

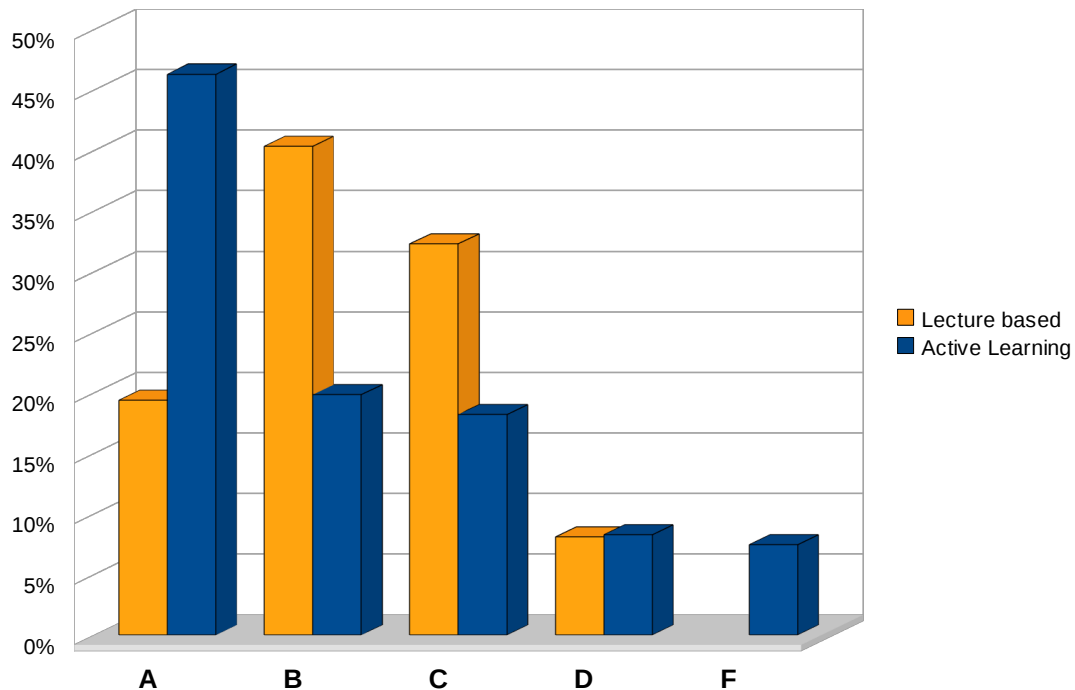
Assessment of Student Learning

When it comes to measuring teaching effectiveness, consistent academic performance is a more meaningful metric than student surveys. A recent Washington Post [article](#) discussed a study confirming that highly-rated professors are overrated. They found that students of professors receiving high evaluations under-perform in subsequent courses. This is because students punish professors who teach demanding courses while rewarding those who teach soft courses. I am not surprised by the study's results.

I do not teach to earn high student evaluations. I teach for long-term academic and professional success consistent with academic standards at an elite institution. I believe it is fair to say students generally regard my courses to be among the most demanding in the BSIS curriculum. The following charts confirm that students are consistently successful in my courses, and active learning techniques have increased their level of achievement.

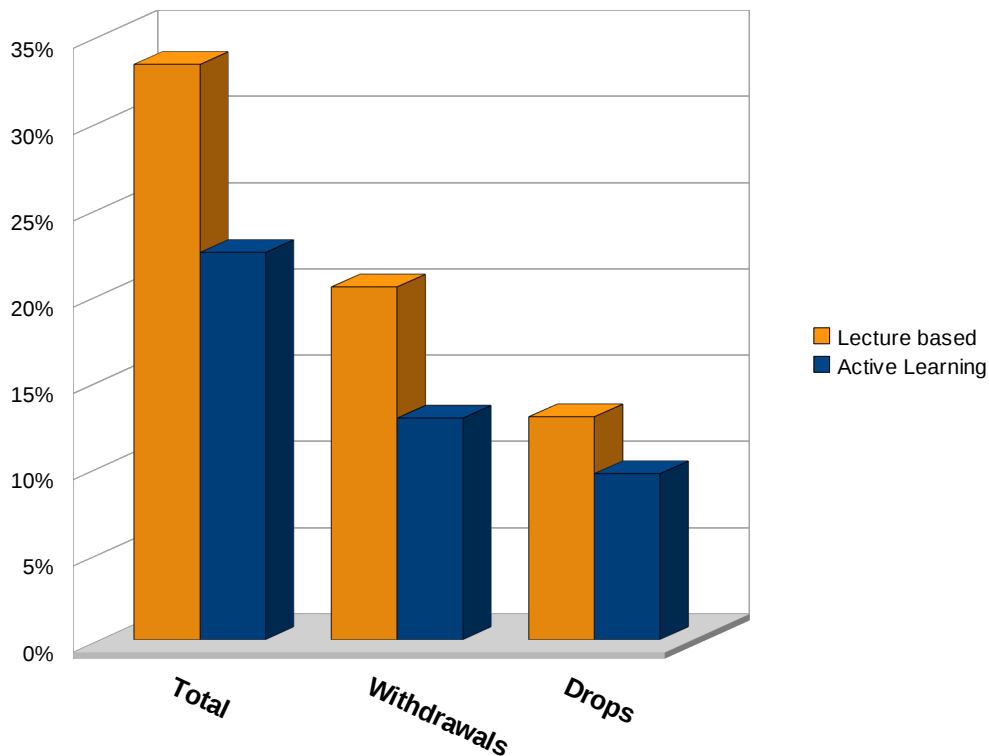
The first chart compares grade distributions between lecture-based vs. active learning-based sections of IS 17 (Java 1).

IS 17 Grade Distribution



Active learning improved student performance relative to lecture-based classes, especially for students making a serious effort. The percentage of students earning an A grade has more than doubled to almost half the class! This is primarily due to higher achievement by B grade students. Overall, 85% earned at least a C grade. On the other hand, there is a slightly higher failure rate under active learning (15% vs. 8%).

IS 17 Attrition Rates

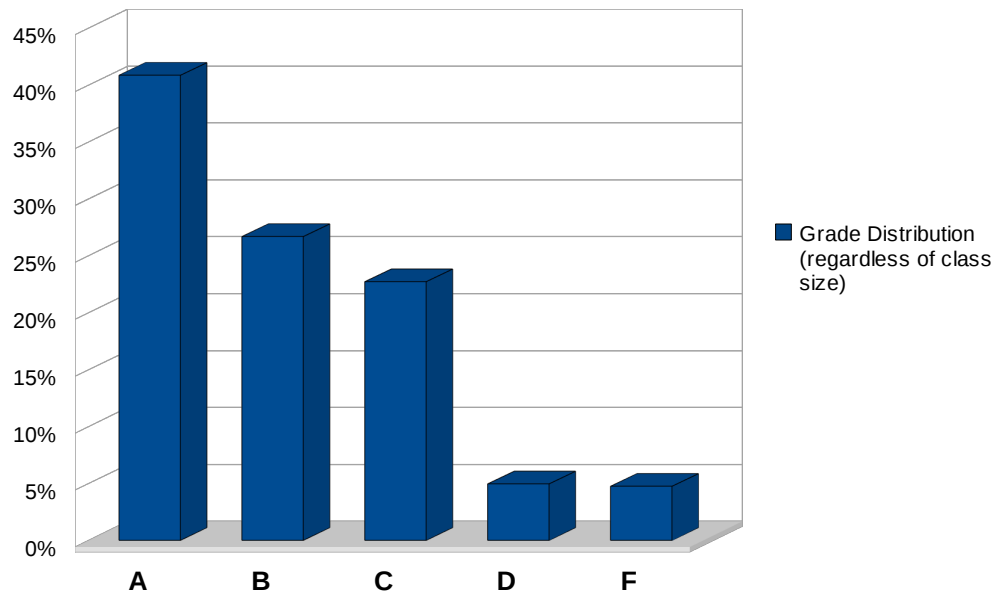


Under active learning, the total attrition rate (withdrawals + drops) has declined from 33% to 22%. In lecture-based programming courses, students are left to fend for themselves outside of class. A much higher level of perseverance is required and many bail out early. In contrast, students receive real-time mentoring in an active learning class. This significantly reduces frustration and increases student confidence. Unfortunately, a few students do eventually fail because they overestimated their probability of success. In most cases, students succeed on the 2nd attempt.

The IS 17 results apply to my other courses as well. The next chart summarizes the grade distribution for all of my active learning-based courses. The Pass:Fail ratio is 9:1. From my experience using active learning techniques during the past 4-6 years, I am convinced it significantly improves student learning relative to classic lecture-intensive courses, especially in the IT disciplines. A New York Times [article](#) in 2009 reports similar results for Freshman Physics at MIT. Going forward, I expect to continue refining active learning techniques in my courses.

Active Learning Grade Distribution

(IS 17, 19, 1024, 1025)



References:

[At MIT, Large Lectures Are Going The Way Of The Blackboard](http://www.nytimes.com/2009/01/13/us/13physics.html?_r=1), New York Times, 2009
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