Application of computer aided teaching in conventional lecture class

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Abstract:

Background: Computer aided teaching (CAT) became popular in medical education but there is debate among the teachers regarding application of computer in a large group lecture class.

Aim of the study: The present study was aimed to find out the acceptance and use of CAT in a conventional large group lecture class along with black board assistance.

Material and methods: CAT was conducted in a large group lecture class of embryology. Related lined diagrams were drawn on the blackboard in front of the students. Students were given a Likert's type three response closed end questionnaire to express their opinion at the end of the concerned system of embryology.

Result: Ninety-nine percent of the students expressed that the teacher should guide them on how to draw a lined diagram. Ninety-nine percent mentioned that emphasis should be given on the applied aspect of the topic. Ninety-six percent of students' opinions were that at the end of each lecture, summary should be either given as a hand out or be allowed to take notes. Ninety-three percentage of the students mentioned that computer aided teaching is beneficial, 86% expressed that hybrid approach of teaching, provoked further study of embryology, 91% mentioned that the teacher should inform which books to be used as reference for further studies.

Conclusion: The study result suggests that CAT is applicable in a large group lecture class. It is better to adopt hybrid approach of teaching for equal involvement of teacher and students. It is necessary to the inform students regarding the importance of concerned topics and expert teacher give the students proper guidance.

*Key wards***:** Computer aided teaching, Lecture class, Blackboard teaching, Hybrid approach of teaching

Introduction:

Medical studies became a subject of study in India since 2500 BC and the curriculum was adopted from the British system of medicine after some modifications (Sachdeva, 2004). All medical schools followed the curriculum prescribed by the Medical council of India, which preferred the conventional lecture based teaching. The aim of the conventional school is that all students should be exposed to identical knowledge, to grow similar interest (Finch, 1999) and farm foundation of basic sciences before entering into the clinical field.

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According to Kumar et al (1998), four formats of teaching used to teach medical students are: traditional and/or conventional teaching, enhanced traditional teaching, problem-based learning and hybrid problem-based learning. Monotony of lecture class should be avoided for any format of teaching (Nierenberg, 1998). Often large group lecture class becomes monotonous due to continuous use of "chalk n talk", using other available electronic teaching or audio-visual aids. Nierenberg (1998) suggested a guideline, to break the monotony and for active participation of students in lecture classes are: (i) one may begin the lecture with a clinical example and may show related photographs and diagrams to sensitized students about the significance of the topic in clinical practice; (ii) students should be asked whether they have come across such a case in their real life; (iii) novice should be asked to

summarize main features of the lecture for their active participation. When one uses this pedagogy in lecture class then it becomes more interactive way of teaching.

When a teacher plans a lecture class with reflective thought in combination of computer aided teaching (CAT), becomes a more effective way of teaching (Steel et al, 2002) because computer aided teaching provides more clarity and uniformity in teaching (Aldred & Aldred, 1998). Therefore, Jonas et al (1993) and O'Neill (2000) mentioned that computer assisted teaching in medical schools instigate students for active learning. However Steel et al (2002) warned that computer assisted teaching should not supplement traditional student teacher encounter and relationship. The present study aimed to find out students acceptance of computer aided teaching in a conventional lecture without loosing the essence of a conventional large group lecture class.

Materials and Methods:

Computer aided teaching (CAT) with the help of LCD projector was conducted in a large group (100 students) a lecture class of first year MBBS students of 2007-08 batch, in Shri Guru Ram Rai Institute of Medical & Health Sciences, India. The experiment was conducted in the embryology lecture class because a novice found it a difficult subject in comparison with other subdivisions of Anatomy.

All related photographs and diagrams of the topic were scanned and summary of lectures were made as a power point presentation. They were projected on an LCD projector using a computer. The terminology "Computer aided teaching" is being used in the present work because the researcher has taken lecture courses with the help of computer technology. At the same time the researcher made the effort to teach students, how to draw a composite diagram in a simplified way. The researcher has drawn all necessary diagrams on the black board in front of the students. All the experimental lectures followed Nierenberg's (1998) guideline regarding lecture class.

At the end of the embryology system, students were given a Likert's scale which had a three response-closed end questionnaire to express their opinion regarding the teaching methodology. The students were advised not to write their names and roll number to avoid the researcher being biased. They were informed of the purpose of the study.

There were chronic absentee in the batch. Eight students were absent in one and/or other lecture sessions of the system of embryology.

The study design did not require the ethical committee's permission. Moreover, this research did not having any financial obligation to any organizations.

Result:

The result of the students' opinion regarding the computer aided teaching 93% of the students expressed that it is beneficial. While 99% of them expressed, they needed their teacher's guidance regarding the technique of drawing a composite diagram in a simplified form. At the same time 99% of the students mentioned that emphasis should be given on applied aspect of the concerned topic and to know the importance of the topic in the clinical practice. Ninety-six percent of the students mentioned, they needed to have a summery of the class. Eighty-six percent of the students expressed that present teaching technology used in a large lecture class had provoked them to study further, 91% of them mentioned, at the end of the lecture, teacher should inform them of the references and the sources of study material.

Discussion:

A teacher of conventional school conveyed, students and teacher are not equally involved (Abdul-Ghaffar, 1999). Students are passive listeners. It was observed that students often expressed regarding their pre-clinical lecture format as "non-relevant, passive, and boring" (Walton et al, 1997; Bligh, 1995).

The Present study result agreed with Nierenberg's (1998) suggestions, because 99 % of the students mentioned emphasis should be placed on the applied aspect of the topic to know the importance of it in their clinical practice. Moreover the novices recognized the instructors' effort, knowing the significance of particular learning needs (Nira & Birenbaum, 2000).

There are various computer aided teaching–learning strategies adopted by medical schools as stated by Vickers (1990); Jonas et al (1990); Haynes et al (1992); Schor et al (1995); Mac & Greenes (1997); Kumar et al (1998); Karim & Qayumi (1999); Devitt & Palmer (1999); Levin et al (1999); Race (2000); Sullivan et al (2001); McLean & Murrell (2002); Treadwell et al (2002); Vogel &

Table 1: Opinions of the students regarding computer aided teaching (n= = 92)

Opinions	Percentage
Computer aided teaching (LCD Projector) in embryology lecture is beneficial	93
Teacher should guide how to draw a lined diagram	99
Emphasis should be given on the applied aspect of the topic to know the importance of it in clinical practice	99
At the end of each lecture topic of embryology, summary should be either given as a hand out or should be allowed us to note down.	96
The way concern teacher used black board and LCD projector, provoked further study of embryology	86
Teacher should inform which book to refer for further study	91

Wood (2002); Chris et al (2003); Lih-Shyang et al, (2005); Robert et al (2006); Broudy & Hickman (2007); Davis et al (2008). They discussed the implications and outcome of the new era of modern technology applications in medical education.

This research result agreed with earlier research. It was expressed by 93% of the students that Computer aided teaching in embryology lecture is beneficial. Because computer aided instructions are able to simulate real life situations and provide more clarity (Karim & Qayumi, 1999). Hence, it is a more effective way of learning (Levine et al, 1999). Most significantly is, the application of information technology and computers can bridge the gap between basic and clinical sciences (Schor et al, 1995).

Computer aided teaching becomes more effective when it was designed and produced to students with innovative and reflective thoughts (Vogel & Wood, 2002) which agreed with the present study, as 86% of the students mentioned that the way concern teacher used black board and computer as audiovisual aids in lecture classes which provoked further study of embryology.

According to Marton and Saljo, (1976), a 'good teacher' makes the learning resources readily available to students. This was evident in present study, as 96% student expressed that at the end of each embryology lecture, a summary should be either given as a hand out or be allowed us to take notes and 91% mentioned that the teacher should inform which book to be used for further study. Moreover, the teaching material should be made available at the Institutional website for reference and revision (Treadell et al, 2002; Vogel & Wood, 2002; Candler et al, 2003). To have the drawing of a composite diagram in a simplified manner on blackboard students remains an important component as expressed by 99% of the students. Instead the teacher should guide students how to draw a lined diagram (Steel et al, 2002).

Summary and Conclusion

Computer aided teaching is beneficial even in a large group lecture class for:
(i) time management and clarity of conceptual knowledge
(ii) more time for interactive discussion and eye to eye contact
(iii) study material to be made available to students through institutional website

The study result suggested that in a large group lecture class CAT is applicable to prepared and planned lectures with innovative ideas and reflective thoughts. It is better to adopt the hybrid teaching approach without losing advantages of conventional lectures. Students need teacher is guidance to acquire basic science knowledge.

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Types of Computer Aided Education Traditional teaching methods and course contents have all been affected by the introduction of computer technology. Education is the main step of all disciplines and should be carried out seriously. In our competing world every individual should learn more and fast in order to take a front row in this competition.

Education is defined as the process of forming an individual identity, becoming sociable and gaining economic effectiveness. Classical language teaching in classroom can be monotonous, boring, and even frustrating, and students can loose interest and motivation in learning. CALL programmers can provide student ways to learn English through computer games, animated graphics, and problem-solving techniques which can make drills more interesting (Ravichandran 2000). Although there are many advantages of computer, the application of current computer technology still has its limitations and disadvantages. Some disadvantages of CALL are as follows: 1. Less-handy equipment. Computer Aided Instruction (CIA), diverse and rapidly expanding spectrum of computer technologies that assist the teaching process. CAI is also known as computer-assisted instruction. Example of CAI applications includes guided drill and practice exercise, computer visualization of complex objects, and computer-facilitated communication between students and teachers. Computer Aided instruction that helps teach or encourage interaction can be presented on computers in the form of text or in multimedia formats, which include photographs, videos, animation, speeches, and music. It has been offered in a wide variety of fields, including all the main school subjects taught in elementary and secondary schools. Computer-assisted language learning (CALL) is an approach to language teaching and learning in which computer technology is used as an aid to the presentation, reinforcement and assessment of material to be learned, usually including a substantial interactive element. Computer-assisted language learning (CALL) is an approach to teaching and learning in which the computer and computer-based resources such as the Internet are used to present, reinforce and assess material to be learned and usually...