Introduction

- **Studio compared to Lecture**: This academic year, we are teaching our IPLS class with three large studio sections and two lecture/lab/recitation sections.
- **Gender gap**: For the first time in our course, we separated data by gender to see if there was a difference in performance.

Key observations

- 64% of the students in the course are female;
- Students in the studio had better outcomes than those in lecture;
- In the fall semester, males did better than females, both in studio sections and lecture sections.

A description of the course

In fall 2013, over 400 students took the first semester of our two-semester algebra-based IPLS sequence. 241 students were in one of three studio sections, which met for six hours/week in a new 81-student classroom (9 tables of 9 students). Each section had one instructor, two TA’s, and two Learning Assistants. 198 students were in one of two lecture sections (3 hours/week), plus a 1-hour weekly recitation and a 3-hour lab that did not meet every week. Total instructional time was approximately the same between studio and lecture.

All students did the same pre-class assignments, homework, tests, quizzes, and used the same book (Duffy, *Essential Physics*).

Gender gap

The graph below shows results on conceptual surveys from many institutions, most often showing males doing better than females...

From: Gender gap on concept inventories in physics, A. Madsen, S. B. McKagan, and E. C. Sayre

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A group of three students in the studio, working together on a problem involving gravitation and energy conservation.

The same set of students compared with the FMCE. We also saw a gender gap on the tests and the final exam, with the male students, on average, doing a little better than the females. This was true in both the studio sections and the lecture sections.

Tests – The same set of students compared with the FMCE. We also saw a gender gap on the tests and the final exam, with the male students, on average, doing a little better than the females. This was true in both the studio sections and the lecture sections.

Closing the gap?

We are experimenting with different grouping arrangements in studio this semester to see if we can close the gap.