

## USING STUDENT RESPONSE SYSTEMS (CLICKERS) IN THE HISTORY CLASSROOM

Thomas Britten

University of Texas at Brownsville and Texas Southmost College

Teaching United States history surveys as part of the core curriculum requires college-level historians to ask themselves many questions. What information should we leave in or pull out? Should we emphasize content or process? How can we engage students in a subject that many regard as simply a “hoop” to jump through en route to graduation? One of the challenges for historians who take teaching responsibilities seriously is to create a stimulating learning environment that actively engages students and makes course material relevant. At the same time, of course, we need to deliver to students a meaningful introduction to the major themes and personalities in American history. We can measure success in accomplishing this feat by gauging the quantity and quality of student involvement in class. Class participation indicates that students are engaged, that they feel comfortable asking or answering questions, and that they care about what is occurring in the classroom. From the instructor’s perspective, class participation provides critical feedback on student attention and comprehension and gives a strong indication of student investment in the learning process. But that raises another question: How can instructors objectively, fairly, and efficiently measure and assess participation, particularly in large classes with fifty or more students?

### Problems of Fairness in Evaluating Student Participation

Writing about class participation in the *Journal of Education for Business*, Molly B. Pepper and Seemantini Pathak voiced a complaint shared by virtually all teachers. “Assigning a grade to class contribution,” they observed, “may be one of the most controversial and difficult challenges that instructors face.” In fact, some scholars have argued that grading class participation makes students feel coerced into speaking when they have little to offer, that it increases racial and gender discrimination, and demotivates students from learning. They add that instructors should determine student grades using strictly objective academic criteria such as exams, quizzes, and research papers.<sup>1</sup>

But what if there was a way for teachers to evaluate class participation that permitted every student an equal opportunity to respond, that prevented any individual or small group of students from dominating the conversation, that was completely objective and measurable, and that was simple and relatively inexpensive to use?

---

<sup>1</sup>Molly B. Pepper and Seemantini Pathak, “Classroom Contribution: What Do Students Perceive as Fair Assessment,” *Journal of Education for Business* (July/August, 2008), 361.

### Evaluating Student Participation: One Possible Solution

One year ago, I began experimenting with a student response system (SRS) in my U.S. history survey classes. I usually teach two or three sections of the survey each semester. Each section normally consists of 65-70 students. The SRS that I selected integrates quickly and easily with Microsoft PowerPoint.<sup>2</sup> As I present my lesson each day, I include four or five interactive slides with questions (multiple choice, true-false, opinion) relating to critical points that I have covered. Every student has a small wireless response device (or “clicker”) about the size of a cell phone. At various intervals during class, I present a PowerPoint slide to students with a question and they have ten to fifteen seconds to record their answer with their individual clickers. The program I use displays a timer to alert students how much time they have to record an answer and a counter so I can tell how many students have responded. Students can change their answer as many times as they wish prior to the timer running out. A small receiver connected to my computer via a USB port registers the last response recorded from each clicker. Once students have responded (or the timer runs out), the program displays a bar chart illustrating how the class answered the question—how many students selected answer A, B, C, etc.

Which of the following is NOT consistent with mercantilism?

- A. Controlling trade
- B. Reducing imports
- C. Possessing a strong navy
- D. Increasing exports
- E. Reducing colonial dependence

0% 0% 0% 0% 0%

Controlling trade  
Reducing imports  
Possessing a strong navy  
Increasing exports  
Reducing colonial dependence

20  
Countdown  
Time  
On Slide

1 of 5

The students' individual responses remain anonymous to the class, but not to me. Since the technology allows instructors to link each clicker to a student's identification number, I can quickly and easily determine who answered correctly, who answered incorrectly, and what answer they selected. Students take their responses seriously, because they know that part of their course grade depends on paying close attention and

<sup>2</sup>The system is TurningPoint, an audience response system manufactured by Turning Technologies LLC of Youngstown, OH. See [www.turningtechnologies.com](http://www.turningtechnologies.com)



answering questions correctly. Based on my experiences thus far, I believe there are several good reasons for history teachers to consider implementing student response systems in their classes.

### **Influence of SRS on Student Participation**

The student response system enables students to give immediate feedback both to the instructor and to each other. Once the instructor reveals the class results, he or she has opportunities to give feedback to the students. For example, when a question appears on the screen, the students click in their answer, providing immediate feedback to the instructor. Once the instructor displays the class results, the students get feedback from each other as they learn how the rest of the class answered the question. The instructor then can comment on the results and explain why a particular answer was correct or incorrect. This experience also can motivate students to work harder in class. According to a study conducted on student response systems at the University of Oklahoma College of Pharmacy, one participant reflected on how peer comparison inspired her to study more after she answered a question incorrectly that the majority of her classmates answered correctly. Although her identity remained anonymous, she felt "negatively reinforced" to study more to avoid future embarrassment for answering incorrectly in future SRS activities.<sup>3</sup>

### **Influence of SRS on an Instructor's Teaching**

Receiving an immediate indication of student comprehension informs me if the class is ready to move on to new material or if I need to re-teach material right away. If, for example, I see that half of the class missed the question on popular sovereignty during my lecture on the Kansas-Nebraska Act, I can employ a new strategy or use alternate examples *on the spot* to help students who are struggling. After re-teaching the concept, I re-poll the class to see if my second effort was successful. I am frequently surprised that material that I believed I had covered adequately and clearly has in fact been misunderstood or not covered as adequately or clearly as I had hoped. If the great majority of students answer the question correctly, I can proceed with some confidence that they are ready for new material.

### **Influence of SRS on Student Attendance**

The student response system provides a quick and simple method of taking attendance. There is no need for me to create seating charts or sign-in sheets or to call roll. Responding to a question indicates that a student attended class. Moreover, when students understand that their clicker responses count as part of their grade, they are more apt to attend class regularly.

---

<sup>3</sup>Melissa S. Medina, Patrick J. Medina, et al., "Use of an Audience Response System (ARS) in a Dual-Campus Classroom Environment," *American Journal of Pharmaceutical Education*, 72 (2008), 5.

### **Influence of SRS on Class Inclusiveness**

Student response systems allow *every student* a quick and easy way to interact with the teacher. Quiet students or those who sit in the back row have as many opportunities to give feedback as more extroverted students. Since clicker responses remain anonymous except to the instructor, students do not fear embarrassment or experience anti-participation peer pressure. To some extent, the clickers are equalizers that give a voice to students who otherwise might never respond to an instructor's questions.

### **SRS Actually Improves Students' Willingness to Participate More Actively**

My experience has shown that students are more apt to participate verbally when I use student response systems. After I display how the class answered a question and explain why the other answers were incorrect, students often respond with comments about the question, perhaps with "Oh, we thought you meant this" or "I answered this way because ...". When students realize that many of their classmates answered in a similar fashion, they feel more at ease knowing that they were not the only one to answer a question incorrectly. When students are comfortable in class, they are more apt to interact with the professor and each other. Student comments regarding their lack of comprehension of a certain question is extremely important in Deep-South Texas where English is not the primary language of many students. Even intelligent students who have studied diligently might not understand a question because of language usage rather than lack of content knowledge. As a result of this process, I have learned a great deal about how to word questions so that students will understand them better.

### **Student Response Systems—A Response to Educational Research**

Educational research clearly shows that the more feedback students receive from the instructor the more they will monitor their learning and the more significant will be the learning outcomes. By receiving daily and multiple instances of feedback from their clicker responses, students gain a glimpse of how they are doing in class—if they are actually "getting it" or not. Without this feedback, students, particularly those who believe that they understand the material, have to wait until an exam to demonstrate what they know. For many students, learning at test time that they have not mastered the material is understandably demoralizing. Student response systems have the potential to alert students earlier, so they can alter classroom behavior and study habits and get help before the exam.

### **Student Response Systems are Flexible**

A great advantage of the SRS that I use is that the technology does not drive the instructor or the content of a particular class. Individual instructors can customize it to use as they see fit. History teachers can devise several strategies for harnessing student response systems to focus class attention. For example, I have used interactive slides



- a. at the beginning of class to see how many students remember the major themes of the previous lesson or to ask a provocative opinion question to grab attention and/or introduce the theme of the day's lesson;
- b. at the end of class to determine whether students grasped the main points of the day's lesson or to determine their readiness for new material; a "teaser" question can be useful at the end of class to prepare them for what I intend to cover in subsequent classes;
- c. interspersed throughout the lesson (every seven to eight minutes or so) to encourage students to maintain focus and to break-up a lecture into segments; and
- d. to solicit student opinions about controversial issues: For example, Was President Truman justified in ordering that atomic bombs be used against Japan? Do you think that a strong, activist federal government is beneficial or a hindrance to most Americans? Should the United States erect a wall along its border with Mexico?

### **Student Response Systems are Easy to Use**

Several SRS are on the market, but I prefer TurningPoint, a program that works seamlessly with PowerPoint. If you know how to create a PowerPoint slide, you can learn how to create TurningPoint interactive slides in a matter of minutes. At the end of class, a couple of mouse clicks provide access to downloadable reports (in Microsoft Excel) to detail students' responses. Several types of reports are available such as the number correct, percentage correct, class average, and more.

### **Effect of Student Response Systems on Student Achievement**

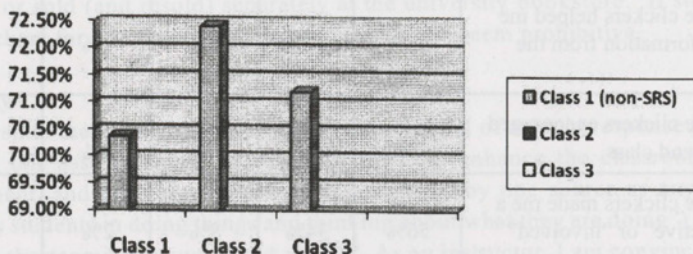
Including class participation as a component in determining student grades, rather than basing final grades only on exams, quizzes, and research papers, has the potential to boost final grade averages. I use five interactive slides per lecture and assign a point value of two points per correct response.<sup>4</sup> Thus, students can earn up to ten points per class period. I keep a running total of their class participation points just as I do with quizzes and exams. In my U.S. surveys, student class participation counts ten percent of their final grade. During a recent semester, I used the student response system in two classes and taught one without clickers. The lectures, exams, and writing assignments were identical in all three sections, but the final class averages reveal that the two

---

<sup>4</sup>Students who answer opinion questions and/or questions with no right or wrong answer receive one point for participating.

sections that used the student response system performed slightly better than the class that did not use clickers.<sup>5</sup>

Comparison of Final Class Averages Between SRS Classes and Non-SRS Classes



### Student Evaluation of the Student Response System

The vast majority of students who used clickers in recent classes judged that they benefitted from the experience (see chart on next page).

### Potential Problems with Using a Student Response System

Although my experience with using a student response system in survey courses has been largely positive, there are legitimate concerns that require careful evaluation before employing clickers in the classroom.

### Technological Problems

Using a student response system requires a hi-tech classroom or media cart with a computer or projector. Any teacher who has depended on a classroom computer, data projector, or even an overhead projector on occasion has faced frustrating equipment breakdowns or malfunctions. Adding a student response system to the mix increases the chance of a technology meltdown.

<sup>5</sup>The class average of the clicker classes was higher than the non-clicker class because of the inclusion of a class participation grade for the clicker classes. There was no statistically significant difference in exam scores between my clicker and non-clicker classes. In a study conducted by Christopher T. Edmonds and Thomas P. Edmonds, students enrolled in SRS classrooms performed 3.15 percentage points better than students in the non-SRS classrooms after controlling for age, gender, prior GPA, and ACT scores. See Christopher T. Edmonds and Thomas P. Edmonds, "An Empirical Investigation of the Effects of SRS Technology on Introductory Managerial Accounting Students," *Issues in Accounting Education*, 23 (August 2008), 421-434.



Question	Very Much	Some	Not Much	Not at All	Total # of Student Responses
Using the clickers helped me pay closer attention in class	68%	29%	2%	1%	161
Using the clickers helped me retain information from the lecture	56%	37%	6%	1%	165
Using the clickers encouraged me to attend class	73%	20%	6%	1%	165
Using the clickers made me a more "active" or "involved" learner	56%	34%	8%	2%	159
Using the clickers allowed me to participate in class	68%	26%	4%	2%	163
Using the clickers made the class more interesting	60%	28%	9%	3%	166

### Do Student Response Systems Facilitate Cheating?

Using a student response system in a large class poses new challenges to academic integrity. Students can see how neighboring classmates are answering by watching what button is pushed or simply by whispering the correct answer since everyone is viewing the same question. With SRS, one cannot use multiple versions of a quiz or exam as could be the case with pen-and-paper exams. There is also the possibility of one student bringing his classmate's clicker to class and answering questions for him or her and thus registering attendance. This threat requires close monitoring and periodic headcounts to ensure that responses do not outnumber the students in attendance.

### Do Clickers Increase Student Anxiety?

Some students express concern that their clickers might not be functioning correctly, that the receiver is not recording their responses, or that they did not have adequate time to click in an answer. Such anxieties gain greater weight if you use clicker responses as part of course grades. At times, students are so busy writing notes that they are not aware that an interactive slide is on the screen. The instructor can mollify most of these concerns, however, by giving a fifteen-minute SRS orientation at the beginning of the semester and by granting a "point cushion" (of perhaps two class

periods worth of clicker points) to all students to address any possible technology breakdowns during the semester.

### **Do Student Response Systems Increase the Financial Burden of Students?**

Although I distribute and collect a class set of clickers before and after each class, the most efficient method of using student responders is to have students purchase them. Individual clickers cost \$35 to \$40 each and could be packaged with the textbook or sold (and resold) separately at the university bookstore. If students are using clickers for one class only, this expense might seem prohibitive.

### **Summary**

Despite these issues, I believe that the potential of student response systems to permit a fair assessment of student participation, enhance the classroom-learning environment, and promote active learning (defined by one source as anything that "involves students in doing things and thinking about what they are doing") outweighs potential shortcomings enumerated above.<sup>6</sup> As an instructor, I am convinced that the immediate feedback and data that I receive each class improves my teaching by removing the guessing game of ascertaining student comprehension during classroom lectures. With this invaluable information in hand, I can evaluate the pace of my lectures, rethink my lesson organization, and re-teach when necessary. This alone makes clickers worthy of serious consideration.

---

<sup>6</sup>Pepper and Pathak, "Classroom Contribution," 360.