



# Research Journal of Pharmaceutical, Biological and Chemical Sciences

## An Exciting Style of Teaching to Increase the Exam Score of Students

S Roopa<sup>1\*</sup>, Bagavad Geetha<sup>2</sup>, and Anitha Rani<sup>3</sup>

<sup>1</sup>Associate Professor, Department of Physiology, Sri Ramachandra Medical College & Research Institute, Sri Ramachandra University, Porur, Chennai - 600116, Tamil Nadu, India.

<sup>2</sup>Associate Professor, Department of Physiology, Sri Ramachandra Medical College & Research Institute, Sri Ramachandra University, Porur, Chennai - 600116, Tamil Nadu, India.

<sup>3</sup>Associate Professor, Department of Community Medicine, Sri Ramachandra Medical College & Research Institute, Sri Ramachandra University, Porur, Chennai - 600116, Tamil Nadu, India.

### ABSTRACT

It is a well known fact that interactive lectures are well received by the students and faculty alike. This study was carried out to find out whether interactive lectures increase the exam score of students. The study was conducted on 78 first year dental students. Two chapters of equal difficulty levels, ie. Endocrine system and Cardiovascular system in Physiology were chosen for the study. The entire batch underwent regular didactic lectures for the Endocrine chapter, and interactive lectures for the Cardiovascular chapter. The interactive lectures were conducted with the following techniques: playing video clippings and posing case histories, student discussion and quick-thinks. Surprise tests consisting of 20 MCQs were conducted at the end of each of the chapters. Written informed consents were obtained from all the participants of the study. The project was approved by the Institutional ethical committee. Statistical analysis was done using SPSS software - version 15. The scores of the students obtained for both the tests were compared by 't' test. The mean score obtained for the test on Cardiovascular chapter was significantly higher than that obtained for Endocrine chapter ( $p < 0.001$ ). This study shows that interactive lectures can increase the exam score of students.

**Key words:** active learning, exam score, interactive teaching, students' performance.

*\*Corresponding author*



## INTRODUCTION

An interactive lecture is one where the lecturer interacts with the students in more than one way. Interactive lecturing is a much experimented style of teaching. Many techniques have been employed to ensure interaction between the teacher and students during the lecture. It is a well-known fact that interactive lectures are well received by the students and faculty alike. The Kirkpatrick model of learning evaluation enumerates four levels i.e. evaluation of student reaction, evaluations of learning, performance and results of the training. There are many studies done which document the fact that interactive lectures are preferred by students than regular lectures, that interactive lectures motivate the students for self-learning and create interest in the subject [1]. This reflects the first of the four Kirkpatrick evaluation levels. It has to be found out whether interactive lectures actually increase the performance of students in exams. Hence this study was carried out with the objective to find out whether interactive lectures increase the exam score of students which is essentially the second level of Kirkpatrick's four levels of learning evaluation.

## MATERIALS AND METHODS

The study was conducted on the first year students undergoing BDS (Bachelor of dental surgery) course. The total number of students was 78, consisting both males and females. Two different chapters of almost equal duration and difficulty levels were chosen for the study. The chapters chosen were the Endocrine system and the Cardiovascular system in Physiology. Each chapter was dealt with twelve lectures each. The entire batch of students underwent regular didactic lectures for the Endocrine chapter, and interactive lectures for the Cardiovascular chapter in Physiology.

The interactive lectures of Cardiovascular system were conducted with the following techniques: playing video clippings and posing relevant case histories, student discussion (in between the lecture the faculty stops for a while and asks each one of the students to discuss with their neighbour the important points covered already in the lecture) and quick-thinks. "Quick-thinks" are different types of questions posed with the aim to break the monotony of lecture and engage students [2]. The various quick thinks used in the study were filling up the blanks, true or false, choose the correct answers etc. Students were asked to write down their responses, discuss the answers with their neighbour, or silently think about a possible response. Surprise tests were conducted at the end of Endocrine chapter lectures and also Cardiovascular chapter lectures. The tests consisted of 20 multiple choice questions each. The scores of the students in both the tests were obtained and analyzed.

Written informed consents were obtained from all the participants of the study. The project was approved by the corresponding author's institutional ethical committee. Statistical analysis was done using SPSS software, version 15.

## RESULTS AND DISCUSSION

The scores of the students obtained for the tests on Cardiovascular system and Endocrine system were compared by 't' test. The mean score obtained for the test on Cardiovascular system was significantly higher than the mean score obtained for the test on Endocrine system ( $p < 0.001$ ) as shown in Fig 1.

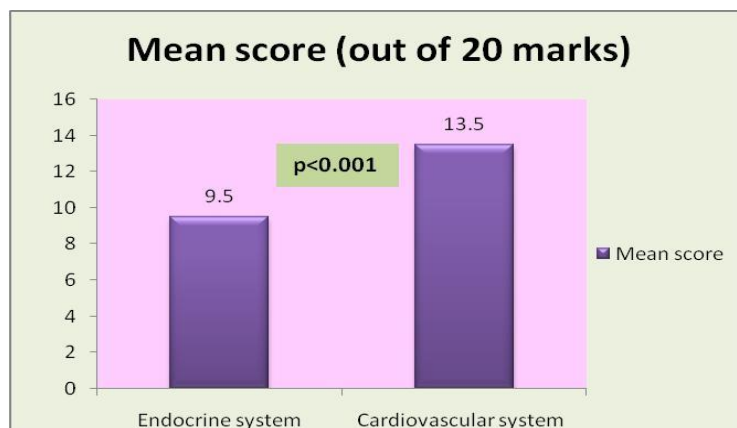


Figure 1: Mean score for the tests on Cardiovascular system and Endocrine system.

A traditional lecture is a one way method of teaching wherein the lecturer does the talking most of the time. This definitely leads to inattentiveness of the students. Interactive teaching, on the contrary is a two way teaching / learning method wherein the lecturer modifies his or her teaching to the response of the students. Students are allowed to interact with the lecturer and / or with the fellow students. In interactive lecturing, monitoring of the student's prior knowledge levels is done with the aim of making students competent learners [3]. Various physiologists have developed various techniques to make their lectures interactive which in turn lead to better learning outcomes [4].

The 'spacing effect' has been shown to improve learning. Spacing effect is a method of teaching where facts and / or concepts are spaced and repeated. Spacing effect results in better learning and retention of the subject learnt. Toppino TC et al have shown that interactive spaced education was associated with improvement in knowledge and was accepted well by the students [5].

Johnston S opines that a quick-think every fifteen minutes or so results in increased attention, interest, and learning by the students. "Quick-thinks" are questions which are formed to elicit quick and brief answers thereby breaking the monotony of lectures and engage students in active learning. Fill up the blanks, multiple choice questions, match the following, correct the error, select the best response are some of the quick-thinks which have been made use of. Students are instructed to note down their answers or verbally generate an answer with a neighbour, or simply think about a correct answer. The instructor can then provide feedback [2].



David et al did qualitative and quantitative analysis in their study and showed that interactive lecturing is liked by students, improves student retention, promotes better understanding and increases thinking skills [6]. In the present study, the chapter on Cardiovascular system was taught by interactive lectures and the chapter on Endocrine system was taught by regular lectures. The result of the study clearly shows that the mean score obtained in the test on Cardiovascular system was significantly higher than the mean score obtained in the test on Endocrine system by the students.

Hardy Ernst et al found out that interactive lecturing improved learning outcome significantly. They found out that even students with limited prior knowledge, when introduced to interactive teaching, achieved a similar learning outcome to those students with a good science background [7]. Active learning methods and cooperative learning in organic chemistry lecture classes increased the overall pass rate in by 20-30% over the traditional lecture mode [8].

It is recognized that increased student engagement leads to changes in attitudes and learning outcomes [9]. However, the results of a study done by Van Dijk show a complex picture. The study shows that a regular traditional lecture can also be associated with students who are actively involved and that interactive lecturing may not result in active involvement of students [10]. In a study conducted by Walker et al, the students performed as well, if not better, in an active versus traditional environment. A correct proportion of student-centred activities and presentation-style instruction may be the best way of teaching [11].

### CONCLUSION

This study shows that interactive lectures can increase the exam score of students which reflects the second level of Kirkpatrick's four levels of learning evaluation. However, since the present study was done on a limited number of students doing one particular course, more studies can be done on students doing medical, dental and various paramedical courses to support the results of the present study.

### ACKNOWLEDGMENTS

The authors wish to thank Dr.M.Semmal, Dept of Physiology, Sri Ramachandra Medical College & Research Institute, for conducting a few lectures associated with the study.

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