

Evaluation **In** **Theory and Practice**

Edited by
Dr. Adenike E. Emeke
and
Dr. Charles V. Abe

EVALUATION
IN
THEORY AND PRACTICE

A Book of Reading in Honour of
Prof. Joseph O. Obemeata

Edited by
Dr. E. Adenike Emeke
Dr. Charles V. Abe

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Computer-Assisted-Instruction in the Classroom

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Introduction

The 21st century has presented us with a major paradigm shift in instructional methods to reflect the challenges present in today's society. For students to maximize learning outcomes and be sufficiently competitive in a global market, we can no longer rely simply on traditional strategies of classroom instruction. In other words, for learners to be adequately equipped for the dynamics of today's environment, we must supplement or replace traditional methods of instruction with innovative educational experiences through the application of computer-assisted-instruction (CAI) to the learning environment. According to Fuzke (1997):

Today's classroom is like none that has come before it. It is diverse in every way imaginable – language, culture, economic, family make – up and styles of learning.

In the traditional model of education, the teacher is responsible for disseminating information to students. The students' primary responsibility is to consume and retain as many of the facts and figures as they can. The most successful students are those who can memorize and regurgitate information in a variety of format – writing papers, oral reports and tests. It is however doubtful if the skills measured through the formats mentioned above can actually prepare students for their professional lives. For a student to be successful in today's job market he must be able to assess and analyze information, not merely memorize.

According to Salawu (1999), the method of teaching could be regarded as the vehicle through which a message is delivered. The conventional method of teaching therefore, could also be regarded as the hitherto, existing traditional methods of instruction in the normal classroom setting. There exists several methods of such conventional methods of instruction which have permeated our educational system over the years. Among such conventional methods of instruction are Montessori methods,

Socratic method, project method, field trip method among others.

The Montessori system of teaching which applied to retarded and non retarded children entails the stimulating of pupils interest, allowing pupils to find out things on their own, an permitting them to practise. What they have learnt (Ayodele, Araromi, Adeyolu and Isiugo-Abanihe, 1995).

The method is still in use in some schools today, but it is doubtful if the exclusive use of this method could enhance learning. There is of course, the questioning technique which is otherwise known as the Socratic method and which is regarded in the teaching parlance as the most effective weapon in teacher's armoury (Ayodele and Adegbile, 2003). The Socratic method involves the teacher stimulating the learners' thought on issues from a different point of view as they never had it before. The Socratic method or the questioning technique of teaching sometimes still obtains in our classroom teaching and learning process till date. It is equally doubtful if this method can meet the demands of teaching and learning in this era of rapid information technology.

If the existing teaching methods have variously been applied to teaching and learning process in this part of the world, and Nigerians continue to witness the level of poor performance of students in strategic subjects like English Language, Mathematics and Biology among others, it is high time we approached modern educational technology to see if it could help salvage the situation. Already, studies like Goldman (1990), Bossey (1992), Marvarech (1993) and Wilson (1993) hold in doubt the efficacy of conventional method of following the findings of the students which found the achievements of students exposed to computer-assisted-instruction (CAI) superior to that of conventional method of instruction.

Computer technology has continued to develop and its cost has continued to decrease while its spread in schools around the world continues to grow dramatically for variety of uses (Encyclopedia of Education. 1992). But as computers continue to make significant impact in education in developed and developing countries, it is an irony that the same cannot be said of Nigeria – despite her taste for education.

According to Oshodi (1999), the awareness is increasingly dawning on classroom teachers in Third World countries that mere verbalization or oververbalisation which means the exclusive use of words alone in the classroom to communicate ideas, skills and attitude to educate learners is an exercise in futility. Although, it is agreed that instructional aids helps in enhancing the effectiveness and efficiency of the total process of teaching and learning, teachers in Nigeria need to move forward in their quest for

improved instructional techniques for learners through the application of computer as a means of instruction in the classroom.

Traditional instructional media like the television, radio, film, print materials etc. have played their role and continued to play their role in facilitating teaching and learning, but the new technologies in education differ from these traditional ones because the new ones involve computer and its various utilities in education (Encyclopedia of Education 1992). The need for the application of computer technology in the classroom becomes more relevant against the backdrop of the poor performance of learners in some cognitive areas of education, like in the humanities and the sciences.

The issue here is that if the conventional method of instruction in the classroom which we inherited from the colonial masters and have applied religiously in the school system, tend to have no solution to the declining performance of learners, it therefore necessarily follows that, attention be focused on modern technology which may assist the teacher to improve instruction in the classroom. This becomes more necessary in the face of positive findings from studies carried out by various researchers on CAI.

One of the best supported findings in research literature, according to Cotton (1994), is the use of CAI as a supplement to traditional teacher directed instruction which produced achievement effects superior to those obtained with traditional instruction alone. Also, Kulik, Bergert and Williams (1983) reported strong effects of CAI on the affective and cognitive domain of students, while Modun (2000) and Ajayi (2000) viewed Computer as a veritable medium of instruction. Bossey's (1992) Study of relative effectiveness of CAI and traditional methods of teaching Mathematics to student, revealed that students taught with CAI had greater academic performance than students taught with conventional method. Ibode's (2004) Study of the achievement in English language revealed that students exposed to CAI had greater achievement in English Language than students taught with the conventional method of teaching.

If our fore-runners in education in the industrialized world have seen the need to introduce computer into the classroom as a way of improving teaching and learning, then why are our educational authorities folding hands and watching helplessly the new age of technological development which has brought personal computers (PCs) into the classroom.

According to Adeniba (1988), a computer is a collection of electronic devices that is able to carry out operations on various categories of data and subsequently come out with result. On their part, Ellington and Perceival

(1984) defined computer as a device which is able to accept information, apply some processing procedure to it and supply the resulting new information in a form suitable to the user. In essence, the computer is capable of performing any function which were hitherto exclusive preserve of man.

The computer has the abilities, as a sophisticated educational teaching aid to enhance conventional methods of presenting information to learners because it can be applied to information in a more sophisticated way as against the use of textbooks. For example, children can sit conveniently reading computer screen and respond to programmed cues and questions (Ogbome 1991). The computer can also carry out the role of traditional modes of instruction such as the role of delivering information, testing understanding and reinforcement or practice in areas where weakness in pupils are detected. Indeed, there are numerous subject-specific programmes which have been developed and are available to supplement existing schemes of work in many curriculum areas.

Computer Assisted Instruction

A wide range of subjects-specific softwares for schools are available for most computers which are referred to as educational computers such as Computer Assisted Instructional (CAI). As a matter of fact, there are several methods in which the computer is used in education. But the method of computer use in the classroom setting which is more directly related to instruction is the computer-Assisted-Instruction (CAI) which can be easily adapted in the school setting. There are other forms of application of computers in education like the Computer Managed Instruction (CMI) which according to Abimbade (1997) entails the application of computer in scheduling courses or subjects, space utilization, inventory and personnel control, recording and reporting attendance, school accounting, storage and retrieval of students' information, marks management (computation and reporting of marks and word processing). Others are Computer Supported Learning Aid (CSLA) and Computer Based Education (CBE). Of all these, the Computer-Assisted-Instruction (CAI) has been found more suitable in instructional presentation because this method is used to present instructional programmes to learners through interactive process. The Computer-Assisted-Instruction (CAI) is a self learning package with the learning instructions advancing at the learners own speed, and the computer continually informing the learner the progress he is making at tackling instructional tasks. According to Akinyemi (1988)

the CAI programme of Computer is used on a time – shared basis to perform any instructional function such as presentation of materials or problem situation, guiding students' thinking, responding to students' question, assess students' performances, managing students' path through a course by selecting the materials to be presented among others.

In a nutshell, Computer – Assisted – Instruction is described by Oshodi (1993) as:

- a. The application of computer programmed instructions to enhance learning by way of instructing, guiding and testing the learner to achieve a predetermined level of proficiency.
- b. The use of computer to instruct learner and to further the process of Education.
- c. The use of computer for the dissemination of facts and concept to learners, based on clearly specified behavioural objectives and with the ultimate aim of producing learning.
- d. The use of computer to present information sequentially to learners who respond to it and gets some informational feedback about his response.
- e. The use of computer to accomplish the teaching functions without intervention of the human instructor, by using the instructional logic stored in its memory.

Computer- Assisted – Instruction could be presented in the following modes.

- 1. Tutorial Mode:** The tutorial mode of Instruction in Computer- Assisted – Instruction is a programme text instruction mediated through computer. This is a presentation in small steps which permits the learner to participate actively in the learning process (Egunjobi 2002). The Tutorial mode of instruction could be described as a suitable mode of instruction in the classroom because instructional materials are designed in such a way that the learners could comprehend easily the instruction. Moreover, this is a self learning package in which the computer informs the pupil if he or she is making progress in the given learning tasks. The tutorial mode of instruction could be applied to virtually all the subjects presently taught in the primary schools.

Drill and Practice Mode: According to Hawkrige (1987) the Drill and Practice mode involves the interaction of the computer and the learner. This mode of CAI has resemblance to what the teacher does in the conventional method of instruction because it is used to consolidate and ensure proper mastery of information by way of re-inforcing previously learnt behaviours, concepts or skills (Egunjobi 2002). The drill and practice mostly consist of a set of questions and answers, and this package is mostly applicable to primary and secondary school classes. The material in drill and practice are developed by the teacher who has determined the kind of practice that will enable the learner achieve some specified objectives.

Games and Simulation: The instructional mode of games and simulation is similar to drill and practice. Of course, games generally comprise questions or activities which may possess new learning or transfer of knowledge from one to another. In game and simulation, there are set roles, there are peculiar moves, including elements of competition or cooperation and the frame which provides a game situation in which the learner interacts with the computer (Akinyemi, 1988). It is agreed that learners at all levels of education need to be motivated towards learning materials, and one of the viable methods of doing this is through the games mode of Computer Assisted Instruction (CAI) which can afford the learners to interact with instructional materials.

Having articulated some of the ways computers could be employed in classroom instructions, the questions then arise, why are computers not presently playing their role in classroom teaching and learning in Nigerian schools? Are the relevant authorities ready to provide Computers for classroom instruction? Are the teachers themselves prepared to accept computer into the classroom? The answers, simply put, are that, the authorities are yet to take practical steps to get computers into the classroom. It is also doubtful if the teachers are sufficiently computer literate to appreciate the role of computer in the classroom. According to the findings of Ibode (2004), Computers are not available in public schools except in few special schools where they are scantily available. Ibode also found that majority of teachers and students are computer illiterate.

Conclusion and Recommendation

Educational authorities need to put in motion, a machinery of action which will enable teachers not only becoming computer literate, but also to be

able to use the computer extensively, even to the point of designing computer programmes in their subject areas and using such programmes for classroom instructions. Efforts should also be made by the educational authority to provide each school with a computer laboratory.

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