

Introducing the Scholarship of Teaching and Learning to Graduate Students Instructors

A discussion group for graduate student instructors teaching
Introductory Statistics Classes

Ulrike Genschel

Department of Statistics
Iowa State University

Email: ulrike@iastate.edu

May, 14-16 2012

Outline & Motivation

Outline:

- Motivation
- Goal
- Discussed Topics
- Conclusions and Outlook

Motivation: introductory level statistics courses at ISU

- Department offers ≈ 30 classes per semester to liberal arts, humanities, science, business and engineering students
- majority of these classes are part of 4 large multi-section courses
- all classes are 60+ students
- Spring 2012: 23/28 classes taught by graduate student instructors; remaining 5 classes taught by faculty

Motivation

Background of graduate student instructors

- at least 2nd year graduate student in statistics
- typically no teaching background or experience
- current preparation typically includes:
 - 1-day university teaching seminar during orientation
 - lab assistant/grader for an intro-level statistics class during year 1
 - meetings with course coordinator discussing both content and implementation of lab sessions during year 1
 - 2-3 sessions about introductory statistic topics & how to teach them during an orientation class during 1st year

This allows graduate students (*instructors to be*) to familiarize themselves with the learning objectives, structure and the student audience but provides by no means an adequate preparation especially keeping in mind that the majority of these students lack formal training in pedagogy or (adult) learning theory.

Motivation

Existing Resources

- Repository of lecture notes, homework assignments, lab activities, quizzes and exams which is typically maintained by course coordinator (faculty member). Students also pass along material among themselves.
- First time class instructors are typically assigned one section of a multi-section course. Multi-section courses are supervised by a faculty member (course coordinator).
- For most of these multi-section courses weekly meetings are scheduled; discussion involves: time line of instruction, assignments; current concerns/questions of instructors regarding class
- **C**enter for **E**xcellence in **L**earning and **T**eaching (CELT) at ISU

Despite best efforts, time and resources are insufficient to provide adequate training and mentoring in the pedagogical aspects that are involved in teaching these intro-level classes.

Goal

A discussion group

Facilitate a weekly discussion group on topics in Statistics Education that is open to all interested graduate students.

- similar to existing discussion groups in various statistics research areas
- idea (admittedly) is several semesters old — I found myself deliberating about structure and content quite a bit.
- Last fall I came across the book “Thinking about Teaching and Learning” by Robert Leamson (1999, Stylus Publishing, LLC.)
- This book provided the “right” starting point for joint reading as part of the discussion group.
- While reading the book the goal is not only to discuss the content but to also engage students and to them connect to their own teaching ideas and philosophies.

Discussed Topics

- Introduction (included a survey about everyone's personal experiences and views on “best” and “worst” teaching practices and teacher habits)
- Book “Thinking about Teaching and Learning” (book is suitable for college teachers of all disciplines)
- PLUS/DELTA Classroom Assessment Technique (Helminski & Koberna, 1995)
- GAISE & CAUSEweb
- Statistics education research (including relevant journals and publishing process)
- Statement of Teaching Philosophy
- IRB (Institutional Review Board) approval for educational research
- Teaching Tips — During the last meeting of the semester we shared personal teaching tips.

Discussed Topics cont'd

What did students want to discuss in addition?

A survey at the beginning about expectations and goals yielded the following topics of interest:

- Learning more about the scholarship of teaching and learning
- Introduction and discussion of different learning and teaching styles.
For example, how effective is team-based learning in introductory statistics courses?
- Increasing students' statistical literacy, quantitative and critical thinking skills
- How to engage students more actively during lecture without compromising on "quantity and quality."
- How to improve reputation of the field of statistics in the eye of undergraduate students taking an intro Stats class.
- Principles of classroom etiquette (classroom management)
- Increasing repository of real data and examples to which students can relate.

The book: Thinking about Teaching and Learning

Developing Habits of Learning with First Year College and University Students

The books consists of 8 chapters:

- ① Thinking about Thinking about Teaching – How a philosophy of teaching develops and why it is important to have one
- ② The Biological Basis of Learning – Learning as brain change, rather than brain use
- ③ Language – On the questionable utility of unexpressed ideas
- ④ Today's First-Year Students – Culture, motivation, and preparation
- ⑤ Teaching and Pedagogy – How the way we teach affects the way students learn
- ⑥ The Classroom – The classroom as a dynamic arena — What students are really doing
- ⑦ Writing and Other Technologies – Technology, old, and new, and as a means to an end
- ⑧ Final Thoughts – Reflections and Ruminations

Conclusions and Outlook

So, how did it go?

- Discussion group consisted of ≈ 10 highly engaged and interested graduate students.
- First and foremost: regardless of the topic that we discussed, we always ran out of time.
- Because this was experimental and my number one goal was to accommodate students' interests we did not have time to accomplish everything that we had originally planned.
- For example, we only got through Chapter 4 of the book.

Conclusions and Outlook

Plans for the future

- Continue discussion group this coming Fall semester and thereafter
- Expand content
- Enable the students to contribute to the scholarship of teaching and learning in Statistics Education

Ultimately it is the goal to turn this into a 3-credit graduate level class for statistics majors.

Thank you!

Please contact me if you have any questions or suggestions, I am always interested to learn about new ideas.

References

- http://www.celt.iastate.edu/teaching/plus_delta.html
- Helminski, L. & Koberna, S. (1995). Total quality in instruction: A systems approach. In H. V. Roberts (Ed.), *Academic initiatives in total quality for higher education* (pp309-362). Milwaukee, WI: ASQC Quality Press.
- Leamson, R. (1999), *Thinking about Teaching and Learning* Stylus Publishing, LLC., Sterling, VA