

## **Comparison of two teaching methods, structured interactive lectures and conventional lectures.**

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### **Abstract**

**In the present project structured interactive lectures with conventional lectures as a teaching method have been compared. Students were divided into two groups, interactive lecture group and conventional lecture group. The two groups were similar in all aspects except the teaching method adopted for two groups. The groups were exposed to structured interactive lectures and conventional lectures separately. Same topics from pharmacology were taught to both the groups by using these teaching methods. Effect of these two teaching methods on students was evaluated by giving questionnaire and a MCQ test conducted on the topics covered. There was no significant difference in average MCQ marks of two groups. But the outcome of questionnaire was in favor of structured interactive lecture method. Structured interactive lectures may be better than conventional lectures as a teaching method.**

**Keywords:** Interactive lectures , teaching methods, MCQ marks

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### **Introduction**

The advent of newer techniques and research on many innovative methods of teaching has started modifying medical education in past few years. Conventional lecturing has been in use as a teaching method since even before printing was invented [1,2]. In conventional lectures students are passive receivers of information and therefore are not involved in process of learning [3]. It is clear from the recent research that students need to be taught by interactive lectures and therefore it is not surprising that traditional information imparting lectures are characterized by poor attendance rates [4]. There is lot of criticism on traditional lecture as a teaching method [5]. Lectures are less effective when instructional goals include application of knowledge, development of thinking and attitude [6]. If properly planned and organized lectures can be very effective [2,7] and can clarify difficult concepts, motivate thinking, foster enthusiasm and motivate for learning [1,8]. Learning is an active process and interactive lectures are considered as educational best practice [9]. Rao and DiCarlo have demonstrated that the interactive-learning technique develops critical-thinking [6,8]. Increased interactivity leads to increased student satisfaction and better learning outcomes [10,18]. Students need to actively participate in lectures to maintain their engagement with the content<sup>(19)</sup>. Indeed, structured interactive session is a better lecture format as compared to didactic lectures [9].

Understanding of pharmacology requires knowledge of basic sciences as well as the disease process. For example for understanding drugs used in treatment of malaria it is essential to understand life cycle of malarial parasite as well as pathophysiology of malaria. Students differ highly in their level of understanding of basic subjects. Therefore we find their different level of involvement in lecture and benefit they derive from lectures. If properly guided students can improve themselves in their basic subjects and as an effect their understanding of subsequent (Para-clinical and clinical) subjects will be improved. Structured interactive lecture is being increasingly recognized as an improved teaching learning method. In this method rather than dictating a didactic lecture students are encouraged to participate and interact. This interaction also reveals common misconceptions of students to teacher.

Our research queries were as follows:

- 1 Can we implement interactive lectures in our set-up?
2. Does interactive lectures are better than the conventional lectures.
3. What modifications students want in the conventional lectures and interactive lectures?

### **Material and Methods**

After the consent of medical education unit for the project seventy-five students in second MBBS class were divided into two groups, viz structured interactive group

(SIG) and conventional lecture group containing 38 and 37 students respectively. While allocating students to these groups, students were first arranged in descending order of their marks in first MBBS university examination and each alternate student was allocated to each group. This is to ensure that two groups are containing students with approximately same intelligence. Structured interactive group was exposed to five structured interactive lectures and control group was exposed to five didactic lectures of same topics separately. Students in the structured interactive group were explained about the design and purpose of study. Students in structured interactive group were informed about the topics to be discussed in well advance before the lecture. They were given a list of basic knowledge topics, which they were supposed to refresh. For example, for understanding antimicrobial drugs acting on protein synthesis one must know the process of protein synthesis. Students were instructed to read the topic before they come to lecture and note down the queries arisen while reading and bring the same to class. Each structured interactive lecture was divided into three -four subtopics. After teaching a subtopic students were encouraged to ask their queries. To increase the involvement of students few questions were asked to students by teacher. This was followed by second sub-topic. Each subtopic was discussed in the same way. For example topic antimalarial drugs was divided into sub-topics - life cycle of malarial parasite, classification of drugs, pharmacology of antimalarial drugs, treatment and prophylaxis in various subset of patients.

Control group was exposed to traditional didactic lectures. This group was not informed about the topic to be taught. Lecture was not divided into small sub-topics and

**Table 1.** Outcome of questionnaire given to students of SIG.

S No.	Parameter	Increased by interactive method Number of Students (%)	Not altered by interactive method Number of Students(%)	Better by conventional method Number of Students (%)
1	Interest in the subject	24 (71%)	7 (20%)	3 (9%)
2	Simplification of topic	21 (62%)	9 (26%)	4 (12%)
3	Retention of topic	25 (73%)	7 (21%)	2 (6%)
4	Exam performance will be	24 (71%)	6 (17%)	4 (12%)
5	Motivation for self study	25 (73%)	5 (15%)	4 (12%)

Opinion regarding modification /replacement of present teaching method was sought in the questionnaire and it was found that 47% students were willing to replace the conventional method with interactive method as it is. 29% students were willing to replace conventional method with interactive method but with certain modifications. Eighteen percent students were willing to continue with conventional method out of that 15% students suggested some modifications in the conventional method. Whereas

students were neither encouraged nor discouraged to ask queries.

After teaching same five topics to each group separately the groups were subjected to a MCQ test and a questionnaire. Students who have not attended at least four lectures were excluded from the analysis. MCQ test consisted of 40 MCQs from the five topics taught. Involvement of students was assessed using a student involvement score. To score students involvement one point was awarded to the group for each topic related question asked by the student. Average marks of two groups were calculated and compared. A questionnaire was given to 34 students from structured interactive group. Four students were excluded from analysis on account of their attendance. No questionnaire was given to conventional lecture group, because only students of structured interactive group are exposed to both teaching methods and therefore in a position to compare the two methods.

The questionnaire contained questions regarding effect of two methods on interest in the subject, simplification of topic, retention of topic, performance in theory and practical examination and motivation for self study. Opinion regarding modification of present as well as new teaching method was also taken.

*Student involvement score* was zero for conventional lecture group and 3 for structured interactive group. That means three questions were asked by structured interactive group in each session while no question was asked by students from control group.

The results obtained from answers to *questionnaire* are shown in the form of table as follows.

only 1 student (3%) was willing to continue with conventional method as it is. Two students (6%) gave no opinion regarding replacement of conventional method with interactive method.

## Discussion

There was no difference in average MCQ marks of two groups, but the result obtained from questionnaire clearly

showed that there is need to make certain modifications in current teaching method. The results clearly shows that 47% students were willing to replace the conventional method with interactive method as it is, and 29% students were willing to replace conventional method with interactive method but with certain modifications, that means a total of 76% students were willing to replace conventional lectures with interactive lectures. Results further showed that 15% students suggested some modification in conventional teaching method. This indicates that students are not satisfied with present teaching method. The modifications suggested by students were as follows.

The structured interactive session should be in small groups. There should be a tutorial as early as possible after the lecture.

There should be frequent examinations on each topic preferably of MCQ type. Each and every student should be asked questions to increase his involvement in lecture.

The observations from questionnaire clearly indicate that structured interactive lectures increases their interest in the subject, simplifies the topic and motivates them for self study. Students also have commented that their retention of topic was increased after the interactive method and they feel that their performance in theory and practical examination will be improved by this method.

Interactive lectures consists of teaching a small subtopic, encouraging students to ask queries and asking questions to students. Students hardly ask any questions unless and until provoked by teacher and therefore teacher never knows what are the poorly understood areas of students. Another difference in conventional lectures and interactive lectures is that, in later teaching is not continuous but it is interrupted for discussion of queries. This not only clarifies their queries but also gives relaxation to students and helps in increasing the receptivity.

The educational research has shown that students who are actively involved in the learning activity will learn more than students who are passive recipients of knowledge<sup>(9)</sup>. Some authors have said that increased arousal and motivation are the essential ingredients for learning and are often more important for retention of topic than intelligence. Active involvement enhances the student's level of understanding and ability to integrate and synthesize material [2]. Attention span studies have indicated that there is considerable decrease in attention after 20 minutes in traditional lecture [20]. Structured interactive teaching it is not continuous but is interrupted by discussion this increases the attention and memory [9,21]. Questions can stimulate thinking and increase interest in the subject and can provide valuable feedback to student and teacher [13,17]. Studies have shown that dividing lecture in small

segments and combining it with other activities is an excellent way to keep students involved [13].

Interactive lectures are probably avoided because of time constraints and fear of losing of control over students<sup>(22)</sup>. This active-learning strategy can be incorporated easily into large classrooms. Interactions allow discussion, reduce the monotony of passive learning, and enhance the students' level of understanding and their ability to synthesize and integrate material [16].

Few apparent points appeared from student feedback are as follows

- Students enjoy being actively involved in the lecture theatre
- The change of pace in interactive lecturing breaks the monotony of the lecture resulting in increased attention. Students say that interactive lectures keep them awake.
- Increased engagement and attention is helpful in developing interest in the subject matter.
- Interactive lecturing helps in developing thinking in students.

It is recognized that increased student involvement leads to change in attitude and learning outcomes [24]. Interactive lectures highlight common misconceptions held by the students and encourage students to question [26] and thus increases self efficacy of student which is linked to their academic achievements. Goldberg et al have found that interactive lecturing increases the educational value of lecture time [27].

At the end it can be concluded that interactive lecture is a better teaching method. This study also shows that the present teaching method of didactic lectures is having many lacunae and there is need to modify the present teaching method.

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