Classroom Response Systems

A Classroom Response System (CRS) is a tool with which instructors can collect student input throughout a class session. This input can come in the form of polls or questions with correct answers. While instructors can use a CRS to grade students on participation or score them in regular knowledge checks, the best use of a CRS is to keep students engaged in course material, check for understanding, and make on-the-fly adjustments to live instruction.

Recommended Tools

Kahoot

Kahoot is a free, web-based, BYOD-style polling and quizzing platform designed with simplicity in mind. Instructors build multiple-choice quizzes (four answers per question) and present them live in a web browser. Students join a session through their own web browser by entering a six-character session code and a screen name. If students use their student username as their screen name, it is possible to create a file ready to import into a Learning Management System (LMS) such as D2L, Canvas, etc.

Plickers

Plickers are specially designed Quick Response (QR) Coded signs (limit 63), which students orient in a given direction to submit an answer (A, B, C, or D). The instructor uses an iPad, iPhone, or Android device and an app to scan the codes in the room and match them with their student respondents. Plickers are "a powerfully simple tool that lets teachers collect real-time formative assessment data without the need for student devices" (https://plickers.com/).

What do I do if I have more than 63 students but want to use Plickers?

Instructors can print Plickers on white or light-colored pages and build a little competition into their courses by splitting the students into color-coded "teams" (blue, yellow, pink, green, etc.) increasing the potential number of students by 63 for each color. With four colors, an instructor can have up to 252 students. The instructor will then just need to scan the room four times (once for each team).
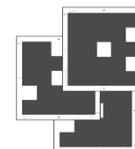
Best Practices

Be clear about the CRS off the bat.	Manage expectations about the CRS. Be clear just what you're doing with it. Do you use it to gauge understanding? Are they being graded? What happens if the CRS fails in the middle of a lecture? Put a memo in your syllabus about what you'll be using and why.
If you're concerned about attendance, send around a sign-in sheet or take roll. Research consistently shows that students resent using a CRS for attendance. While, this is truer when the CRS is used *only* for attendance, it's still not best practice. In lieu of an "Are you here?" question, consider using a warm-up or reading check question at the beginning of class instead (you can always then re-poll students at the end of class with the same question or one which expands on the first).	**Don't use it to take attendance.**
Integrate; not "add on"	Use your CRS to engage students by weaving questions throughout lectures or to supplement or drive discussions and group activities. It's best not to use the CRS as a means to get students to simply repeat the information they were just given but rather to reflect on or re-apply that information.
Use your CRS occasionally to check understanding or regularly to increase engagement. In either case, use the CRS often enough to make it "worth it" to students but not so often that it becomes burdensome or detracts from course content.	**How often to use it**

It's best to begin with low-stakes versions early in the semester to soften the learning curve. Consider "getting to know you" questions like "What is your major?" or "I took this course because…" which will both help you gauge the overall make-up of your course and provide them an opportunity to learn and use the tool without penalty for error. Make it clear during the first few sessions that technical difficulties will happen and that this is the time to seek support if needed.

Use the CRS to divide your course into teams and create friendly competition as appropriate. Some CRSs also allow you to determine who answered correctly the fastest or most often. Consider offering a daily bonus point for accuracy. Make your teams fun (Hufflepuff, Ravenclaw, Slytherin, and Gryffindor) or subject specific (Transition Metals, Noble Gasses, Alkali Metals, Lanthanides, etc.)

Low-stakes competition

How much weight to give CRSs

The jury is still out on an exact number since how you weight your responses will depend on the rest of your CRS policy. If you conduct a poll every day, it may be a good idea to give students one or two "freebie" days in case they need to miss class for good reason. In general, CRS grading should be flexible and should not total more than 10% of the final grade for the course. Some instructors find it useful to break CRS points into two categories: Participation for those who are engaged with the CRS but inaccurate in their responses; and Performance for *correct* answers. It's best practice to exclude CRS participation or performance points the first week or so of the semester as students get used to the tool.

Students don't like to be clobbered over the head with a CRS, but they'll also be averse to having to use one if they don't use it often enough to be worth it. Consider the frequency with which you put up questions. In general, try peppering your lectures with a CRS question (a good frequency may be one or two questions every eight to ten minutes) to re-capture student attention. As you do this for a few sessions, you'll get a feel for how this frequency will need to be adjusted.

Periods of focus

Re-poll, re-assess, adjust

Using the feedback you get from a CRS is encouraged! Don't be afraid to ask the same question several times or in different ways throughout a semester, a unit, or even a session. Re-polling to track changes of opinion or check for understanding or re-assessing to keep tabs on learning can help to steer your instruction to the students' benefit.

No technology (however simple) will work 100% of the time. Have a back-up plan for when your CRS of choice fails either on a class-wide scale or when a particular student can't participate fully due to a malfunction. (Don't forget: hand raising is a CRS too!)

Be flexible and be prepared

Sample activities

Voting

Not everything is about right and wrong. Has it come time to decide something as a class? Conduct an anonymous poll in class.

Choose Your (Our) Own Adventure

A Choose Your Own Adventure is a series of paths which branch out from one another based on choices. In a CRS Choose Our Own Adventure, the class votes on which path to take. A lively discussion may be needed to break ties. Consider using this also in student-directed sessions. Students can research a topic and develop a Choose Our Own Adventure to present to the class.

Live Debate Feedback

Some CRS systems allow for continuous re-answering of poll questions up until the polling closes. Hold a debate in class (with up to four participants for ABCD poling options) and have students continually update (or regularly check in) with who they feel is coming out ahead.

So you want them to identify— but you've only got four choices…

When you'd like to have students identify something on a map, chart, or diagram, but your CRS is limited to four choices (ABCD), one solution is to use multiple responses to answer a single question. For example: If you'd like to ask "Where is the Popliteal surface?" using the image below, you can ask "Red letter?" and then "Purple letter?" If they've answered C for both, they're correct.

Note: It's always good to have colors also identifiable in another way for the color vision impaired. Here red and purple can also be identified as higher and lower.

Anterior (*left*) and posterior views of right femur.