



IS CHALK AND BOARD STILL A PREFERRED METHOD FOR ENHANCING LEARNING?

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ABSTRACT

Lectures, which were traditionally taken via chalk and board, are slowly being replaced by multimedia due to advances in technology. This Cross-sectional, observational study compared the students' preference for chalk and board and multimedia computer-based lectures. 241 bachelors of Physiotherapy students were asked to fill a questionnaire consisting of ten questions on two teaching methodologies: chalk and board and multimedia computer-based lectures. In addition to rating the 10 questions on a five-point Likert scale ranging from 1-Disagree strongly to 5-Agree strongly, the students had to describe qualitatively their preference for a particular teaching method. Students preferred chalk and board method ($p < 0.001$) for 'attempts student teacher interaction', and multimedia computer-based lectures ($p < 0.05$) for 'Contents are more informative'. Overall the chalk and board was more preferred to multimedia computer-based lectures.

In conclusion, the teacher impacts the maximum, whatever may be the teaching method employed. A good multimedia computer-based lecture can engage student, prevent distraction and promote a good student experience. However a number of students still preferring older methods compared to multimedia computer-based lectures cannot be ignored.

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INTRODUCTION

In India, the ancient system of teaching and learning (gurukul) was a type of 'residential School' one in which the teacher or the guru would impart knowledge & skills to a small group of students or shishyas residing nearby or with him in the same house. The students would learn everything from self discipline to mathematics, skills, politics and daily chores. In India, lectures are one of the oldest forms of oral presentations utilized by teachers & public speakers addressing large group. Lectures generally being delivered via chalk and board have been common mode of teaching before the advent of recent multimedia computer-based lectures. Although lectures can be a method by which one introduces new concepts, enhances scientific knowledge, deepens understanding and critical analysis, it could be a deterrent with regards to motivation & comprehension if merely recited stating facts & findings. (Brown and Manogue, 2001)

In the 21st century with advances in technology, in the educational institutes, traditional chalk and board method is slowly being replaced with newer teaching methods utilizing technology like multimedia computer-based lectures. These newer technology is based on the idea that it would enhance retention as the information presentation is improved. (Szabo and Hastings, 2000; Ricer, Filak and Short, 2005)

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Physiotherapy is a skill based profession consisting more of practicals and clinicals conducted in small groups, however theory teaching incorporates combination of interactive lectures with use of multimedia computer-based lectures today. All the teaching methods and aids have their own advantages and disadvantages but use of multimedia computer-based lectures is being recently emphasized. However, since the chalk and board was still being used by many renowned teachers, this study of comparing the student preference for chalk and board to the use of multimedia computer-based lectures was undertaken.

METHODOLOGY

This was a Cross-sectional, observational study done on Bachelor's of Physiotherapy students of College of Physiotherapy. The study was approved by the institutional ethical committee. The sampling technique used was convenient sampling. Total of 241 students from second, third, and final year of Physiotherapy, who were already exposed to both the methods of teaching, were included for the study. Those who were willing to participate in the study voluntarily were asked for a written informed consent and a participant information sheet with details of the study was given to them. The students were explained regarding the purpose and objectives of the study and assured confidentiality. The questionnaire (table 1) was prepared after reviewing the literature to study the preferences of the students on two teaching methodologies. It had 10 questions which could be

rated on a five-point Likert scale ranging from 1-Disagree strongly to 5-Agree strongly. The questionnaire was distributed to the students, one class at a time. All those who were absent on the day the questionnaire was distributed were excluded from the study. In addition to rating of the questionnaire the student also had to describe qualitatively in their own words their preference for a particular method.

Table 1 Questionnaire

Sr No	Statement	Chalk and board	Multimedia
1	Stimulates my interest		
2	Attempts student teacher interaction		
3	Preference depends on the teacher teaching it		
4	Lecture organization is good		
5	It is clear and more understandable		
6	Note taking/ drawing diagrams is easy		
7	More effective for learning		
8	Contents are more informative		
9	Recall/Memorizing of the contents is easier		
10	Continuity of thought is better		

RESULTS

In total there were 241 students, from second, third and final year, whose data was analysed (figure 1). The gender distribution for all the students is given in figure 2.

The average age of students was 19 years. For the purpose of analysis, the level of statistical significance was at $p < 0.05$.

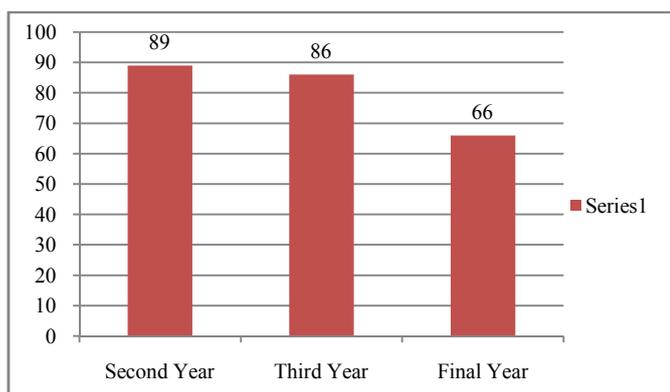


Figure 1 Year-wise distribution of students

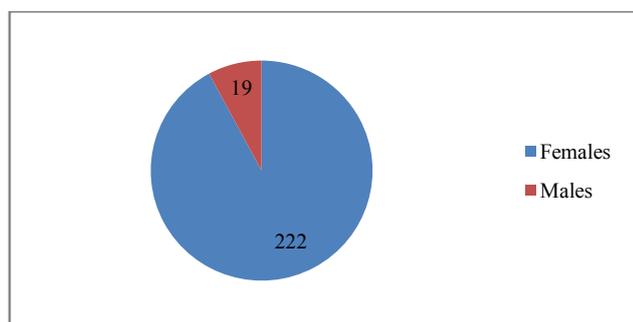


Figure 2 Gender-wise distribution of students

For comparing preference between chalk and board and multimedia within the second, third and final year of students, paired t-test was used (tables 2-5).

For the question ‘Attempts student teacher interaction’ chalk and board was preferred more in all the years. (table 2).

Table 2 Attempts student teacher interaction

Year of study	Teaching method	Mean	N	Std. Deviation	p value
Second year	Chalk &Board	3.99	89	.846	<0.001
	Multimedia	3.20	89	.967	
Third year	Chalk &Board	4.30	86	.670	<0.001
	Multimedia	3.36	86	.893	
Final year	Chalk &Board	4.39	66	.742	<0.001
	Multimedia	3.56	66	.979	

For the question, ‘Stimulates interest’, only the final year students preferred the chalk and board more. For all the other years there was no significant difference (table 3).

Table 3 Stimulates interest

Year of study	Teaching method	Mean	N	Std. Deviation	p value
Final year	Chalk &Board	4.27	66	.669	0.006
	Multimedia	3.82	66	.943	

For ‘Lecture organization is good’, only the second year students preferred multimedia for all the other years there was no significant difference (table 4).

Table 4 Lecture organization is good

Year of study	Teaching method	Mean	N	Std. Deviation	p value
Second year	Chalk &Board	3.37	89	1.081	0.005
	Multimedia	3.88	89	1.043	

For ‘Contents are more informative’, all the three years of students showed more preference for multimedia computer-based lectures (table 5).

Table 5 Contents are more informative

Year of study	Teaching method	Mean	N	Std. Deviation	p value
Second year	Chalk & Board	3.07	89	1.116	<0.001
	Multimedia	4.04	89	.903	
Third year	Chalk & Board	3.56	86	.977	0.004
	Multimedia	4.02	86	.840	
Final year	Chalk & Board	3.79	66	.775	0.033
	Multimedia	4.12	66	.832	

Table 6 Overall preference between the two teaching methods in different years of students-paired t test

Year of study	Teaching Method	Mean	N	Std Deviation	p-value
Second Year	Chalk & Board	3.57	89	1.010	0.232
	Multimedia	3.79	89	1.028	
Third Year	Chalk & Board	3.91	86	.928	0.591
	Multimedia	3.81	86	1.000	
Final Year	Chalk & Board	4.26	66	.664	0.141
	Multimedia	4.03	66	.841	

Comparison of two teaching methods between the second, third and final years using one-way ANOVA, showed a significant difference ($F=11.088$, $p < 0.001$) for the chalk and board method. All the other questions did not show any statistical difference ($p > 0.05$) between the two methods of teaching.

DISCUSSION

There are mixed opinions by authors who have compared the students’ preferences for chalk and board and Multimedia computer-based methods of teaching as some report students

preferring the chalk and board method more (Petimani and Adake, 2015; deSa and Keny, 2014;) and others report more preference for Multimedia. (Jabeen and Ghani, 2015; Seth, Upadhyay, Ahmed and Moghe, 2010; Kumar, 2013) The present study analyzes preferences of Physiotherapy students. Students from all the years rated the question 'Attempts student teacher interaction' significantly higher for the chalk and board method.

The reasons for this could be several, the teacher possibly has subject content almost as a part of her, he / she does not have to run through any pre prepared slide show, he / she may have outlined the objective on the board and/or a piece of paper in front on the table. Probably this results in improved eye contact, leading to a feeling of improved interaction. The teacher is not bound to one place and can therefore move around the class (Baxi, Shah, Parmar, Parmar and Tripathi, 2009) interacting with the students by asking them questions or solving their doubts. Also during chalkboard teaching the teacher takes pauses to either write/draw or erase on the board and thus breaks monotony of the class (Seth *et al.*, 2010; Jabeen, 2015). These findings are in line with studies done on the above topic (Petimani, 2015; Baxi *et al.*, 2009) which also show a similar result for the same question.

According to Baxi *et al.* (2009) interaction with chalk and board is more likely with experienced teachers and also as delivery of the talk is at a considerably low speed, (Jien, 2011) holding attention is enhanced, thus facilitating learning and improving grasping. Moreover, students attending to talk may like to make note of points, copy & draw diagrams during the pauses & breaks in the talk (Seth *et al.*, 2010). The greatest advantage is that the chalk and board method can be continued even if there is power failure (deSa, 2014). However an inexperienced teacher and illegible or poor hand writing on the board are clear disadvantages attached to this method, apart from limited content that may be covered (Seth *et al.*, 2010).

In response to the question on the method that 'stimulates interest'; the final year students alone rated the chalk and board method high. The reasons for this could be that the final year is all about learning actual physiotherapy management as applied in different clinical conditions involving different systems of the body, there is vertical integration and hence chalk and board is preferable.

Multimedia computer-based lecturing on the other hand was rated significantly high on contents being more informative, better organized. Appropriately prepared Multimedia will attempt a good & relevant integration of the text with the videos, animations, pictures & figures / graphs, 3D images etc. (Baxi *et al.*, 2009; Thomas and Raju, 2007; Ricer *et al.*, 2005). It has been reported that younger teachers favour this method (Baxi *et al.*, 2009). There is possibility that if multimedia is text-heavy (Petimani, 2015) it leads the students to feel that contents are more informative, all the more if the print outs are circulated as they can access these printouts at any point of time even if they have not attended the lecture.

A good multimedia computer-based lecturing presents the steps with clarity, in chronological order, simplifies complex concepts with use of technology, engages students with visuals thus enhancing comprehension (Baxi *et al.*, 2009). It is known, as said by author Rodney M Schultz too, that verbal information is better retained when appropriately supplemented by a visual simultaneously presented (Schmaltz, 2014). However the contrary effect could be that the student

becomes a passive observer of the technology (Jabeen, 2015). The strong multimedia apparently has been seen to reduce mental strain on the teachers as the slides serve as memory aid, (Petimani, 2015; Jien, 2011) the other advantage of multimedia is that it can be periodically updated.

For the health related courses the teachers have to handle multiple tasks from treating patients, administrative work and preparing for lectures and hence the skill of making a good multimedia computer based lectures could remain weak. 'A weak power point could effectively diminish a strong lecture'. (Schmaltz and Enström, 2014)

Overall chalk and board was more preferred by the students compared to multimedia computer-based lecturing, and this preference increased in ascending order from the second to the final years.

CONCLUSION

Both the methods, chalk and board as well as multimedia computer-based lectures are seen to have advantages and disadvantages, the teacher apparently impacts the maximum whatever may be the teaching method employed (Thomas and Raju, 2007). There is a paradigm shift in the teaching & learning these days and the emphasis is more on it being student centric (Kumar, 2013). A good multimedia computer-based lecture can engage student, prevent distraction and promote a good student experience. However a number of students still preferring older methods compared to the multimedia computer based lectures cannot be ignored. Today the teachers need to remain updated not only in the subject but also in the technology enhancing presentation skills.

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