

A Transition-to-Graduate-School Boot Camp

Using Active Learning and Primary Historical Sources

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Oregon State University

Table of contents

1. The Structure
2. Transforming Instruction in Undergraduate Mathematics via Primary Historical Sources (TRIUMPHS)
3. Homework
4. Classwork
5. Reflections

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- Morning Sessions: Investigate fundamental concept via primary historical source readings and related exercises
- Afternoon Sessions: Work through more challenging (modern) problems in groups
- Class was free, optional, had no official credit. 18 of 23 incoming students attended

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(TRIUMPHS)

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- *Intended for undergraduate study*

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- The mini-PSPs are incredibly high-quality
- I wanted to read the historical sources myself!

Homework

Homework (Example)

Essential that this is done BEFORE class as preparation. Class is built on this work. No post-class assignments.

DAY 1: (Limits)

- AM Reading: "Investigations into d'Alembert's Definition of Limit"
 - Download reading at digitalcommons.ursinus.edu/triumphs_analysis/8/
 - Prior to class, please do exercises 1, 5, 11, and 13 from the reading. Please write out your answers to the exercises and bring them to class.
- PM Assignment:
 - Write down and bring to class the definition of a metric space (taken from your favorite analysis book, or Wikipedia, or whatever).
 - Write down and bring to class the definition of limit superior and limit inferior. (These will likely be new to you!) There are two classic definitions (equivalent ones, obviously) for each concept. Write them both down. Try to understand what they mean. We will discuss examples in detail in class, but it will be helpful if you've struggled a bit with it first.

Classwork

Morning Classwork

General framework: Have class reread small section from primary source. Get into small groups to discuss some chosen related exercises. After a few minutes choose students to write solution on the board (if appropriate). Finish discussion as a class. Continue this process until we worked through the project.

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- Students moved through material quickly
- Supplemental exercises: "Mimic d'Alembert's proof of the uniqueness of limits and generalize it to metric spaces"

Afternoon Classwork

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- “How might we try to extend the definition of a limit to make sense of the limit of a sequence of functions?”
- “Why are these two definitions of \limsup equivalent?”
- End with a qualifying exam problem

Reflections

- Students engaged more when their peers presented

My own transformation

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- I hope to NEVER LECTURE AGAIN

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- **Bootcamp resulted in strong cohort bonding.**

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- Bootcamp resulted in strong cohort bonding.
- In reviews every single student recommended that future students take the bootcamp

Thank you!

Boot Camp Website

For more information about how I ran the boot camp (including detailed descriptions of daily readings and assignments) please visit <https://sarahhagen.weebly.com/boot-camp.html>