

# Medical students' perception on role of audiovisual aids in didactic lectures

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## ABSTRACT

**Background:** Medical teachers have conventionally been using different teaching methods to educate medical students. Nowadays audiovisual (AV) aids such as PowerPoint slides and animation videos are being used. The optimum use of AV aids is essential for deriving their benefits. **Aims and Objective:** To know the students' preferences regarding various AV aids, with an aim to improve their use in didactic lectures for better understanding of concepts in medical science. **Materials and Methods:** Cross-sectional and observational study was undertaken in 113 undergraduate medical students of Government Medical College, Surat, Gujarat, India. A set of questionnaire was distributed and students were directed to choose the most appropriate option as per the Likert's scale. The responses were analyzed using SPSS 17.0. **Result:** Of the 113 students, 45.1% preferred the use of combination of AV aids during a didactic lecture. A total of 27.4% preferred animation videos, 15.9% preferred PowerPoint slides, and 11.5% preferred the use of blackboard. **Conclusion:** Our study demonstrates that use of combination of AV aids is the most preferred mode of teaching by the students. For better understanding of a subject and improvement of student's performance, a teacher should match the lectures with preferred AV aids and use them prudently. The subjects wanted animations to be incorporated frequently into medical education.


**KEY WORDS:** Animations; Audiovisual (AV) Aids; Blackboard; Didactic Lectures; Medical Students; PowerPoint Slides

## INTRODUCTION

Today we are living in the era of information and communication technology. The power of technology has captured the minds of new generation and this influence could be seen in the field of medical education too. The technology for teaching students in this competitive scenario is by the use of audiovisual (AV) aids in the form of PowerPoint (PP) presentations, animation videos, movies, and so on, or can be the combination of both.<sup>[1]</sup>

Lectures are the most traditional, old-fashioned, and didactic method of teaching, which are meant for one-way delivery of information and are especially useful when a large number of learners must be taught at a time. Well-organized lecture remains one of the most effective ways to integrate and organize information from multiple sources on complex topics.<sup>[2]</sup> Lectures are often supported by AV aids by emphasizing key points on the blackboard, the projection of written or printed matter on transparencies via an overhead projector (OHP), or via a computer-based system, notably Microsoft PP and animation videos, which is increasingly used nowadays.<sup>[3]</sup>

The traditional chalk-talk methodology provides strong student-teacher interaction, but its effectiveness declines as the number of students in the class increases. Furthermore, maintenance of discipline and drawing student's attention gets hampered.<sup>[4]</sup> OHPs lack the ability to display moving images and have poor visibility and optical focus. Microsoft PP slides, accompanied with multimedia projectors (MPs), have remarkably

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revolutionized teaching. Texts as well as AV clips can be easily played on PP slides. Animations refer to three-dimensional video clips that can be played on an MP. They provide a visual simulation that is particularly handy in sustaining interest and understanding of complex medical concepts.<sup>[5]</sup>

Students favor teaching methods employing AV aids over traditional lectures using blackboard.<sup>[3]</sup> However, the optimum use of AV aids is essential for deriving their benefits.<sup>[6]</sup> There is no conclusive study stating the superiority of one method over the other. Garg *et al.*<sup>[7]</sup> have observed that students want the teachers to include AV aids during the lectures, but it is not certain whether it improves their understanding or their performance in the examinations. Baxi *et al.*<sup>[8]</sup> have observed that there was a marked improvement in examination results when PP replaced the use of OHP.

So there is a mixture of views based on the recent studies and it is not clear whether the use of a particular lecture delivery method is superior to others. Therefore, this study was undertaken to get the feedback from the medical students regarding their preferences in using newer modalities of teaching methods such as animation videos, PP slides, and prerecorded lectures along with blackboard teaching with available resources and progressively improving lecture delivery for their better understanding.

## MATERIALS AND METHODS

The cross-sectional, observational study was conducted at Government Medical College, Surat, Gujarat, India with prior approval from Institutional Human Research Ethics Committee. A self-administered validated questionnaire based on previous studies<sup>[4,6,16]</sup> was distributed to 130 students of second and third year MBBS, aged 18–22 years, selected by random convenient sampling after obtaining their informed consent. The questionnaire was given to the students and they were asked to complete anonymously. Participation was voluntary and dependent on subject's willingness. The participants were asked not to reveal their names, registration number, or any other personal information so that they can answer freely without any influence. Responses were taken from the students present in the class on the day of survey. Those who were absent or those who refused to participate were excluded from the study. A total of 113 students of the 130 who returned the filled questionnaire became the participants in this study.

The questionnaire consists of 20 questions designed in two parts, first part composed of information regarding schooling, HSC board, and HSC percentage of the participants. Second part contained questions related to the preferences and opinions regarding the use of AV aids in lecture delivery, in which 12 attributes were measured, based on Likert's scale of grading, which are strongly agree/agree/no opinion/disagree/strongly disagree. The scores allotted in the aforementioned sequence are 5/4/3/2/1. The participants were encouraged to furnish their independent and unbiased opinion without revealing their identity in the questionnaire.

The sum of all the students grading on each attribute was taken for calculating the final weighted score. The response was analyzed using SPSS 17.0 for data entry and statistical significance was calculated by using Friedman analysis of variance test.

## RESULT

Association between the attributes and preference of AV aids is depicted in Table 1. To analyze the best method of AV aids used for the independent attributes, ranking scale was adopted allotting the sequence in ascending order. It is evident that mean ranking for blackboard, PP, and prerecorded lectures was lower than that of animation videos for most of the attributes. On application of "Friedman test," a significant association was found ( $P < 0.001$ ), which concluded that there was a significant difference in the preference of students regarding the different teaching modalities. The animation videos were the most preferred AV aid by the participants for the majority of attributes whereas blackboard was preferred for taking notes and diagrams. As depicted in Table 2, majority of the students preferred the use of combination of AV aids (45.1%). Majority of female students preferred the use of combination of aids whereas majority of the male students preferred animation videos, but this difference was not statistically significant.

## DISCUSSION

This study was conducted to get feedback from the medical students with the help of a questionnaire regarding their opinion on AV aids used during didactic lectures. It is an obvious observation that the use of electronic media has gradually become more common in medical colleges over conservative teaching methods that used blackboards.<sup>[9]</sup> For centuries, a blackboard remained the mediator for displaying information in a persistent manner, and could give the audience a consistent view of far more information, which can be held in short-term memory. Anderson<sup>[10]</sup> noted that blackboards encourage note-taking and student-teacher interaction, which was also found in our study. Seth *et al.*<sup>[4]</sup> noted that by using blackboard, taking down the simply drawn diagrams is easy, the teacher makes natural pauses, and power breaks do not interfere with the lecture. Its limitation is that information-rich contents such as complex tables, graphs, and vivid images cannot be displayed and the organization of the presentation is poorer as compared with electronic slides.<sup>[5]</sup> He also noted that the majority of medical students preferred PP presentations, whereas dental students preferred blackboard. Baxi *et al.*<sup>[8]</sup> observed that an equal number of students preferred blackboard-based or multimedia-based lectures and insisted to consider the need of using multimedia modalities to present lectures to students.<sup>[11]</sup>

In our study, it was revealed that the students preferred animation videos over PP presentations or blackboard. Majority

**Table 1: Association between attributes and preference of audiovisual aids**

Attributes	Blackboard			PP slides			Animation videos			Prerecorded lectures			Combination			Stat. Sig (Friedman's test)
	Mean	SD	Median	Mean	SD	Median	Mean	SD	Median	Mean	SD	Median	Mean	SD	Median	
Lectures were well organized	2.99	0.966	4.00	3.23	0.798	4.00	3.93	0.659	5.00	1.73	1.036	3.00	3.12	0.891	4.00	$P < 0.001$
Contents were well informative	2.87	0.992	4.00	3.38	0.793	4.00	3.74	0.566	4.00	2.06	1.036	3.00	2.96	0.908	4.00	$P < 0.001$
Lectures clear and understandable	3.43	0.862	4.00	3.11	0.833	4.00	3.64	0.651	4.00	1.90	1.059	3.00	2.94	0.932	4.00	$P < 0.001$
Clarity was good	2.83	0.937	4.00	3.51	0.958	4.00	3.41	0.879	4.00	2.23	1.092	3.00	3.03	0.936	4.00	$P < 0.001$
Well audible	3.20	0.744	4.00	3.13	0.908	4.00	3.31	0.789	4.00	2.35	1.073	4.00	3.01	0.926	4.00	$P < 0.001$
Stimulated interest	2.91	1.015	4.00	3.20	0.983	4.00	3.63	0.966	5.00	2.22	1.143	3.00	3.04	1.069	4.00	$P < 0.001$
Advanced understanding of topics	3.12	1.045	4.00	3.13	0.966	4.00	3.44	0.962	4.00	2.32	1.108	3.00	2.98	0.671	4.00	$P < 0.001$
Delivery was interesting	2.86	0.955	4.00	3.06	0.958	4.00	3.52	0.852	4.00	2.47	1.112	3.00	3.08	0.642	4.00	$P < 0.001$
Able to take notes/diagrams	3.74	0.967	4.00	3.36	1.136	4.00	2.50	1.123	3.00	2.28	1.145	3.00	3.12	1.126	4.00	$P < 0.001$
Effective in clearing concept and remembrance	3.25	0.50	4.00	3.00	0.963	4.00	3.46	0.973	4.00	2.36	1.157	3.00	2.94	0.942	4.00	$P < 0.001$
Concentration/attention span maintained	3.40	1.140	4.00	3.07	1.134	4.00	3.28	0.946	4.00	2.32	1.175	3.00	2.93	0.949	4.00	$P < 0.001$
Explanation/summarization	3.21	0.973	4.00	3.25	1.062	4.00	3.37	0.869	4.00	2.27	1.126	3.00	2.89	0.964	4.00	$P < 0.001$

SD, standard deviation.  $P < 0.05$  is considered significant.

**Table 2: Gender-wise distribution of participants according to their preference of different audiovisual aids**

	Preferred audiovisual aid				Total
	Animations	Blackboard	Combination	PP slides	
Female	14 (20.9%)	7 (10.4%)	35 (52.3%)	11 (16.4%)	67
Male	17 (37.0%)	6 (13.0%)	16 (34.8%)	7 (15.2%)	46
Total	31 (27.4%)	13 (11.5%)	51 (45.1%)	18 (15.9%)	113

AV, audiovisual; PP, PowerPoint.

of the students opined for the use of combination of AV aids in didactic lectures for better understanding of concepts in medical science, which correlates with the study conducted by Bhowmick et al.<sup>[12]</sup> The training program in undergraduate teaching uses a judicious mixture of didactic lectures with AV aids and problem-based learning methods, clinical teaching, and practical experiments.<sup>[6]</sup> Optimum use of AV aids is essential for deriving their benefits.<sup>[6]</sup> AV aids can be effectively used to show the photographs and the animated pictures related to the topics.<sup>[13]</sup> Animations, with their unique three-dimensional presentation, have been accredited with simultaneously being able to increase interest and motivation, to draw attention, to illustrate procedures, and to explain how things work.<sup>[14]</sup>

### CONCLUSION

Our study demonstrated that the lecture delivered by using a combination of AV aids was most appreciated by the students. To understand complex concepts and to retain facts, the participants desired animations to be incorporated frequently into medical education as they are interesting and it breaks the monotony of lecture. It motivates students to attend lectures as they are very curious to see or hear what the teacher is going to show them in the upcoming class; by seeing animated effects, colorful presentation, and hearing recording they are able to concentrate more.<sup>[1]</sup>

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