Enhancing Teaching through SIMPLE Faculty Development Groups

Innovations in Teaching and Learning Conference

George Mason University

September 19, 2014

What are our plans for the session?

- Describe the SIMPLE model for faculty development groups.

- Share how the facilitators have explored innovative techniques in our classrooms.

- Lay the groundwork for participants to try new classroom techniques and to form SIMPLE faculty development groups.

Interactive Exercise

What are your goals for this session?

(Why are you here, and what do you hope to leave with?)

Who are we?

- Jill Nelson -- Electrical and Computer Engineering

- Cody Edwards – Office of the Provost / Biology

- Laura Kosoglu -- Civil Engineering

- Craig Lorie -- Electrical and Computer Engineering

- Mary Nelson -- Mathematics / STEM Accelerator

- Kathy Pettigrew -- Forensic Science / STEM Accelerator

- Jessica Rosenberg -- Physics, Astronomy, and Comp. Science

- Reid Schwebach -- Biology / STEM Accelerator

Structure of our Faculty Development Group

- Monthly meetings

- Discussion of relevant literature on teaching and learning

- Discussion of the new interactive techniques each of us is trying

- Preparing to lead (and now leading) **SIMPLE** faculty development groups in our disciplines

The **SIMPLE Design** Framework for Faculty Development

Sustainable – small, ongoing groups

Incremental change – participants make one small innovation

Mentoring – comfortable environment for learning from others

People-driven – organized around needs and interests of participants

Learning **E**nvironment – focused on integration of interactive learning

Design – participants document process of trying new interactive teaching practices

Interactive Exercise

List one or two new teaching techniques you would like to try in your classes.

Our experiences with trying new teaching techniques

- What technique did we try?

- Why did we try it?

- What went well?

- What do we wish we had known beforehand?

- Where are we going from here?

Craig Lorie
Electrical and Computer Engineering

- **What?** Use I-clickers to engage students in the classroom.

- **Why?** Encourage student participation in class, leading to better retention and improved learning.

- **What went well?** Students were more engaged. Led to student discussion and improved attendance.

- **Wish I'd known?** Writing "good" questions is difficult.

- **Future Directions?**
  - Expand the use of I-clickers to my other courses.
  - Start using question types beyond multiple choice.
  - Ask pre-assessment questions.

Jessica Rosenberg
SPACS
ASTR 115: Finding New Worlds

- **What?** New GenEd Science + Lab course taught studio style in ALT room

- **Why?** Design a course based on a cutting-edge research topic that would actively engage students.

- **What went well?**
  - Students responded well to room and format.
  - Students often assembled and presented material to class.

- **Wish I'd known?** How to make all students feel they've contributed when there is time for only some to present.

- **Future Directions?** Teaching class again in spring. Solving the balanced contribution problem is going to be important

Mary Nelson
Mathematics Department
COS STEM Accelerator

- **What?** Oral reviews

- **Why?** Improved student engagement, deeper understanding, and improved grades

- **What went well?**
  - 0.6 grade improvement for math participants
  - Improved facilitator understanding of student thinking
  - Buy-in from Biology and Chemistry

- **Future directions?**
  - Expansion of orals in math department
  - Initiation of orals in physics and geology

Katherine Pettigrew
Forensic Science Program – COS
STEM Accelerator – Dept. of Chemistry and Biochemistry

- **What?** Active Learning with Technology (ALT classroom).

- **Why?** Improve student engagement, increase student learning, and enhance instructor satisfaction.

- **What went well?** Everything, but student and instructor buy-in took time, work and evidence.

- **Wish I'd known?** Keep a WRITTEN report (reflections/journal).

- **Future Directions?** Moving in a new direction with interdisciplinary co-teaching focused on microscopy.

Reid Schwebach
Biology Department
STEM Accelerator Program

- **What?** Using notecards in a Socratic teaching strategy for large lecture

- **Why?** Build student communication skills, depth of understanding, and critical thinking skills. (And to increase engagement, participation, and attendance.)

- **What went well?**
  - Survey says students "like" notecards in class and think overall learning is improved.
  - Many students "didn't like notecards," because they felt they had to come to class.

- **Wish I'd known?**
  - Many students experience communication anxiety.
  - Notecards require a little extra prep time and creativity if >150 students.

- **Future Directions?**
  - Look at relationship between students "liking" notecards, having communication anxiety, and course performance.
  - Design pedagogical approaches for using notecards in large lecture.

Cody Edwards
Office of the Provost & Department of Biology

- **What?** End of semester oral exam

- **Why?**
  - To facilitate greater understanding of central concepts of field
  - To ensure assessment techniques appropriately measure mastery of material.

- **What went well?** Compared to previous cohorts where this technique was not used, "pilot" cohorts had significantly fewer "D"s and "F"s.

- **Wish I'd known?** Major out of class time commitment for all involved.

- **Future directions?** Have since paired this with a concept inventory (pre- and post semester)

Laura Kosoglu
Civil, Environmental, and Infrastructure Engineering

- **What?** Partial classroom flipping – helping students work problems in pairs in class for 10 min.

- **Why?** Students can easily become passive note-takers, and working problems gives the instructor a chance to correct misconceptions early on.

- **What went well?** Student feedback was positive.

- **Wish I'd known?** Make sure problems aren't too long.

- **Future Directions?** Will continue to implement.

Interactive Exercise

Find a person (or people) in the room who share(s) your discipline and/or your interest in a particular type of interactive teaching technique. Share ideas, concerns, and contact info.

Interactive Exercise, Cont.

Brainstorm a list of instructors you know who might be interested in trying new interactive techniques.

What we hope you'll do next

Join a SIMPLE faculty development group!

OR

Form a SIMPLE faculty development group!

We're happy to help – just contact us!

Resources

- Susan A. Ambrose et. al, *How Learning Works: Seven Research-Based Principles for Smart Teaching*, John Wiley & Sons, 2010.

- Thomas A. Angelo and K. Patricia Cross, *Classroom Assessment Techniques: A Handbook for College Teachers*, Jossey-Bass, 1993.

- Elizabeth F. Barkley, K. Patricia Cross, and Claire Howell Major, *Collaborative Learning Techniques: A Handbook for College Faculty*, John Wiley & Sons, 2005.

- Wilbert McKeachie and Marilla Svinicki, *McKeachie's Teaching Tips*, Wadsworth, 2014.

- Sanjoy Mahajan (Instructor), *Teaching College-Level Science and Engineering*, MIT OpenCourseWare, Spring 2009, http://ocw.mit.edu/courses/chemistry/5-95j-teaching-college-level-science-and-engineering-spring-2009/

Questions?

- Now: Ask Away!

- Later:
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