EDUCATION:
BUILDING A SOUND MIND AND SOUND BODY

A BOOK OF READINGS

IN HONOUR OF
DR. OLU AYODABO

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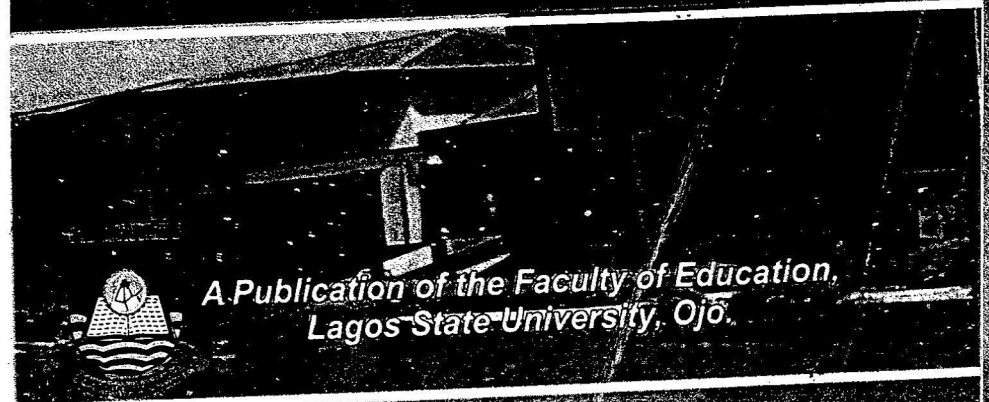
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CHAPTER 21

INFORMATION AND COMMUNICATION TECHNOLOGY: AN EFFECTIVE AGENT OF CLASSROOM TALK AND PUPILS' THINKING

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Abstract
This paper examines the effects of ICT on both learners and teachers creativity in and out of the classroom.
It also drew emphasis on the need to make ICT available in our schools for effective teaching and learning as well as the enhancement of learners' interest in the use of computers.

Introduction

Information and communication Technology is a powerful tool for presenting information in different ways. These ways could be through different forms or by enabling changes to be shown dynamically such as in mathematical modeling or by helping visualization of complex processes in science.

Information and communication technology plays a very important role in information societies' educational systems. In these societies, stakeholders in the educational sector always redesign and reconstruct the educational systems based on new educational paradigms such as constructivist theory so that both teachers and students develop the necessary knowledge and skills sought in this digital age.

The integration of ICT in learning and teaching has been found to improve the quality of education by emphasizing competences such as critical thinking, decision making, and handling of dynamic situations, working as a member of a team, and communicating effectively, Anderson and Weert (2002). Roblyer and Edward (2000) suggested in their study that there are five important reasons for teachers to use technology in education: (i) motivation (ii) distinctive instructional abilities (iii) higher productivity of teachers (iv) essential skills for the information age, and (v) support for new teaching techniques. In order to use technology in the classroom effectively, teachers' attitude towards technology should be positive and they should be trained in using modern technologies in the field of education (Samark, 2006). Horkin (1994) noted that teachers must clearly act as the "change agent" in the relationship between technology and the students.

In Nigeria, the political conditions for the past thirty five years after her independence had left no room for continuity of educational policies which might have brought improvement to our education. Aduwa-Ogiegbaen and Iyamu (2005) noted that over the years the political power in Nigeria has been used to entrench mediocrity, misplace priority and consumer culture. The direct effect of these is a battered economy and an educational system that is decaying by the day. Aduwa-Ogiegbaen and Iyamu (1997) opined that computer is not part of classroom technology in over 90% of public schools in Nigeria. Thus chalkboard and textbooks continue to dominate classroom activities in most secondary schools in Nigeria.

Today, computer perform a host of functions in teaching and learning as many nations are adding computer literacy, reading and writing and writing literacy in their curriculum in other to have skilled students take a place in a technologically developed world (Thomas, 1997). At the instructional level, computers can be used by pupils to learn reading, mathematics, social studies, science, art, music and so on.

ICT provides productive teaching and learning and increase people's creativeness and intellectual resources especially in today's information society (Peter, 2001). Through the use of audio, text, multicolour images, graphics, ICT gives ample and exceptional opportunities to the students to develop capacities for high quality learning and to increase their ability (Thomas, 1997).

In Nigerian schools, the use of ICT will improve efficiency in teaching various subjects and ensure that learners are accurately and systematically instructed. Computers can also enhance problem-solving skills of the learners by focusing on thinking skills especially in science subjects and mathematics.

Computer will enhance individualized learning and enable the student make progress at his or her own pace and receive continual evaluation feedback and corrections for errors made. By integrating information and communication technology into our schools curriculum a fundamental shift in what the teacher teaches and students learn will be evolved.

Basically, ICT cannot stand alone without the use of some software packages that focus on creativity and analytical development of the mind. The classroom interaction or talk, pupils' thinking and creative thinking depend on the different types of software available for learning.

Mind mapping is a great way of organizing ideas and thinking about how to group ideas and concepts. Mind mapping software could be used to replace the traditional method of using pencil and paper to put down ideas. Many packages such as presentation and desktop publishing packages can be used effectively for mind mapping exercises. Mind mapping could be used to form part of a whole class discussion depending on how familiar students are with mind mapping software, teachers may do this as a class activity using the electronic whiteboard.

For the purpose of this study, classroom talk, pupils thinking and other benefits derivable from using ICT in education will be discussed.

Classroom Talk

In recent times, most schools recognize the value of making ICT resources available in classrooms and many of these schools had been supplied with variety of resources including small numbers of computer, printer and other accessories. In this way, teachers had greater opportunity to use ICT for whole class teaching and few cases, to allow individual or small group of learners have access to ICT during lessons where this was appropriate. Basically, use of ICT in teaching enhances a more interactive approach to teaching and learning and promote a kind of structured play.

Most learners have developed or were developing a wide range of ICT skills through engagement with ICT at home, in education or at work. Many learners use a few of these skills to support their learning although, for some young people the aspect of mind mapping was perhaps the least significant. Learners began to develop their word processing skills and use of this application help in the development of these skills. So, with time and perhaps with practice learners would have developed sufficient skills in word processing application. They later incorporate images into the documents, thus adding interest and colour to their

work.

A systematic review according to Goldberg, Russel and Cook (2003) concluded that "on average, students who use computer when learning to write are not only more engaged and motivated in their writing, but they produce written work that is of greater length and higher quality". However, teaching skills is not done in isolation. Multimedia presentation in the form of talking text books has been shown to improve beginning readers' phonological awareness but without improving their word recognition (Chera & Wood, 2003). An interpretation of this might be that children get better at playing the computer "game", but that the improved skills are not readily used away from the computer.

Computers can be used individually, in small or large groups or by the teacher with the whole class. Each approach has been shown to be effective, though there are some differences in the approaches and as a result upon outcomes. The difference comes in the way in which the teacher uses the different opportunities to help learners talk and think about their work within and outside the classroom.

The potential of new tools and opportunities can take a long time to have an impact on classroom practices. Use of ICT had contributed well to aspects of citizenship, including chains of resources within the classroom and working with peers in the classroom. With the use of ICT, students can use more primary source materials and be encouraged to address real problems and develop analytical and interpretive skills (Riel, 1998).

Pupils' Thinking

It is usually argued that ICT can assist students in engaging cognitively to a greater depth with knowledge domains. That is students are supported in employing the full range of thinking skills within authentic context. This is often discussed in terms of cognitive taxonomies such as that provided by Bloom (1964). The computer within the classroom setting is able to support problem solving activities in many forms. It is well suited for use as a means of enhancing higher order thinking skills. Similarly, computer systems provide a wider range of motivating situations in which students can develop and apply these higher level thinking skills and provide opportunities to develop "deep knowledge" (committee on Developments in science of learning, 2Students using an integrated learning system to support the development of skills in spelling, vocabulary, reading and mathematics showed improvements and this approach is more cost effective than other major initiatives (Mann et al. 1999).

Conclusion

There is no doubt that teachers and learners will have incredible resources available to teach and learn if they have access to Information and Communication Technology. ICT will evolve a fundamental shift in the way teacher teaches and students learn if it is integrated into the school curriculum.

ICT will help to develop pupils' thinking in a range of different ways including reasoning, understanding and creativity when applied effectively as revealed by this study. It will support the development of understanding across the curriculum and opens up new possibilities for teachers and learners.

Recommendations

(i)   Science teachers should be exposed to computer technologies and have opportunities to access computers in order for their level of using technology in their courses to rise

(ii) Enough manpower that will integrate technology into the curriculum should be trained
(iii) Teachers should endeavour to exposed their students to computer so that their thinking in a range of different ways including reasoning, understanding and creativity can improve
(iv) Pupils should be allowed to manipulate and make changes to information on computers so that they can develop understanding of the relationship between different types of information or through the process of changing that information dynamically
(v) Pupils should be encouraged to make connections between other learning and what they do and learn on a computer
(vi) Teachers should be supported to develop both new technical and new pedagogical skills
(vii) Teachers should be cautious of early adoption of new technologies
(viii) More substantial gains in pupils' attainment are achievable where the use of ICT is planned, structure and integrated effectively.

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