



Bok Center Capstone Project

Chi-Yun Hsu, Departmental Pedagogy Fellow
Department of Mathematics, Harvard University
May 3, 2019

Background: Teaching in Mathematics

First semester

Pedagogy Course

- Course Title: Math 300 – Teaching Undergraduate Mathematics
- Meeting Time: 75 minutes a week in Fall + 1 extra class in Spring
- Teaching Staff: 3 senior preceptors + departmental pedagogy fellow

Microteachings

- Format: 3 times, 10-15 minutes each
Topic: Actual topics of calculus lessons
Before: Go through lesson plans with teaching staffs
Audience: undergraduates actually taking calculus
After: Reflect through videos.
Watch preceptors teach the actual lesson

Meeting with Undergraduates

- Chat casually with undergraduates
 - Knowing students outside of mathematics
 - A practice for individual meetings with students
- Answer math questions from calculus classes
 - Knowing students' way of thinking about math
 - Practice guiding rather than directly giving answers

Teaching with Questions

- An extremal way to practice interacting with students
- Can only use questions to move forward the class

Lunch with experienced TFs

- Obtain practical teaching tips
- Learn how senior TFs went from novice to expert

Observing the first class

- The first class is extremely important to set up the tone
- Actually see how experienced TFs do the first class

Before Teaching

Apprenticeship

- Aim: More real experience in teaching
- Format: Graduate students are paired with a preceptor as a mentor, and teach 3 actual calculus lessons

Once every year

Actual Teaching

- Graduate students indicate their preference for types of teaching and which semester they want to teach in mid April. Teaching is assigned considering everyone's preference and ability.

Types of Teaching

Calculus Teaching

Teaching Fellow

- Topics: Math Ma, Math 1a, Math 1b, Math 21a, Math 21b, from precalculus to multivariable calculus and linear algebra
- Graduate students are the main instructors of a section of the course
- All sections have common syllabus, homework and exams

Coaching

- An extra practice for graduate students not ready to teach
- Graduate students hold extra review sessions for struggling undergraduates

Tutorial

- Topics: self-design
- Upper undergraduate level
- Graduate students are in charge of everything from syllabus, final projects, to grades

Graduate Course Assistant

- Topics: Graduate level courses
- Graduate students grade homework and hold problem sessions

Accomplishments in 2018/2019

Feedback for Pedagogy Course

- Motivation: The pedagogy course welcomed feedback, but there were no formal feedback solicitation system.
- I designed a feedback form to understand learning efficiency and teaching efficiency.

Videotaping and Consultations

- Graduate TFs usually consult with course heads or preceptors.
- I serve as an alternative if graduate TFs are too nervous to be observed by preceptors.

Tutorial Info Session

- Motivation: Contrary to teaching calculus, there was few information on how to apply and teach tutorials.
- 1-hour workshop
- Activity
 - Director of Undergraduate Studies explains how to apply for tutorials.
 - Q&A with graduate students previously taught tutorials.
 - Afterwards I prepared a document recording the information and Q&A's, and distributed it.

Workshop on talk techniques

- Motivation
 - Promote good board work in teaching and talks
 - Initiate discussions on how to give good talks
- 1-hour workshop
- Activity
 - Discussion on what constitutes a good talk.
 - Professors share their opinions.
 - Specific examples on how to improve board work.

Acknowledgement

I want to express my sincere gratitude to Robin Gottlieb, who always listen to my ideas about the pedagogy course or holding new activities, and give constructive advice to make the ideas better. I want to thank Marty Samuels, for being supportive and always reaches out to ask me if I need any help during the academic year. I want to thank Dani Duke, for being very helpful and efficient in the process of video taping and processing. Lastly, I want to thank Rebecca Brown, Pamela Pollack and Adam Beaver, for designing the wonderful pedagogy fellow program.

Reflection and advice for 2019/2020

Success

- There were suggestion of covering topics like FERPA laws, and we obtained resources to teach this topic through the help of Bok Center.

Challenge

- Reply rate was low.

Advice

- Next time pass down the feedback form at the end of the last class, rather than using emails.

Success

- There were TFs coming to me for class observations, before they had to be observed by preceptors.

- Video consultations also extend to postdoc TFs.

Challenge

- Most TFs do not actively ask for video consultation.

Advice

- Ask course heads for the list of TFs who need consultation or videotaping.
- Advertise more to TFs that pedagogy fellow is an resource disjoint from preceptors.

Success

- There were many participants.
- The number of tutorial proposals increases a lot.

Advice

- Should continue to hold the tutorial info session every year.

Challenge

- Uncertainty of whether people would be interested.
- Looking for support from professors.

Advice

- Should continue to hold the workshop on talk techniques, but better at the beginning of either Fall or Spring semester.