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"Clickers" in the Classroom

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Large classes are hard to read. "What are they thinking?" I often find myself wondering while teaching Political Science classes with more than a hundred students.

The classes I teach are loosely modeled on the Socratic Method, so I always know what the handful of students speaking during any given class are thinking. But generalizing from that sample is risky. That is partly just a function of numbers: eight or nine students can never fully represent a class of 150. It is also a function of self-censorship; some viewpoints are unlikely to be expressed when students are asked to respond in front of their peers.

I have often wished that I could take the pulse of the entire class. It is difficult to know which myths to dispel or what biases to challenge if you don't have a good sense of what everyone thinks. Playing Devil's Advocate also requires some sense of which positions are most popular and which are most likely to be overlooked or undervalued.

A simple solution to this problem is index cards. I have tried this once or twice per semester in many classes. *Would a draft be preferable to an all-volunteer force? Should Brown privatize the bookstore?* The anonymous responses give me a good sense of what the class understands about certain concepts. It also tells me where their thinking could/might profitably be pushed.

But digesting 150 cards, even with allegedly short answers, is no simple task. Responses come in varying lengths and varying degrees of legibility. Some cards are much more responsive than others. However entertaining or creative, the off-beat

cards also tend to be off-topic. Collating the results from index cards, then, is difficult. As a result, they generally provide more impressionistic than aggregate data.

This year, I tested a new classroom technology aimed at addressing these problems in real time. The Personal Response System (PRS), informally known as “the clicker,” is a portable remote-control device that allows students to register their answers to multiple choice questions projected on a screen in class. Answers are recorded through receivers connected to a laptop computer. The aggregate results are instantly calculated and can be projected on the screen as a bar chart.

The clicker would seem truly revolutionary but for the TV quiz show *Who Wants to be Millionaire?* Anyone familiar with the popular program quickly recognizes that the clicker brings “Ask the Audience” into the classroom. Those familiar with the legislative process recognize the similarities between the clicker and the voting system in many legislatures—although in the legislative context, registered votes are always associated with specific names.

The clicker can be configured to be anonymous—and that is how I used it this past academic year. With the assistance of an Instructional Technologist from the CIT, I used the clicker in the Introduction to Public Policy last fall (enrollment, 125) and in Ethics and Public Policy in the spring (enrollment, 155).

Overall, my experience was quite positive. I learned a lot about my students and probably improved a few classroom lectures as a result. There are drawbacks with the clicker, however, that might counsel waiting for additional innovations in technology and in classrooms. The benefits and drawbacks are spelled out briefly below.

Benefits

The most obvious benefit of the clicker is that it increases the level of engagement in the classroom. In a class where only a handful can meaningfully participate in any given session, the entire class feels more involved through the clicker. Registering their own opinion gives students a larger stake in the discussion. The minority often wants to convince others. Leaving class, I often heard students discussing how they “voted.”

The clicker also adds dramatic tension to class. During the actual minute or two of voting, while each click is registered on the screen, there is often an air of excitement about the impending result. Sometimes, the results were breathtaking. While lopsided results tend to be disappointing, close votes were invigorating. The times that the class split right down the middle on an issue there was almost always an audible and excited response to the final tally.

Its major teaching benefit is in providing a much better sense of the class. Instead of operating off guesses or conclusions drawn from the most vocal students, the clicker provides a far more accurate and sometimes quite surprising picture. I would have guessed overwhelming opposition to racial profiling at the airport. Instead, I quickly learned that half the class considered the practice acceptable. I spent much more time on arguments against such profiling than I would have had I assumed most students were already opposed.

The clicker also dispelled some myths about radicalism at Brown. Indeed, my primary conclusion from a year of clicker questions is that Brown students are far more moderate than is generally assumed. And they are occasionally surprising in their conservatism. For example, 60 percent of the Introduction to Public Policy students agreed with the statement that “Title IX has gone too far in promoting gender equity in sports.”

Finally, and possibly most important, the anonymous feature of the clicker assures a voice for viewpoints that might not otherwise be expressed. Opponents of affirmative action, for example, might feel constrained against expressing their views out loud. The clicker is not subject to peer pressure in the same way as speaking out loud in class. A clicker question can also establish that a seemingly minority position is actually widely held.

In Ethics and Public Policy, I used the clicker to supplement our consideration of honor codes and academic honesty. That discussion inevitably raises questions about whether violations of the academic code are widespread at Brown. With the protection of anonymity, I asked whether students in the class had ever violated the academic code. Six percent of the class said they had done so more than twice. Sixty-nine percent said they never had. While there are limitations on the interpretation of such results, they were fairly reassuring that cheating is not a widespread problem under the existing code.

Drawbacks

There are several drawbacks to the clicker. First, few classrooms at Brown are wired for the system. My Teaching Assistants had to set up two receivers on tripods at the beginning of each class last fall. In the spring, Media Services hard-wired two receivers to the wall in lower Salomon; although it turned out that a third receiver would probably have allowed votes to be registered much quicker.

Second, the system is relatively slow, at least by the standards of an often-instantaneous world. It generally took between 60 and 90 seconds to register all votes. Unfortunately, the system gets overloaded if too many people click at once. I

found it worked best when I orchestrated the voting by rows. Also, the clicker works like a television remote control and it must be pointed directly at the red light in the receiver. Inevitably, some seats in a large class are much better positioned to have votes registered than others.

Finally, it was more of a challenge than I expected to get students to remember to bring their clicker. Inevitably, a few students will lose or damage it, raising issues about how much Brown will charge for a replacement. There was considerable concern in the fall when students were informed that they would be charged \$100 for a lost clicker. Once one realizes that the process is exactly the same as checking a book out of the library, however, these concerns generally dissipate. I don't know any students who worry about checking out library books because they will be charged if they lose them.

The drawbacks had little apparent effect on how students viewed the clicker. When asked on the final day "Do you recommend using the clicker in PS10 next year?" the response was 94 percent yes, 6 percent no.

Conclusions

That does not mean that I will always use it in large classes. Only some classrooms will adapt well to its use. Moreover, the current technology is still a bit cumbersome, especially for classes well in excess of a hundred students. The technological drawbacks will undoubtedly lessen over time. PRS is a commercial product. One competitor is now offering a device that uses radio waves instead of infra-red beams, promising a quicker and more versatile service. As this technology becomes faster, its flexibility and usefulness in the classroom will increase.

No innovation, of course, will keep people from forgetting their clicker, or having their battery die. But as these technologies improve, classrooms will become more interactive and, I think, better environments for learning.