

## **Using Clickers to Expose and Counteract Negative Stereotyping of African American Students in the College Classroom**

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### **Overview of the Course for Which Clickers Are Used: Introduction to Psychology**

Introductory Psychology is taught both fall and spring semesters with an enrollment of 550-650 students each semester. Students are enrolled in 2 course sections with a maximum of 350 students per section. The majority of students are freshmen. Students attend 2, 75-minute lectures per week and 1, 50-minute lab/recitation section per week. Recitation sections contain no more than 35 students each and are taught by a graduate teaching assistant (TA). In the recitation sections, TAs carry out brief laboratory-type experiments and clarify questions that students may have from lecture presentations or web assignments. Weekly quizzes on material covered in the labs are administered by the TAs as well.

### How clickers are used

Clickers are used in lectures as well as in lab sessions. In lectures, clickers are used to provide both instructor and students with formative “snapshots” of student thoughts about and understanding of the lecture content during the lecture. With clickers, class lectures now become an interactive process: by using well-constructed clicker questions, I discover in real time what material students find difficult to grasp; I can therefore unravel immediately specific “knots” in student understanding of the course material.

I use clicker questions as determinants of a number of measures, including:

- How prepared are students prior to the lecture
- How well a concept has been grasped after its presentation
- Whether students have preconceived notions about particular topics that could interfere with their understanding of lecture material
- What students really think about sensitive or controversial issues without exposing individual students to embarrassment, censure, or ridicule

The use of clickers also provides me with ongoing formative assessment; it helps dispel the erroneous assumption of many instructors that students understand their lecture material. This mindset, which psychologist David Myers (Myers, 2005) has termed the “Curse of Knowledge” refers to the expert’s inability to understand what the novice doesn’t know. Without feedback to the contrary, instructors commonly assume that students accurately perceive and understand the intended message. This is often a faulty cognitive mindset, which can interfere with effective instruction. Clickers provide a mechanism for instructors to combat the curse of knowledge by increasing the instructor's ability to connect with and understand the student or novice perspective.

Clickers also provide immediate formative assessment benefits for both students and TAs. During lab/recitation sessions, students receive immediate feedback on quiz answers instead of having to wait for a graded pencil and paper quiz to be returned. Immediate feedback also gives the TAs a measure of how effectively their material had been presented to students. Because student aggregate responses to quiz questions can be displayed immediately, quizzes serve not only as an assessment tool, but can be used to provide instruction at the same time. Explanation and clarification of quiz questions can be provided immediately. Thus, students get additional and immediate instruction over any quiz material that they may have missed, and receive immediate positive reinforcement over quiz material they answer correctly. Clickers provide seamless integration of assessment and instruction.

### **Motivation for Using Clickers**

My motivation for using clickers stems from the need to engage literally hundreds of students in a lecture-based, large enrollment survey course. Clickers have been particularly effective in combating student boredom and detachment during my 75-minute lectures by generating student interest and involvement. Clickers allow each and every student to have a “voice” in class discussions. This is particularly important when “sensitive” issues are discussed. Clickers allow students to participate in lecture discussions without fear of ridicule or criticism. With clickers, my students are now far more likely to express their true opinions on controversial issues. This newfound openness allows me to identify and challenge students to recognize their own biases

and to confront their own and others' biases without the fear of public embarrassment and/or harassment (Caldwell, 2007; Briggs, 2008).

For example, attitudes on race and ethnic issues can be targeted easily with clickers without triggering defense mechanisms. It is assumed by many that the racial climate in America has progressed to the point where there is no longer a need for special "accommodations" to be made for minority groups to achieve economic and social equality. This is, indeed, an erroneous assumption. However, because of the current climate of "political correctness," few have the courage to challenge social convention and most comply with being "politically correct." Ethnic biases are rarely openly expressed and, as a consequence, become more entrenched because these biases are rarely challenged. Prejudicial attitudes and behaviors have become more implicit than overt and, consequently, more difficult to identify and eradicate. Behaviors that appear to be egalitarian may often mask prejudice (Salvatore & Shelton, 2007). Clickers can be used to expose negative and prejudicial attitudes towards minorities and to allow these attitudes to be challenged and counteracted.

Another motivation for using clickers in Introductory Psychology is to train students to read assigned textbook material *before* they come to lecture. College instructors frequently lament that students come to class unprepared and have not read their assigned materials before lecture. I've experienced this often myself. Posing clicker questions at the beginning of each lecture about textbook content gives me a mechanism to change this student behavior. Many more students come to class better prepared and their participation is therefore more informed.

## **Implementation**

### Grading Policy

Clicker points are awarded as extra credit points for each of the 6 course exams during the semester. A correct answer is required in order to receive points for content and conceptual questions. Points are rewarded for participation for opinion questions. The algorithm for awarding points is as follows:

- 90% and above of the total available points = 3 points
- 75-89% of the total available points = 2 points
- 50-74% of the total available points = 1 point
- 1-49% of the total available points = 0 points

### Types of Questions Asked

I ask 3 to 5 clicker questions in each lecture. Clicker questions include:

- Content and reading questions (questions over the assigned textbook readings)
- Conceptual questions (designed to gauge how well students understood a concept I just presented in lecture)
- Opinion questions (designed to target bias and attitudes, including those related to sensitive topics).

Content and concept questions have a “right” or “correct” answer whereas opinion questions do not. I also ask “questions on the fly,” which develop spontaneously out of a lecture point. It’s quite rewarding when a class of 300 students urge you to ask a clicker question about a concept that has just been covered because they are interested in delving deeper into the lecture material. I adopt or adapt content questions from the textbook’s student study guide and/or publisher-supplied test-bank questions. I write my own conceptual and opinion questions.

Below is an example of one of my conceptual questions, involving classical and operant conditioning. Introductory Psychology students frequently struggle in differentiating classical and operant conditioning. After reviewing the two forms of learning, I ask students to visualize themselves floating on a rubber raft off the Gulf shore. In order to get students in a stress-free mindset, I tell them that I'm going to play a little 'relaxation' music. At that point, I play the "Jaws" theme. After the class stops laughing, I pose the following clicker question:

Which form of conditioning explains why someone floating on a rubber raft off the Gulf shore would find hearing the Jaws theme disturbing?

- A. Classical Conditioning
- B. Operant Conditioning

After displaying the histogram of the class responses to this question, I ask students to justify their answer to the person next to them (using principles of peer instruction/"think-pair-share"). The class is generally split 50/50 on their responses before I require them to justify their answers to their neighbors. After they've had time to discuss their answers, I re-poll the class and the results shift to a 60/40 split. Interestingly, the majority of students move to the incorrect answer. When the correct answer is revealed, students who held their ground pump the air with their fists, jump up and shout "Yes!", and engage very spontaneously in "I was right!" behaviors. This provides me with a great teaching moment. I can further delve into classical and operant conditioning by discussing prejudicial attitudes and behaviors can be classically conditioned, easily and unconsciously (Staats & Staats, 1958).

Other examples of i>clicker questions involve exposing and challenging erroneous beliefs and thought processes/models students hold regarding racial/ethnic/gender issues. For example, when covering material on intelligence testing, I ask which sex is smarter. There is consistently a 60-40 split with females voted as being smarter than males. Male students, of course, then want to know the class composition of females versus males. Interestingly, the composition of females vs. males in the typical Introductory Psychology class is 60-40 as well. This demonstration acts as a springboard to subsequent lecture conversations involving racial/ethnic stereotyping and frees students to express their true opinions through clicker questions.

## **Results and Conclusions**

i>clicker use has increased class participation, class discussion, student preparation, and student understanding of lecture material. Although attendance in lectures isn't mandatory, students comment frequently that they really value the opportunity to earn clicker points and, consequently, make every effort to attend class lectures. They also comment that the clicker questions in lecture motivate them to read the textbook before they come to class.

Sample formative feedback responses from students on the use of clickers in Introductory Psychology lectures include the following:

“...I enjoyed the clicker questions because they helped me understand [course] information. I enjoyed the lectures a lot. It was very interactive with the large class...”

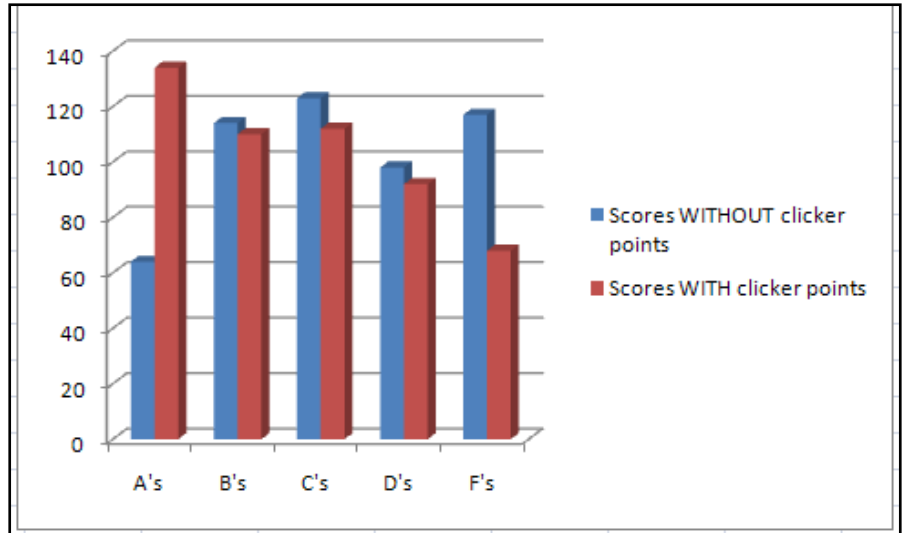
“... lectures kept me interested in the subject and they usually involved the class in discussion. I have been in other large classes like this before, but none of them were this interactive with the students.”

“...the clicker quiz helped because it allowed me to see what I was truly understanding and what I thought I was understanding but really wasn't.”

The overall impact of clicker questions on student grade outcomes is that the number of F's and Ds decreased consistently whereas the number of As and Bs increased compared to grades without clicker extra credit points. When Introductory Psychology final grades from a recent semester were analyzed, the biggest increase in a single grade category was the increase in the number of As. Although the number of Fs and Ds decreased, it appeared that the “B” students benefited most from clicker point opportunities (because their grades were “bumped” upwards to an A).

While no formal study was conducted in measuring learning outcomes, an exam covering neuroscience and human behavior—arguably the most difficult content in the Introductory Psychology course—illustrates a very dramatic impact of the clicker extra credit points on grade outcomes.

In this exam, the number of “A’s” **increased** from 12% to 26% whereas the number of “Fs” **decreased** from 23% to 13%.



In short, clickers have encouraged students to come to class better prepared and to actively participate in lecture. The formative assessment benefits of clickers in the Introductory Psychology class have been significant and notable.

## **Relevant References/Citations**

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