



Research Journal of Pharmaceutical, Biological and Chemical Sciences

A Study of Students' Attitudes towards the Use of Different Types of Audio- Visual Techniques for Biochemistry

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ABSTRACT

Lecture has been the most common form of teaching and learning process. Lectures delivered by using mixture of audio visual techniques are appreciated by students. The purpose of this study was to assess the student's preference regarding the use of different type's audio visual techniques for Biochemistry. Total 200 undergraduate medical students were participated in our questionnaire based study. Out of 200 students 115 (57.5%) are male and 85(42.5%) are female. In our study we found, 60 % of students preferred power point in combination with black board teaching and only 20% students' preferred power point presentation. The 15% of students favored the traditional black board teachings than projector or power point class. A very few (5 %) of students opted for the over head projector. In conclusion of our study we observed that the undergraduate medical students preferred a combination of power-point presentation along with blackboard teaching for biochemistry. It helps in both the visual and auditory senses to absorb information.

Keywords: Audio-visual, lecture, power-point, black-board, OHP.

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INTRODUCTION

A lecture is an oral presentation intended to present information or to teach students about a particular subject. Universally lecture is generally accepted as an effective form of instruction [1].

Mc Leish (1976) claims the lecture is undoubtedly the most economical method by which the individual can present in a personalized and continuous argument, the general framework for understanding the fundamentals of particular subjects and involving the audience [2].

Critics has pointed out that lecturing is mainly a one-way method of communication that does not involve significant audience participation. Although discussion methods in small group appear to be superior method of attaining higher- level intellectual learning [3]. But they are powerful techniques for getting across a large amount of theoretical information and are especially useful when large number of learners must be taught at one time. The main problem encountered by faculty of Medicine is the huge number of students wishing or directed to study medicine which exceeds the capacity of the faculty from one hand and some of them may not be able to finish the long years of study which again increase the burden on the faculty resources [4,5]. Thus, the lecture is here to stay, so it is immensely important that it should be as effective as possible [6].

The effective lectures are supported by audio- visual aids such as black board or white board , use of transparencies with an overhead projector (TOHP), recently a popular electronic presentation Microsoft Power Point (PPT) is being used [7,8].

Power Point lectures are increasingly being delivered in medical colleges than other colleges and universities [10]. The use of multimedia presentation software such as Microsoft Power Point has changed the form of lectures e.g. video, animation, graphics, websites or prepared exercises may be included.

There is a constant need to have an internal pool of qualified teachers in basic medical sciences to teach and develop research in the medical universities [10]. The basic medical science includes pre-clinical subjects like anatomy, physiology, biochemistry, pharmacology, microbiology and pathology. All these students need to be trained in fundamentals of anatomy, physiology and biochemistry in the first year of their course [11]. Biochemistry is an important area of knowledge in the health sciences, taught in the first year of the courses with an average duration of 120- 240 hrs [12,13,14,15].

The teaching of biochemistry has specific features, since it involves an overload of ever-changing information and implication on extensive list of terminology, such as names of enzymes, cycles and metabolic pathways [16]. So use of visual aid is evident to absorb and understand the information.

The aim of this study was to investigate the undergraduate preferred teaching techniques, traditional black board, power point presentation or over head projector for the subject biochemistry in medicine courses.

MATERIALS AND METHODS

The present study analyzed the Biochemistry discipline, in medicine undergraduate courses, at Rohilkhand Medical College, Bareilly, U.P. In this curriculum, subject Biochemistry is taught by the department of Biochemistry, in the first year of the course. The subjects were taught by different teachers of the discipline, during the period (2010-2011; 2011-2012). As teaching techniques, the teachers used over head projector, power point, multimedia and traditional blackboard. Preference for specific teaching techniques was questionnaire based survey. The questionnaire was circulated to all first year students. Out of 200 medical students (batch 2010-2011; 2011-2012) 116 are males and 85 are females, who have answered the questionnaire.

Students asked to respond 15 questions with having opportunity to offer additional comment or suggestion for improving the teaching. The questionnaires were structured in such a manner to obtain their views and perception of three methods of lecture delivery. The result analyzed and statistical analysis was done.

RESULTS

Table-1&2, Fig.-1&2 shows our results. Total two hundred students participated in this study. In our study we observed, 60% of students preferred power point in combination with black board teaching and 20% students' preferred power point presentation only. The 15% of students favored the traditional black board teachings than projector or power point class. A very few 5% opted for the over head projector.

Table 1: Showing the total number (n=200) of students preferred audio-visual technique.

Serial No.	Audio-Visual Technique	Number of students	Percentage of students
1.	Power point	40	20%
2.	Black Board	30	15%
3.	OHP	10	05%
4.	Power point in combination with Black Board	120	60%

Table 2: Showing the ratio of (n=200) male and female students in our study.

Serial No.	Sex	Number of Students	Percentage of students
1.	Male	115	57.5%
2.	Female	85	42.5%

Figure 1: Showing the total number (n=200) of students preferred audio-visual techniques.

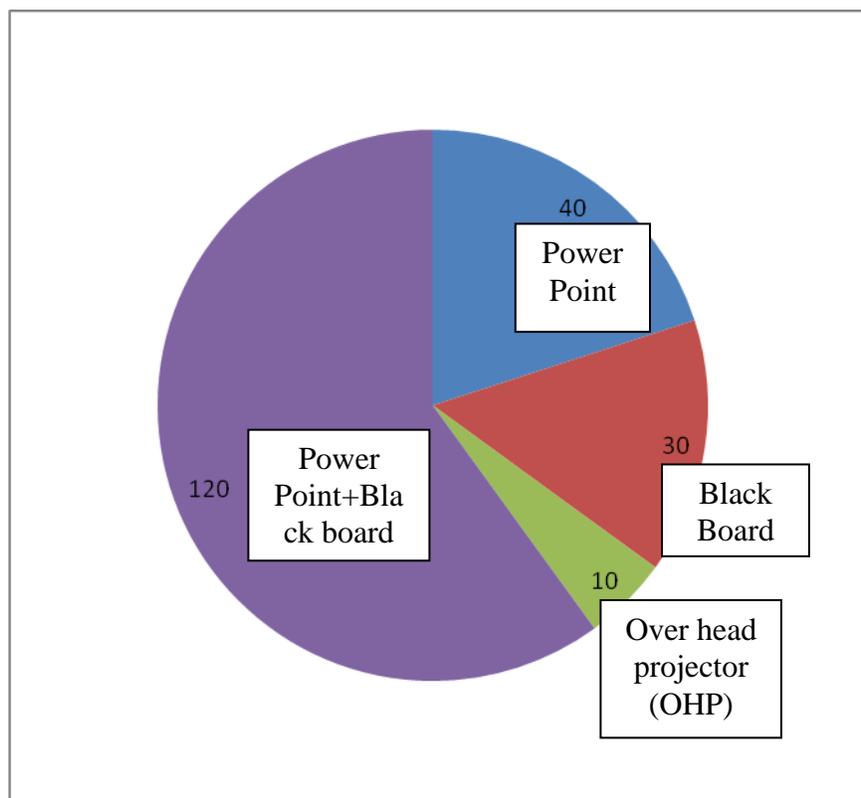
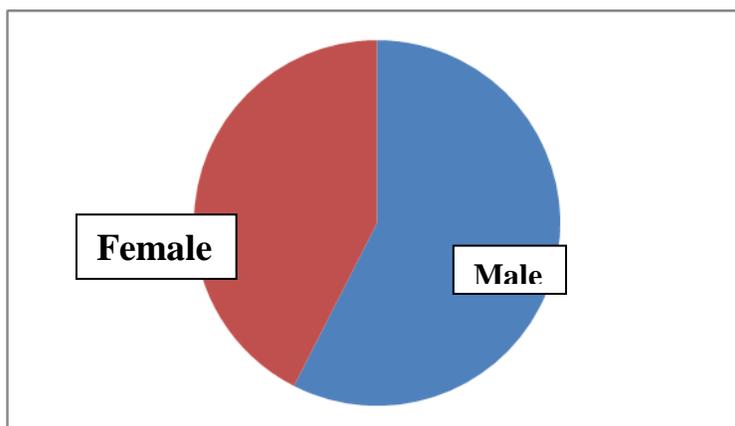


Figure 2: Showing the ratio (n=200) of male and female students in our study.



Out of 115 male students 75% of them were more interested in power point in combination with black board teaching than female students. Female students involved in getting a self written information compared to their counterparts who relied on handouts or textbook information. Majority of students noted that sufficient time should be give to take down the notes and diagrams.



DISCUSSION

Lectures have been the most common form of teaching and learning since ancient times [17]. During a lecture, both the visual and auditory senses are used to absorb information and here assistance in the form of a visual aid is useful [18].

According to our study, the majority (60%) of the students preferred power point presentation in combination with black board teaching during Biochemistry classes. In biochemistry lecture, use of power point presentation in combination with black board teaching was justified due to easy perception of diagrams, flow chart, animation, cycles and pathways. Similar types of observations were reported by Lalit. M. et al [19]. In our study we also observed only 20% students preferred power point presentation tool. The main reasons for liking power point presentation are that it provides a better quality of text and diagram according to few students. Some students (15%) preferred black board teaching because of better interaction between teacher and students, it encourages taking down the notes and power failure could not interrupt the lecture. E.Novelli et. al. way back in 2006 suggests that biochemistry teaching to the students indicated that they preferred traditional face-to-face explanation using black board- teaching methods than projector or power point based classes [16]. But disadvantage of black –board teaching is that it is difficult in implementing when the class is too large according to some observers.

The interviews also showed that the less number of students (5%) like OHP. The main reasons for liking this technique, it is easier to follow and take down the notes provided the hand writing is legible [20].

But for biochemistry teaching, OHP become difficult to put cycles or pathways with sequences of reaction along with energetics. The over head projection is having other disadvantages like poor visibility, faulty focusing, poor handwriting which makes the projection area crowded and it becomes burden over students [21].

In the subject Biochemistry, learning become more impressive by power point in combination with black board due to its colorful flowcharts, graphs, tables, cycles, pathways, animated control mechanism such as signaling, activation, feedback inhibition and also student-teacher interaction is better. The use of computer and web for dialogues do not hinder the educational process and students favored more contact with their teachers [22].

Using this technology, colors sometime helps in mental imaginary process. Visualization of color causes certain areas of the brain to respond and involve. Usage of color cautiously, a good guide is to use deep blue or green background colour with white, yellow, orange and cyan text and lines [23]. Using color fonts that contrast sharply with the background and use of color to emphasize a point but only occasionally it can be disastrous. ‘Trying to be more creative can be disastrous’ [24]. One disadvantage of PPT is student becomes a passive observer rather than an active participant [25]. The traditional black board teaching is preferred by students because



it's natural pace and break gives student ample of time to follow the materials and take down notes [26].

But in the Biochemistry teaching, writing the lengthy cycle or pathways is demanding staff time and stressful for the staff as well as for students. The black board teaching may be difficult to implement when class size is large. As hand written letter appears to be very small. The faulty board, faulty chalk and soiling of clothes and hands of the teacher add more stress [20].

Lastly the lectures effectiveness depends upon the teacher's skills like communicational skills, gesture, voice, handling of the subject and command over the language. Good communication skills are required that facilitate students to communicate effectively with one another. Experts suggest maintaining eye contact with audience and are vital as it keeps all those present involved, interested and alert. Teacher needs to be aware of how to effectively use gesture and facial expressions. Convey ones thought courageously [27].

CONCLUSION

In present scenario with advanced multimedia power point the learning and teaching is more enjoyable to students and teachers. Biochemistry is perhaps the most rapidly developing subject in medicine. The learning environment is more stimulating attractive and understanding with combination of power point with black board and gives room for taking notes during lectures.

The major universities now have established postgraduate courses in basic medical science. The postgraduate are be trained in teaching tools.

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