

END OF LESSON ASSESSMENT (EOLA): A USEFUL TOOL TO ENHANCE POST-LECTURE CONTENT RETENTION

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ABSTRACT

Introduction: The lecture is fast disappearing as a mode of instruction due to reported insufficient lesson retention by students, even though it offers an equitable delivery platform while saving time and costs of learning. The present study was conducted to determine post-lecture content retention by medical students, using the End-of-Lesson-Assessment (EOLA) as a tool.

Materials & Methods: An EOLA program was initiated at Rehman Medical College, Peshawar, since its inception in 2010 for all LGF sessions. Teachers wrote detailed lesson plans based on learning objectives and included Multiple Choice Questions (MCQs) and Short Answer Questions (SAQs) to be attempted by students as EOLA. The Department of Medical Research (DMR) offers an elective program to undergraduate medical students, the course content of which includes Large Group Format (Lectures), Small Group Format (SGF), Research Projects, Report Writing and Publications. The present survey is based on the results of 50% randomly selected DMR EOLA for the class of 2010 for the years 2011-2012. Data were analyzed by SPSS version 15.0.

Results: Students' attendance in EOLA from different modules ranged from 44% to 88%. At a cutoff passing score of 50%, student scores ranged from 9% to 100% in different EOLAs, with a mean passing score of 70.5%. The mean scores of students in all EOLAs ranged from 22.0 ± 21.0 to 92.0 ± 15.0 with an overall mean score of 63.1 ± 20.4 . There was only one class failure based on EOLA marks (90% successful retention) and three class failures based on mean scores (70% successful retention).

Conclusion: EOLA increased successful retention of lecture content from the reported $\leq 15\%$ to a significant level of 70% to 90% in the present study. This is perhaps a reflection of the educational maxim "*Assessment drives learning*" evidenced in an elective research program in which the students had no previous teaching or practice.

Key Words: Lectures; Learning; Teaching; Teaching methods; Techniques, educational; Educational Assessment.

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INTRODUCTION

The Lecture, as a Mode of Instructional Transfer (MIT) has remained a favorite of teachers throughout history.¹ Among its advantages is the transfer of knowledge to a large body of students at one time, thereby maintaining a sense of equity among students; moreover it offers the convenience of savings on time, resources, faculty and costs of education.¹ It is thus not surprising that it has withstood the test of time and is still in vogue in most of the educational institutions of the world.²

However, serious issues have been highlighted with this MIT; chief among these being the low rates of retention of lesson content by students, essentially no interactive or higher learning by students, and promotion of passive learning. To this end, a number of publications appeared over the past decades identifying weaknesses of the lecture as a mode of instruction.¹⁻⁶ Further researches and publications were done to develop ways and means of strengthening the impact of lectures and to overcome some of these weaknesses.^{7,8,9} Some of the suggestions were to make lectures interactive, stimulate student interest, make them more structured and pleasant, etc. Nevertheless, the utility of lectures still remains a moot and controversial point in educational circles, including medical education, with one of the key issue being retention of lesson content by students on a short-term or long-term basis.

The present study was conducted to document the extent of immediate post-lecture retention of lesson content by medical students enrolled in the elective subject of Medical Research at Rehman Medical College, Peshawar, Khyber Pakhtunkhwa, Pakistan.

MATERIALS & METHODS

Rehman Medical College (RMC), established in 2010, developed an indigenous modular integrated hybrid MBBS curriculum in which medical research was included as an elective subject taught by the Department of Medical Research (DMR). In addition, a program of including an End of Lesson Assessment (EOLA) was kept for all lecture sessions. Teachers developed detailed lesson plans for each session, including MCQs and SAQs as EOLA instruments. The DMR program consisted of a structured and tiered course in which the Mode of Instructional Transfer (MIT) included Lectures (designated as Large Group Format or LGF teaching), Small Group Format (SGF) teaching, research projects, report writing, presentations and publications.

The present study was based on analysis of 50% random LGF EOLA sessions of different modules for the years 2011-2012, selected through the SPSS version 15.0 random selection process. The participants were First and Second Professional MBBS students with class strength of 100 students; the same students were evaluated in both years as they passed from year one to year two. Final selection of EOLA for the study was based on completion and verification of assigned marks by teachers, so that incomplete or dubious entities were excluded. Data were analyzed for frequencies, proportions, percentages, means and SD. Cutoff passing scores were 50%, as determined by the RMC Curriculum Committee for all subjects.

RESULTS

A total of 10 LGF EOLA sessions were finally included for analysis. Attendances of students ranged from 44-88% in different sessions. At the cutoff score of 50% marks for passing the EOLA, the performances of students ranged from 9% to 100% in different sessions, with a mean passing score of 70.5%.

The mean EOLA scores of students ranged from 22.0 ± 21.0 to 92.0 ± 15.0 with an overall mean score of 63.1 ± 20.4 .

Based on the cutoff passing score of 50%, there was one failure in EOLA marks (90% successful retention) and three failures in mean scores (70% successful retention).

DISCUSSION

Innovators and reformers rely on two basic strategies to bring about change: one is Salvage, where the previous system is rescued by incorporating newer entities in it thereby upgrading it to current standards; the second is Replacement, where the previous system is thrown out as being irreparable and a new system put in place. The Lecture has, from time to time, been subjected to both these methods in educational institutions of varying calibers, yet has survived to this day, the tenacity perhaps being attributable to the well-known human tendency of opting for subjective convenience rather than objective merit.

One of the known shortcomings of a Lecture, the low retention rate of content by students, has been addressed several times in the past by reputed educationists and scholars, who gave their valuable suggestions on how to improve lecture delivery by teachers, thereby increasing interest of students. The present study, directed at Salvage strategy, also attempted to determine if including an End of Lesson Assessment (EOLA) in the lecture could increase content retention by students.

Results obtained clearly demonstrated an unexpectedly strong performance by students in the EOLA with successful content retention in the range of 70-90%, as against the expected 15% or lower. Even more remarkable is the fact that this high retention was obtained in a subject that is taught as an elective course for which there is no formal Internal or University examination. Hence the results are attributable to short term retention

of content by students, rather than to other driving forces.

Another reason could be that although the lectures delivered by DMR were PowerPoint-based, they were more of the interactive type rather than traditional lectures; this is because teaching of research involves an interactive interface including exercises given to students, so they have to remain more attentive. There is evidence in the literature that supports interactive lectures having significantly better content retention compared to traditional lectures.^{3,10, 11}

Though the present study cannot say whether the content will be retained on a long-term basis, it has grounds for establishing that most students did achieve what the lecture is meant for – to sensitize students to an issue and hopefully stimulate them enough to adopt self-learning on the topic later. The trick to long-term retention is not the previously delivered lecture, rather repeated practice or interaction with the topic by students.^{12, 13} Hence studies looking for long-term lecture content retention may not be too valid as judgment, because other important confounding factors may be involved, such as student interest, need and use of the content in future careers, opportunities for practicing and self-learning, peer group discussion on the topic (Peer Assisted Learning, PAL), organic memory, need for retention or reinforcement for examinations, etc.^{14,15}

A few studies have been done to assess the impact of Lectures on content retention by students. A study by Jayachandran et al., from India, (Feb. 2016),¹⁶ wherein two groups of second year MBBS students were pre-and post-tested concluded that

pre-testing had a significant impact on immediate post-lecture content retention by students.

Another convincing study by Butler et al. (USA, 2007)¹⁷ conducted on Washington University undergraduates concluded that long-term retention of lecture content by students was maximal for those taking post-lecture SAQ tests, followed by those taking post-lecture MCQ tests, as compared to students who simply restudied the topics after the lectures; feedback given to students about their exam performance had no effect on long-term retention.

Shankar et al. (India, 2012)¹⁸ concluded from their study on medical students that not only were the post-test scores after a lecture significantly better than the pre-test scores, there was high correlation of the post-test scores with subsequent student performance in annual examinations, thereby showing an effect of the post-test performances on long-term retention of lecture content by students (or on preparing for examinations).

A fairly large study conducted on medical students from years 2 to 5 from five medical colleges of Pakistan¹⁹ concluded that 67% students still considered the lecture as a useful MIT, agreeing to do away with lectures only if replaced by clinical teaching sessions in hospitals. The students also wanted that lecturing techniques should be improved and modernized.

Conclusion & Recommendation

End of Lesson Assessments (EOLA) was shown to be a valid tool for assessing post-lecture content retention by medical students and should be used as a routine teaching aid in the classroom.

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Submitted for Publication: March 10, 2016.

The author declares no conflict of interest and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

This research work was presented as an oral paper at the Association for Excellence in Medical Education (AEME) Conference 2016, held at the Khyber Medical University, Peshawar, Khyber Pakhtunkhwa, Pakistan, March 04-06, 2016.

This article may be cited as:

Qayum I. End of Lesson Assessment (EOLA): a useful tool to enhance post-lecture content retention. J Rehman Med Inst. 2016 Jan-Mar;2(1):22-6.
