

## One Best Thing - Classroom Response Systems

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### *What have I done?*

My colleagues in the Department of Chemistry and Biochemistry and I have incorporated a classroom response system (CRS, colloquially known as “clickers”) in first-year chemistry courses.

We have used clickers from Turning Technologies to collect and analyze student responses in both traditional and flipped courses. Students use clickers to submit answers to multiple choice, short answer (one word response), and numerical questions in a number of different settings - class meetings, exams, pre-laboratory quizzes. The instructors use this feedback immediately to guide their class discussions and as a measure of student participation.

### *Why did I do it?*

Steve Theberge and I have taught in the General Chemistry sequence for a number of years and were getting increasingly frustrated with the level of engagement displayed by the in the students in the course. We wanted the students to actively participate during the entire class time and chose to use clickers to encourage student participation and get a sense of the student understanding of the material.

### *What was the result?*

For the past 7 years, we have used the classroom response system in both lecture and laboratory sections. Overall, we have observed that the students remain much more engaged throughout the entire class period because they are getting not only feedback on their responses, but also credit for participation. We have also found that the use of clickers have allowed us to change the class on the fly in response to lack of student understanding of a concept or problem.

### General Information about Classroom Response Systems

For general information on classroom response systems, see Derek Bruff's excellent page <http://cft.vanderbilt.edu/guides-sub-pages/clickers/>.

These systems can be implemented using either a dedicated device (clicker) or other electronic devices (tablets, cell phones, or laptops). Turning Technologies (<https://turningtechnologies.com/>) and iClicker (<https://www1.iclicker.com/>) have created systems that work with their own dedicated devices and with other electronic devices through an app or browser interface. The software is generally free for instructors and students have to either purchase a clicker or access to the software.

Other systems are not tied to a dedicated device, but are designed to work with iPads or other electronic devices. Socrative (<http://www.socrative.com/>) is a freely available system that can be used for classes up to 50 and can be accessed via any iOS or Android portable device, as well as through a web browser. The uRespond system is primarily for the sciences and is accessible through a web browser on any platform (<http://besocratic.chemistry.msu.edu/urespond/index.html>).