

Computer-Aided Learning in Education

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ABSTRACT - Recent decades witnessed the use of computer in monitoring the learning in educational institutes. Computer-aided learning (CAL) is an interactive technique where a computer is used to represent the instructional material which uses a combination of text, sound, graphics, and video to enhance the learning process. The computer has many purposes in the classroom, and it can be utilized to help a student in all areas of the curriculum. CAL refers to the use of the computer as a tool to facilitate and instruction. CAL programs use tutorials, drill and practice, simulation, and problem-solving approaches to present topics, and they test the student understands. Computer Assisted Learning (CAL) describes an educational environment where a computer program, or an application as they are commonly known, is used to assist the user in learning a particular subject.

Keywords: Computer Aided learning, CAL, Education, Engineering design

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1. INTRODUCTION

Computer aided learning is a self-descriptive term that refers to learning with computers or use of computers to support the education of people. Computer-aided learning conveys a vast amount of information in a short span of time [1]. It is a powerful method of portraying concepts which are first being learned through textbooks and discussed in the classrooms. CAL can test attainment at any point, provide faster or slower routes through the material for people of different aptitudes, and can maintain a progress record for the instructor [2].

However, our understanding of efficiency of a computer has changed considerably over a period which in turn leads to the evolution of definition of CAL.

1.1 Advantages

- It serves the individual.
- It promotes active interaction and use of target language.
- It lets students to see the progress.
- It breaks down complex topics into simpler ones.
- It is interesting and interactive.

2. DESIGN

Three basic components that affect the way materials are conceptualized: the user, the medium, and the type of hardware delivery system [3].

2.1 Nature of the User

CAL materials are basically being designed for the use by students within a particular institution. If a course writer creates materials for a given set of students, he must keep track of different requirements of the advanced student as well as slower student and adjust the pace accordingly. The advanced student sees the exercises on a computer simply challenging. For the average student CAL proves to be a boom with infinite patience, and no peer pressure. It offers the possibility of repeated attempts to answer a single question. Tutorial software is used for the presentation of concept. Students who are absent could be benefitted from the tutorials, if are made available [4]. Computer animations make the learning process easy for the problematic topics containing three-dimensions.

The student can be given choice to leave the program at any point of time, requesting supplementary information whenever needed, etc. Lock-step progressions and automatic branching may perhaps seem good ideas in theory: in practice they can deter both advanced and remedial students.

2.2 Nature of the Medium

Before designing the lessons, the course writer should be well aware of the limitations of the computer and have a clear idea of the linguistic skills it is best suited to promote.

The computer does not recognize a wide range of sounds and can speak and interpret speech in a very primitive manner totally unsuitable for language training [5].

The computer, then, most easily adapts itself to the written word and therefore the linguistic skills that depend on the written word. Most existing CAL programs for foreign languages concentrate on vocabulary, grammar syntax and, to a lesser extent, reading comprehension. Such limitations should in no way deter the course writer since these skills are fundamental to second language acquisition [6].

2.3 The Equipment

All computers have certain things in common: they can retrieve and present information: they can manipulate data; they are interactive and can respond to input. We should like to discuss briefly the two main types of systems and the features that they make available for exploitation by the course writer.

The first Hardware configuration, the teletype or the (non-graphic) cathode ray terminal attached to a mainframe computer was the teletype terminal which restricted us to a print-oriented, linear medium with lines of print, words following each other, no overstrike capability, and most importantly no erase feature whatever is printed, remains printed [7].

On the other hand, the microcomputer is a totally different medium which offers an expanded range of technical features which may be at once the joy and the despair of the

course writer. Whatever is placed on the screen can be moved, in any direction, either quickly or slowly. Characters can be added or removed. Portions of the screen can be manipulated and divided off independently. It offers an overstrike capability which allows the cursor to be moved to any part of the screen, allowing the modifications to be made [8].

3. IMPLEMENTATION

In this section, we have considered two major components that might facilitate or impede the implementation process.

3.1 The Place in the Curriculum

Nobody would claim that the computer can be used as the sole source of instruction in a language course designed to teach the mastery of all linguistic skills. If the language student is to receive a total linguistic experience, the computer must be used in conjunction with other sources of instruction such as a teacher. Another possibility is to use the computer, as the sole source of exposure to new material for certain areas of instruction only for example, grammar presentation, syntax, theoretical phonetics or vocabulary. With this application the computer assumes entire responsibility for the aspects of the course for which it is best suited, leaving areas such as composition, translation, conversation, stylistics, and verbal competency to the teacher in the classroom and the language laboratory facilities [9].

A third possibility is to limit the use of the computer to an adjunctive role in which it

merely serves to reinforce, or test material presented elsewhere. This application is useful for providing additional drill and practice to weaker students and testing for students of all levels.

3.2 Human Factor

According to the results of a survey conducted in 1971-72, it was revealed that faculty attitude would be the second most important factor, the first being the funds, that would decide the adoption of CAL in learning [10]. A more recent study conducted in 1976 indicated that although 80 (of the 300 faculty members polled) resisted the widespread use of CAL in education because they felt that student-teacher interaction weakens in due course of time.

4. CONCLUSION

The main goal of CAL is to educate with computer. In the future, the use of computer-aided designs and techniques will be developed for all kinds of learning. Computer aided learning has the potential to totally transform the education process and remarkably improve the efficiency of learning by providing great encouragement to students. CAL gives them freedom to experiment with various options such as instant feedback, several attempts to answer a single question and answer to queries. Self-pacing is yet another great feature where CAL software can change the study material as per the need of beginner and advanced levels. This assistance from technology can help provide more bandwidth to teachers to work with students

who need more of their time. Privacy feature helps the shy students to experiment new things with no fear of fellow students knowing how many times they have attempted a single problem or even their answer is wrong or right, they and teacher will only get the feedback and then design the learning strategy accordingly. Multimedia and animation help to learn the difficult concepts easily. Overuse of multimedia may also divert the attention from the content and learning process becomes a way too mechanical. So, the balanced use of technology under the guidance and supervision of teacher must exist to transform the learning process. In western countries, software applications are being used from the 1st grade itself and student choose the topic from the recommended list of topics from the teacher to pick any and work on sample worksheets in their free time.

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