Assessment of student progress with an audience response system
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Progress Report:

The development of new approaches to teaching of large lecture courses is needed. Today’s classroom has a wide range of students including high achieving, motivated learners, students struggling to understand basic concepts, and learning-challenged students. Many of these students can be lost in large classes in the shadow of the high achieving extroverted student who dominates classroom question and answer sessions.

I implemented audience response system from Turning Technologies, LLC in MLRS 54, Principles of Microbiology course as a result of an instructional incentive grant from the center for teaching and learning, University of Vermont. This technology involves a software application installed on instructor’s laptop computer and remote control devices or clickers used by the students in the classroom. The technology allows instructor to ask the class a question presented via computer and a projector, each student gives a response and the teacher is able to see if the class achieved understanding. This approach offers unlimited means of gathering information, yes/no responses, multiple choice, true/false, or survey. After students respond, the answers can quickly be shown on a graph so students see the results.

The students enrolled in this course represent many different majors on campus including biology, animal sciences, nutrition, nursing, athletic training, business administration, and medical laboratory science. In addition continuing education and post baccalaureate premedical students take this course. With a diverse student body enrolled in the class it poses a challenge to traditional instructional and assessment strategies.

Outcome:

The goal of this project was to increase student interest and participation in class. There was an increase in student participation in the classroom discussions soon after this technology was introduced. Students liked the use of these devices and stayed more focused knowing they will be expected to respond during the presentation.

Since it is impossible to ask questions to every student during a lecture, these devices provided instant feedback to help meet student needs. It was beneficial to see instantly how students comprehended the material presented. The questions were offered as a focusing activity at the beginning of a lesson, embedded throughout the lesson, or placed at its conclusion to check for understanding. After the lecture, the software allowed to review individual student answers for follow-up. Students who missed an excessive number of questions received further instruction to address the concepts that were not understood. Students showing a gap in achievement were identified using this technology. These students were often reluctant to answer questions in class. This tool required them to become an active participant in the class in spite of learning barriers. In a sense, they have a free pass to participate without fear of embarrassment. Audience response system allowed students to take an active role in monitoring their own learning. This allowed all students to become confident in their abilities and promoted success.

A comparison of students attending MLRS 54 class in 2007 and 2008 indicated marked increase in the performance (Fig. 1). The percentage of students scoring an “A” was higher in the 2008 class where clicker technology was implemented. There were fewer students scoring “C” in the 2008 class compared to the previous year. In conclusion the introduction of this technology had a positive impact on the overall success of the students. In fall 2008, I introduced this
technology to two other courses that I teach and I already have seen improvements in the students’ progress.

![Progress of MLRS 54 Students](image)

**Fig. 1:** Percentage of students receiving various grades in MLRS 54 class during 2007 and 2008.