



Question Card Break as A Novel Method for Effective Learning of Physiology in Dental Students

KEYWORDS

question card break, effective learning.

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ABSTRACT

The present study was taken up to introduce a novel interactive modified traditional lecture: "question card break" for the enhancement of the teaching-learning process in Physiology. The study was done on 1 BDS students (76), divided into 2 groups. General physiology lecture was taken by Traditional method for Group I (n=37) and by Question card technique for Group II (n=39). Pre and Post-tests were conducted. Wilcoxon Signed Ranks Test was applied to know the significance of difference between pre and post test scores of each group. The significance of differences in the improvement in both groups was compared using Mann-Whitney test in which group II students showed a significant improvement in the scores, ('p value' < 0.001). The intervention of the question card break during the lecture has resulted in effective learning and the maintenance of the 'attention span' of the students for the whole session.

INTRODUCTION

"Tell me & I forget. Show me, & I remember. Involve me, & I understand." This is a popular Chinese proverb that effectively highlights the importance of Interactive Teaching – Learning methods. Lecture is most widely used and accepted economical method of teaching. Traditional lectures have limited ability to maintain attention and promote active participation of students as they are more teacher-centered. Trends in education are now shifting from passive to active learning, replacing the old metaphor of 'transmission of knowledge' with new metaphor of 'dialogue'. (1) The modification of traditional lectures is one way to incorporate active learning, heightened attention, and motivation and achieve the instructional goals in the classroom (2). Students are revived from their passivity of merely listening to a lecture and instead become attentive and engaged, two prerequisites for effective learning. These techniques are often perceived as "fun", yet they are frequently more effective than lectures at enabling student learning. (3) One such interactive tool is 'Question card Technique' in which the learners anonymously ask questions about confusing and difficult aspects of the presentation and when interspersed with didactic sessions gives a chance for energy shift and the 'instructor' becomes 'facilitator' who answers or encourages answering the questions, leading to a simple strategy of active participation of the students and helping them recall and summarize key concepts. This method of teaching arouses student attention and allows for instant feedback on whether the lecture material has been understood.(3).

CONTEXT OF THE STUDY:

Physiology is a core subject with many concepts which are very important for the understanding of medicine and forms the foundation of further knowledge gained during the course of medical/dental sciences. Over the period of years by taking only passive lectures in Physiology it has been observed that, first year dental students often find it difficult to understand and remember various facts and concepts involved in general and systems physiology.

Attention span studies have shown that the students' interest and attention in the traditional lecture diminishes significantly after 25-30 minutes. Change of pace are essential for students' to remain focused. When asked questions during traditional lectures, only few selective students tend to answer while most of them refrain from asking doubts for the fear of being ridiculed.(4) Further the Interactive question card techniques allow the

teachers to receive feedback at a number of levels, on how the information has been assimilated, and on future learning directions.

This interactive lecture uses a question card swapping strategy to help participants share any confusion they might have while eschewing the embarrassment that often comes from revealing a personal knowledge gap. After the presentation the participants anonymously ask questions about confusing and difficult aspects of your presentation. Answer these questions and use a simple strategy to help participants recall and summarize key concepts. (5)

MATERIALS & METHODS:

Methodology:

This project was conducted on first year 76 dental students by the department of Physiology of Sinhgad Dental College and Hospital, Pune.

The students were divided into 2 groups. To avoid bias, care was taken to form groups which covered all the strata of students, and was done on basis of their previous examination marks. The groups were not pre informed about the interactive technique. The lecture series in General physiology was taken by Traditional method for Group I (n=37) and by Confusion technique for Group II (n=39) on the same day but during different lecture hours. Groups did not interact with each other.

Pre-test and Post-test were conducted at the beginning and end of both the lecture methods and had similar questions.

Qualitative feedback was also obtained from the students of both the groups in the form of written feedback form without revealing their identity and it was different for Traditional and Confusion method.

Materials required

Index cards to write the queries, and a bell.

The presentation

Lecture was conducted in logical and coherent fashion. After 30 minutes a break was taken to carry out the question card technique.

The learners were told that 15 minutes of allotted lecture time will be for responding to the doubts and queries that they have. The students were

asked to write a question that they would like have answered, on card, without revealing their identity in the form of name/roll numbers.

All the participants were instructed to fold

their question cards and keep exchanging cards with each other without reading the questions till the ringing of the bell continues (30 seconds), in passing the parcel format. The students were encouraged to read out the questions or doubts from the question card which they had received. The questions were answered either by the students who knew the answer to it or by the teacher. After clarification of all the doubts, the topic was summarized and few loose ends were covered.

RESULTS:

Table 1: Improvement In the test scores before and after the lecture (both the groups)

	N	Mean	Std. Deviation	Percentiles			Wilcoxon test for paired comparison
				25th	50th (Median)	75th	
TRAD_PRE	37	4.2703	1.4842	3.0000	4.0000	5.0000	Z values: -5.25, p<0.001, Significant
TRAD_POST	37	8.2432	1.9777	7.0000	8.0000	10.0000	
QUES_PRE	39	5.1026	1.3138	4.0000	5.0000	6.0000	Z values: -5.46, p<0.001, Significant
QUES_POST	39	11.5128	2.0245	10.0000	12.0000	13.0000	

Wilcoxon Signed Ranks Test results showed that both traditional and the confusion groups showed a significant improvement after attending the lecture session indicating that both methods improve academic performance (Table.1).

Table 2: The differences in the improvement in both groups (traditional VS question card)

Groups	N	Mean	Std. Deviation	Percentiles			Statistical test	
				25th	50th (Median)	75th	Mean rank	Mann- Whitney test
Traditional	37	3.9730	2.0067	2.0000	4.0000	5.0000	25.8	Z-value= -4.8, p-value-<0.001, Significant
Ques. card	39	6.4103	1.6657	5.0000	6.0000	8.0000	50.4	

The improvements in the marks in both the groups compared by using "Mann-Whitney test" showed a significant difference in the groups with the "Question card" group students showing a higher improvement in the scores compared with the Traditional group (Table 2.)

- The analysis of students Qualitative feedback pertaining to perceptions and preferences of the teaching methods, their overall assessment of the lecture course in terms of specification of learning objectives, their level of active involvement, attention span throughout the session and general atmosphere during the session was done. Ninety to hundred percent of students of both groups indicated that the learning objectives and core concepts were made clear to them. 27% of group I learners reported their 'attention span' to be 'good' throughout the lecture whereas 63% of Group II learners reported their attention span to be good throughout the session. 60% to 90% of the respondents of Group II have reported the question card technique to be useful in better understanding of the subject, the session to be fun learning, increased active participation, motivating and confidence boosting.

DISCUSSION:

Though Traditional lecturing has a long and distinguished history as the prime teaching method in higher education, interactive lectures promote two way teacher and student communication and long term retention of information.

Performance of both the Groups was assessed by evaluating pre and post test answer papers.

STATISTICAL ANALYSIS:

Kolmogorov-Smirnov test was applied to know normalcy of the data. There was significant deviation from normal data in one of the groups. Hence we decided to apply non parametric test for independent data, namely "Mann-Whitney test" and Wilcoxon Signed Ranks Test.

Significance level of less than 0.05 was considered to be statistically significant.

Table no. 1 highlights the improvement in the test scores before and after the lecture in both the groups (I & II), with 'p value' being <0.001 (significant). Simple intervention of administering an appropriate pretest before lecture class arouses curiosity in the learners and gives them an idea to focus on the important points along the lecture course. A similar finding was reported by Dr. Padma K at MS Ramaiah medical college, Bangalore, in a study that brings out the importance and usefulness of pretest in enhancing learning.(6)

Table no.2 shows the difference in improvement in the both the groups clearly highlighting the posttest scores of group II being significantly greater than group I post test score. ('p value' < 0.001), thus emphasizing the positive outcome of the interactive interventions during lectures that

can lead to better recall and in depth understanding of the concepts. The findings of a study by de Caprariis, Barman & Magee (2001), suggest that lecture leads to the ability to recall facts, but discussion methods produce higher level of comprehension. (6) The interactive methods as Question card technique foster greater participation, self confidence and attentiveness leading to better understanding. Morgan, Whorton, & Gunsalus (2000) demonstrated that the use of lecture combined with interactive breaks resulted in superior retention of material among learners. (6)

The analysis of students qualitative feedback of both the groups emphasizes the importance of 'energy shifts / change of pace' for better attention and interest arousal. Similar

findings were reported by Frederick, 1986; Foley & Smilansky, 1980; Stuart & Rutherford, 1978, in their studies

where the stimulating breaks have led to longer attention spans which in turn led to enhanced memory and learning.(4)

CONCLUSION:

Teaching and learning are the two sides of a coin. A measure of good teaching is the amount of student learning that has occurred. Even the most lucid and brilliant exposition of the topic by a teacher in a lecture, may result in limited learning if the students' involvement and active participation is lacking. Interactive teaching methods in combination with traditional lecture formats can be regarded as good practice to explore the creative side of the learners and in a formative fashion focus the students' mental processing towards the set goals of the core concepts.

A good query is the reflection of the mental processing and involvement of the students. Encouragement at the right moment leads to motivation and arouses interest in total

concept based subjects as Physiology. The feedback of the students leads to identification of the problem zones.

8) Acknowledgement:

I owe my deep sense of gratitude to Dr.K.B.Patil, Professor & HOD, Department of Physiology for his support.

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