Undergraduate Medical Education
UNIVERSITY OF TORONTO

Office of Faculty Development

Incorporating Active Learning Methods within Large Class Lectures:

A resource for faculty teaching in the new Foundations Curriculum

What is active learning and why is it important?

Student learning and engagement is influenced by the **student's motivation to learn** and instructional design that incorporates **active learning methods within the session.**[1] Active learning refers to instructional approaches that require learners to **interact with the material in some fashion**, rather than passive recipients of information.[2] Learners can interact with the materials in many ways such as: reflecting on what they have learned, discussing with others, applying newly acquired knowledge to practical situations, or assessing their learning via a test.

Large group sessions are a way of efficiently transferring knowledge, however traditionally large group lectures tend to foster more passive learning. Education data shows that sitting for an hour just listening is not the best way to learn.[3] There are many instructional strategies that can be incorporated into large group lectures that create deliberate opportunities for students to interact with the materials. It is our goal in the new Foundation Curriculum to incorporate active learning, even within the large group lecture.

How do students learn in a large group environment?[3]

Students must be attentive and determine what to pay attention to.

Students must organize information into a pattern that is understandable to them.

Students must take information that is stored in their short-term memory and add it to their existing long-term knowledge base (process called rehearsal)

What is the role of large group lectures in the new Foundations Curriculum?

Large group lectures are one of many teaching and learning modalities employed in the new foundations curriculum. In-class lectures in the Foundations Curriculum may serve several purposes:

1. build on material covered in the pre-readings
2. a broad introduction to material that will be covered in greater depth in the CBL and self-learning
3. an opportunity to teach concepts best conveyed in the lecture format

In the new Foundations curriculum structure, the week will begin with pre-week material (videos, pre-readings, or modules) that the student is expected to complete prior to the Monday morning lectures. (In year two, lectures will occur on Fridays.) Three hours of lecture on the first morning of the week constitute the full extent of lecture time in the week. The remainder of a student's learning will occur within the CBL case, self-learning modules, seminars, or anatomy labs.

Designing your lecture[3]

Following is a summary extracted from a chapter from a textbook by Jeffries and Huggett[3]. The goal is to provide you with an advanced organizer that highlights key concepts and the full chapter as a resource you can use if you are interested to explore further any of the sections.

Consider the role of your presentation:

- How does your lecture fit in with overall course objectives and assessment methods?
- What is the relationship of the content in your lecture compared to that of the rest of the week or course?
- What is the depth and scope of your area of responsibility? If you are not sure, check with the week director.
- What do you expect students to have learned when the presentation is over?

Look realistically at what they can learn in the one-hour time frame. There is a tendency to overestimate what students need to know in lecture — identify the ***essentials*** that need to be covered.

✓ Strive to include active learning methods to enhance student learning and maximize retention

What methods can be incorporated into a large group presentation to increases active learning?

Active learning techniques to consider when developing of your lecture (see reference 3, pages 22-24):

1) Lecture Respites – pause every 10-15 minutes and allow students to clarify points they do not understand.
2) Small group activity – break up the class into smaller units that can engage in other activities
   a. Buzz groups
   b. Think-pair-share
   c. Pair discussions
   d. Problem solving activities
3) Classroom survey
   a. Poll the class by physical means (show hands, hold number cards
   b. Audience response systems
4) Flipped classroom
5) Reflective techniques
6) Games

You may wish to combine a number of the strategies above such as pause lecture (lecture respite), ask students to discuss with partner something that requires them to use information presented (small group), and select the correct answer to a question posed to the whole class (classroom survey).

Design a Lecture Plan (reference 3):

✓	Orient students to the topic and its place in the course (and the lecturer).
	Disclose any conflict of interest and how you manage the conflict (if any).
	Highlight what students are expected to learn by the end of the lecture (Learning objectives should be directly taken from the list predetermined in Spring 2016).
	You can provide an outline slide illustrating the more detailed objectives to be achieved during the lecture.
	Develop a plan to introduce the topic - start with a case or start with underlying foundational science. Other frameworks include using a "pro vs con" approach or a "familiar to unfamiliar" progression to establish a context for the new material.
	Be enthusiastic about the topic and the class.
	LESS IS MORE! Consider pacing and density of content - if paced too quickly or too dense, the ability of students to build concepts is overwhelmed and learning is impaired dramatically. Material delivered too quickly will reduce attention, depress cognition, inhibit effective note taking and decrease learning.
	Consider attention span – 10-15 minutes. Longer stretches also overwhelm capacity of short term memory. Therefore: every 10-15 minutes plan to a) 'sum up' or b) do a 'note check' to see if they have any questions c) introduce an active learning exercise at that point. Use these as a respite from listening to the lecturer passively.
	Use handouts effectively - ensure there is room to take notes and "fill in" what is being learned in lecture, rather than putting everything on the handout (If using 'notes' function of PowerPoint, these notes should not be crowded and students can type in the details to help reinforce learning). Students will not receive any paper handouts. They will download the PDF handout from Portal and annotate electronically.
	Use slides effectively – see table 2.4 page 21.
	Any audiovisual aids should help explain things, not provide barriers to understanding (i.e., visible, clear etc.)
	Employ some active learning strategies.
	Ensure students understand that the purpose of the presentation is not about what is on the exam, but about learning the material in the classroom.
	Ensure Assessment questions require more than just rote memorization. If students are made aware of this, there will be great interest in active learning in the classroom.

✓ ***Review table of 'common mistakes', table 2.5 page 25 in reference 4.***

References:

1. Barkley E. (2010) Student Engagement Techniques. John Wiley and Sons, San Francisco, CA.

2. Ferguson KJ (2014) . Facilitating student learning (Chapter 1). In: An introduction to medical education. (2nd ed) Huggett N, Jeffries WB (eds). Springer, Netherlands.

3. Jeffries WB. (2014)Teaching large groups (Chapter 2). In: An introduction to medical education (2nd ed). Huggett N, Jeffries WB, Huggett N (eds). Springer, Netherlands. (see chapter)

4. Jeffries WB, Huggett N. (2014) Flipping the classroom (Chapter 4). In: An introduction to Medical Education. In: An introduction to medical education (2nd ed). Huggett N, and Jeffries WB (eds). Springer, Netherlands. (see chapter)

This faculty resource is designed to be used together with chapters two and four from the textbook: Huggett N, Jeffries WB, Huggett N (eds). (2014). An introduction to medical education (2nd ed). Springer, Netherlands.

The chapters can be accessed as an electronic resource through the University of Toronto Library System. And available online at: http://books1.scholarsportal.info.myaccess.library.utoronto.ca/viewdoc.html?id=/ebooks/ebooks3/springer/2014-09-10/1/9789401790666

Additional Information about the use of Flipped Classroom

In some weeks of the Foundations Curriculum, the pre-week material will contain information that it is necessary for students to know prior to lecture. Students will be expected to come to class having done some preparation relating to the topics discussed. The in-class lecture time is an opportunity to build upon the material and apply it, for example, through case-based discussion. This is the 'flipped classroom' concept.

Key concepts underlying the flipped classroom

Learning is reinforced through application rather than memorization.

Knowledge transfer is done by student at home (homework) before coming to class.

In the classroom, students work on knowledge application.

Teacher (expert) can provide help and answer questions as students work through applying their newly acquired knowledge to real-world problems.

Designing the flipped classroom session (reference 4, page 43)

✓	Clearly describe what student will be able to do at the end of the session.
	Carefully prepare pre-week preparation materials (short/succinct videos, or readings, or modules) that will lead in to the lecture.
	Incorporate a readiness assurance - quiz at the beginning of the session using an audience response system to address the objectives of the preparatory session.
	Develop the activity for the session- see Reference 4 for examples.
	Avoid the temptation to deliver a 'mini-lecture'!
	Develop assessment questions based on the session—What you choose to measure on assessments sends a powerful message to students and they will detect if a mismatch in rigor is present between classroom activities and questions on course examinations.

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