

Audio Visual Aids-Quality Use in Lecture Classes of Undergraduate Medical Education in Bangladesh

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Abstract

This descriptive type of cross sectional study was conducted to explore the use of AV aids in undergraduate medical education in 7 government & 5 non-government medical colleges of Bangladesh by convenient sampling. Sixty (60) lecture classes were observed to estimate the proportion of the uses of different AV aids & to identify the quality use of different types of AV aids by observation checklists. Views were also taken from 20 teachers regarding the quality use of different types of AV aids by open ended questions. Study revealed that 20% teachers used CB/WB, 15% used OHP and 65% used PPT. Most of the CB/WB & PPT users maintained the quality use of these media but not OHP. Readability and legibility of handwriting or text of all media were acceptable in 78% lectures but it was 33% in OHP lectures. Students' attention was also less in OHP. Regarding number of words per acetate sheet/slide, only 33% OHP lectures met the standard criteria & 72% PPT slides met this criterion. In open ended questions, 25% teachers choose CB/WB, 10% Choose OHP and 65% choose PPT. Study recommended that use of clean, multi-color and good quality chalk/marker & board/screen are essential for effective teaching learning session. Adequate lighting, AC lecture class/gallery, proper sound systems & training on different AV aids are also needed to standardize the quality use of AV aids in lecture classes.

Key words: CB/WB (Chalkboard/Whiteboard), OHP (Over Head Projector), PPT (Power Point Presentation), AV (Audio Visual) aids & Lecture.

Introduction

Lectures have been the most common form of teaching and learning since ancient times. It can be traced as far back as the Greeks of the fifth century BC¹. Students learn from lectures by listening, observing, summarizing and note taking². A lecture has its own merits, otherwise this form of teaching would have ceased. It is almost inevitable that the medical students will experience lectures, as the number of students attending is too large in comparison to the teaching staff available³. Modern teaching aids like OHP, multimedia, models were facilitating the classes of MBBS course. A good number of teachers are also trained on modern teaching and assessment methods⁴. Lectures can be supplemented with AV aids for better illustrations, clarity and learning². The oral communication may be accompanied by occasional demonstrations, pictures, or diagrams; and these may be presented in various media, including the chalkboard⁵. During lecture, both the visual and auditory senses are available to absorb information and here assistance in the form of a visual aid is useful⁶. The effective lectures are supported by AV aids such as black board or white board, use of overhead projector (OHP), recently a popular electronic presentation Microsoft Power Point Presentation (PPT) is being used⁷. About 80% of the information which we assimilate through the senses is visual⁸. AV aids, now-a-days, are integral parts of classroom activities of medical institutions⁹. The blackboard was introduced into the US education system in 1801¹⁰⁻¹¹. A chalkboard is uniquely effective as a medium of class-room instruction and has been used commonly in the lectures, while the use of overhead projector (OHP) is also popular⁷. Recently, the use of electronic presentations is now common in medical colleges, as in other colleges and universities. Microsoft Power Point Presentation (PPT) is the most popular package used out of all electronic presentations¹². In Bangladesh, the teachers of different government and non-government medical colleges prefer lecture classes due to large number of students and to lack of adequate teaching staffs available. They use different AV aids like chalkboard, white board, OHP, PPT and occasionally combined in their lectures to make it effective, attractive and memorable to the students. It was found that most of the teachers of medical colleges of Bangladesh use AV aids during their teaching learning session. About all of the teachers of medical colleges are using blackboard and microphone, and majority of the teachers are using OHP

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in their lecture classes. Few teachers used slide projectors, epidiascope and video clips in their lectures¹³.

Considering the diverse views about the use of teaching aids, we want to observe the situation and quality use of these AV aids in lecture classes. We also want to find out the reasons of use & their suggestions about the improvement of the quality use of different AV aids.

Materials and Methods

This descriptive type of cross sectional study was conducted from July'2012 to June'2013 among the teachers from assistant professor to professor of different disciplines of 7 governments and 5 non-governments medical colleges in Dhaka and outside Dhaka. Data were collected by two types of research instruments named 1) Observational checklist and 2) Open ended questions. Data were collected in lecture classes to explore the use of audio visual aids (CB/WB, OHP & PPT) in undergraduate medical education of Bangladesh by convenient sampling. Sixty (60) lecture classes were observed by preformed observation checklists. Views were also taken from 20 teachers (assistant professor to professor) to find out the reasons for use, suggestions about the improvement of the quality use of different types of AV aids by open ended questions. Inclusion criteria was the teachers those who were willing to participate in this study. The investigator himself collected all the data anonymously with prior permission of the principal, vice principal and head of the departments of the respective medical colleges and some where permission was taken from ethical committee. All the collected data were checked and identification number was put. Data entry, editing, processing and analysis were done by using SPSS 11.5 version. Interpretation of data was presented by graphs, tables and description.

Results

A total 60 lecture classes were observed to find out the use of AV aids from 1st year to 5th year in seven governments and five non-governments medical colleges of Bangladesh.

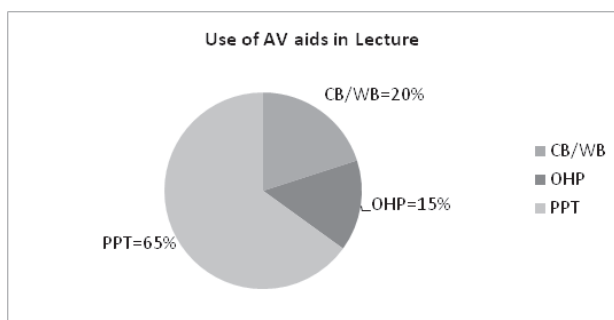


Figure-I: Distribution of respondents in respect to AV aids used in lecture classes

Figure-I shows the distribution of respondents in respect to AV aids use in lecture classes. It was observed that CB/WB was used in 20%, OHP were 15% and PPT was 65% lecture classes. PPT was used in highest percentage among the other audio visual aids.

In Table I, five criteria or rubrics were set for readability and legibility of handwriting or text of CB/WB, OHP and PPT. Regarding readability and legibility of handwriting or text of all media were excellent in 53.3% lectures, good in 25% lectures, fair in 13.3% lectures, not fair in 6.7% & not fair at all in 1.7% lectures. It was not acceptable in 67% OHP (fair, not fair, not fair at all) lectures.

Table-I: Distribution of readability and legibility of handwriting/text in CB/WB or screen.

Readability & legibility of handwriting or text	Different types of AV aids used in lecture classes				
	CB/WB	OHP	PPT	All media	Percent
Not fair at all	0 (0)	0 (0)	1 (2.5)	1	1.7
Not fair	0 (0)	3 (33.3)	1 (2.5)	4	6.7
Fair	2 (16.6)	3 (33.3)	3 (7.7)	8	13.3
Good	4 (33.3)	2 (22.2)	9 (23)	15	25.0
Excellent	6 (50)	1 (11.1)	25 (64)	32	53.3
Total	12 (100)	9 (100)	39 (100)	n=60	100.0

Table II has shown about 50% handwritings or texts of CB/WB were well visible, 56% were hardly or not visible in OHP & 62% were well visible in PPT. Considering all media, 82% handwritings or texts were well and fairly visible and 13.3% were hardly or not visible.

Table-II: Distribution of visibility of handwriting or text of CB/WB, OHP & PPT from the back of the gallery or class room.

Visibility of handwriting/text	Different types of AV aids used in lecture classes				
	CB/WB	OHP	PPT	All media	Percent
Hardly visible	1(8.3)	5(55.6)	2(5.1)	8	13.3
Visible	0	1(11.1)	2(5.1)	3	5.0
Fairly visible	5(41.7)	2(22.2)	11(28.2)	18	30.0
Well visible	6(50)	1(11.1)	24(61.5)	31	51.7
Total	12(100)	9(100)	39(100)	n=60	100.0

In table III, 41-50 words were found in 67% acetate sheets, 31-40 words were found in 22% of OHP. In PPT, 31-40 words were found in 23% slides, 41-50 words were found in 23% slides, 10-20 words or >50 words were found in 13% slides.

Table-III: Distribution of number of words in per acetate sheet of OHP/PPT slide.

No of words per acetate/slide	Different types of AV aids used in lecture classes			
	OHP	PPT	All Media	Percent
11-20 words	0 (0)	3 (7.7)	3	6.2
21-30 words	1 (11.1)	16 (41.0)	17	35.4
31-40 words	2 (22.1)	9 (23.1)	11	22.9
41-50 words	6 (66.7)	9 (23.1)	15	31.2
>50 words	0 (0)	2 (5.1)	2	4.2
Total	9 (100.0)	39	48	(100.0)

In table IV, 5-8 lines were found in 11% acetate and more than 20 lines were found in 33% acetate sheets of OHP. In PPT, 5-8 lines were found in 49% slides & 9-16 lines were found in 51% slides.

Table IV: Distribution of number of lines in acetate sheet or PPT slide (on Average)

No of lines in per acetate/slide	Different types of AV aids used in lecture classes			
	OHP	PPT	All Media	Percent
5-8 lines	1 (11.1)	19 (48.7)	20	41.7
9-12 lines	1 (11.1)	17 (43.6)	18	37.5
13-16 lines	2 (22.2)	3 (7.7)	5	10.4
17-20 lines	2 (22.2)	0	2	4.2
>20 lines	3 (33.3)	0	3	6.2
Total	9 (100.0)	39 (100.0)	48	100.0

Table V has shown Font size of headings were >40 in 33% slides, 36-40 in 28% slides and 32-36 in 26% slides in lectures. Font size of sub-headings were 36-40 in 5% slides, 32-36 in 31% slides, 28-32 in 39% slides. Font size of texts were 32-36 in 26% slides, 28-30 in 33% slides and 24-26 in 33% slides in lecture classes.

Table V: Distribution of Font size of Headings, Sub-headings and Text in the slides of PPT

Font size	Heading	Sub-heading	Text
24-26	2 (5.1)	4 (10.3)	13 (33.3)
28-30	1 (2.6)	15 (38.5)	13 (33.3)
32-36	10 (25.6)	12 (30.8)	10 (25.6)
36-40	11 (28.2)	2 (5.1)	0
>40	13 (33.3)	0 (0)	0
Others	2 (5.1)	6 (15.4)	3 (7.7)
Total	39 (100.0)	39 (100.0)	39 (100.0)

Result of open ended questions:

Total twenty teachers from assistant professor to professor were included in this study. Questionnaires were distributed to the teachers who were willing to answer the questions and data were collected timely. Answers of the respondents were written down in a broad sheet and content analysis was done. Then themes of the contents were arranged accordingly.

In Figure II, 25% respondents had chosen CB/WB, 10% OHP and 65% PPT.

1. Preference of AV aids:

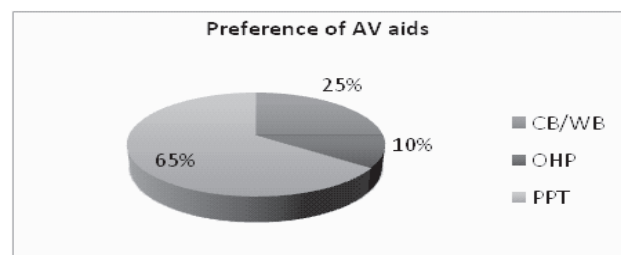


Figure-II: Distribution of respondents according to the preference of AV aids answered in open ended questions.

2. Reasons for choosing CB/WB, OHP & PPT are as below:

A. Reasons for choosing CB/WB by respondents in lecture classes:

- 1) Student can follow & understand the track of writing and drawing (60%)
- 2) It helps to give more lessons within short time and thus save time (60%).
- 3) Teachers have to be prepared very strongly & confidently (20%)
- 4) It is available in every class & can be used when power off (20%)

B. Reasons for choosing OHP by respondents in lecture classes:

- 1) OHP is available in every institution (50%)
- 2) It is available in every class, easy to use & less expensive (50%)

C. Reasons for choosing PPT by respondents in lecture classes:

- 1) Exact colors, complicated pictures or 3-D pictures, figures, structures & illustration video can be shown and understand easily (62%)
- 2) It is easy to change, modification & editing (7.7%)
- 3) Detailed lecture can be given by PPT (15%)
- 4) It is modern, most efficient method of teaching (23%)
- 5) Good visualization from the back of the gallery (15%)

Discussion

In this study, CB/WB was used in 20%, OHP were in 15% and PPT were in 65% lecture classes (Figure-I). PPT was used in the highest percentage among all other AV aids. This study was supported by Seth et al¹⁴. Selection of sans serif font is needed for clarity and readability of the text^{9, 16, 17}. In this study, readability and legibility of handwriting or text of all media was excellent in 53.3% lectures, good in 25% lectures, fair in 13.3% lectures, not acceptable in 8.5% lectures. In respect to all media, 18.3% handwritings or texts were hardly visible which support the finding of Asaduzzaman¹³ & it was 17.7%. Use of pointer is a standard rule during lecture by OHP and PPT^{9, 18}. Pointer was always & occasionally used in 55% lectures & not used in 45% lectures. The legibility of lettering on a transparency/slide depends upon individual handwriting WHO¹⁵. In OHP, 33.3% handwritings were not legible. Illustration was used in 64.6% lectures. Power interruption was found in 11% lectures of OHP and in 8% lectures of PPT which was found in this continent¹⁴. In printing terms, the smallest letters should be at least²⁴ point bold & for heading the size may be 30 point bold^{9, 17}. Only 33% handwritings/texts met the standard (font size >20) & 67% fonts were <20 size. Text color should be complement, and be distinguishable from, the color background^{16, 17, 20}. Slide master was used in 49% respondents. Font color was consistent in 62% lectures. Classrooms > 200 seats, Headings: 42 point, Main text: 36

point. Classrooms < 200 seats Headings: 36 point, Main text: 28 point. Rooms seating < 50 Headings: 32 point, Main text: 24 point^{16, 17}. Standard font size of heading (≥ 36), sub-heading (≥ 32) & text (≥ 28) was gradually in 61.5%, 36% & 59% PPT slides in lectures. In open ended questions, 25% teachers answered on CB/WB, 10% on OHP and 65% on PPT (Figure-III). This finding completely supports a study where CB/WB was 23.8%, OHP was 9.5% and PPT was 66.7%^{14, 19}.

In conclusion, this descriptive type of cross sectional study was conducted to explore the use of audio visual aids in undergraduate medical education of Bangladesh from 1st year to 5th year by convenient sampling. Sixty (60) lecture classes were observed by checklist & views were taken from 20 teachers by open ended questions. In this study, 20% used CB/WB, 15% used OHP & 65% used PPT in lecture classes. PPT was used in the highest percentage among the other AV aids. In open ended questions, 25% teachers answered on CB/WB, 10% on OHP and 65% on PPT.

Due to time constraint and location of medical colleges, only 60 lecture classes were observed in 12 medical colleges & 20 open ended questions were collected and included in this study. The result would be better & more refined if this study would cover all government (23) and non-government (51) medical colleges.

References

1. Brown, G & Atkins, M 1988, 'Effective teaching in higher education, London, Routledge'.
2. Brown, G & Manogue. M. AMEE Medical Education Guide No.22: Refreshing lecturing: a guide for lecturer, Medical Teacher. 2001; 23(3):231-44.
3. Cannon, R. Lecturing, Kensington (N.S.W.). Higher Education Research and Development Society of Australia; 1988.
4. Talukder MHK, Hossain MZ, Hanif MA, Akter N, Pervin IA. Reviewing and Updating of MBBS Curriculum 2002: Intern Doctors views. Bangladesh Journals of Anatomy. 1992; 9(1): 35-40.
5. Gagne Robert M, Briggs Leslie J, Wager Walter W. Principles of Instructional Design. 4th edition. Harcourt Brace Jovanovich College Publishers; 1992.
6. Sahu DR, Supe. The art and science of presentation: 35-mm slides. J. Postgrad. Med AN. 2000; 46:280-85.
7. Estes A, Ressler S, Welch R, Hanus. 'Seminar on communication skills', Exceed teaching workshop. J 2009.
8. Khouw, N n. d. 'Color matters: the brain: the meaning of color for gender', Retrieved October 16, 2008, from www.colormatters.com/khouw.html.
9. Shamim, KM. 'The impact of different arrangements and forms of power point Textual presentation on the recall-level short term learning in adults', Thesis; 2008, 2.
10. Wikipedia. "Blackboard - Dictionary.com". "Chalkboard - Dictionary.com". "The Cato Education Market Index". "About Blackboards - Blackboard Technology and Chalkboard History Advances".
11. Wikipedia. Who Invented the Chalkboard? Full text of "Alberuni's India. An account of the religion, philosophy, literature, geography, chronology, astronomy, customs, laws and astrology of India about A.D. 103.
12. Sharma R, Verma U, Kapoor B, Chopra. Novel teaching approaches in Pharmacology. JK Sci. VS. 2004; 6(3):172-3.
13. Asaduzzaman, AKM. Use of Audio Visual Aids my medical teachers in teaching & its effects in learning - Perception of students. Dissertation in CME; 2003.
14. Seth V, Upadhyaya P, Ahmed, M & Kumar. 'An assessment of teachers' preference for lecture delivery methods in medical education'. Educational Research and Review. 1997; 5(9):533-537.
15. World Health Organization (WHO). Media development in health professions education: Designing, producing and using OHP transparencies; 1997.
16. Holzi J. Twelve tips for effective PowerPoint presentations for the technologically challenged. Medical Teacher. 1997; 19 (3):175-179.
17. World Health Organization (WHO). Media development in health professions education: Designing, producing and using Instructional Text; 1997.
18. Essex-Lopresti M. How to use an Overhead Projector. Medical Teacher. 1979; 1(1):9-15.
19. Choudhary R, Dullo P & Gupta U. A prospective study on MBBS students about different visual aids. J Bangladesh Soc Physiol. 2009; (2): 58-63.
20. Laidlaw JM. 'Twelve tips for Designing Instructional Text using Desktop publishing', Medical Teacher. 1989; 11(2):139-143.