

MATH-GA.2840-004:
Written and Oral Presentation
Lecture 2: Tips for Teaching

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Exercise: Elevator Talks

Prepare a 3-minute elevator talk for one of the scenarios below.

Topic:

1. Your current research project
2. What is [your favorite mathematical field/topic] ?
(For example: What is “Linear Algebra” ?)

Audience:

- (a) An expert in your field
- (b) A researcher whose expertise is not in your field
- (c) A first-year graduate student in your dept.
- (d) An undergraduate student in a Calculus 1 class
- (e) Your neighbor

Today: Tips for Teaching

1. Practical Tips
2. Pedagogical Considerations
3. Managing a Course, etc.

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Peter Filene, *The Joy of Teaching*, 2005

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 - Speak clearly and confidently
 - Make eye contact with students

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8. Incorporate elements of active learning

Using blackboards effectively

Using slides effectively

Blackboard vs. Slides?

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2. Pedagogical Considerations

1. What are the goals and learning objectives of the course?
 - ▶ Bloom's Taxonomy
2. How do we get there?
 - ▶ Lectures
 - ▶ Active learning methods
3. How do we evaluate students' learning?

Bloom's Taxonomy

A framework for classifying “educational learning objectives into levels of complexity and specificity”.

1. Remembering
2. Comprehending
3. Applying
4. Analyzing
5. Synthesizing
6. Evaluating
7. Creating

Bloom's Taxonomy

Other examples in university-level math:

<https://www.math.toronto.edu/writing/BloomsTaxonomy.pdf>

Active Learning Methods

Benjamin Braun, Priscilla Bremser, Art M. Duval, Elise Lockwood, and Diana White, *What Does Active Learning Mean For Mathematicians?*, Notices of the AMS, Vol 64, No 2

<http://www.ams.org/publications/journals/notices/201702/rnoti-p124.pdf>

Active Learning Methods

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2. Think-pair-share
3. Clickers
4. Flipped classrooms
5. Inquiry-based-learning methods

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Video: *Eric Mazur Shows Interactive Learning*

https://www.youtube.com/watch?v=wont2v_LZ1E

Lectures vs. Active Learning

More Resources: Workshops at NYU

Friday, February 9 — Active Learning Workshop

Featuring Anton Borst, Robert DiYanni, and Trace Jordan, Center for the Advancement of Teaching

Global Center for Academic and Spiritual Life, 238 Thompson Street, Room 461, 9:30-11:30 a.m.

(Breakfast will be offered beginning at 9:00 a.m.)

Friday, March 9 — Collaborative Learning Workshop

Featuring Anton Borst and Robert DiYanni, Center for the Advancement of Teaching

Global Center for Academic and Spiritual Life, 238 Thompson Street, Room 461, 9:30-11:30 a.m.

(Breakfast will be offered beginning at 9:00 a.m.)

More Resources: MAA Instructional Practices Guide

<https://www.maa.org/programs-and-communities/curriculum%20resources/instructional-practices-guide>