Engaging Students in Large Classes

Andrew Goodliffe and Josh Galster

July 2018

Interactive lectures: Classes in which the instructor breaks the lecture at least once per class to have students participate in an activity that lets them work directly with the material.

Setting the stage

http://finance.fortune.cnn.com

- What is large?
- Do you have teaching assistants?
- Do you have a classroom management system (e.g. Blackboard)?
- Identify your teaching style – Informer, Questioner, Entertainer, etc.
- Play off your style and strengths, but incorporate other deliveries to promote engagement.

How do you prepare for big lectures?

- Identify your main points
- How do slides advance these points
- Prepare your visuals

- Print out notes
- Practice!
- Focus on your slide transitions

- Don't install new software right beforehand!
- Adapt as needed

- Take notes on how you would improve for next year
- Use a lecture preparation checklist

Preparing the teaching team

Detail your expectations in writing

- Explain TA duties

- Team work

- Records policy

- If co-teaching make sure each professor has clear responsibilities

---

Goals for the course: Define for yourself and students

- **What is the purpose of the course**

- **Develop an informative syllabus (set the expectations)**
  - State goals
  - **Explicitly** express policies and procedures for grading, attendance, late homework, missed tests, office hours, email, etc. - make all expectations clear
  - Publish all important dates at the beginning of the class
  - Identify all resources that will be used and have them ready
  - **Do not make up rules as you go along!**

Activity

- Identify a large class that you might teach (see worksheet on page 2-16)
- What are your top 5 goals for what students will learn in this class?

Delivering the Lecture

EXPRESSIVENESS is the most basic and most direct way to keep students' interest

Engagement Triggers - examples

- Interpreting Graphs
- Making Calculations
- Demonstration/making predictions
- Brainstorming
- Reading to solve a problem
- Physical prop
- Evocative visual/picture
- Cartoons
- News Clips & Articles

- Video clips
- Think-Pair-Share
- Minute paper
- Muddiest Point
- ConcepTests
- Question of the Day
- Small group discussion
- Clicker
- Google Earth (or other tech)

http://serc.carleton.edu/NAGTWorkshops/
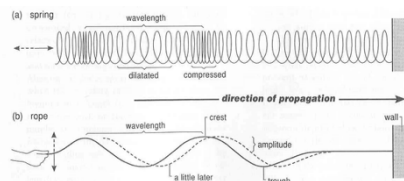earlycareer/teaching/LargeClasses.html

An Example of In-Class Activity

In a 10-20 minute breakout……

- Break into groups of 5-10 (works even in auditorium seating)

- Provide a single question, set of questions, or exercise that students need to discuss.

- The question(s) can be used as an introduction or as an assessment of presented material. Each group independently discusses the question and negotiates a group answer.

You and the TAs monitor and guide groups. Collect each group's answer (a singular assignment with everyone's name listed).

Kinesthetic Learning Example – P- and S-Waves

(a) spring   wavelength

dilatated   compressed

direction of propagation

(b) rope   wavelength   crest   amplitude   wall

a little later   trough

Figure 4.1 Waves along a spring and a rope.

From: Mussett and Khan, Looking into the earth

Differences in particle motion between a P- and S-wave.

Personal response systems

Interactive Lectures Activity

Spend the next few minutes on an activity that you'd like to use in your class (see worksheet, page 2-17).

- What concept do you want students to better understand?

- How will you engage the students?

- How will you know it is working?

Interactive Lectures
Group Brainstorm and Sharing

Now share your idea with a partner and provide each other with feedback.

Engaging non-majors

Many large lecture classes serve as a core requirement and have many non-majors who are not necessarily engaged in the topic. This is your opportunity to get them interested and excited in geoscience.

- Make it relevant to their lives
- Make pop culture work for you
- Engage different learning styles
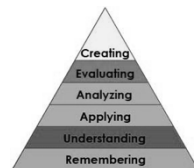- Bring in your personal experiences

Bring your personal experiences to the classroom

- Where have you done fieldwork?
- What inspires you?
- What environmental issues keep you up at night?
- Where have you traveled?
- What is the societal relevance of your work?
- What career path did you follow and what experiences shaped that?

Assessment that is consistent with your engagement style…

In "large" classes, you can use a variety of techniques, depending upon the # of students and how much TA support you have:

- Multiple choice/ scantron
- Online quizzes/tests (group or individual)
- Short answer / short essay
- Fill in the blank
- Matching (vocabulary)
- Clickers
- Fill in the blank diagrams
- Peer review

(Bloom's Taxonomy pyramid: Creating, Evaluating, Analyzing, Applying, Understanding, Remembering)

Use Bloom's Taxonomy - aim for students to be working at the "top" of the pyramid in class, and in your exams

Consider collaborative exams!