Making lectures memorable: A cognitive perspective

Azam Afzal, Shazia Babar

Abstract

Lectures have been a cornerstone of medical education since the introduction of a discipline based curricular model more than two hundred years ago. Recently this instructional strategy has come under criticism because of its reliance on passive learning. There are still many medical schools that cover content predominantly through lectures due to its feasibility. With the introduction of the flipped classrooms, lectures have been given a new lease of life.

Improving cognitive imprinting during lectures would enhance retrieval and promote long term storage. Simplifying the content reduces the cognitive load of the information being received and makes it more meaningful hence more memorable. To make learning memorable, rehearsal should be built into the sessions.

With the exponential increase in online learning, the need for online learning technologies will require a generation of a large amount of asynchronous video content which should ideally be truly meaningful and memorable, and inspirational to our students.

Keywords: Lectures, Learning, Memory.

Introduction

Lectures have been a cornerstone of medical education since the introduction of a discipline based curricular model more than two hundred years ago. Lectures are the most commonly debatable instructional strategy as it just focuses on transfer of knowledge with minimal cognitive advancement.[1] There are still many medical schools that cover content predominantly through lectures. Most of the medical colleges of Pakistan have 100 students in the private sector and nearly 300 students in the public sector.[2] So what is the main reason for using lectures to teach; is because it allows convenient content coverage, its logistic feasibility, or its ability to empower a teacher's need for pastoral leadership?

Recently however this cornerstone of medical education has come under criticism because of its reliance on passive learning which consequently decreases student engagement and learning. Students can forget up to 90% of the content covered in a lecture after just two months.[3] The most effective instructional strategy for maximum number of students is lectures.[2] With progress in e-learning programmes (including online lectures), students are empowered to learn at their own time and pace within their preferred environment. The time spent in lecture halls hence needs additional reasons to be justified.[1] Additionally, the advances in digital media technologies have further complicated matters by raising the thresholds of students attention and focus to levels where an augmented stimulus is needed to gain their attention.

One way to address this issue has been to "flip" the classroom, which includes incorporating active learning techniques during the face to face sessions while the passive viewing of the content can be assigned for homework, thus "flipping" the basic concepts of conventional education.[4]

What is sure is that lectures will be a part of future educational strategies as they can still find use in a modern curriculum such as to address gaps left by active learning methods, to help develop students schema, introduce new contents and to motivate by communicating the value of learning a specific topic, skill or its affect. Especially, when it comes to the teaching of the effective domain, there is a perceptible loss in fidelity between a live and a prerecorded talk.

Addressing the criticism against lectures, and its effective uses as a modern teaching method largely depends on making the lecture more memorable (cognitively speaking). Consequently, there are three key elements to making lectures more memorable: cognitive imprinting, simplification of the taught content and rehearsal of learnt information. The former two deals with the storage, while the later deals with the retrieval of learnt information.

Cognitive Imprinting

Cognitive imprint effects short term memory predominantly, but can influence long-term if used correctly. The better the information has been imprinted,

Department for Educational Development, Faculty of Health Sciences, Aga Khan University, Karachi, Pakistan.
Correspondence: Shazia Babar. Email: drshaziababar@gmail.com

the more readily it can be accessed by the student when needed and becomes a more permanent memory.[5] Cognitive imprinting is where lectures get their bad reputation as the passivity of the educational strategy leads to poor cognitive imprinting.

Factors which affect cognitive imprint is the strength of stimulus, the interest of (and the key to making contents more meaningful for them), the complexity the content, and linking it to deeper, more permanent long term encoded information.

Gagne[6] in his instructional planning steps calls for gaining the attention of the learner; this signals the start of the cognitive imprinting process. After gaining the students attention, they are told about the real world relevance of information. This is followed by the content presentation to the student and then checking their understanding and clarifying misconceptions. This is what most faculty development activities on teaching also stress upon for faculty to improve teaching skills.

Simplification of Content

Mastery in teaching is what truly differentiates a more experienced teacher from the mediocre. Master teachers have the ability to simplify even the most complex concepts into simpler more easily comprehensible information for students. The more complex the information, the higher its cognitive load, this increases the time it takes to learn it and also its cognitive volatility.[7] Master teachers do so in ways that boost cognitive imprinting by lowering the processing load of information for students.

Personal experiences and interesting information have an effortless cognitive imprinting which experienced teachers are able to use to their advantage. They are able to accomplish this by expertly incorporating strategies such as incorporating analogies (to link information to preexisting information) and storytelling (to make information more meaningful) into their lectures. This has the ability to generate a linked cognitive imprint making it more memorable to the learner. They also draw from their experience those self-regulation tips which have been used to remember the information, much like the clever mnemonics used to remember the cranial nerves. The one thing that expert teachers do not do is overload students with information.

Rehearsal

Good teachers always ask questions during their lectures apart from engaging the audience it also helps develop stronger impulses for cognitive imprinting by having students process the information to respond to the query. The amount of times a set of neurons or an information pathway is used the more likely it is to undergo a chemical, physical or structural change and consolidate into becoming a long-term memory. Similarly asking students to summarize the content into two or three lines or key words, and giving them time to do so helps students create cues which create a link to the presentation. Revisiting these links there for enhance recalling the information presented.[8]

Conclusion

With the exponential increase in online learning, the need for online learning technologies will require generation of a large amount of content, comprising largely of asynchronous video lectures and presentations, so there is still a need for lectures though its role may change. A question for the reader to reflect upon whether one is generating content for the flipped classroom or preparing a face to face lecture. Is this presentation truly meaningful and memorable, and will inspire my students to learn?

Funding Source: Source of support in the form of grants equipment, drugs, or all of these: Nil

Disclaimer: Nil

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