

Impact of Active Learning Approach on Students Evaluation of Teaching

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Abstract

Objective: The present study was designed to evaluate the extent to which students were benefited from active learning approach of teaching. It was intended to check the usefulness of whiteboard as a teaching medium instead of more commonly used audio-visual aids like PowerPoint.

Method: It is a cross-sectional descriptive questionnaire-based study. Interactive teaching strategy was used instead of diagnostic lecture. Instructor used only whiteboard as a teaching medium encouraging interactivity. At the end of the session, 150 students filled the form which comprised of 12 statements regarding evaluation of the instructor. Students were supposed to respond to them according to 5-point Likert-scale. Only students ≥ 18 Years and those willing to fill the form were included in the study. Exclusion criteria included students not willing to fill the form and those returning incompletely filled forms. The reliability of form was checked using Cronbach's Alpha which came out to be 0.8 proving it to be reliable.

Results: The average overall score for the proforma was 54.5 ± 3.901 out of 60. This showed that there was more positive perception about the instructor than negative after employing active learning approach.

Conclusion: From the results of this study, it can be concluded that active learning approach using whiteboard along with enhanced student interactivity is an effective way of teaching.

Keywords: Active learning, SET, power point, whiteboard.

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Introduction

Evaluation is an important aspect for improving teaching practices not only in medical education but also in other disciplines. Besides improving teaching, it is also done for other purposes like developing a resume

for job application, for promotion or for personnel decisions.¹ Student evaluation of teaching (SET) has a long history, has grown in prevalence and importance over a period of decades, and is now commonplace in many universities internationally.² Regarding improvement in teaching practices, the best method to adopt is student evaluation of teaching (SET) as students are directly affected by the teacher and are in an appropriate position to tell about the clarity, relevance, affectivity and other aspects of teaching of a particular instructor.³ In addition, literature has also proven the validity of SET for evaluation of teaching particularly for nonclinical courses.⁴ However, there are some concerns regarding use of only students' feedback for evaluation of an instructor as there are multiple factors that can influence individual students' response like the subject being taught by instructor or some other attributes of instructor that cannot be highlighted in a classroom setting.⁵ So generally, it is advisable to gather feedback for the purpose

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of evaluation from multiple sources like peers, chairperson etc. known as triangulation to increase its validity even further.⁶ Interactive teaching methods belong to the constructivist philosophy of learning, which gives special importance to student-centered active learning where the lecturer takes on a facilitator's role. This method made students more involved in their own understanding of the material and aware of their level of learning. It also provides scaffolding for education using questioning.⁷ Numerous studies in medical education have proved the importance of active learning approach in making teaching effective and meaningful.⁸

To meet the challenges of modern era and present generation Z we need to do some innovation in our teaching practices. It is also essential because every student has a different learning style and accordingly requires multiple opportunities.⁹ Teaching methodologies in medical education also need to be revolutionized.¹⁰ Innovation in medical education has always been difficult due to its vast curriculum but it's the need of hour. So present study was designed to evaluate the extent to which students were benefited from active learning approach. It was intended to check the usefulness of whiteboard as a teaching medium when used alone which increases interactivity instead of more commonly used audiovisual aids like PowerPoint.

Materials and Methods

This was a cross-sectional descriptive questionnaire-based study of 150 undergraduate medical students during afternoon tutorial sessions of 3rd year MBBS. Interactive lecture was used as a teaching strategy and only white board was used as a teaching medium and there was no PowerPoint presentation; however only a small video related to the topic was shown. Students were encouraged to participate and share their knowledge with their peers and instructor on the basis of which new knowledge was delivered. At the end of the teaching session students were supposed to fill a form within approx. 5 minutes which consisted of statements evaluating the instructor's teaching skills. Prevalidated Proforma was derived from DREEMs questionnaire which comprised of 12 statements regarding teaching evaluation.¹¹ Students were supposed to respond to those statements according to 5 point Likert-scale. Details of 5-point scoring are: 5 for strongly agree, 4 for agree, 3 for unsure, 2 for disagree and 1 for strongly disagree.^{12,13} 12 statements with 5 points for each gives a total score of 60 perceived as an ideal instructor. These results in

the form of score were interpreted as:

0-15= very poor performance

16-30= multiple problems exist in teaching methodology that needs to be addressed

31-45= more positive things about the instructor and minimal problems

46-60= ideal instructor

Students were supposed to fill the statements based form in the last 15 minutes of my teaching session. Students were told that these are anonymous and will not affect their grades to ensure greater student participation. Study duration for data collection was from 1st August 2017 to 15th Dec 2017. Study site was Department of Pharmacology and Therapeutics, King Edward Medical University Lahore. The reliability of form was checked using Cronbach's Alpha which came out to be 0.8 which exceeds Nunnally's 14 threshold of 0.70, suggesting that the instrument is highly reliable. Simple Random Sampling technique was used for data collection to minimize the bias. Participation was voluntary and only students willing to fill the form were included in the study. It's difficult to get feedback because students are usually not interested in filling such proformas. So, to motivate them objective of the study and importance of their response were explained to them before-hand. Only student's ≥ 18 years and those willing to fill the form were included in the study. Exclusion criteria included students not willing to fill the form and those returning incompletely filled forms. Total 160 forms were distributed, 155 were collected back out of which 150 were included in the study based on inclusion and exclusion criteria. Identity and data of the participants of this study was kept strictly confidential. Data obtained from Proforma was analyzed using SPSS version 21 Descriptive statistics were used and data was reported as mean \pm S.D and percentage. To compare means of the DREEMs score obtained from male and female students, independent-t test was applied.

Results

A total of 150 students participated in the study which included 62 male (M) students and 88 female (F) students. Overall average score of the Statement based form derived from DREEMs inventory regarding evaluation of teaching came out to be 54.5 ± 3.901 out of a total score of 60. This showed that students had a more positive perception about the instructors teaching style

than negative. After analyzing the available data using descriptive statistics, we found that 86.7% students agreed that overall instructor and the instruction methodology was good whereas 6% of the students strongly agreed to this. Only 7.3% students were unsure about their opinion and didn't give any positive or negative response. (Table 1 and Fig-1)

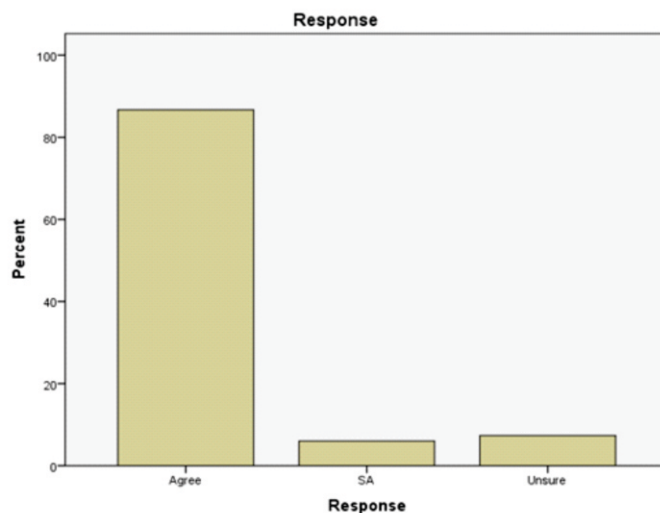


Table 1: Table showing percentage and frequency of student's response for Student Evaluation of Teaching (SET) form.

		Frequency	Percent
Valid	Agree	130	86.7
	SA	9	6.0
	Unsure	11	7.3
	Total	150	100.0

SA: Strongly Agree

Fig-1: Graph showing percentage of student's response for Student Evaluation of Teaching (SET) form.

While analyzing results of individual questions, it was seen that 56.7% students strongly agreed that learning outcomes of the session were clearly communicated at

Table 2: Students response for each individual statement.

Sr #	Statements	Strongly Agree (5)	Agree (4)	Unsure (3)	Disagree (2)	Strongly Disagree (1)
1	Learning outcomes of the session were clearly communicated at the start	85 (56.7%)	62 (41.3%)	3 (2%)	Nil	Nil
2	Instructor is well prepared and has command on the topic	106 (70.7%)	44 (29.3%)	Nil	Nil	Nil
3	Instructor relates the topic content with real life examples	26 (17.3%)	65 (43.3%)	51 (34%)	8 (5.3%)	Nil
4	Instructor encouraged interactivity (student participation)	118 (78.7%)	26 (17.3%)	6 (4%)	Nil	Nil
5	Instructor responded to students' questions effectively when asked	94 (62.7%)	46 (30.7%)	8 (5.3%)	2 (1.3%)	Nil
6	Instructor communicates clearly using verbal, nonverbal and written language.	99 (66%)	50 (33.3%)	1 (7%)	Nil	Nil
7	Instructor challenged and ensured equal participation of all students	99 (66%)	50 (30.7%)	5 (3.3%)	Nil	Nil
8	Instructor used any form of technology to increase student interest.	74 (49.3%)	46 (30.7%)	24 (16%)	4 (4%)	Nil
9	Instructor used the allotted teaching time effectively	99 (66%)	44 (29.3%)	7 (4.7%)	Nil	Nil
10	Instructor creates a positive learning environment.	100 (66.7%)	48 (32%)	2 (1.3%)	Nil	Nil
11	I have gained knowledge regarding this particular topic from Instructor	108 (72%)	40 (26.7%)	2 (1.3%)	Nil	Nil
12	Instructor presented the content in a way that we can understand easily	112 (74.7%)	34 (22.7%)	4 (2.7%)	Nil	Nil

the start of the session. Regarding preparedness of the instructor about the topic more than 70% of the students strongly agreed that instructor was well prepared. 43.3% students agreed that teacher related real life examples with the topic. When asked about the interactivity more than 80% students agreed that instructor encouraged students' participation. 62.7% and 66% students strongly agreed that instructor responded to student's questions when asked and had good communication skills respectively. Instructor also challenged students to think and reflect as proven by student's response (66% SA). Instructor also used technology (short video) to enhance understanding of the topic as 49.3% students strongly agreed with this. 66% students strongly agreed that teaching time was used effectively and efficiently by the instructor. More than 70% students strongly agreed that instructor created a Positive learning environment in the class which facilitated their learning and enhanced understanding of the topic. (Table 2 and Fig-2)

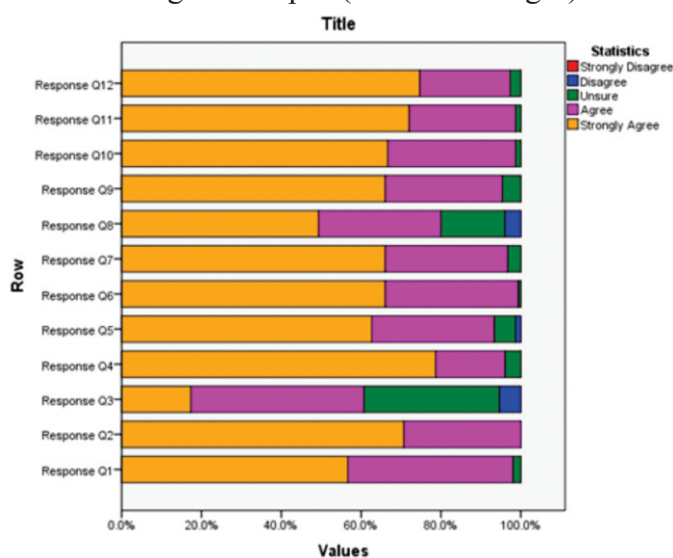


Fig-2: Students response for each individual statement.

Discussion

Students' evaluation of teaching (SET) has long been used as a mode of evaluating teaching effectiveness of an instructor. Cohen 1981 strongly supported the validity of SET as a mean of determining teaching effectiveness. He declared it to be a bona fide index of instructional effectiveness.¹⁵ Another study showed that higher rating on SET was also associated with higher external exam scores proving that good instruction has an influence on students learning.¹⁶ However a meta-analysis of these previous studies declared that teaching effectiveness and exam score are not influenced by higher SET

scores.¹⁷ A recent study has shown that SET should not be used in medical schools for coarse evaluation or for making critical decisions about faculty promotion, salary increase.¹⁸ Keeping in mind all these perspectives, the present study was designed in the form of a questionnaire with the objective to elicit the perception of the students about the particular instructors teaching style employing active learning approach by interactive lecture using white board only through which students are encouraged more to participate in their learning process rather than didactic lectures. This evaluation of the instructor by students can be used as a mean of useful feedback that is obtained through a designed questionnaire. Numerous psychometric research has shown the accuracy and soundness of student's opinion and its direct correlation with teacher's teaching effectiveness.¹⁹ In this regard many objections that were previously attributed to student evaluators are likely to be of minimal importance.²⁰ It has also been seen in literature that there is an association between evaluation scores and gender of students.²¹ Female students were found to be giving higher scores than male students.²² Contrary to it our study showed that gender of students didn't influence SET score.

In our study encouraging more student participation enabled the instructor to get a high SET score. It has also been observed in literature that many teachers tried to improve their rating by involving students more in their learning process.²³ So, it is evident that interactive learning imposes a positive impact on SET score that reflects a particular instructor's performance. It has been seen in literature that teaching by Interactive lectures is most popular mode of instruction among the students as well. A study reported that 42.1% students preferred interactive lectures as compared to other methods of teaching which was highest.²⁴ PowerPoint presentation is mostly used nowadays as a means of delivering lectures to enhance students understanding by adding useful illustrations but unfortunately its use has decreased interactivity in classroom. Whiteboard or blackboard teaching is a good way to attract student's attention by taking frequent feedbacks and ensuring active participation by them. It is considered one of the most favorite modes of instruction by students as is evident from literature.²⁵ Interactive learning has a positive influence on student evaluation of teaching, but this does not ensure student learning as a recent meta-analysis has shown that SET and student's learning are not related.²⁶ So having a positive perception about the instructor using SET shows that students had a plea-

sant learning experience and environment in the class, but it does not guarantee good student grades. In andragogy, adult learners are self-motivated to study and get good grades.²⁷ Teacher is only a facilitator and responsible for providing favorable learning environment in the class. The present modern generation needs some innovative teaching learning practices that can foster more student teacher interaction, enhance students' communication skills ultimately creating positive learning environment to generate highly skilled future medical practitioners.

Conclusion

Our study has made it clear that when students are involved more in their learning process through interaction by using white board as a teaching medium and not PowerPoint presentation, they acknowledge it positively as evident from a very high SET score in our study. Teachers' performance was appreciated by the students that might have also helped them in understanding the subject and in their own learning process as well but that still needs to be explored through future research in this respect.

Conflict of Interest: *None*

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Authors Contribution

TZ: Conceptualization of Project

SM: Data Collection

M: Literature Search

BFA: Statistical Analysis

MIP: Drafting, Revision

UI: Writing of Manuscript