Effects of Coupled Active Learning & Review

Becky Stem, Michael Lai, Cullen Young, & Madeline Hessmann

Introduction

How much do students truly absorb by passively attending lecture?

Is information retained more effectively if it is simply presented to the students or if they work through it on their own?

These questions have influenced drastic changes in the educational system in the last several years, especially at the collegiate level. Interactive learning has proven to be extremely successful. We ponder what can be done to even further the benefits of this system.

By coupling in-lecture-learning with outside review, we assume that students will associate and understand concepts without the hand-holding components of lecture.

Objectives

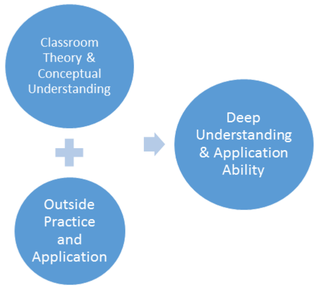
We hope to..

- Provide students with a guided connection between in-class active learning to outside review and private studyinge.
- Present problems auch that students learn to analyze concepts rather than fal into patterns lacking in understanding.
- Receive feedback from students revealing the effectiveness of both interactive learning and out of class review sessions.
- Use this feedback and analyzed data to more effectively teach students.

Methods

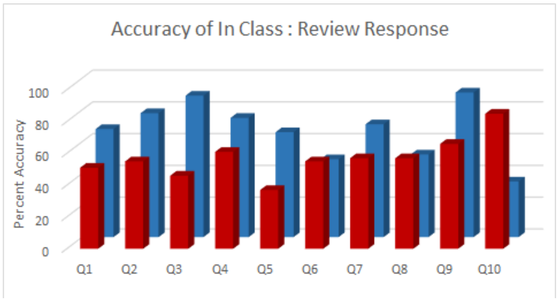
After collecting data to find the most difficult "clicker questions" presented in class, our team held a comprehensive review session asking similar questions. After the review, we compared our new data to the old data. As for the questions, the arbitrary numerical values in the problems were altered so that students focused more on the conceptual nature of the problems, rather than recognizing the answer from class. However, the problems were familiar enough that students were able to connect classwork to an outside review.

We predicted that, when combined with review, a higher percentage of students will "click in" correctly. We continually expect that these students will score better on the exam corresponding with reviewed material (exam three) than students who did not attend this review session.



Results

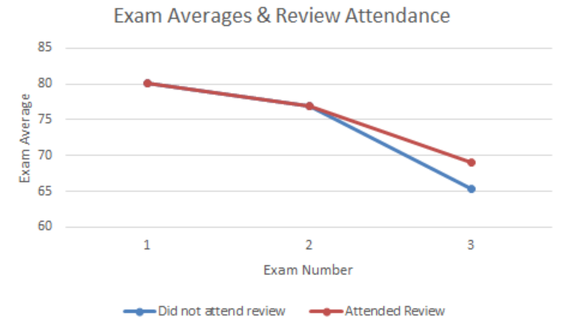
We were able to acquire data that showed us the percentages of students that got each question right during our review session. Since we based our review session clicker questions off of actual clicker questions professors posed in class, we were able to see the students direct improvement on most questions, when given a second exposure to the questions during the review.



Comparing percent accuracy of student responses between in class questions and review.

After the Chem 112 students take Exam 3 on April 7th, we will see if the review session improved the classes' test scores.

Conclusions



Exam Averages of Chem 112 students that did vs. did not attend clicker review.

Before we analyzed students individual Exam 3 results, we considered the overall average for the class. This exam is the most difficult of the semester, and averages are expected to be low. However, the curriculum this semester was thrown off by the legendary snow day and each lecturer was at a different point when exam three came around. For this reason, we expected averages to be even lower than normal.

Based on the scores we received from the Chem 112 Instructional Team, it seems like the class average on Exam 3 was a 65%. This was also the average for the students who did not attend our interactive clicker review. However, of the students who did attend our review session, the Exam 3 average for them was actually a 69%, 4% higher than the class average and of the average of the individuals who did not attend the review session.