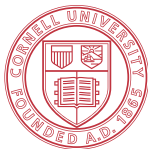


Active Learning the Small Teaching Way

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Welcome!

Norms of this workshop

- We are all learning.
- Everyone has something to contribute
- No one has all the answers.

I stole this from Prairie's talk at the teaching seminar.

Please ask questions along the way.

What is Active Learning?

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“The core element [of active learning] is getting students to participate actively in their own learning. Instead of asking them to sit quietly while we lecture, we are asking them to develop ideas, to practice solving problems, and to talk to and listen to their peers.”

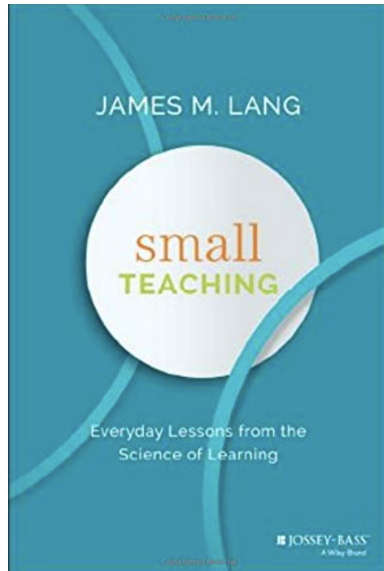
Center for Excellence in Teaching and Learning, University of California, Davis.

What is Active Learning?

“Active Learning is, in short, anything that students do in a classroom other than merely passively listening to an instructor’s lecture. This includes everything from listening practices which help the students to absorb what they hear, to short writing exercises in which students react to lecture material, to complex group exercises in which students apply course material to “real life” situations and/or to new problems.”

Paulson & Faust, Active Learning for the College Classroom, California State University, Los Angeles.

Small Teaching



- “Enables every educator to energize and boost student understanding by introducing small activities that require minimal preparation and grading.”
- James Lang is an English professor and director of the Center for teaching Excellence at Assumption College in Worcester, MA.

Objectives

- Explore some active learning strategies and how they can be used in our courses.
- Align what happens during class time with or teaching goals.
- We will go over the whole course experience including assessment not just class time.
- You do not need to use these strategies every class/week.
- We will go over the three main sections from Small Teaching and discuss active learning strategies for each:
 - 1 Knowledge
 - 2 Inspiration
 - 3 Understanding

Breakout Room Reflection

- Why should students come to class?
- What do you hope students get out of class time?

Knowledge

Retrieving

- Start class by asking students to remind you of the content covered last class.
- End class by asking students to write down the most important concept from that day.
- Minute paper/muddiest point.
- Give frequent, low-stakes quizzes.

Knowledge

Predicting

- Have students predict future material (theorems).
- Example:
 - ▶ In linear algebra: ask students to predict some conditions for a system to be consistent?
 - ▶ Algebra: after introducing $\mathbb{Z}/n\mathbb{Z}$ ask what conditions on n yield a field?
 - ▶ Is the converse of a theorem true?
- (Low technology) polling questions

Knowledge

Interleaving

- Keep a few review questions at hand that you can go over when you have a few minutes left at the end of class.
- On tests/HW/worksheets asks questions about older material.

Knowledge Activity

- Pick a course and topic.
- Design an in-class activity that uses at least one of retrieving, predicting or interleaving.
- Your activity should use at most 15 minutes of class time.

Inspiration

Motivation

- Before class post a picture of the day. It could also be a claim or math solution. Ask:
 - ▶ What do you notice?
 - ▶ What do you wonder?
- Show your enthusiasm for the subject you are teaching.

Inspiration

Growing

- Allow failure.
- Share your struggles.
- Growth mindset: praise effort not talent.
 - ▶ When asking for explanations about a polling questions encourage explanations of wrong answers.
 - ▶ Encourage students to share what they are uncertain about.

Inspiration Activity

- Without overburdening your students, think about ways to increase motivation and growing when designing your course assessments?

Understanding

Connecting

- (not small) Daily HW.
- In a survey, ask students what their previous knowledge/background is.
- Minute paper: ask students to connect previous knowledge with the new material.

Understanding

Practicing

- Add skills to your syllabus, not just topics.
- Have students practice before exams:
 - ▶ In class.
 - ▶ Feedback.
 - ▶ T/F questions (polling questions).

Understanding

Self-Explaining

- If you use online HW: remind students that they should be capable of explaining their work.
- If you let students work during class send a few to the board.
- Polling questions, before showing results, have students explain why they chose option X.

Understanding Activity

- What are some small (low prep, little class time) ways you can encourage connecting, practicing and self explaining?
- See list of active learning activities.

Conclusion

- A few small changes every semester can make a big difference in the long run.
- Don't do too many things you are not comfortable with.
- What teaching workshops would you like?