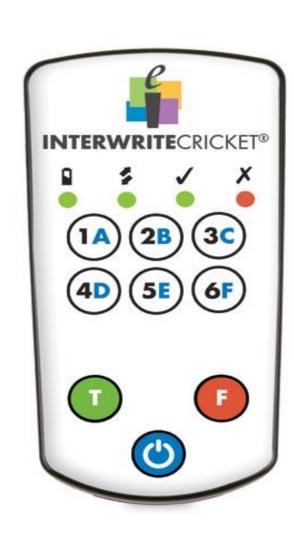
Integrating an Audience Response System into a College Chemistry Course Janet L. Stringer

Introduction

During long evening classes it can be difficult to maintain the energy level and attention of the students for the entire time. For the evening section of CHEM 410, the regular use of an audience response system was incorporated to address this issue. The goal was to maintain the attention of the students and to obtain immediate feedback for both the students and instructor on the progress of the class on the material.

Methods

The Division of Science and Technology has obtained, using grant funds, 80 Cricket clickers from eInstruction.

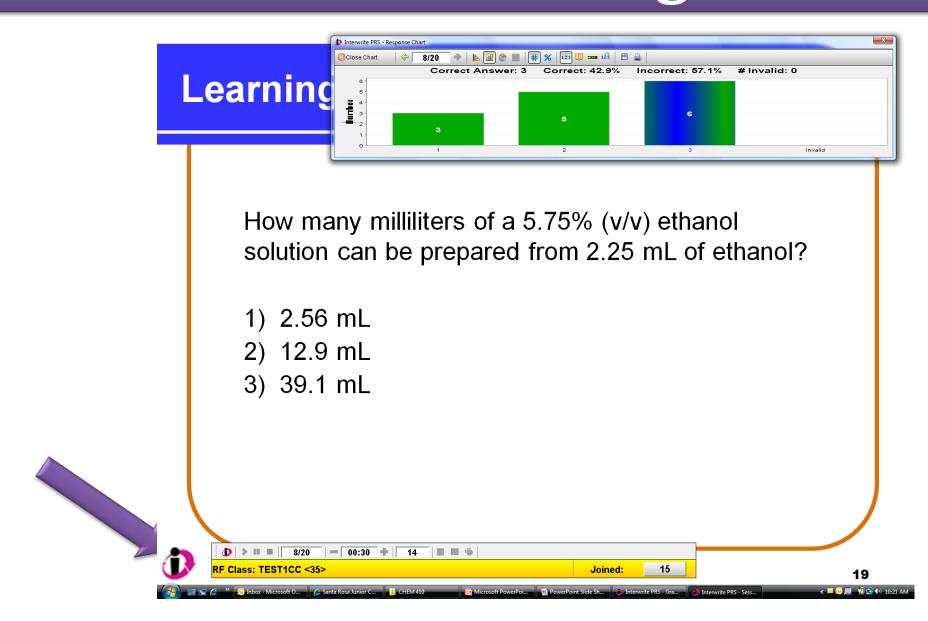


Each student was assigned a specific clicker (shown to the left) and then a 'grade book' was set up with this clicker assignment. Multiple choice questions were incorporated into every class session, both within the introductory lecture for each chapter, in dedicated problem sets at the end of each chapter and during review sessions.

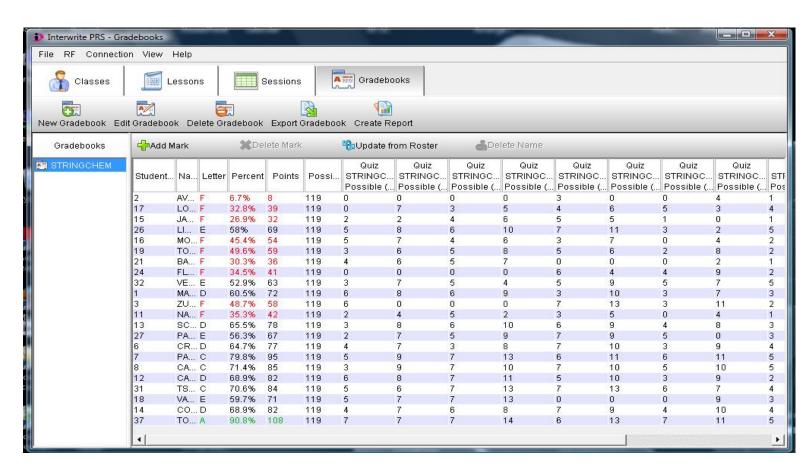
Training for both instructor and students took place on the first day of class using a quiz on chemistry lab safety.

System settings:

- ▶30 seconds for each question. Clicking a button on the timer bar adds an additional 15 seconds. I chose to keep the time going until nearly everyone had keyed an answer.
- Allow students to change answers within the time allowed.
- At the end of the allotted time, a histogram automatically displays the number of responses for each of the options. I chose not to display the individual responses, but this is an option.



Sample Powerpoint slide with the eInstruction symbol showing that this question has been linked to the audience response system. Lower bar shows the number of questions in the file, time allotted for this question, number of students who responded and number of clickers activated ("joined"). Top bar shows automatic histogram generated with the correct answer in blue/green.



Gradebook that can be easily generated from the class sessions. The gradebook could be used to "grade" the students, but I have chosen not to count the responses towards the students' grades.

Student Feedback

- >"Keeps me involved in the lecture"
- > "Keeps the class focus/attention on the lecture"
- ➤ "The teacher can see when people are lost based on their answers immediate feedback."
- >"Makes the class more interactive"
- >"Keeps the student on task."
- "Makes the student accountable."

Advantages

- ➤ It is very easy to add the response system to a PowerPoint slide.
- > Students practice answering questions under a time limit.
- The instructor controls when the timer starts and for some more difficult questions, I chose to wait and help with the solution before starting the timer.
- The gradebook feature can be used to monitor attendance and participation. It is also possible to look at data for an individual question to see who got it right and who got it wrong.
- The automatically generated graph makes it easy to only work in detail the questions that have been missed. Also, it is easy to see where students are having difficulty.

Limitations

- The system is only set-up for multiple choice questions.
- It was often difficult to gauge how long the students would need for a particular question.
- If the instructor accidentally "pages down" past a question, you cannot go back and do that question with the system.
- ➤ It takes time to check all the clickers at the end of class to be sure that they are all off.

Conclusions

Regular use of the audience response system has greatly enhanced student engagement during the long evening class sessions. The system was easy to learn and to incorporate into the class.