

Pause procedure to enhance learning during the lectures in Medical Colleges

Zafar Ali Chaudhry ^a, Muhammad Tahir Bashir Malik ^b, Ayesha Ayub ^c,
Amir Imtiaz Khan ^d, Moin Anwar ^d, Mahnoor Shakeel ^e

^a Vice Chancellor, Department of Medical Education, Faisalabad Medical University, Sargodha Road Faisalabad.

^b Assistant Professor, Department of Urology, Faisalabad Medical University, Sargodha Road, Faisalabad..

^c Senior Demonstrator, Department of Medical Education, Faisalabad Medical University, Sargodha Road, Faisalabad

^d Senior Registrar, Department of Urology, Faisalabad Medical University, Sargodha Road Faisalabad.

^e MBSS Student, Shalamar Medical College, Lahore.

Correspondence: *drtahirbasheer@gmail.com

ABSTRACT

BACKGROUND & OBJECTIVE: Lectures are still the most appropriate and practical way of conveying knowledge in available limited resources but their effectiveness is very debatable. The pause procedure is a strategy that uses strategic pauses in a lecture to help students overcome this problem. The objective of this study was to analyze the effectiveness of pausing to enhance learning during lectures in medical colleges..

METHODOLOGY: After institutional permission # 48.ERC/FMU/2023-24.384, this comparative cross-sectional study was conducted on fourth-year MBBS students (the whole Batch was involved, which comes to the urology ward) in a public sector medical institution. The technique of taking a clarification pause during the long sessions (equal to or more than 45 minutes) was utilized and feedback was taken.

RESULTS: Student satisfaction was described by 75% of students in Method-A (taught with pausing technique) and 48% of the students in Method-B (taught without pausing) ($p=0.018$). Maintaining the attention span till the end of the lecture was described by 74% of Method-A and 34% of Method-B students ($p\leq 0.001$). Clarity of the topic was described by 82% with A and 51 % with B students ($p\leq 0.001$). The mean MCQ score of the students group after method A was 62% and 52% with B.

CONCLUSION: The pause procedure is an effective methodology to improve learning and academic performance in undergraduate medical students without causing any added burden.

KEYWORDS: Medical Students, Medical Education, Attention.

INTRODUCTION

For large groups of learners, lectures are still the most appropriate and practical way of conveying knowledge in available limited resources^[1]. Student's satisfaction, involvement, and retention of information by the learners are the main difficulties faced by the educators adopting the lecturing technique^[1]. One of the main factors involved in it is the attention span which tends to wave off after 10-15 mins in a long lecture^[2].

However, it has been proven that the attention of students in a well-structured, interactive, and planned lecture is maintained throughout the lecture and does not decline after 10 mins as expected^[3]. The pause procedure (sometimes called Clarification Pause) is a strategy that uses strategic pauses in a lecture to provide students with time to review their notes, discuss in pairs, and clarify, assimilate, and retain the lecture material hence promoting active learning^[4].

This idea of breaking the lecture into brief pauses to enhance student learning was described by Rowe et al in their work

How to cite this: Chaudhry ZA, Malik MTB, Ayub A, Khan AI, Anwar M, Shakeel M. *Intertrochanteric fracture neck treatment with percutaneous dynamic hip screw fixation technique: understanding outcomes in elderly patients. Journal of University Medical & Dental College. 2024;15(2): 809-812.*



Attribution 4.0 International (CC BY 4.0)

as an excellent active learning strategy with very little time consumption during the lecture, making good collaboration of pair and share where students can reflect in this short pause on their own learning^[5].

In developing countries like Pakistan, where the resources are limited and educators have to deal with a large group of students, especially in public sector medical institutes, lectures are still the most common teaching strategy used and couldn't be replaced completely. Pause procedure teaching method/technique can be used in such circumstances to enhance learning and improve the quality of medical education in our environment.

This study was planned to analyze the effect of the Pause Procedure on students learning during a large group / long teaching session (>40 minutes) The Objective of this study is to analyze the effectiveness of pausing in enhancing learning during lectures in medical colleges in terms of student's satisfaction and improved learning.

METHODOLOGY

After institutional permission 48.ERC/FMU/2023-24.384 dated 30-01-2023 this comparative cross-sectional study was designed to analyze the effectiveness of a simple teaching strategy in fourth-year MBBS students' groups and was conducted from 1st February 2023 to 10th February 2023. Purposive sampling was used and About 10 Groups, each comprising 22 students attended a clinical rotation of two weeks in the Urology department.

To get reliable statistical analysis, a sample size of a minimum of 60 subjects is required. Randomization was done by picking every 4th roll number. Batches of students had already been constituted in such a way that every batch gets a diversity of students in terms of gender, region & performance. Urology topics taught to the students were the management of colic, management of urinary retention in an emergency, and management of hematuria in an emergency.

Selection bias & performance bias were overcome by random pick up of the students from the whole class, who were attending clinical rotations in the Urology Department. Researchers applied this teaching technique with an open mind, without any pre-convincing. However, there was a hypothesis that a simple but innovative approach may benefit the students. Multiple lectures were delivered to the students. The modular system has been applied to the first-year MBBS in our institution, and this is not implemented in the fourth-year MBBS, in which this study was conducted.

In clinical rotation, students spend three hours daily in the clinical department, in which 45 minutes are reserved for talking, and the rest of the time is spent in history taking, examination, and case discussion. Currently, this technique is applied only in the urology department, not in other clinical departments. The students delivered half of the

lectures without any pausing and half with the incorporation of clarification pauses during the lecture. We utilized this technique of pausing the long sessions (which were equal to or more than 45 minutes). The tutor delivering a talk was supposed to pause for 3-4 minutes every 10-12 minutes, in which students were advised to make a quick recall of the knowledge that was just delivered to them and/or clarify any confusion, by discussing it with other students sitting next to them.

Students were allowed to write down a few bullet points if they wished, or just take a few minutes of mental breaks without leaving the class room. Sixty students, both males and females were picked randomly from all batches. They were advised to give feedback about the session with and without pausing. The responses were recorded by the tutor on predesigned Performa. The recorded variables were student's satisfaction in terms of maintaining the attention span, achievement of learning objectives, and overall impact of the lecture in terms of clarity of the topic as well as retention/recall of knowledge.

The ability of quick recall was further assessed by a set of five MCQs immediately after the end of the talk. The student's responses were compared with their experience in sessions in which this technique was not used. All the data were entered into SPSS software version 23 and analyzed using the T-test for quantitative variables and the Chi-Square test for qualitative variables. P-values less than 0.05 were considered significant.

RESULTS

Feedback of total 60 students, both male and females analyzed in this study revealed the efficacy of this technique by highlighting a significant difference in student's satisfaction (in terms of achievement of learning objectives and maintaining the attention span throughout the session) and improved learning (in terms of clarity of the topic as well as ability to recall and retain the contents of delivered talk).

Student's satisfaction was described by 73.3% of students in Method-A (taught with pausing technique) and 43.3% of the students in Method-B (taught without pausing). Maintaining the attention span till the end of the lecture was described by 80% with Method-A and 26.7% with Method-B students. Clarity of the topic was described by 86% with A and 43.3 % with B students. The mean MCQ score of the students group after method- A was 66.6% and 40% with B.

Table I: Outcome of Pausing technique in Long Lectures based on student's feedback (n:60)

Variables	Response	Lecture Technique		Total	p-value
		With pausing n(%)	Without pausing n(%)		
Achieving Learning Objectives	Yes	22(73.3%)	13(43.3%)	35(58.3%)	0.018
	No	8(26.7%)	17(56.7%)	25(41.7%)	
Maintaining attention span till the end of a lecture	Yes	24(80%)	8(26.7%)	32(53.4%)	≤0.001
	No	6(20%)	22(73.3%)	28(46.7%)	
Clarity of the topic	Yes	26(86.7%)	13(43.3%)	39(65%)	≤0.001
	No	4(13.3%)	17(56.7%)	21(35%)	
Improvement in MCQ score of students	Yes	20(66.6%)	12(40%)	32(53.3%)	0.038
	No	10(33.3%)	18(60%)	28(46.7%)	
Total		30(100%)	30(100%)	60(100%)	

DISCUSSION

Traditionally, large lectures had been a popular approach for teaching the students. Lectures are the most commonly used teaching method for sharing information and transmitting factual knowledge with a large number of students^[6]. However, the impact of large didactic lectures on student learning has been widely questioned because of their educational limitations related to the passive role of the students^[6,7]. This problem can be solved by promoting interactive learning in large groups by using techniques to facilitate communication and promote interaction^[8].

Various techniques increase student engagement, performance, and retention, particularly in large classes promoting active learning, for example, Peer Instruction that improves student satisfaction and retention^[9]. Research has proven the fact that making lectures interactive inculcates critical thinking in students, improves student satisfaction, enhances motivation, and improves overall academic performance^[10].

The study has evaluated a very simple method to enhance active learning named as "pause procedure" which includes giving a pause of 2-3 minutes every 10-15 minutes during a lecture and asking students to discuss the knowledge delivered before the pause. The results showed increased retention and recall by the students undergoing lectures with a pause procedure strategy being utilized as compared to the other group having no such intervention.

Pause procedure is known to have a very positive impact on the retention and recall ability of students^[11]. Architecture students had shown a better understanding of the content being taught in lectures with clickers and concept tests used as pause and recall during lectures to enhance interaction and involvement of students in the final assessment, these students also showed better results as compared to another student^[12]. Better performance in assessment was also noted by the students of Group A as compared to Group

B in the present study. Similar results were shown by accounting students in Nigeria proving the Pause procedure to be an effective teaching methodology to enhance students' performance^[13].

A study conducted on literature students also confirmed the inability of students to apprehend and understand the content being taught in continuous lectures with no pause and loss of focus during such classes^[14]. Similarly in simulation-based learning, using Reflective pauses can help students understand the concepts better and to achieve objectives in their true potential^[15].

A study conducted in Pakistan indicated that cooperative learning enhanced students' engagement relative to their previous experience of learning in lecture-style classes^[16]. This study incorporates the same strategy of using cooperative learning during a pause in a lecture to enhance retention and recall and improve the academic performance of medical students.

Pause breaks are known as a powerful learning experience in which the learner reflects on their own and causes retention of information and processing it into long-term memory leading to better understanding and permanent learning experience^[17]. In a randomized controlled intervention study at the Mayo Clinic Internal Medicine Board Review course, 48 lectures were randomly assigned to an intervention (pause procedure) or control (traditional lecture) group and the result showed that the mean presentation evaluation scores were significantly higher for pause procedure than for traditional presentations (70.9% vs 65.8%; 95%CI for the difference, 3.5–6.7; $p \leq 0.0001$). Mean number of rapid recall items was higher for pause procedure presentations (0.68 vs 0.59; 95%CI for the difference, 0.02–0.14; $p = 0.001$)^[18].

These results are consistent with the results of this study. In a nutshell, the pause procedure is an easy, time-effective, and extremely useful active learning strategy to enhance students' engagement in class, learning, sharing, reflecting, and comprehending.

LIMITATIONS:

The study was conducted in small groups randomly rotating in many departments. Only one department was implementing this strategy to enhance the utility of long sessions. Moreover, the same pause technique can be utilized in larger groups. To make the results more valid, a large-scale, institutional-based study, when all departments apply similar techniques to a large group of students, shall describe more reliable results.

CONCLUSION

In our country with limited resources to arrange small group teaching strategies for medical students to enhance participation and improve learning, the pause procedure can be effectively used during large group lectures to promote active learning, improve retention and recall, inculcate reflective practices, and improve the academic performance of medical students without causing any added economic burden to the institute.

ACKNOWLEDGEMENT: None

CONFLICT OF INTEREST: None

GRANT SUPPORT AND FINANCIAL DISCLOSURE: None.

REFERENCES:

1. Tuma F. The use of educational technology for interactive teaching in lectures. *Annals of Medicine and Surgery.* 2021 ;62:231-235..Doi: 10.1016/j.amsu.2021.01.051
2. Eze C, Misava E. Lecture duration: A risk factor for quality teaching and learning in Higher Education. *Integrity Journal of Education and Training.* 2017;1:1-5. https://ecommons.aku.edu/eastafrica_fhs_fhs/12
3. Rosengrant D, Herringington D, O'Brien J. Investigating student sustained attention in a guided inquiry lecture course using an eye tracker. *Educational Psychology Review.* 2021;33:11-26..Doi: 10.1007/s10648-020-09540-2
4. Bachhel R, Thaman RG. Effective use of pause procedure to enhance student engagement and learning. *Journal of clinical and diagnostic research: JCDR.* 2014 ;8(8):XM01-XM03.Doii: 10.7860/JCDR/2014/8260.4691
5. Brawer FB. Teaching the Sciences. *New Directions for Community Colleges, Number 31. New Directions for Community Colleges.* 1980.
6. Alaagib NA, Musa OA, Saeed AM. Comparison of the effectiveness of lectures based on problems and traditional lectures in physiology teaching in Sudan. *BMC Medical Education.* 2019 ;19(365):1-8.Doii: 10.1186/s12909-019-1799-0
7. Aburahma MH. Do not lose your students in large lectures: A five-step paper-based model to foster students' participation. *Pharmacy.* 2015;3(3):89-100. Doi:10.3390/pharmacy3030089
8. Tuma F. The use of educational technology for interactive teaching in lectures. *Annals of Medicine and Surgery.* 2021;62:231-235. Doi:10.1016/j.amsu.2021.01.051
9. Porter L, Bouvier D, Cutts Q, Grissom S, Lee C, McCartney R, et al. A multi-institutional study of peer instruction in introductory computing. In *Proceedings of the 47th ACM Technical Symposium on Computing Science Education.* 2016:358-363. Doi:10.1145/2839509.2844642
10. Khalid K, Ahmad SA. Effectiveness of interactive lectures on knowledge retention and students motivation in undergraduate medical education-a mixed method study. *Pakistan Armed Forces Medical Journal.* 2019 ;69(1):206-11. <https://pafmj.org/PAFMJ/article/view/2523>
11. Harebell MW, O'Sullivan PS. Reviving the medical lecture: practical tips for delivering effective lectures. *Regional Anesthesia & Pain Medicine.* 2022;47(5):331-336. Doi:10.1136/rapm-2021-103401
12. Joshi N, Lau SK, Pang MF, Lau SS. Clickers in class: Fostering higher cognitive thinking using Concepts in a large undergraduate class. *The Asia-Pacific Education Researcher.* 2021;30(5):375-394.Doii: 10.1007/s40299-020-00525-x
13. Mahmoud AS. Effects of pause procedure on performance of financial accounting students in college of education, Nigeria. *Nigerian Journal of Business Education (NIGJBED).* 2023 ;9(3):27-39.
14. Diora L, Rosa RN. An analysis of students' difficulties in listening comprehension: A descriptive study at English language and literature department FBS UNP. *Journal of English Language Teaching.* 2020;9(1):85-98. Doi:10.24036/jelt.v9i1.107957
15. Clapper TC, Leighton K. Incorporating the reflective pause in simulation: a practical guide. *The Journal of Continuing Education in Nursing.* 2020;51(1):32-38. Doi:10.3928/00220124-20191217-07
16. Panhwar AH, Bell MJ. Enhancing student engagement in large ESL classes at a Pakistani university. *Educational Action Research.* 2023 ;31(5):964-980. Doi:10.1080/09650792.2022.2089191
17. Rice GT. *Hitting pause: 65 lecture breaks to refresh and reinforce learning.* Taylor & Francis; 2023.
18. Richards LW, Wang AT, Mahapatra S, Jenkins SM, Collins NM, Beckman TJ, et al. Use of the pause procedure in continuing medical education: a randomized controlled intervention study. *Medical Teacher.* 2017 ;39(1):74-78 Doi:10.1080/0142159X.2016.1230664

Authors Contributions:

Zafar Ali Chaudhry:Substantial contributions to the conception and design of the work.

Muhammad Tahir Bashir Malik:Acquisition, analysis, and interpretation of data for the work.

Ayesha Ayub:Drafting the work.

Aamir Imtiaz Khan:Reviewing it critically for important intellectual content.

Moin Anwar:Final approval of the version to be published.

Submitted for publication: 1-02-2024

Accepted after revision: 23-05-2024