboratory/Insufficient Computers in the Laboratory**

Most public institutions cannot boast of adequate and functional computer laboratory, of which the computer would go round the students even when the lecturers may be ready to teach the students. There are some cases where computer laboratories are built but no sufficient technical equipment to furnish the laboratory. This has definitely led to frustration among the computer educators. With insufficient computers in the laboratory, it is difficult for a class of twenty students to use just one/two computers. Not all students can comprehend or understand what the teacher is demonstrating without laying their hands on the computer. Thus, computer resources and related instructional aids should be made available for effective teaching of subjects in schools.

**Inadequate Supply of Information and Communication Technology Facilities**

ICT facilities such as internet connected laptops, CD-ROM Data base, institutional cyber cafe, multimedia classroom, digital library, institutional website, departmental website, computer networking, among others are very vital instruments in the utilization computer. However, federal and state governments have not addressed this critical issue of writing examinations on the basis of students' population.

**Inexperienced computer science teachers**

A computer science educator who is not well trained or competent in the field of computer science will not be able to teach computer science in education perfectly. If the teachers are not experienced in the field of computer science education, suitable application of computer practical will be very difficult in schools. However, inexperienced computer science teachers taking the subject may not have adequate knowledge of the subject. Hence, training of computer education teachers is highly required.

**Parents' Attitude towards Computer Studies**
Parents and educators who deplore the passion with computers in schools observe computers as eroding children's basic skills and knowledge, since they only perceive computers being utilized as copy-and-paste. However, computers have more prospective beyond that. Moreover, the factual benefits of a computer may not be accomplished until the users can apply it not only as **a presentation tool** and as a **productivity tool**, but also as a **cognitive tool** (Yusuf & Onasanya, 2004).

**Lack of Adequate Motivation among the Instructors**
Computer instructors are subjected to deplorable working conditions. They are barely found in equipped offices; instead they are found in large staff rooms, a time with students in the laboratory.

**Position of Computer education in the Education Curriculum**
Selected subjects like English language and mathematics amongst few other subjects are made compulsory for students to be offered in secondary schools and to be examined in secondary school certificate examination but computer science is presently not included. Since computer education is currently not included, stakeholders in education do not see the significance of encouraging computer education at tertiary institutions.

**Erratic Power Supply**
Functionality of computer education relies upon the electricity but in most public institutions, epileptic power supply in Nigeria create problem for its integration. Hence, computer facilities cannot be used for instruction whenever there is power failure.

**Remedies to the Problems Facing the Implementation of Computer Education**
In spite of the challenges facing computer science education in Nigerian institutions, there are expectations in its implementation. Therefore, to ensure the future of computer science education, the following measures are suggested for enhancing and advancing the implementation of the programme:

i. Computer equipment/facilities are largely capital intensive, thus all stakeholders in education must be enlightened in the need for computer education so that they can donate generously to finance the installation of systems in all institutions.
ii. If computer science education will be elevated to acceptable level, computer lecturers and instructors should be highly motivated for purpose of getting them to have satisfaction from their job.
iii. The federal and state government should make frantic efforts to provide functional computer laboratory not only for the examinations but cater for teaching and learning of computer science education.
iv. Governments and the school authorities should release funds for the procurement of ICT facilities for lecturers and students for better implementation.

v. Only qualified and experienced computer scientists should be allowed to teach computer study courses.
vi. Needed classroom facilities should be provided for effective teaching and learning of computer study courses.
vii. Computer scientist educators should be encouraged to proceed on in-service training on innovative issues and development in computer study courses.
viii. The government should procure standby generators to tackle the problem of epileptic or erratic power supply in order to support the full integration of computer education in institutions.
ix. Web based instruction should be encouraged with the provision of functional internet connectivity in schools.
x. There should be internet connectivity in every location in the school.

**Revision Questions**

1. Explain the term "computer education"
2. Explain the prospects of computer education in Nigeria
3. What are the limitations to the implementation of computer education curriculum?
4. Briefly discuss the remedies to the problems facing the implementation of computer education in Nigeria.

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