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Using Classroom Clicker Technology to Enhance Student Engagement

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Abstract

Classroom clicker technology is used in many K-12 and university settings. The use of clickers is often seen as a way of engaging students with technology "native" to their generation. Handheld electronic gadgets are clearly popular with students. While clickers may not have the "wow factor" of the latest mobile phone or MP3 player, students generally seem to find clicker technology appealing. Faculty members, who may find technology a bit more daunting, find value in clickers for other reasons. Clicker technology is particularly appealing in large, auditorium style classrooms, where it is often difficult to know and engage all members of a class in weekly lecture interactions. This article focuses on how one University implemented a standardized clicker system for use by faculty across campus; in addition, the article discusses activities using clickers in a first- year seminar to better engage generation Y students who want technology and interaction in the classroom.

Student engagement is essential in ensuring students' success in the classroom. Considering the needs of the current population of college students, coupled with the trend of increasing class sizes, technology, and the use of clicker systems in particular, is an attractive option for reaching this demographic. In 2006, a group of Kutztown University faculty members

began discussing the merits of clicker system standardization, which would afford students the ability to purchase one system for use in all or any courses during their college career. Prior to this point, clicker use at the University was limited, and professors who were using clickers were specifying potentially different systems on a per-class basis. There was little coordination in the selection of systems, which led to sub-optimal results. The potential for students to need several different clickers for their classes was real. This ad hoc approach to clicker selection sometimes resulted in students purchasing a device that might only be used in a single class.

Faculty members knew a coordinated, sustainable clicker approach was needed. Moreover, clickers were seen as one possible aid in helping engage students in a large classroom building that was recently completed on campus. After a great deal of collaborative exploration, piloting, and discussion, a single clicker system was selected. This system has been in use, primarily in our large classroom settings, since 2007, with reasonably good results--both in terms of system reliability and user satisfaction. Clicker use survey data and anecdotal feedback from students and faculty are generally positive. Specific discussion of the implementation process and feedback from the pilot program can be found in "*Implementation of a University Standard for Personal Response Systems*" (Jefferson and Spiegel, 2009). Also, Steslow's (2009) "*Click Here to Participate: Participation and Student Performance in a Large Business Law Course before and After Implementation of a Remote Personal Response System*" includes three semesters of clicker use survey data from the students in a large-classroom, Business Law course at Kutztown University.

Implementing a clicker program on a university-scale is a rather large undertaking. No one clicker system will suit all needs ideally, and even if a system is discovered that does seem ideal, the "fit" may be transitory. Vendors may merge and clicker systems will evolve.

Sometimes this "evolution" may require a rethinking of direction. Technologies evolve too. A few queries with a favorite Internet search engine will reveal clicker or polling applications for mobile phones (De Lorenzo, 2007). Students have already asked, "Why can't I use my cell phone as a clicker?" Netbooks, at around 300 dollars, are now too expensive to be considered as clicker surrogates, but the cost trend of these devices is clear. Eventually, Netbook technology may be competitively priced with clickers. Once that parity, or near parity, occurs, will clickers still be needed?

One interesting "feature" of clickers is that they are *limited* in functionality. Calling a limitation a feature may seem like an odd notion, but clickers, with their specific, focused purpose, do work well in keeping students on task. Eventually, mobile phones and Netbooks may make their way into the classroom, but how many of those devices will be running the clicker application and how many will be on the social software site of the day? For now, clickers may be the safer choice.

One of the reasons Kutztown's clicker program has been a success is that there is coordination and support among those involved in the program. Our technologists maintain the software and antenna systems, and the techs are on call to fix these technologies to ensure minimal classroom disruption. The University bookstore serves as a "warranty" depot. If a student does have a defective clicker, it can be replaced on campus, with little fuss. Faculty members have easy access to a training department on campus, so faculty training on the technology is literally a phone call away. Lastly, with one standard clicker system, less time is spent in the classroom teaching the technology. Over time, the clicker has gone from novel to somewhat commonplace. Faculty members all know colleagues who are using clickers, and they now have enough *indirect* exposure to the technology that their confidence and willingness to try

clickers has increased. Moreover, the technology is not particularly difficult to use. It involves software installation on the faculty member's computer, which in turn makes a traditional PowerPoint presentation interactive. Most of the work is done in PowerPoint. The faculty member simply builds objective questions into the PowerPoint for the given lecture. The Information Technology (IT) department adds a small USB antenna to the workstation in the lecture hall. The professor conducts the lecture in a normal manner using the PowerPoint to emphasize key concepts. Students use their clickers to respond to questions the professor has embedded strategically throughout the PowerPoint presentation. This, in turn, generates interest and *actual* discussion in the classroom. The technology serves as a "magnet" and tends to draw more students into the discussion.

Encouraging faculty to use such technology is an important step in reaching students, but first it is important to know who they are. Traditional-age college students, known as Generation Y (or Millenials, the Net Generation, or the Digital Generation), have grown up with technology and are the most socially connected, multitasking students to enter college (Oblinger and Oblinger, 2006; McGlynn, 2008). According to the Pew Research Center's study of 50 million millenials, this generation is the first truly digital generation; indeed, technology, according to Tapscott (1998), is like air to this population of students. Howe and Strauss (2000, 2007) described these students as fascinated with technology and pointed out their need for group activity and connectedness to others through social networking sites. Oblinger and Raines (2002) also concluded that these students want technology and group activities in the classroom. In many facets of their lives, from entertainment to learning, this generation prefers audio, video, and interactive media (Carlson, 2005). Their ability to use technology has made these students a generation of multitaskers who hate busy work but prefer learning by doing and receiving instant

feedback ("How the New Generation of Well-Wired Multitaskers is Changing Campus Culture," 2007).

The key, then, to reaching these students in the classroom is active learning and student engagement. The data reported in the National Survey of Student Engagement (2009) show that students had a positive attitude toward interactive technologies (including clicker systems) as they related to their interaction with faculty and their own learning. Generation Y students are accustomed to and want collaboration, immediacy, and connectivity (Skiba and Barton, 2006). This generation, being more socially connected, wants classroom activities that provide opportunities for interaction. According to Oblinger and Oblinger (2005), if such interaction is not provided, students will not come to class. Skiba and Barton (2006) suggest that clickers encourage interaction, even in a lecture environment, enabling faculty members to ask questions and students to respond and receive comments immediately. Because students' responses are aggregated, students learn what other students are thinking, and faculty can build further questions from their responses. Faculty can ask questions in real time using clicker systems. Students who may be reluctant to speak in a large lecture tend to respond to questions more readily due to the anonymity of the responses given through the clickers, thus feeling like they are participating along with other students in the class without needing to vocalize their response. Clicker systems can also be enjoyable because this technology can allow faculty to create "games" through which students can learn and assess their understanding. As McGlynn (2008) points out, this is a generation that wants immediate feedback, and having students use such classroom technology enables that immediacy. Rickes (2009) echoes this sentiment, suggesting that such devices provide the instant feedback that these students so strongly desire.

So how do clickers resonate with our students and how can faculty use them? The faculty members in the Advising Center at Kutztown University were early adopters of clicker technology. In the first-year seminar for undeclared students, a course which is taught in a large classroom, faculty used clickers to better engage students in learning and provide them with instant feedback. Dangel and Wang (2008) have pointed out that in using clickers, it is important for faculty to help students apply what they have learned, analyze information, evaluate, and even create. The Advising Center faculty have done so in developing specific clicker-based activities to engage students from the beginning of class, develop their critical thinking skills, learn new information in enjoyable ways, and give and receive feedback during class. These activities include ice breakers and discussion starters which get the students immediately involved in class and engage them in critical thinking, as well as a music stereotype audio and video activity and a video-based guessing game which engage students in dialogue and reflective thinking about the course content.

The quickest and easiest way to get started with clickers is to develop simple icebreaker questions or questions about controversial topics to generate class discussion. In the first-year seminar course, the faculty almost always start class with a clicker question to wake students up and make them fully present in the class, which is necessary for learning and interaction to occur. Icebreaker questions can be as simple as campus trivia. For instance, at Kutztown University, there is a lingering legend that a ghost named Mary haunts the Old Main building. If this question is asked in one of the first classes, students find this interesting because they have not been on campus long enough to know the story. The questions can be as simple as "What is the name of the Ghost that haunts Old Main?" A question like this is a good icebreaker because it is fun and it engages first-year students as they discuss interesting stories about their new home.

Students can also be asked questions about controversial topics by faculty to generate discussion. For instance, in a course on death and dying, a faculty member could get an idea of the students' feelings about euthanasia. While some students may be hesitant to voice their opinions without knowing how other students in the class feel about the topic, if all the students share their opinions anonymously through the use of clickers, then more students may be comfortable talking, knowing that at least some other students in the class share their views. Also, a faculty member can ask a controversial question simply to know where his or her students stand before beginning the discussion of a topic in class.

Once faculty members become comfortable using clickers, they can integrate media into clicker activities as well. One such example is the music stereotype activity used in the first-year seminar. This activity is interesting to students because it combines audio, visual, and hands-on participation. First, students are asked to listen to clips from ten songs which represent different musical genres. As they are listening, students are also asked to guess the name of the song, the artist, and the genre. While this is not the point of the activity, it excites students and gets them involved in what feels like a game show. They can guess through the personal response system and be a part of the game without the risk of being wrong or embarrassed publicly. Student can be asked to choose one title, artist, and genre out of several possible choices. The answers are immediately displayed – students know what they got right or wrong, and, more importantly, they are engaged in the activity, of which the most important part is yet to come: the discussion of musical stereotypes. From the ten songs, a class discussion ensues about what preconceived ideas people have about different types of music – the types of people who listen to a particular type of music, what they look like, what type of people they are. The point of this exercise is to break down musical stereotypes as a transition to discussions of other stereotypes and how

students can break those down and embrace diversity on campus and in their personal and professional lives. After the listening, guessing, and discussion parts of the activity, students then watch faculty-produced videos of students who talk about their favorite type of music, whether or not they believe stereotypes exists, and, most importantly, discuss how they do not fit the stereotypes. This activity engages students through something they all love – music – and incorporates audio, clickers, PowerPoint and video.

One of the activities for which the music stereotype activity works well as a transition is a video-based guessing game called "What's My Major?" In this activity, students watch faculty-produced videos of professionals speaking about what they do every day in their jobs (their job titles are displayed on the screen). After seeing the first half of the video, students must guess what each person's major was in college based on what his or her job entails. This is done through multiple choice questions using the clicker system. Students enjoy this activity because they are very surprised at what the people's college majors actually are – this activity shows that stereotypes about majors exist and students learn that a particular major can lead to many different careers. After students guess using the clickers and the correct answers are discussed, students are then shown the second half of the video in which the same people talk about how their college major helps them in their current career. This activity is another way of using clicker technology; students enjoy watching the videos, hearing from real people working in their respective fields, and playing the guessing game through the clicker technology.

These are just a few of the activities that have been used successfully in the first-year seminar course for undeclared students at Kutztown University. Faculty can adapt these activities for use in their own classrooms. Kutztown's experience with clicker technology illustrates the sometimes complicated, but ultimately successful process of implementing a single clicker

system on campus for students to use, as well as bringing faculty on board to use this technology to engage students in large classroom settings. An undertaking such as this requires coordination of many campus departments and services, from IT support, to the bookstore, to a technology training department for faculty. This process, however, seems to pay off in better student engagement, which is obviously a goal for any classroom instructor. Classroom activities involving clickers help faculty reach our current students who have grown up with technology, expect to be active in class, and enjoy instant feedback while learning. Clickers are a useful tool for integrating technology in a focused way, given that clickers are single purpose devices used solely for the purpose of answering classroom questions – there is no interference with web pages, social networking sites, or texting that might occur if computers or more sophisticated technologies were used. Clickers offer faculty a simple, relatively inexpensive way to meet tech-savvy students in the middle while increasing interaction and engagement in the classroom.

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