

EVALUATING LARGE GROUP LECTURES – A SCIENTIFIC APPROACH OUTCOMES

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ABSTRACT

Objective: To evaluate students' perspectives on large group lectures with a scientific approach of instruction.

Materials and methodology: A descriptive cross-sectional study was conducted. Data collected over 4 months with single instructor. Total 300 participant's response considered. Audience assessed the presentation according to given questionnaire, using likert scale and open comments. Data analyzed on SPSS v23. P value calculated using chi square.

Results: In Cumulative Frequencies, (83%) participants agreed that presentation met expectations. Another (85%) approved that it was presented in a clear and organized manner. From these 240(80%) decided that pre-presentation administration was efficient. Total (47.67%) found scenario discussion most useful. Another (86.7%) decided presentation location appropriate. Total (88.7%) established that session was informative. Another (76.6%) agreed on time allocation. Total (94.67%) wanted similar presentations from other presenters. Another (86%) approved lecture pace. Total (87.7%) agreed to appropriateness of presenter response. Another (12.33%) suggested, to continue similar presentations in future.

Conclusion: We can apply questionnaire on scientific approach to lectures like Gagne's model to ensure an effectual and organized learning. It gave a comprehensive view to the teaching.

Keywords: Active learning, Interaction, didactic lectures, Evaluation, Questionnaire.

INTRODUCTION

Large group lectures have been a major mode of delivering information to learners. It is simple and time efficient for the instructors both in the sense of preparation and delivery. In addition, the format is scalable, allowing for instruction from tens of students to thousands¹. However, with time, didactic lecturing has waned to prove effectual in encouraging students' thought and teaching skills². Student attention span for passive learning is limited to just about 20 minutes³. Learners need to adapt to every lecture regardless of the fact that they may have difficulty with the level of information and the pace of presentation. Finally, lectures often focus more on facts and concepts, rather than on skills or creativity⁴. At the same time, it is true that institutions have not yet found empirical alternative teaching methodologies for large group lectures⁵. However, attempts have been made from time to time to enhance effectiveness of lectures. Problem-based and team-based learning are implemented widely in current medical school curricula,^{6 7 8} while blended and flipped learning models, and online inter-active modules are gaining popularity.^{9 10}

Each method has its own merits and demerits, yet none has been successful in completely replacing traditional lecture. Efforts are made continuously to improve effectiveness of lecture, by adopting incomplete outlines, break in activities, relatable examples and teachable skills.^{4 11 12}

At the American College of Emergency Physicians, Kessler et al compiled presentation techniques from its highly rated faculty, focusing on key objectives. It increased audience participation with manageable slide content.¹³ Similarly, Issa et al found that audiences prefer visual representation and slides without bullet points.¹⁴

In this article, we tried to deliver an organized lecture for participants attending large group lectures, keeping Gagne's Principles in mind. At completion, participants' perspective was evaluated regarding expectations, satisfaction, organization, pace and preparation of presenter. In addition, response of presenter to questions asked, time allocation, evaluability of lecture and pre-lecture administration were also checked through a questionnaire. Questions were asked about most interesting part of lecture and

whether participants recommend such lectures to others. Comments and suggestions were welcomed. This evaluation aimed to guide educationist in developing better teaching designs.

OBJECTIVES

- To explore learning in a large group teaching environment
- To evaluate participants' perceptions in a structured lecture.

MATERIALS AND METHODOLOGY

A descriptive, cross-sectional study was conducted by enrolling 300 participants with observation period of 4 months by an experienced instructor, between January and April 2017. Participants belonging to medical field were invited to complete a 15-itemed questionnaire regarding their participation in the large group lecture. The lecture was carried out by same instructor for all, with similar design, but different topics. A variety of participants were selected, including Medical students and General Practitioners. Out of total 300, 100 participants were final year students of Ameer ud din Medical College and the remaining 200 were General Practitioners from diverse background, within Lahore city and outside. Participants from various training levels were encouraged to attend. Data from the questionnaire were analyzed using SPSS version 23. P value less than 0.05 was considered significant.

We tried following techniques in order to enhance learning in didactic lecture.

For the purpose of gaining attention of students, different methods were applied, such as an abrupt stimulus change, like starting the lesson with a thought-provoking question, case scenario or interesting fact. After the introduction, participants were appraised of the learning objectives, by informing them on what they are going to learn and in which order. Questions were posed to them in following manner

- What other question would you like to ask while taking history of this patient?
- What examination would you like to perform?
- How will you investigate the case?
- What is your differential diagnosis?
- What are your treatment options?
- What is the prognosis of this disease?

Participants were given ample opportunities to ask questions with relation to the learning objectives.

Some participants had prior working experience with the scenario given due to the inter-professional nature of the class, which they were encouraged to share in order to stimulate recall of prior learning. The diversity of personal background knowledge was

encouraged in sharing experience. Content of scenario was presented via detailed explanatory PowerPoint presentation. Topics covered included history taking, examination, investigations, treatment and prognosis of the disease. To make the stimulus more meaningful and to enhance retention, additional suggestions including use of examples, case studies, graphs and mnemonics were included. Lecture was given in a spacious Lecture hall with good light and ventilation and sitting arrangement of 100 students at a time. Time allocated for the lecture was 50 minutes maximum. This study was found acceptable and approved by ethical committee of Ameer ud Din Medical College/PGMI/AMC/Lahore General Hospital.

RESULTS

We asked all 300 participants same 15 questions. First inquiry was whether the presentation met their expectations, to which 142 strongly agreed, 107 agreed, 25 remained neutral, 18 disagreed and 8 strongly disagreed (**Table: 1, Figure 1**). This question was taken as dependent variable to calculate results, using Chi-square.

Next question that whether they were satisfied with presentation location, to which 139 participants strongly agreed, 121 agreed, 20 remained neutral, 3 disagreed and 17 strongly disagreed. P value for this question was significant. (**Table: 1, Figure 1**)

Next question was whether presentation facilities were adequate. In response, 140 strongly agreed, 113 disagreed, 30 remained neutral, 5 disagreed and 12 strongly disagreed. P value for this question was significant. (**Table: 1, Figure 1**)

For question regarding material presented in a clear and organized manner, 156 strongly agreed, 99 agreed, 22 remained neutral, 12 disagreed and 11 strongly disagreed. P value for this question was significant. (**Table: 1, Figure 1**)

For inquiry regarding the pace of lecture, 131 strongly agreed, 127 agreed, 21 remained neutral. 12 disagreed and 9 strongly disagreed. P value for this question was again significant. (**Table: 1, Figure 1**)

For question on whether presenter was properly prepared, 184 strongly agreed, 84 agreed, 18 remained neutral, 6 disagreed and 8 strongly disagreed. P value for this question was also significant. (**Table: 1, Figure 1**)

For question about presenter response to questions in an informative and appropriate way, 158 strongly agreed, 105 agreed, 23 remained neutral, 6 disagreed and 8 strongly disagreed. P value for this question was significant. (**Table: 2, Figure 2**)

For question on adequacy of time allocated for lecture, 118 strongly agreed, 112 agreed, 31 remained neutral, 20 disagreed and 19 strongly disagreed. P value for this question was significant. (Table: 2, Figure 2)

For question on information and value of session, 162 participants strongly agreed, 104 agreed, 17 remained neutral, 7 disagreed and 10 strongly disagreed. P value for this question was also significant. (Table: 2, Figure 2)

For question on pre-presentation administration efficiency and caring, 120 participants strongly agreed and 120 agreed, 42 remained neutral, 11 disagreed and 7 strongly disagreed. P value for this question was significant. (Table: 2, Figure 2)

For question regarding most useful session, 142 found the scenario discussion as most useful. Only 16 were of the view that entire lecture was useful, 12 found moral videos most useful, 11 found algorithms and lessons very significant. A large number (116) refrained from giving any response. P value was 0.183, and insignificant.

For question regarding future recommend of similar methodology of presentation, 284 agreed and 16

denied. P value was significant for this question. (Table: 3)

We welcomed suggestions for future presentations. 210 did not participated, 23 encouraged adding pictures and demonstration on real patients, 22 suggested making lecture more interactive without any concrete suggestion on how to execute, 21 pointed ill organization and wanted it to be better, 17 suggested to add a short time break and 7 found that presentations lacked in latest guidelines. P value was 0.85, and insignificant. (Table: 3)

We also asked our participants if they learnt something new from presentation. 150 did not participated, 119 learnt how to listen to the patient in a better way, 16 learnt how to do brain storming and 4 learnt the art of team work. P value was 0.362, and insignificant.

In free comment session about any other comment, 46 participants mentioned it as great experience, 39 wanted to continue it in future, 5 demanded to get access to slides. However, a majority (208) did not participated. P value for it was 0.22, and insignificant. (Table: 3)

Table 1: Illustrating response to questionnaire by Participants

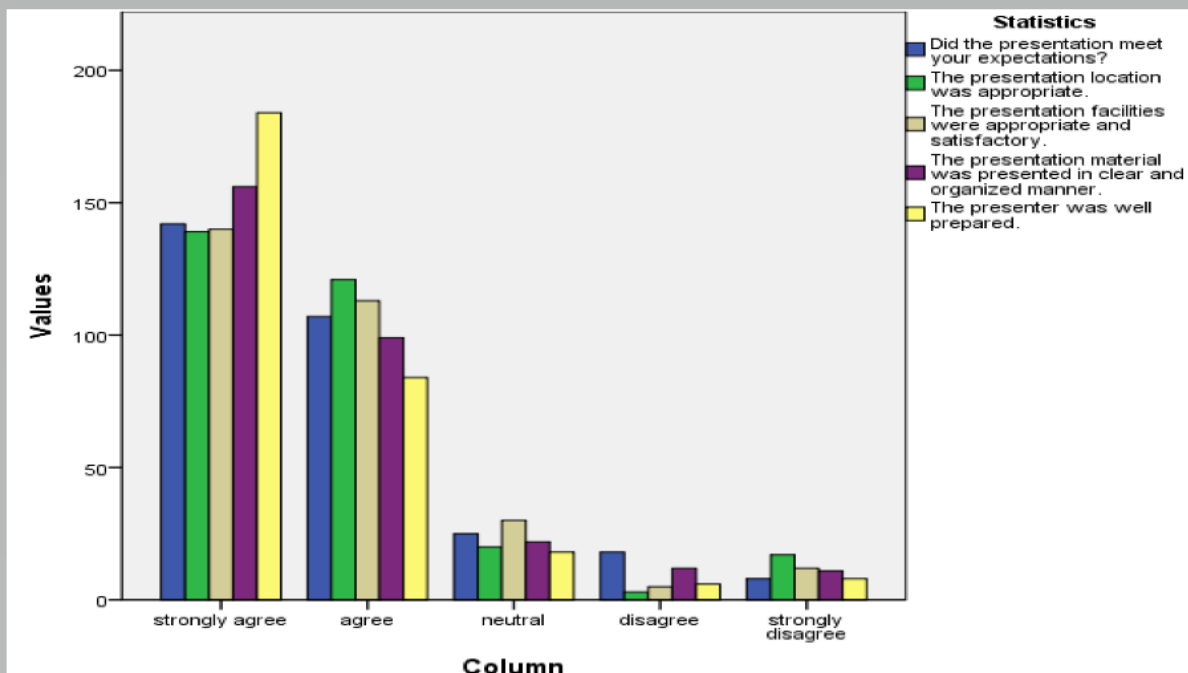
	strongly agree	Agree	neutral	disagree	strongly disagree	P value
Did the presentation meet your expectations?	47.3%	35.7%	8.3%	6.0%	2.7%	0.000
The presentation location was appropriate.	46.3%	40.3%	6.7%	1.0%	5.7%	0.000
The presentation facilities were appropriate and satisfactory.	46.7%	37.7%	10.0%	1.7%	4.0%	0.000
The presentation material was presented in clear and organized manner.	52.0%	33.0%	7.3%	4.0%	3.7%	0.000
The presenter was well prepared.	61.3%	28.0%	6.0%	2.0%	2.7%	0.000

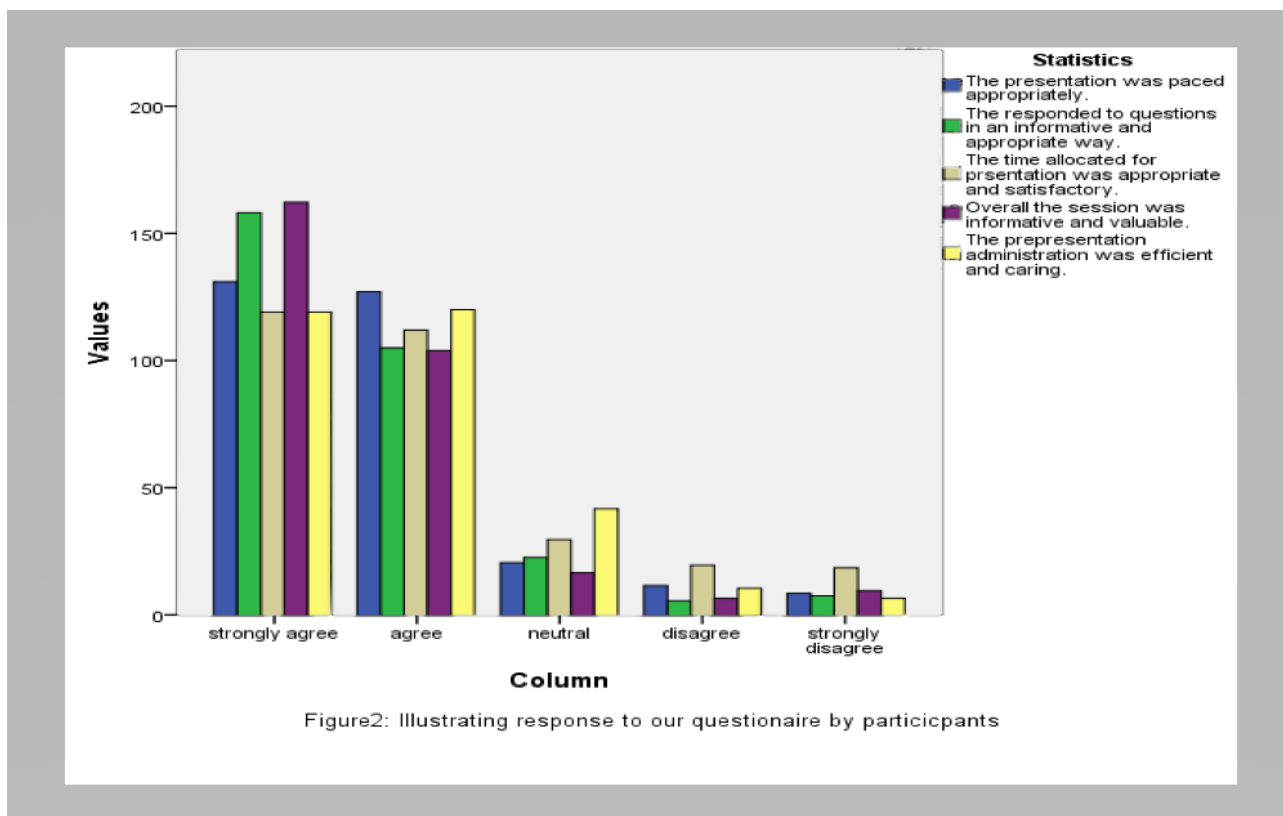
Table 2: Illustrating response to questionnaire by participants

	strongly agree	Agree	neutral	disagree	strongly disagree	P value
The presentation was paced appropriately.	43.7%	42.3%	7.0%	4.0%	3.0%	0.000
The responded to questions in an informative and appropriate way.	52.7%	35.0%	7.7%	2.0%	2.7%	0.000
The time allocated for presentation was appropriate and satisfactory.	39.7%	37.3%	10.0%	6.7%	6.3%	0.000
Overall the session was informative and valuable.	54.0%	34.7%	5.7%	2.3%	3.3%	0.000
The pre-presentation administration was efficient and caring.	39.8%	40.1%	14.0%	3.7%	2.3%	0.000

Table 3: Illustrating response to questionnaire by Participants

			P value
Which session/element of the presentation did you find useful?	scenario discussion	77.3%	
	Algorithms and lessons	5.9%	
	Moral videos	6.5%	
	Entire lecture	8.6%	
	Management	1.6%	0.183
Would you recommend this or similar presentation to a colleague?	YES	94.6%	
	NO	5.4%	0.000
Do you have any suggestion for future presentation that you would like us to organize?	Add pictures and demonstrate on real patient	25.6%	
	Make the session interactive	24.4%	
	Lack of organization.	23.3%	
	Addition of latest guidelines	7.8%	
	Short time duration and break of five minutes	18.9%	0.85
What new skills have you learnt from the presentation that you think you will be able to put into practice?	Team work	2.7%	
	Agree	7.3%	
	Listening to patient	79.3%	
	Brainstorming.	10.7%	0.362
Any other comments.	Great	48.4%	
	Inappropriate sequence	2.1%	
	Continue in future	41.1%	
	Sharing of slides via email	5.3%	0.22





DISCUSSION

Teaching large group sessions is a difficult task for both teachers and students. One way to confront this problem is by practicing new teaching methodologies. Keeping in view this possibility, multiple papers have been published. We aimed at contributing to improve learning methodologies especially in Pakistan through our study.

Audience feedback, if properly applied, is a valuable resource for improving medical education as it has played a pivotal role in advancement of theory lectures.^{15 16} During evaluation in our study, it showed that majority of audience were satisfied with lecture as a whole (83%), with presentation location (86.67%), facilities (84.34%), mode of delivery (85%), 86% with pace, 89.33% with preparedness of presenter, 87.6% with how questions were addressed, 76.67% with time allocation and 80 % with pre-presentation preparations. 88.66% rendered them valuable and informative. Majority (43.3%) of audience appreciated scenario-based learning. Some found entire lecture to be useful with some appreciating videos the most. They encouraged skill-based learning along with adding more pictures, algorithms, graphs and latest guidelines with some even suggested adding a short break. There were adverse remarks also, with some wanting it to be more interactive and pointing ill organization. They learnt

team base learning, brain storming, and interaction more effective for learning with patients. 94.67 % recommended similar methodology of delivery of lecture in future.^{15,16}

In UK, Wong YL et al¹⁷ and in California, Davies M et al employed Gagne's nine events of instructional design in curriculum. Students demonstrated better results after the design, which indicated improved retention¹⁸. First five principles of this methodology were similar to our methods of improving didactic lectures, which included gaining attention through various stimuli, informing participants of objectives, stimulating recalling of prior learning, presenting the content in useful and meaningful way and providing learning guidance. We were similar to them in results in our study, but different in the last four, as we did not included teaching practical skill in didactic lecture.

Wong YL et al ¹⁷ study 83 % agreed that presentation met their expectation, which was exactly similar in our study, with same percentage in agreement of meeting expectation. When we asked question regarding the most useful part of presentation 12 out of 300 found moral videos most useful. In comparison, Wong YL et al ¹⁷ commenced their lecture via videos regarding topic. In our case, there were primarily moral or general knowledge videos at the end or start of the lecture. However, in both studies participants

appreciated videos the most, which favors their use in this format.

Issa et al found that audiences preferred visual representation and slides without bullet points¹⁴. In our study, 23 out of 300 participants encouraged adding pictures. While on the other hand Larocque et al found that students preferred larger font sizes and a higher proportion of text-only slides.¹⁹ This was not in keeping with our findings. Possible reason could be multiple. Background knowledge about a particular subject, basic qualifications and cultural change can cause these variations. More work is needed to understand this difference.

Kessler et al who compiled presentation techniques from highly rated faculty of the American College of Emergency Physicians, focusing on key objectives, increased audience participation, and manageable slide content.¹³ Majority of reaction in their study suggested that they responded to questions in informative and appropriate way. It is very similar to our findings, where majority participants also thought in a similar way. Possible reason could be that they selected highly rated faculty, and in our situation, there was just one presenter involved in all presentations. It also suggested that if trained faculty is used, the responses can be compared.

Our study had some limitations. Despite incorporating participants from various levels, responses were not similar from all groups. Our evaluation was limited to only the participants attending a particular lecture by a specific presenter. Evaluation of lecture and presenter in the form of questionnaire was conducted and no evaluation of participants was carried out initially. Moreover, our study only demonstrated participant's response post design and no research was conducted on pre-design. This was primarily because our study consisted of participants from different training and non-training levels, involving feedback from class rooms, conferences and symposium large group lectures, making it difficult to implement pre and post design methodology. During our presentations only, theoretical lectures were delivered and no practical skills were taught, making assessment of last four of practical components of Gagne, a difficult task to assess. Also arranging small group lecture was time consuming. In our setup, most of teaching was in lecture form in medical schools, therefore we evaluated this methodology. There was just one presenter in all lectures, instead of multiple presenters, which was also a limitation. However, it helped us in keeping this factor constant and concentrating on the response of participants.

A good number of researches were done, in order to evaluate the most effective way of teaching. There is need to do more research in this field. Not only students' response needs evaluation, but also there is a need to evaluate that how many presenters actually are incorporating new and effective methods in their lectures, and reach a consensus on better methodology.

CONCLUSION

Our method of teaching provided valuable information. It facilitated students in better understanding and retention. Results were encouraging with other studies, if similar methodology was incorporated. This cannot be concluded for all lectures, because the circumstances can vary in different educational environments. There is need to do more research on this topic and inculcate it into the curriculum. Teachers may also need training to implement new methodologies of teaching for better coaching.

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