

Tips & Trends: Classroom Response Systems

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Overview and Definition

Classrooms Response Systems (CRS) is software or hardware that allows instructors to poll students for assessment and/or engagement purposes. For example, an instructor may use a CRS to display multiple choice questions within a presentation slide. Students then use cell phones or “clickers” to respond. Then, after responses have come in, the instructor is able to show the results to the class. Faculty and instructors, particularly in the sciences, are finding them very useful in conducting meaningful assessment during classes, while also providing immediate feedback for students. Library instructors are increasingly finding similar benefits from implementing them in their classrooms.

Some instruction programs and classrooms are using CRS during Information Literacy sessions to foster more meaningful discussions and to assess student learning in ways that were previously difficult and timely during one-shot sessions.

Basis for Current Interest

Technology in the classroom is swiftly becoming an expectation of students. CRS have been used in a variety of formats since the 1960s; however, with increased technological advances and the promise they show in engaging students in a variety of ways, many in higher education are starting to implement them more heavily in their classrooms (Deal 2007, 5). More and more emphasis is being placed upon institutions of higher learning to produce innovative and employable workers after graduation. It is being argued that technology integration in the classroom is necessary to create a millennial generation workforce that can operate in a workplace that relies so much on technology (Dill 2008, 527).

As educators advance in their understanding of the many different types of student learning styles, as well as the stages of student development, CRS can be a valuable tool in engaging students at all different levels. Elizabeth Connor’s study illustrates that library instructors especially can benefit from CRS, since they can engage students in all four levels of Bloom’s Taxonomy simultaneously (2011, 251). This robust engagement strategy can allow for learning across the spectrum, from the novice level to those who are ready for advanced information literacy discussions.

Current Applications in Academic Libraries and Higher Education

In a review of the literature, CRS are heavily used in the sciences. In science classes (and other large lecture halls) “the large number of students, the size of the room, and the fixed nature of the seating tends to maximize the distance between instructors and students” (Cole & Kose 2010). CRS help instructors to eliminate that barrier, since they allow for each student to answer a question instead of just the one who raised their hand.

Additionally, CRS allow for data collection of class engagement. Most technologically based CRS allow for data to be collected, archived, analyzed, and displayed for students/instructors to see real time. Students report that this immediate feedback loop allows them to check their current levels of understanding of the material, and therefore better prepare them for exams (Hunter et. al 2010, 20). In fact, Richard Hall et. al.’s study on engagement, motivation, and learning using CRS in large lecture classes found that “Students’ comments indicate that [CRS] served as a powerful motivator not just for attendance, but class preparation as well” (Hall et. al 2005, 5).

Current Applications in Academic Library Instruction

A survey of literature indicates that use of CRS in library instruction remains experimental – librarians are using the technology not only to achieve pedagogic results, but also to “play” with

technology to measure its effectiveness in one-shot sessions. With that in mind, there are three uses that stand out:

Active Learning

Academic librarians are experimenting with using CRS in one-shot IL sessions in order to engage students in active learning. Librarians have cited the desire to capture the attention of Millennials, who are perceived as expecting technology to be integrated into their instruction (Chan and Knight 2010, 193). Librarians have also noted the difficulty in keeping students focused during one-shot sessions (Burnett and Collins 2007). Students who use CRS during library instruction "...found the library sessions to be more enjoyable, organized, well-presented, and participatory" (Chan and Knight 2010, 197).

Pre & Post Assessment

CRS can be an effective substitution for written, in-class assessment of prior knowledge and instruction. One use of CRS assessed graduate education students' knowledge of book classification systems; how to use the online catalog; and how to create a bibliography, among other skills, prior to instruction (Deleo, Eichenholtz, and Sosin 2009, 441). This same use determined that CRS provide a solid means of checking student misconceptions during IL instruction.

An example of CRS use in pre/post testing occurred in freshman composition classes at Georgia State University/Georgia Perimeter College. These classes focused on the differences between scholarly and popular resources. Questions were developed to engage the students as well as to transition students through various discussion points. Results for these questions were viewed immediately during class. Results to post-test questions were reviewed only by faculty. Results of this use indicated that the assessment was valuable in measuring only short-term retention of knowledge (Petersohn 2008, 5).

Promotion of Library Services

CRS have also been used to advertise the existence of library services and to promote the use of the library within the context of specific classes. A CRS was used to orient 400 first year students in an

introductory business course to library services, as well as to "...provoke students into thinking about and planning for opportunities to incorporate research into their term work..." (Matesic and Adams 2008, 7).

Potential Value

The value of this technology lies in its ability to forge connections and facilitate responsiveness. The game-like use of CRS systems appeals to students who grew up gaming. This attraction engages students. Class attendance, and responsiveness during class discussion, has increased in classes that use CRS (Keller, et. al., 2007, 130; Cole and Kosc 2010, 405). Instructors have used CRS to implement peer-to-peer learning in large lecture settings, which one author referred to as "turn and talk" – a question is posed, the class clicks through, and students are encouraged to discuss the results with their classmates (Deleo, Eichenholtz and Sosin 2009, 443).

Use of CRS increases the responsiveness of faculty to students during class (Hunter, et. al., 2010, 24). Typically, this responsiveness takes the form of correction – either troubleshooting student data collection in science classes, or correcting student perceptions in IL sessions. It is this element of being able to quickly assess student knowledge that has the most usefulness in classroom instruction (Tao, et. al., 17), particularly during IL sessions, when librarians need to quickly correct student misconceptions of library functions or processes (Deleo, Eichenholtz and Sosin 2009, 442).

Potential Hurdles

CRS systems that are purchased by colleges and universities often require students to purchase their own handheld "clicker." This led one student to state that he/she "...felt like I was paying to raise my hand..." (Dallaire 2011, 200). Money also can be an issue when students are asked to use cell phones as "clickers" and are charged for text usage. (Author)

Another hurdle that can manifest itself during instruction is the failure of cell phone connections. Applications that use cell phones are dependent on good connections across carriers and through barriers. Testing connectivity can be difficult due

to the variety of carriers used by students. (Author).

Little research has been done on the pedagogical benefits of the use of CRS. Studies that have been done show little evidence that CRS use increases students learning or long-term retention of information. These studies have all looked at CRS use throughout semester-long classes (Champion and Novicki 2006, 234; Cole and Kosc 2010, 404; Skinner 2009, 23). Perhaps it is relevant to note again Barbara Petersohn's observation that CRS use is successful in measuring only short-term retention (Petersohn 2008, 5).

As with all assessments, how well crafted a question or prompt is makes all the difference between meaning and confusion. Steven Skinner makes this point well in his discussion of how "question driven" instruction should rely on three goals: content goals, process goals and metacognitive goals (Skinner 2009, 22). Does the question meet a specific learning objective? Are the questions and responses written in such a way as to immediately elicit understanding?

Lastly, librarians must be aware of the possibility of "chaos," the loss of control of a classroom that can occur when student response is made the focus of learning. As Cole notes, instructors need to possess the force of will necessary to rein in students. Instructors also need to decide if they are willing to divert from their lesson plans should student discussions take different paths (Cole and Kosc 2010, 407).

Conclusion

Classroom Response Systems are increasingly being used and evaluated in higher education. Library instruction programs that utilize the technology are finding value in having a technology that allows them to assess student learning on the fly and provide a meaningful catalyst for in-class discussions. As with any technology, librarians are still discovering best practices and looking to alleviate financial barriers to implementing CRS.

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Other Examples

Clicker (Hardware) Technologies

Smart Response Systems:
<http://www.smarttech.com/>

Promethean Activate:
<http://www.prometheanworld.com/>

eInstruction:
<http://www.einstruction.com/>

iRespond:
<http://www.irespond.com/>

Quizdom:
<http://quizdom.com/>

Powercom:
<http://www.powercomars.com/>

Free Application Technologies

Poll Everywhere:
<http://www.polleverywhere.com/>

SoapBox:
<http://qsoapbox.com/>

VotApedia:
<http://www.urvoting.com/>

Socrative:
<http://www.socrative.com/>

ProProfs
<http://www.proprofs.com/>