

## RESEARCH ARTICLE

### PowerPoint versus chalk and board teaching in physiology of vision - A comparative study

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#### ABSTRACT


**Background:** It was always debated, which one is the best PowerPoint (PPT) or chalk and board (CB), many studies prove the efficacy and advantages of one over another. With an increasing number of medical seats in medical colleges and an extensive syllabus, there has been a constant effort to use modern teaching aids in medical colleges. Most of the studies were qualitative, so we carried out a quantitative study to compare the above methods of teaching. **Aims and Objective:** The aim of the study was to compare the performance of students after PPT and CB teaching in the physiology of vision for first MBBS students. **Materials and Methods:** This comparative study was conducted in the department of physiology on April–June 2016. Approval from Institutional Ethical Committee has been taken. After written consent from students, they were divided into two different groups in two different lecture halls at different times; the division was random, each group has 40 students. For the Group I, pre-test and post-test were conducted for 10 min (10 marks) before and after the PPT teaching (30 min). For Group II, same was done after CB teaching. A total of five sessions were conducted for the physiology of vision. The obtained marks by two groups were analyzed with the paired *t*-test. **Results:** In post-test, mean marks of CB are slightly higher than PPT. Values are statistically significant on applying the paired *t*-test in all sessions (except in session 5). **Conclusion:** In small group, teaching performance of students in CB teaching is better than PPT teaching group, and it is statistically significant.

**KEY WORDS:** Chalk and Board; PowerPoint; Small Group Teaching; Teaching Aids

#### INTRODUCTION

It was always debated, which one is the best PowerPoint (PPT) or chalk and board (CB), many studies prove the

efficacy and advantages of one over another. With an increasing number of medical seats in medical colleges and an extensive syllabus, there has been a constant effort to use modern teaching aids in medical colleges. In Europe and the United States (US) during the 18<sup>th</sup> century, teachers and students used clay tablets. The teacher went to each student and wrote the lesson on each student's slate/tablet. In 1801, in Scotland, James Pillans, Head of the school and geography teacher, hung a large piece of slate on the wall to teach the students.<sup>[1]</sup> The use of the blackboard by a teacher depended on his/her ability to draw and write on the board. It provided a variety of opportunities for modifying the presentation of

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the subject content. The introduction of the blackboard was a new innovation that was well accepted by the teachers and it gained popularity across the globe.<sup>[2]</sup>

Bob Gaskins and Dennis Austin developed the first version of PPT called presenter in 1984 and Microsoft released the first version of the software in the year 1990. Before the introduction of PPT, a lot of time was spent drawing and writing on the board/transparencies/slides. The introduction of PPT, thus, saved millions of man-hours every year.<sup>[3]</sup> The prominent place that the CB, whiteboard, and the overhead projector occupied in the classroom was replaced almost completely by the ubiquitous PPT presentation. PPT software package has found wide acceptance among the teaching, scientific as well as the business community for making presentations.<sup>[2]</sup>

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 with other media (such as overhead projectors). Some studies find that PPT actually impairs learning. It was observed that the short-term retention of facts was less with PPT, and hence, students in PPT group obtained lower scores. Furthermore, more number of students preferred blackboard.<sup>[4]</sup> Most of the studies were qualitative, so we carried out a quantitative study to compare the above methods of teaching.

### Objective

The objective of the study was to compare the performance of students after PPT and CB teaching in the physiology of vision for first MBBS students.

### METHODS

This comparative study was conducted in the department of physiology on April-June 2016 as a Part of Project for MCI's advanced course of medical education (SRMC, Chennai). Approval from Institutional Ethical Committee (IEC) has been taken. After written consent from students, they were divided in two different groups in two different lecture halls at different times; division was random, each group has 40 students. For group I pre test and post test were conducted for 10 minutes (10 marks) before and after the PPT teaching (30 min). For group II same were done after Chalk & board teaching. Total 5 sessions were conducted for the physiology of vision. The difference in the marks obtained in the two groups was analyzed. Physiology of vision has been divided into 5 different sessions for both group I and II. Each session had pre-test and post- test and each has 10 marks respectively. Sessions were prepared from standard textbooks of physiology with use of multiple choice questions. Statistical analysis was done with paired t- test.

### RESULTS

In post-test, mean marks of CB are slightly higher than PPT. Values are statistically significant on applying paired *t*-test in all sessions (except in session 5) [Table 1].

### RESULT

In post test mean marks of CB are slightly higher than PPT. Values are statistically significant on applying paired-t test in all sessions shown in table 1 (except in session 5).

Feedback by students-Disadvantages of PPT were, it takes longer to set up the projection, power failure interrupts the lecture and it is difficult to take down the notes it is difficult to learn concepts with running PPT teaching, less interaction of teacher with students, Advantages are pictorial and graphical representation is better. Disadvantages of CB were diagrams were not clear; some points of topics were left. Advantages are interaction with students were more, students get more time to understand topic.

### DISCUSSION

In this study post test mean marks of CB are slightly higher than PPT. Values are statistically significant on applying paired-t test in all sessions except in session 5. Written students feedback were mixed for teaching methods and were recorded.

In study by Waheeda et al[4], it was observed that the short-term retention of facts was less with PPT, and hence students in PPT group obtained lower scores and more numbers of students preferred blackboard (60%) over PPT (45%), in our study also mean score in chalk and board session for all sessions (except 5) were more than PPT sessions. In study by Novelli EL *et al* <sup>[5]</sup>, power-point presentation might give a wide perception of the integrated metabolism, as previously studied, step-by-step in the blackboard. The traditional classes with blackboard presentation were most favored by students from biomedicine and medicine courses, allowing undergraduates to understand the metabolic topics, which were preferred by the students of these courses. The use of students' preferred teaching techniques might turn biochemistry more easily understood for biomedical and medical students, in our study student's feedback favored PPT for pictorial representations and CB

**Table 1: Mean marks obtained in sessions**

Sessions	Pre-test		Post-test	
	PPT	CB	PPT	CB
Session 1	6.250	5.450	7.250	8.100
Session 2	4.621	4.650	6.091	6.650
Session 3	4.811	4.696	6.000	6.870
Session 4	3.396	3.857	3.990	4.381
Session 5	4.788	4.925	5.212	5.500

PPT: PowerPoint, CB: Chalk and board

for topic understanding. Our study can be compared with study conducted in Bangalore during 2011-2012 considered blackboard teaching is most satisfactory because students can follow the teaching and understand the concept effectively<sup>[6]</sup>. In study conducted by Seth V *et al* students wanted to be able to listen to the lecturer and make their own notes. The most effective lectures were the students are able to understand and given sufficient time to take down the notes, flow charts and diagrams as in our study students are keen to take out notes from class and need some time to understand the topic<sup>[7]</sup>.

There are lots of qualitative studies regarding perception of medical students and faculties on teaching methods but very less quantitative studies are there, so our attempt with this study is to compare CB and PPT teaching. We had done this study on MBBS teaching with “physiology of vision” along with student’s feedback. Though CB had significant upper hand over PPT but we have some mixed students feedback favoring both for different reasons. So such type of study will depend on topic and subject of medical curriculum, as topics where there will be need of more diagrammatic presentations PPT can help effectively and where topics are lengthy will need CB teaching so that students can assimilate the topics. A blended method where CB, PPT and other audiovisual aids can be very well used and can be studied, so comparative study with other medical subjects and topics should be conducted.

## CONCLUSION

Although students’ feedback for CB and PPT was mixed, in small group teaching performance of students in CB teaching is better than PPT teaching group, and it is statistically significant.

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