Science and Math Brown Bag lunch

May 4, 2017

Present: Steve Bogaerts, Jacob Hale, Bryan Hanson, Jeff Hansen, Sara Lee, Rich Martoglio, Pam Propsom, Dave Roberts, Jackie Roberts, Maria Schwartzman

Facilitators were Selma Poturovic and Brian Wright.

Brian talked about how they have reorganized the Intro Kines course by identifying their primary goals: prepare students for Kines curriculum, improve scientific literacy, promote and develop Kines student community to show students that they matter. In the past, the community element really didn’t happen until the senior year.

Labs are now two-week projects completed in groups. High value and emphasis on communication. Instructor assigns groups, students introduce themselves, collect data, complete true “in-class” assignment (mini-lab) and during the second week they use the data, then there is a take-home assignment for which all students in the group get the same grade (lab grade accounts for 35% of course grade). They have a TA.

The faculty have developed a document that outlines communication (Lab Group Communication Guidelines). The idea is that all voices are heard, all participants are doing all of the work and understanding the concepts, how to deal with conflict. Faculty have to continually re-emphasize this. The take-home lab assignment has three components: hypothesis testing (organizing data, running simple analyses, graphing, written explanation of results), conceptual applications, and real-work implications. Dissent form is an option. Peer evaluation is required (although they’re still figuring out how to use this feedback). They change lab groups for every new lab.

Other assessments in the course: exams every Monday (top 10 count towards grade), elaborate interrogation assignments (participation grade tied to interacting with TA), partner research article presentation, and final exam. His impression is that students are more comfortable in the lab; the hypothesis-testing part of the lab has improved. Midterm grades have gone up. They’ve had to reduce some course content.

Selma talked about why she has decided to “flip” Chem 120. She has noticed that students don’t listen to her recommendations for how to be successful in class (e.g., read the textbook, spend 3 hours outside of class for every hour inside of class, don’t memorize but instead practice applying the concepts to problem-solving). She felt she was spending too much class time delivering the content rather than getting to practice problem-solving. Evidence has shown that the flipped classroom improves student learning. In the flipped classroom, students use pre-class time at home to create a foundation (“easier stuff at home”) so that they can do harder stuff in class.

She gives students a document describing the process. To prepare in advance, students have to study lecture materials on Moodle, read textbook and do problems, complete an online Moodle quiz (designed to take about 10-15 minutes). She can then see what the students are misunderstanding prior to class so that she can clarify in class. In-class time is used for group problem-solving and other activities. She has kept the grading assessments consistent with past semesters and used similar exams; final exam is exactly the same. Her data from previous semesters show that the average final grade has improved, and more significantly, the number of D’s and F’s has significantly declined, as has withdrawals from the flipped course.

Benefits—she can better help students clarify misconceptions; students seem more engaged; student attitudes are better; surveys from students are positive; flexibility to use class time for different activities (because no pressure to “deliver content” during class time).

Drawbacks—difficult to help every group in a larger class; development of class material is time-consuming initially.

She spends first 5-10 minutes reviewing concepts students had problems with on the online quiz. Students tend to complete the quizzes and get to drop 9. Randomizes groups every day. A TA might help get around to all group questions in class. Students also have to present on the board individually for participation points.