

Teaching Notes for Physicians:

Lecturing for Effective Learning

Why lecture?

Lecturing is one of the oldest teaching methods but is still the most frequently used, because it is an efficient way to:

- provide an overview of a topic
- deliver content uniformly to groups of learners
- generate rapid understanding, and
- inspire and guide independent learning (1-4).

From theory to a practical model

Knowing how we learn enables us to derive a practical and effective model for lecturing. Cognitive theory states that new information remains in short-term memory for about 0.3 seconds before either being lost or added to working or long-term memory; note-taking only defers this. The conversion from short-term to long-term memory happens most readily when we find the information interesting and understandable, and can link new information with what we already know. Learning occurs when existing knowledge structures are modified by incorporation of this new information. Retrieval is easier from episodic memory than from semantic memory, explaining why stories are more readily recalled than list of facts, concepts or theories.(1)

Effective lecturers

- Allow time for thinking and note-taking (or handouts)
- Explain new information in a structured and interesting way
- Link new content explicitly with what is already known

What you must know at the start

Assess learners' prior knowledge by checking the core documents in the electronic curriculum repository, Osler.ⁱ Check learners' prior understanding at the start of class. Our curriculum uses clinical presentations and standardized problem-solving approaches (schema) as a teaching framework. Look up the clinical presentation, its key features, and the learning objectives that relate to your topic; referring to these explicitly will underline the relevance of your lecture and help learners to make links with what they already know.(2;5) Choose the media you will use by considering learning objectives, class size, facilities, and your personal preferences. Be reassured that it isn't always necessary to use complex audiovisuals in order to give a great lecture.ⁱⁱ People learn best in different ways; use drawings, words (written, verbal), tables, lists, diagrams and schematics to build redundancy into your presentation. Mayer's principles of multimedia learning(6) identify that best learning occurs from a combination of words and pictures, when the words are spoken and key words stressed. Construct handouts ahead of time, as you must post your powerpoints and notes to the relevant page in your 'My Teaching Sessions' section of Osler at least 3 days in advance.

Skills for successful lecturing

Learners appreciate enthusiasm, clarity and organization, interactivity, use of concrete examples, and well-designed audiovisual aids and handouts. (2;3;7)

ⁱ Osler is at www.osler.ucalgary.ca
Contact Janet Tworek, Educational Design Lead in Undergraduate Medical Education for a username and password; jktworek@ucalgary.ca

ⁱⁱ Contact the Office of Faculty Development if you'd like help with presentation skills.

Enthusiasm

Learners will find your natural enthusiasm for a subject and eagerness to share your expertise both engaging and motivating.

Clarity and organization

Show your lecture plan; learners feel less anxious when they know where they are. Consider inserting placeholder slides into visual presentations to indicate progress through the material. Indicate how learners can best learn from your lecture, and the assigned readings and projects expected of them.

Lecture components (8)

Preparation	Research learner knowledge, learning objectives, clinical presentations, schemes, and the venue
Opening	Introduce yourself Show where content fits with previous learning, and its future relevance
Explaining	KEY COMPONENT Explain the lecture plan, what is expected from the learners Explain content – use analogies and metaphors Be clear, be interesting, be persuasive
Presenting information	Cover the necessary facts or theories. Excessive detail induces boredom; learners enjoy discovering extra details for themselves – set assignments
Narrating	Use case histories, personal experiences, concrete examples
Using AV aids	Choose with care – they should complement, not duplicate or contradict, your verbal presentation
Responsiveness	Often neglected – monitor interest (consciousness?), check for understanding, adjust accordingly
Interactivity	Use relevant activities to stimulate interest, understanding, and independent learning
Summarizing	Summarize both during and at the end of the lecture, emphasize important points, show links

Introduce the handout and how it is to be used. Indicate where your topic links with

previous material and how it will be of relevance in future. Introduce the learning objectives and return to them at the end of the lecture. Lecturers typically speak at a rate of 100 words per minute – that's a lot of content - so structure your lecture carefully by focussing on essentials, summarizing main points frequently, and making relevance and connections explicit as you go. Pause and check for understanding periodically. Pace your delivery to allow sufficient time for learners to take notes, activate pre-existing knowledge, reflect on new content, and allow questions to rise to the surface. Learners may incorporate new information during the lecture, or later, when reviewing notes and handouts. State, right at the start of the lecture, at what point you prefer to take questions.

Interactive lectures

Human attention spans vary between 12 and 20 minutes(1;3) so introduce different delivery techniques and learner activities to maintain interest. Consider directing attention to handouts, audiovisuals, or short video clips; ask learners to get together briefly in pairs or small groups to undertake a task - frame a question, answer a question, solve a problem, make a comparison – then poll the class or check the answer with a few groups to check for understanding, before moving on. Summarize or ask learners to provide summaries throughout, and at the end of the lecture. Be aware that beneficial effects can be reduced if you overuse interactive exercises. (1)

Use concrete examples

Begin the lecture with one or more vivid cases to generate interest, or pose an intriguing question. Using examples that learners are familiar with will allow them to associate new content with pre-existing knowledge, aiding understanding and recall. Introducing colourful narrative and recounting personal experiences makes teaching more memorable. Remind learners of the key features (find them in the core documents) and where your content fits into the framework provided by clinical

reasoning schema, stressing relevance and enhancing motivation.

Audio visual aids

Creating audio visual aids is a topic in itself; check the Office of Faculty Development for further information.

Handouts

Most learners will have made their own copies of your handout, obtained from Osler. Explain that you will indicate when and how these are to be used, but expect some initial paper-rustling anyway. Use simple, clear language and beware excessive abbreviation and use of acronyms. Hartley(9) suggests interactive handouts are better for generating understanding and aiding recall than an exhaustive set of notes, so provide a partial summary of your lecture, leaving room for learners to add their own notes. Consider handouts as a method for introducing alternative activities during the lecture, including questions, short exercises (“explain to your neighbour”), and partial diagrams or tables for completion. Include learning objectives, self-test sections, and reading lists so that learners can check their understanding and learn independently after the lecture. Use your handout to gather learner feedback on the lecture (see *Improving your lecturing* below). If you are giving a series of lectures, consider providing learning objectives and an overview of the course, and detailing any prerequisite information or learner preparation, so that you can concentrate on explanation during the lecture. (10)

Finish with a flourish

Summarise – or ask learners to summarise – the main points covered in the lecture. Returning to your original clinical case or problem will help to reinforce the lecture content and tie it all together. Help learners see the pertinence of this new knowledge by indicating links with future topics, small group work, and a broader selection of cases where they can apply it.

Improving your lecturing

If your goal is to improve your lecturing, there are several sources of information available to you. Self-reflection is the most important mechanism for change (1), and Taylor and Toews (11) provide a framework for deconstructing presentation strategies that will support accurate self-evaluation.

Sources of feedback

- Self
- Peers, faculty developers
- UME
- Learners

Feedback from trusted peers, particularly those who teach in the same course, can be very valuable; be specific about which aspect you seek feedback on, and honour your team-mate’s time and honesty by carefully reflecting on their input. Offer to reciprocate, as the chance to experience someone else’s teaching at this level is rare and can be a wonderful learning experience. Educators from the Office of Faculty Development also offer individual, confidential consultations at no cost; contact the office for an appointment.

Undergraduate Medical Education collects student ratings of teaching and you can ask for reports from the UME Office and course chair.

Some lecturers will ask to read notes taken by a few learners at the end of the lecture. Alternatively, you could add a feedback section to handouts; Sinclair (12) suggests asking learners to note the most useful thing learned, the muddiest point, and any remaining questions at the end of the lecture; Brown and Manogue provide an alternative version in their excellent paper (1). Or simply ask a few students informally at the end of your lecture. You can check the outcome of your lecturing by providing examination questions to the evaluation coordinator, and asking to see the results.

Enjoy your teaching!

For further information or confidential no-charge teaching consultations, contact us:

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Reference List

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- (12) **Sinclair M, Rowe K, Brown G. The minute paper: a quick guide to assessing student learning. *Nursing Times* 1998;2:4-5.**