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Title: Consider Clicking In: Using Audience Response Systems to Spark Discussion

Courses: Any Large, Lecture-Format, Communication Course

Objectives: Students will apply and evaluate course concepts through daily discussion activities and class dialogues supported by audience response systems (i.e., clickers).

Introduction and Theoretical Rationale

Audience response systems, also known as clickers, hold much promise for use in the communication classroom. Yet potential benefits notwithstanding, implementing new technology in the classroom also offers challenges for faculty who must master it themselves while managing students' learning. Successful clicker implementation like the implementation of most technologies depends on more than just their efficacy (Leonardi, 2009; Lewis, 2007). Research has pointed to the need to meaningfully integrate clickers with course design and philosophy and to use clickers to encourage active participation. I detail two clicker-enabled activities for incorporation over the course of the semester—a daily discussion activity and whole-class dialogues—and offer strategies for making clickers work.

Clickers allow an entire class to respond to questions in real time through individual response pads. Setup usually includes a central receiver, computer, and LCD projector that processes and displays responses. Specific procedures vary but, typically, after purchasing a response pad, students register online to connect their clickers to their identities in a database for later use by the instructor (e.g., uploading responses to a learning website). The latest clickers allow students to send short phrases as well as multiple-choice responses. Universities have also used smart phones or palm computers that offer even more affordances (Chen, 2009). Emergent

technologies have begun to support students' use of their own phones to text responses. Interest in clickers speaks to concerns many instructors have about the efficacy of large, lecture classes (Boyd, 2010), and they promise benefits for attendance, retention, and learning (Bruff, 2009).

Caldwell's (2007) review highlighted the varied uses of clickers such as managing interactions between students, finding out more about students by surveying their opinions, replacing scantrons, and encouraging active thinking through participation. However, she emphasized the importance of *grounding clicker use in course learning outcomes and philosophies*. An instructor interested in encouraging active thinking during lecture might place questions throughout. An instructor wanting to review material might place questions at the end. The pedagogical design impetus should come first. The pair of clicker activities described herein should be adaptable to most communication courses, but I designed them to perform diagnostic assessment, check the students' understanding of past lectures, and most importantly, to spark discussion.

Although uses for clickers may vary, research has suggested that their effective use depends on *engaging clicker results during class*. Bunce, VandenPlas, and Havanki (2006) found that clicker quizzes in class did not affect performance much, because students did not study for them. However, incorporating dialogue about clicker questions did aid learning. King and Joshi (2008) found that active participation moderated the effects of clickers on grade improvement. Students only using clickers but not actively participating did not perform differently from students not using clickers at all. Students using clickers and participating actively saw the greatest improvement. Caldwell (2007) forwarded a tentative explanation that clickers act through checks of understanding, active participation, and peer learning. The activities presented

here—daily discussions and whole-class dialogues—were designed to encourage these processes.

Activities

Starting with Clicker Questions to Spark Discussion

The daily question activity follows a simple logic: Each class should begin with answering and discussing two to three clicker questions. Questions should be drawn from material covered within the last few classes and to be covered that day. Discussion should precede and follow revealing the correct answers. To prepare, the instructor should generate questions after each lecture for input into their clicker system. I often placed more challenging questions first to create a progression that ended with success for most of the class. Regardless, the first questions should focus on material already covered.

Whereas the first question might ask students to apply content to an example or to use what they learned to make a connection I had not made explicitly, the second question focused on more straightforward concept definitions. The second question should transition into upcoming material. The transition question need not test course material. It might instead be a provocative opinion poll related to a nonintuitive idea to be covered in the upcoming class.

The value added by this activity is in the opportunity for discussion created by asking the questions—not just revealing the correct answers. For example, after each question, we took a few minutes to explore why students erred. A question that many students missed often proved more useful than easy questions. Discussing responses before revealing the correct answer proved to be the most generative of engagement. Strategies include asking questions to push them to rethink their answers, to reword answer alternatives to make them correct, and to connect questions to other relevant course material.

The daily question activity also allows the instructor to reiterate central course themes. For example, I often included additional questions on days at the end of a subunit in the class using the clicker questions to highlight thematic elements. In a junior-level communication theory class for approximately 250 students, rather than focusing on the key meta-theoretical concepts at just one point in the class, I returned to them as we discussed each theory and between subunits to connect and contrast related theories. For example, at key transition points, I asked questions that compared the scopes of different theories or the role of a communication process across theories (e.g., the function of disclosure in social penetration theory, relational dialectics, and uncertainty reduction theory).

Clickers for Class Dialogues

Whereas daily clicker questions fit easily within already existing course designs, the instructor may also add entire classes devoted to clicker-enabled dialogues. To prepare, the instructor assigns a provocative reading or film and reading/viewing questions. Then, the instructor creates a series of slides that contain key discussion questions. During the class, the instructor shares a clip from the film or quote from the reading, asks students to reflect on their own and after a minute or so discuss with a nearby peer. Then, the instructor asks everyone to respond to a closed-ended version of the question through the clicker system. Processing the clicker results should involve prompting peer teams to share their conversation and explain their answer. Typically, a fifty-minute class can accommodate four rounds of questions.

For example, when discussing the intersection of interpretive and critical meta-theoretical assumptions in communication theory, the students viewed *The Heart Broken in Half*, a documentary about the work of Dwight Conquergood (Siegel & Conquergood, 2008). Following the procedure outlined above, I showed them a clip where a fight breaks out at a neighborhood

block party. I asked the students to reflect on the ethical responsibilities of the researcher. I circulated as they discussed. I encouraged the pairs to guess about how the class as a whole would respond. After students reflected on their own and discussed with a peer, they responded to a clicker question that asked if they would have intervened. They shared their reasoning, and we highlighted in our class-wide discussion tensions in research ethics. Clickers supported such discussions in my classes between as many as 250 students, and although a small proportion of students spoke to the entire class, everyone participated to some degree through peer discussion and clickers. The activity could thus be adapted to even larger classes.

Debriefing and Evaluating Student Participation: Balancing Play and Performance

In both the daily question activity and the class dialogue activity, successful debriefing depends on encouraging discussion by grounding the questions in current course material. More successful questions also tended to focus on more provocative, nonintuitive, or frequently misunderstood course material, but at the same time missing a question seemed to produce anxiety in the classroom about their mastery of course material. Managing the concerns created by asking tough questions may be best managed through the system for evaluating students' performance on the clicker questions. Rather than mandating a single strategy for evaluating student performance, I highlight below the questions an instructor may face in practice for not only evaluating student performance but also using clickers in general (see Table 1).

The instructor should determine what if any influence clicker results will have on student's grades and how to limit the influence of technology failures. The instructor may decide not to evaluate the clicker results at all or give credit just for meeting a threshold of participation. In my experience, clicker questions provided an opportunity for learning, because we could play

with the material without large consequences, but I found it necessary to reward those students who had performed well to motivate participation.

In any case, the grading scheme should fit the philosophy of the course. In designing a strategy for grading clicker questions, I wanted a scheme that would recognize student progress toward learning objectives while also matching the philosophy of the exercise as an opportunity to play. I graded overall performance on clicker questions throughout the semester rather than breaking it up into sections. Grading the semester as a whole limited the consequences of technology failure without ignoring students who never participated. I only considered the questions actually answered, because attendance was not required for my courses. At the same time, giving the same credit to a student who only answered one question and a student who attended regularly would not be fair. I used a hybrid grading system. I considered how many days a student answered a question, and as long as they answered one question each day 60% of the time, then their score was based on their performance only on the questions they answered. Not meeting that threshold meant a default penalty. Although clicker performance did figure into the students' grades, its relative weight was low (5-10%). This hybrid grading system did not require attendance, but overtime the value of the discussions did encourage higher attendance. However, such complex grading schemes may compound students' uncertainty about clickers. Ideal grading schemes should strike a balance between play, performance, and complexity.

Debriefing may also focus on the clickers themselves. I also afforded time in the class to discuss the clickers. After the first few weeks, consider setting aside time for informal conversations about the clickers. At the middle of the term, consider formal evaluations (using the clickers themselves). In my experience, debriefing the clickers in class allowed students to vent about their frustrations with the clicker, and it engaged peer support. Students could hear

other students' stories of success, and more than my admonitions or policy efforts, students' own interactions about the fairness and effectiveness of the technology helped mitigate their concerns.

Appraising the Activities: Managing the Technological Shortcomings

The activities work well to spark discussion, but potential drawbacks stem from interactions between the limitations of the technology and students' existing expectations. Most of my students had little familiarity with the technology. I provided information about how to register a clicker, how to troubleshoot registration problems, and how to use the clicker. At our large, state school, most of my students were technologically savvy. Instructors should be sensitive to varying levels of technology expertise especially for populations that have demonstrated a higher need for academic skill development such as first-generation and nontraditional college students.

Use a "Preseason" to Pilot Test

Instructors should consider a "preseason" period at the start of the semester to give students time to learn the technology. Although we started using clickers on the second day, we did not count responses until 75% had successfully registered. Waiting allowed for addressing concerns through practice. The clicker devices I used gave students immediate feedback that their answer had been received through a small LCD screen on the clicker and the projected results at the front of the classroom. I was able to post their responses on our campus learning website. This feedback assuaged concerns that their responses had gone through. Waiting to count also helped manage concerns about fairness, because we grounded our start date in the class's pace.

Recognize the Existing Frames Students have for Clickers

Students draw on organizational norms and institutional logics to make judgments about the fairness of clicker questions and clicker policy. Few technologies operate without errors. Grading schemes can accommodate a certain amount of problems, but strategies are needed for managing malfunctions. In my classes, students who experienced a malfunction or forgot their clicker could not participate unless the malfunction was system wide. The clicker device I used included an indicator of battery life meaning that students could know if they were about to run short. Instructors may consider using paper alternatives, but fudging an answer may prove too tempting if the activities are evaluated.

Even though the grading scheme meant that forgetting a clicker once or twice would matter little, the policy ran counter to the institutional norm that a present student should be able to participate. Students at first conceived of the clicker questions as a pop quiz drawing on a model with which they were already familiar: A student present for a quiz should be able to participate. Instructors may need to encourage students to take responsibility for clickers by changing their conceptions of the clicker activities from quizzes toward daily activities.

Balance the Monetary Costs of Clickers with Other Materials

The clicker also involved an additional cost for the students. Instructors should ask if the benefits of clickers outweigh the cost created for students. Our campus had dictated the use of a single clicker system to amortize the cost of a clicker over many semesters. I also encouraged seniors to sell their clickers to underclassmen by creating an online forum to connect previously and currently enrolled students, and I minimized the assignment of required materials to lower the overall cost of the class. A few generous students even donated their used clickers to me, allowing me to lend clickers to students for whom purchasing the device was too burdensome.

Developing classroom response systems that allow students to use their own phone to text responses show much promise too for minimizing costs.

Conclusion

Clickers have many uses, but connecting the clickers to course learning objectives and engaging the results of clicker questions through discussion are best practices that should cut across implementations. The power of the particular activities herein was in the conversations they supported, and the costs and drawbacks of clickers should discourage uses that do not yield such value (e.g., taking attendance without also encouraging discussion). Clicker-enabled activities also present a set of tensions that must be negotiated (see Table 1). Remaining mindful of implementation sensitizes us to the diversity of concerns students may have and the ways that the concerns can be interdependent. It also highlights the importance of interactions between the students themselves as a space where these concerns are negotiated, and the influence of existing organizational and institutional beliefs students use to make judgments about clickers as well as other new learning technologies.

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Table 1

Questions for Managing Students' Concerns about Clickers in the Classroom

	Students' Concerns	Potential Management Strategies
Performance Concerns	Will I be graded? How will I be graded? How will technology failures affect my grade?	Connect use to learning objectives and philosophy of course. Transparent scheme for calculating grade. Policy for technology failures that provides room for error.
Uncertainty Concerns	How will the clicker work? Is my clicker working?	Clarity in written course materials. "Preseason" days for practice. Ongoing feedback about use.
Normative Concerns	Is it fair? Is it manageable? Who is responsible for technology failures? How much will the clickers cost?	Tie policy to institutional notions of fairness. Provide opportunity for dialogue regarding the technology. Encourage student-to-student support. Balance commitments to faculty-provided technology support and student personal responsibility. Remain sensitive to differing student technology backgrounds.

Note. The clusters of questions are informed by Lewis's (2007) stakeholder model of change implementation communication.