

International Journal of Computer Science and Mobile Computing



A Monthly Journal of Computer Science and Information Technology

ISSN 2320-088X

IMPACT FACTOR: 6.017

IJCSMC, Vol. 6, Issue. 6, June 2017, pg.254 – 258

CAL: COMPUTER ASSISTED LEARNING

Mahvish Farooq¹, Hadia Showkat Kawoosa², Mudasir Ahmed Muttoo³

¹Student, Computer Science Engineering, SSM College of Engineering & Technology, Kashmir, India

²Student, Computer Science Engineering, SSM College of Engineering & Technology, Kashmir, India

³Assistant Professor, Computer Science Engineering, SSM College of Engineering & Technology, Kashmir, India

¹ mfishere@gmail.com, ² kawoosahadia@gmail.com, ³ mudasir.muttoo@gmail.com

Abstract— The sole purpose of this paper is to provide an overall view of computer-assisted learning (CAL) which includes the basic definitions and the terminologies used in the paper. The overview also provides information related to the hardware, software, the techniques used and finally the advantages and disadvantages of CAL. This paper also offers a comprehensive number of references for each concept, method and application in CAL.

Keywords— CAL, Computer assisted learning, e- learning, software, learning.

I. INTRODUCTION

Utilizing computers has always raised a question of interfacing. Human has been interacting with the computers using different methods from a very long time. This journey is still continuous and everyday new designs, systems and technologies appear in the market. This area of research has been growing really fast in the last few decades. Since education is a complex process in which both human and technical resources should be used very carefully, teaching and learning concepts have changed drastically. All the types of Technology-Enhanced Learning (TEL) may be included in it, where technology is used to support the learning process. In broader sense, it may be considered as a part of E-Learning.

CAL is an abbreviation which stands for Computer Assisted Learning, one of the frequently used acronyms in the field of education. CAL can be defined as a technology that has been integrated which define san environment of education where different computer programs are used to assist any user in learning a particular field of interest.

The main Objectives include:

- Help to memorize the difficult topics at ease but also it acts as a virtual laboratory experiments.
- Some so called hard subjects will be joyful using CAL.
- Computer aided learning packages will serve as a better teaching and learning materials.
- This audiovisual technique will help and motivate Children With Special Needs (CWSN) to learn
- Objectives will in turn help to reduce drop out, repetition rate.
- Enhance in the achievement levels etc.

Despite the increase in the interest of this technology within the field of education, there is no clear definition of “CAL”. However we should concern ourselves with the context in which this term is being used rather than on its meaning. There are two common contexts of usage:

1. CAL as Computer Based Learning and
2. CAL as Integrative Technology

In CBL, a computer program replaces a specific part or the whole of a lecture course with no provision or support provided from other methods.

In Integrative Technology, the program does not actually replace a lecture but is introduced into the course as a learning resource. Here the students experience directed learning (directed by the lecturer) or self study which takes place “outside” the main curriculum hours and thus beyond any level of support from traditional method.

II. HARDWARE AND SOFTWARE USED

A. *Hardware Used*

- Computer
- LCD Projector
- Speakers
- Headphones

B. *Software Used*

The following types of software are used in CAL:

1) *Drill And Practice Software:*

The working of this software is same as worksheets and flashcards that are used in classroom. It gives the students exposure to various kinds of facts and information in a questionnaire or gaming type format. It has been used the most since nobody knew how computers could be used for other purposes as well. It measures the performance of the students and also provides them feedback. Most of them have tracking device to enable the student and the teacher to know about their progress. Many of these softwares have sounds and other interesting features that motivate the student.

Example: Reader Rabbit, Math Munchers etc.

2) *Tutorial Software:*

This software is responsible for presenting skills and various concepts and then the student is given the opportunity to practice these concepts. This is unlike the drill and practice software in which there is no teaching component. Tutorials can be both linear and non-linear. In linear tutorials, the student goes from one tutorial to another in sequence while in non-linear tutorial, the student can go to any tutorial he/she wishes depending on his/her interests. Older tutorial software is mostly linear. Tutorial software is very interactive and the students are not passive

participants. The tutorials adjust their pace and feedback based on the progress of the student. The students can also catch on the topics they have missed if the tutorial covers those topics. This feature of the tutorial software is extremely beneficial to the students using it which makes this software very much appealing to its users.

Example: Type To Learn etc.

3) *Problem Solving Software:*

This software allows its users to view the results of their reactions to various events. Manipulation of variables is done by the users and feedback is provided to them according to these manipulations. This software does not always use realistic situations or scenarios. If problem solving applications are matched to the curriculum, they can greatly enhance the learning capabilities of the students.

Example: National Inspirer, Shape Up etc.

Students engage in a wide variety of learning experiences of which PBL tutorials are of central importance.

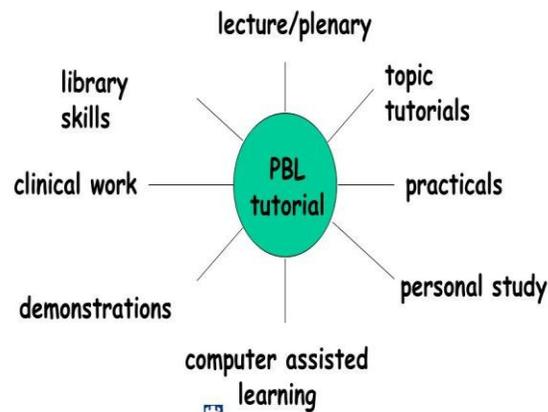


Fig 1 How a problem solving software works

4) *Simulation:*

It is a model of a real phenomenon, object, event where the learners are shown their result based on their actions. Sometimes it is not feasible to do the real thing, so this software is used to provide the experience that otherwise was not possible. The major difference between simulation and problem solving is the dealing of simulation with realistic scenarios. It is a very powerful software as the users can see the consequences of the decisions made by them. Problem solving and simulation deal with very high level thinking skills. One important thing in problem solving and simulation is that sometimes they do not accurately reflect what students know and have understood from these packages. Therefore, better evaluation of the student's understanding must be done by other alternative forms of assessment.

Example: Oregon Trail, Hot Dog Stand etc.

5) *Tool Software:*

It is the mostly used software in education nowadays. It includes all the softwares that can be used as great tools in the student learning. The software helps the users to express their thoughts. It helps both students and teachers in the management of their information. They can be very well utilized in the curriculum of the students. Desktop Publishing Packages, Graphic Programs etc. are samples of tool softwares.

Example: Inspiration, etc.

III. FEATURES OF CAL

- Personalizing information increases the learner's interest in the task.
- Animating objects help in better understanding of the concept
- Learners are provided choices over their own learning.
- Fantasy context are provided that facilitate engagement.

IV. ADVANTAGES AND DISADVANTAGES

A. *Advantages*

- It works according to the pace and capabilities of the user.
- CAL has interactive features like quizzes and games for learning.
- It can utilize the capabilities of multimedia.
- It can enhance decision making abilities, etc.

B. *Disadvantages*

- It is not an integral part of the education but a novelty.
- It is expensive.
- Some of the content in a CAL package can be outdated.
- The increasing development in hardware makes selection of a system difficult for CAL as the system may become obsolete, etc.

V. CONCLUSION

CAL is an effective way of teaching. The modern the era, the more sophisticated is the technology. Computer has been used in many fields. One such field of computer is in education. CAL is an important part of system design and the quality of any system depends on its representation and how it is being used by the users. So enormous attention needs to be paid on its design. In Last few decades, a lot of institutions have been using this technology. It not only introduces a user to new technology but also brings positive effects on users' by increasing their knowledge in a far better and joyful way. Virtual reality is also an advancing field of CAL which can be the common interface of the future. CAL technology has been used in many countries like Iran, India, Turkey, Britain, USA, Canada, etc and has received tremendous positive feedback in all these places.

ACKNOWLEDGMENT

We would like to thank our HOD Mrs. Yasmeen for providing us with useful and valuable comments on the study. This study would not have been possible without their support. All remaining errors, if any, are our responsibility. The usual disclaimer applies.

REFERENCES

- [1] <http://www.encyclopedia.com/computing/dictionaries-thesauruses-pictures-and-press-releases/computer-assisted-learning>
- [2] <http://resources.intenseschool.com/introduction-to-computer-assisted-learning-cal/>
- [3] <http://www.slideshare.net/AMRITAROY26/computer-assisted-learning-67488489>
- [4] <http://wikieducator.org/Computer Assisted Instruction CAI>
- [5] <http://thecanadianencyclopedia.ca/en/article/computer-assisted-learning/>
- [6] http://www.google.co.in/?gfe_rd=cr&ei=AjKPWd70Fs308we1hKGYBQ#q=computer+assisted+learning+research+papers