



## **POWER POINT VERSUS CHALK BOARD: IMPACT ON THE MEDICAL STUDENT**

**Sharadkumar Pralhad Sawant\***

Professor and Head, Department of Anatomy, K.J.Somaiya Medical College, Somaiya Ayurvihar, Eastern Express Highway, Sion, Mumbai-400 022, Maharashtra, India.

### **ABSTRACT**

Traditionally, most of the lectures are taken with chalk and board in India. However with computer technology the use of computer assisted techniques in teaching is inevitable, it enhances the ability to process the ever-increasing volume of medical knowledge. The use of power-point presentations (PPT) has been increasingly adopted by many of the medical colleges over the past decade but the superiority of these aids over one another has not been proven. Teaching and learning are active processes occurring simultaneously on a continuous basis Teaching facilitates and supports learning .However, learning is the cognitive processes whereby an individual acquires the professional and ethical values, clinical knowledge, reasoning and psychomotor skills necessary for professional competence. Both teaching and learning are dependent on the teacher, the learner, the subject matter, environment(s) and the teaching methods. The responsibility lies on the teacher to ensure that student is given the opportunity to think in the classroom. As thinking is essential to knowledge and knowledge is essential to thinking Hence strategies should be developed to use PowerPoint appropriately in the classroom. The aim of this study was to compare the impact of the PowerPoint multimedia presentation and chalkboard in teaching. It assesses the students' perspectives and preferences for chalk and board and power point presentations. Also it evaluates efficacy of these tools as far as examination performance is concerned. Students were given a questionnaire seeking their opinions about helpfulness of the teaching tools for reproducibility of diagrams and text in examination, retention of lecture information in memory and understanding of simple and complex concepts. Most of the students opined that C&B is more helpful than PPT for all the three parameters. PPT should not replace chalk & board, but be used as a supplementary to enhance the efficacy of a lecture.. This was suggested by recognizable number of students, that both methods should be used in combination, as per need of the topic.

**Key words:** Chalk and Board, Computer Technology, Power-Point Presentations, Combination of Both.

### **INTRODUCTION**

Lecture, the commonest form of teaching since ancient times is a universally accepted way of teaching, and adopted in universities all over the world. Teaching and learning are active processes occurring simultaneously on a continuous basis. Teaching facilitates and supports learning .However, learning is the cognitive processes whereby an individual acquires the professional and ethical values, clinical knowledge, reasoning and psychomotor skills necessary for professional competence. Both teaching and learning are dependent on the teacher, the learner, the subject matter, environment and the teaching methods The responsibility lies on the teacher to ensure that the student is given the opportunity to think in the classroom. as thinking is essential to knowledge and

knowledge is essential to thinking.

Traditionally, most of the lectures are taken with chalk and board (C&B) in India. With the advancement of computer technology of India, the use of computer assisted techniques in teaching is inevitable. Also with the increasing syllabus and increasing knowledge in the medical field, there has been a constant effort to use modern teaching aids in medical colleges.

Although discussion in small groups appears to be a superior method of teaching- learning, it is almost inevitable that the medical students will have to face lectures, as the number of students attending is too large in comparison to the teaching staff available. Hence lectures are here to stay, so it is imperative that they should be as effective as possible.

\*Corresponding Author Sharadkumar Pralhad Sawant Email:- drspsawant@gmail.com

The use of power-point presentations (PPT) has been increasingly adopted by many medical colleges. The young generation teachers are more fascinated by it.

Chalkboard aid is inexpensive; easy to clean and reuse, allows students to keep pace with the teacher and is not dependent on electricity. But it is time consuming; one cannot go back to what has been erased and is not so effective for large number of students.

PPT has the advantage of using colors, fonts, diagrams and animation. Its disadvantage is that dim light cause's loss of eye contact;

One viewpoint is that using PPT improves learning or comprehension whereas other viewpoint states that students remember about the same amount of material following PPT as they do following other media (such as overheads and blackboard).

Some studies have found that PPT actually impairs learning.

Hence several student feedback studies have been conducted in the past, in the field of medical education but the superiority of PPT to the traditional chalk and talk method has not been successfully proven.

Performance in examination evaluates the level of knowledge and skills achieved during a particular course. It is of vital importance for medical students, as it affects the quality of service to the patient and thus in broader perspective, the public health. Hence the assessment of impact of the teaching tools on performance in the examination is important.

However this area appears to be underexplored as far as teaching in anatomy is concerned.

Assessment of students' performance in anatomy cannot be complete without assessing the ability to draw accurate, proportionate and neat, well labelled diagrams. Thus we feel that the efficacy of any teaching session or teaching method for anatomy should be assessed under three domains -- understanding the concept, retention of lecture information in memory and reproducibility of diagrams. So also, the students' perspectives and preference to a particular method should be considered.

**Table 1. Comparison of marks obtained by the students**

Parameter	C&B	PPT	Combinat	p-value
Marks Obtained	8.92	7.5	6.3	<0.0001

**Table 2. Students exposed to chalk and board type of lectures**

Parameters	C&B	PPT	Combinat	p-value
Understanding of concept	5.33	4.5	4.2	<0.0001
Retention of memory	7.0	6.5	6.3	<0.0001
Reproducibility of diagrams	6.7	3.0	5.2	<0.0001

**Table 3. Assessment done by students (Feed back form)**

Parameters	C&B	PPT	Combinat
Arrangement of topics in proper sequence	82%	85%	78%
Coverage of all aspects of topic	87%	83%	84%
Clarity of diagrams	75%	88%	85%
Simplification of topic	92%	65%	72%
Overall Quality of lecture	85%	76%	72%
Understanding of concept	89%	62%	65%

## MATERIALS AND METHODS

The study was conducted in Department of Anatomy, of K.J.Somaiya Medical College at Mumbai among the Ist MBBS students. The students were briefed about the study. A total of 45 students were selected at random to participate in the study. The students were divided into three groups of 15 students each:-

Five lectures of gross anatomy were selected randomly, all of them from the same region and of the same difficulty level. The lectures were conducted in three separate rooms for the three groups. The first lecture was conducted using Chalk and board, the second was conducted using PPT and the third lecture was conducted using a combination of both techniques. The time allocated for the lectures was the same (1 hr). The teacher conducting the lecture was well versed in the use of both teaching tools.

The standard of the lectures was kept uniform, and this was assessed by providing the students with a feedback form at the end of the lectures. For this a questionnaire was provided to the student, to not only assess the standard of the lectures but also to rate the usefulness of the above tools as regards to understanding of the topic and the reproducibility of the text and diagrams in the examination.

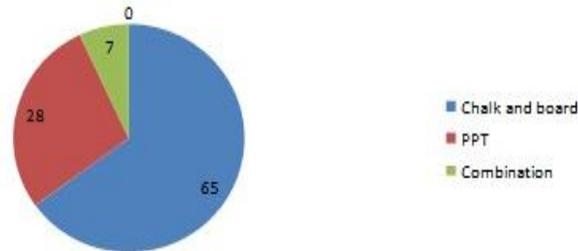
At the end of each lecture, a theory examination of 45 minutes duration was conducted for all the three groups. The examination consisted of 5 multiple choice questions which tested the cognitive knowledge of the students and two Long answer questions which tested the knowledge of the students under three headings - understanding of the concept, retention of memory as well as the reproducibility of the diagrams. The questions were designed to match the expected knowledge of the undergraduate medical students.

## RESULTS

The scores obtained at examinations were combined and analysed out of 10.

Retention of memory	84%	55%	60%
Reproducibility of diagrams	95%	72%	75%
Which method is better	85%	65%	35%

**Figure 1. Students preference for teaching methods**



**DISCUSSION**

Table 1 shows the comparison of marks obtained by the students who were taught on C&B, PPT and a combination of two. Significantly higher marks were obtained by students who were taught on C&B or PPT alone as compared to the combination type teaching. Between C&B and PPT alone, C&B stood out better than PPT.

In our study, as per Table 2, students exposed to chalk and board type of lectures were found to have better, conceptual understanding, memorization and reproducibility of text information as well as diagrams at the theory examination.

As per the feedback form also, when students were asked about their preference for the teaching method, majority of students expressed that the C&B is more effective than PPT.

Some students (35%) also suggested that the combination of both the methods be used, however their proportion remains low, as majority expressed confusion when both were used. They could not comprehend where more attention was required.

The teacher's role is not just to deliver information but also to respond to students' learning efforts by encouraging thinking and trying to relate to, what is already known. Similarly, the students' role is not just to copy new information, but also to actively make sense and construct meaning. The most important factor in learning is the baseline knowledge of students, and new knowledge is constructed by enhancing concepts on existing knowledge.

Every lecture topic has some specific facts which has to be memorized by the student so as to develop into new knowledge later on. These facts are emphasized by the teacher, and this is where the teaching tools comes into play. The type of media used will decide how much a student will grasp a particular fact, during the lecture, thereby influencing the knowledge.

The students opined that C&B lectures are more helpful to retain the lecture information in memory. It is observed that short term retention of facts is less with PPT, hence students exposed to PPT score lesser.

As per students' opinion, the explanations, clarity of concepts and learning to draw diagrams are better done

on C&B than PPT. The C&B method is more student centered while PPT is more teacher centered. In C&B, the teacher can elaborate points, if he wishes so. When contents are elaborated on chalkboard, the students were more active and got time to ask the questions compared to showing slides on PPT. The students write and draw their notes/diagrams with the teachers, thus students are active learners. Hence conceptual understanding is more. The lectures are not interrupted due to power failure. There are natural pauses (e.g. during cleaning of board (Seth 2010c) which provides sufficient time to the students to grasp the new concepts.

As we all know, diagrams are central to Anatomy. Diagrams drawn by teachers on board are simplified version of those in text books /atlases. They are simple line diagrams while diagrams on PPT are usually scanned or photographed, so may be complicated. Line diagrams are difficult to draw on PPT. Whereas, any diagram/illustration on a C&B can be copied and reproduced easily.

The problems with C&B are that the teacher has to be well versed and prepared with the topic, the teachers drawing should be good and handwriting should be legible.

PPT offers a tremendous number of options for personalizing slides. Having choices of font, color scheme, display options, sound, and graphics providing an opportunity to enhance a presentation in different ways. However, it should be kept in mind that inappropriate use of PPT features can substantially degrade the quality of a presentation. Sometimes it is seen that most of the teaching faculty do not pay adequate attention to appropriate preparation of PPT due to their busy schedule and assign the job to someone else. In such scenario, teaching faculty can neither deliver the lectures adequately, nor can they stimulate the students at active learning standards. A common fault of PPT is the use of slides with too many lines per slide, too many words per line, or too many graphics, all of which distract the attention of the student from the main concept.

In PPT, the students have to concentrate on two sources of information, one is the visual information which they get from the screen and the other is the auditory information, which they derive from the teacher. For some students, this may become difficult. Also the students are

used to C&B from their school days, so they may be more comfortable with it. Points in favour of PPT, according to students are good quality diagrams with good visibility, but may be difficult to reproduce sometimes. Many students opined that the diagrams on PPT though attractive, cannot be copied. Their examination score also proves it. In a previous study, Thomas and Appala, observed that 92% students felt that coping of diagrams was easier with C&B.

Even though our study clearly proves the superiority of C&B over PPT or a combination, however various studies all over the world have varying opinions on this issue. Garg et al., 2004, noted that AV aids though preferred by teachers to be included in lecture, it was not certain whether it increases understanding and post examination performance. Seth et al noted that though the test performance was better by C&B than PPT, the difference was not statistically significant. Szabo and Hastings, and Shallcross and Harrison found that there is no difference in performance of students in tests who were taught by different methods.

## CONCLUSION

Both the tools of teaching (PowerPoint or chalkboard) have some strengths and limitations. The results of the present study suggest that chalkboard has the advantage of a better recall besides being the most preferred aid among medical students. For a student what

matters in the end is not only the clarification of concepts, but also the examination scores. Our study clearly unfolds that C&B is better than PPT as far as post examination performance is concerned. As ultimately it is the teacher who uses the teaching aid, it all depends on how effectively the aid is utilised. 'A good teacher with lack of audiovisual aids will be better received than the poor teacher with the best audiovisual aids'.

## Competing Interests

The author declares that he has no competing interest.

## Authors' contributions

SPS draft the manuscript, performed the literature review & SR assisted with writing the paper.

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