FLIPPING & CLICKING YOUR WAY TO HIGHER-ORDER LEARNING

Michael S. Garver and Brian A. Roberts

This innovative system of teaching and learning includes the implementation of two effective learning technologies: podcasting ("flipping") and classroom response systems ("clicking"). Students watch lectures in podcast format before coming to class, which allows the *entire* class period to be devoted to active learning exercises designed to achieve higher-order learning. Class time is primarily devoted to clicker-based competitions, which are team events employing peer-to-peer learning methods. The competitions motivate students and simultaneously helps them to achieve higher-order learning. This method of teaching and learning overcomes many of the obstacles associated with traditional class formats and has resulted in significantly better learning outcomes.

PROBLEMS WITH ACHIEVING HIGHER-ORDER LEARNING

For more than 50 years, Bloom's taxonomy of learning has been a useful tool to assess different levels of learning in the classroom (Bloom and Krathwohl 1956). Lower levels of learning are an important start and foundation, but a meaningful learning experience must also include the two highest levels from Bloom's taxonomy of learning—*synthesis* and *evaluation*. In short, synthesis is the ability to plan, create, or *do* the topic area. Evaluation is the ability to rate or critique a plan, creation, or work done in the context of a given subject matter.

A common problem is that many straight lecture classes reach only the two lowest levels—*knowledge* and *comprehension*—of Bloom's taxonomy of learning (Bonwell and Eison 1991), which does not achieve higher-order learning. The problem is that there is not enough time to cover the material and do active learning exercises to achieve higher-order learning. Innovations in technology can overcome this problem. This paper will chronicle how higher-order learning (*synthesis* and *evaluation*) is being achieved in a market research course via two learning technologies: podcasting ("flipping") and classroom response systems ("clicking"). The use of both of these technologies is focused on active learning and student engagement.

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LECTURES VIA PODCAST—FLIPPING THE CLASSROOM

"Flipping the classroom" has become a new buzzword to describe what has been taking place in this professor's classroom for more than six years. In short, presentations are captured using screen-recording software, which are edited, uploaded, and made available for students to download via iTunes U (university), which is linked into a learning management system (i.e., Blackboard). It is important to note that these podcasts are not recordings of a live classroom lecture. Instead, these are lectures that are planned, recorded, and edited in the professor's office. All of these podcasts are developed prior to the start of the semester, assigned as preclass homework, and watched by students as a way to prepare them for the upcoming classroom activities and discussions.

Prior research conducted by the authors demonstrated that over 92 percent of the professor's students owned a mobile device (laptop, iPod Touch, iPhone, etc.) capable of playing audio and video. The same percentage had an iTunes account. Based on this information, the decision was made to record a collection of PowerPoint presentations, lectures, and software demonstrations (e.g., SPSS) that would be delivered in podcast format. While there are many screen-recording software packages available, we chose to use TechSmith's Camtasia Studio because of its ease of use and variety of simplified export options. Using a basic computer microphone and, most commonly, PowerPoint, the professor recorded the podcasts. Once the lectures were recorded, edited, and saved as podcasts, the files were uploaded into iTunes U. A semester's worth of podcasts were made available at the start of the course, which is beneficial to the students who want to plan and work ahead of schedule.

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After the podcasts were uploaded into iTunes U, the students could subscribe to the course content via an RSS (Really Simple Syndication) link that was added into the learning management system (Blackboard). The course schedule informed students which podcasts were to be watched before each class.

In most cases, students are required to download and watch one to three podcast lectures prior to each class period. Having the students watch the podcasts before class eliminates the need to lecture during class. A major benefit of this method is that now the *entire* class period can be used to do hands-on, active learning exercises. In this system, "[t]he instructor's role resembles that of a coach instead of a dispenser of information" (Dufresne et al. 1996, p. 2).

An added bonus is that when lectures are provided in podcast format, in contrast to offering them via a streaming source, students can choose to view the presentations on desktops, laptops, and other mobile devices even when they are not connected to the Internet. The podcast is downloaded to and resides on the device itself. Note that students are not required to own or use a mobile device. Podcasts can be downloaded and viewed by any student via any device that has the free iTunes software installed on it.

CLASSROOM RESPONSE SYSTEMS ("CLICKERS")

Clickers are an interactive system that allows professors to engage their students by posing questions; making statements; and obtaining students' responses, reactions, and opinions through the use of a remote device, a receiver, and a multiple-choice-formatted list of response options. Students use a handheld device to submit their responses while the faculty uses a computer and a receiver to accept and show the results on the classroom projection system.

Research has shown that clickers can be used to improve student engagement and involvement in the classroom in addition to achieving higher-order learning (Bruff 2009; Dufresne et al. 1996; Zhu 2007). There are numerous advantages to using clickers, some of which are listed below:

- Students are actively engaged and participating in the learning process.
- Students are provided with and appreciate the instant feedback, which is key to effective learning.
- Students know what they know, and they know what they do not know, because of the instant feedback that they obtain after responding.
- Students feel more confident discussing their ideas and opinions in the classroom.
- Students feel a sense of competition, which motivates them to learn.
- Students can share their opinions anonymously and help to codirect a class discussion. As a result, they are responsible for their own learning (Zhu 2007).
- Students prepare more thoroughly for a class that uses clickers (Zhu 2007).

Numerous clicker applications have been developed and employed in higher education (Mazur 1996). This paper focuses on two key applications of clickers: individual daily quizzes and competitions.

Individual Daily Clicker Quizzes

Each class session begins with a five-question quiz that is directly aligned with the preassigned podcast(s). The quiz is designed to assess the students' understanding of basic concepts as well as application of knowledge to a real-life situation (higher-order learning). The quiz further ensures that students come to class prepared to participate in active learning exercises (Bonwell and Eison 1991). Also, research has demonstrated that more frequent review and assessment of course content results in better retention of knowledge and improved learning outcomes (Poljičanin et al. 2009).

At the completion of the clicker quiz, the results are immediately saved into an electronic file format and later uploaded into a learning management system, at which time the students' grades are assigned automatically. During the quiz, the students receive and benefit from the instant feedback on their choices. Likewise, the professor instantly knows what material is and is not understood by the class and can adjust the classroom activities accordingly.

While some students are leery of daily quizzes at the beginning of the semester, they soon realize how the quizzes help them learn and understand the material. By the end of the semester, over 71 percent of student evaluations noted that daily quizzes were a strength of the course and that they helped students understand and retain the material better.

Clicker Competitions

As part of the professor's teaching and learning philosophy, it is important to model the classroom after the business world. The business world for marketers is highly competitive. Marketing is about beating the competition and winning new customers. Competition in the classroom is also the key to student motivation and engagement.

The clicker competitions are team-based events, which employ peer-to-peer learning methods, a method embraced by researchers (Mazur 1996). Peer-to-peer interactions sup-

port flexible, learner-centered designs in which learning is active and organic rather than static (Yardi 2008). The students develop their own semester-long, four-person teams for all of the in-class exercises and out-of-class projects. The students find the clicker competitions fun as well as highly motivating.

The clicker competitions are meticulously designed to achieve higher-order learning. The questions are designed either to have students *evaluate* a scenario and to critique a company's decision or to actually *do* or make a market research decision (i.e., choose the correct research method given the scenario).

Upon completion of the daily quiz, the professor engages the students in a clicker competition that includes questions and scenarios that are directly related to the content that the students watched in the podcasted lectures. Each clicker competition question is asked twice. The first time the question is presented, the students respond to the clicker question individually without any discussion with their teammates. The students are given approximately 30 seconds to answer the question, and the results of the individual answers are *not* presented to the class.

Next, team members get together and have approximately two minutes to discuss the question in detail. At the end of the two-minute team discussion, each student answers the same question a second time. Once all of the responses are recorded, the results are immediately displayed. At this point, either the professor provides detailed feedback or allows individual team members to provide their team's logic for the choice that they made. Students become intensely focused during both the team and classroom discussions.

Research conducted with students from this class found that 82 percent of students "really like" classroom competitions (on a seven-point semantic differential scale with endpoints of 1 = "don't like" and 7 = "really like"). Content analysis from written student evaluations found that 74 percent of students thought clicker competitions were a strength of the class. The students noted that the clicker competitions help motivate them to do their best work. Students enjoy the clicker competitions, and they feel that the competitions help them better understand the material.

ASSESSMENT

Flipping and clicking allows every level of Bloom's taxonomy of learning to be reached, yet over 90 percent of class time is devoted to the top two levels (i.e., higher-order learning). The podcasts deliver the content while the clicker activities help students *do* and *evaluate* the concepts during class. With this in mind, there is no lecturing during class—the entire class time is dedicated to active learning exercises. As a result, student engagement and interest in market research careers has dramatically increased. For example, gathering student responses during class (anonymously) the first year teaching this course (2006), less than 1 percent of the students were interested in pursuing a career in market research. In the same course in 2011, approximately 8 percent of the students were interested in pursuing a career in market research. Students generally like the learning process and feel more positive about market research as a career path.

Initial assessment results took place in 2006, and all of the assessments occurred within the same course—market research. From a student's perspective, learning is greatly improved and more enjoyable as compared to a traditional class format. The following data were gathered from the professor's market research course in 2010, four years after the initial implementation in 2006: 94 percent of students "strongly preferred" the podcast lectures and clicker exercises compared to a traditional class format (top two choices on a seven-point anchors-only scale).

Student evaluations of the professor also increased since the implementation of this innovation. Overall student evaluations for this market research course before the innovation averaged 3.54 on a four-point scale. After the innovation, overall student evaluations averaged 3.87, a significant improvement of 0.33.

From the professor's view, scores on assessments, quizzes, projects, and exams have also increased significantly. The following comparisons are also from the 2006–10 period. Quiz grades improved approximately 18 percent since the implementation of this method. Prior to using this method, project quality was not meeting expectations set forth in the project rubric. It was obvious that students were not engaged with the material and that understanding of key concepts was limited. Furthermore, the actual implementation of these key concepts was of low quality. In the 2010 class, project quality improved dramatically compared to projects before the implementation. Students are more excited and engaged with the projects and show a better grasp of understanding key concepts. Furthermore, students are demonstrating that they not only understand the concepts, but now can *do* the concepts effectively. Moreover, students' exam scores have also increased since the implementation of the flipping and clicking in the classroom.

The content of the third exam is statistics, a topic that students traditionally do not enjoy and have historically performed very poorly on. Before the implementation of flipping and clicking in 2006, only two students (i.e., approximately 5 percent of the class) scored above 90 percent on the exam. In 2011, three students (i.e., approximately 3 percent of the class) scored a perfect 100 percent on the statistics exam, with over 23 students (i.e., approximately 35 percent of the class) scored above 90 percent on the statistics exam. Results for the cumulative and reflective final exam have also improved. Students are not only remembering the basic concepts of market research, they are now able to demonstrate that higher-order learning has taken place.

CHALLENGES AND LIMITATIONS

The major challenges and limitations of flipping and clicking in the classroom both center on implementation and include (1) course design and (2) student buy-in.

Designing, or redesigning, a course is difficult and time consuming, but it is imperative to ensure success. In this regard, student feedback suggests that the more closely aligned the podcasts are to in-class activities, the more engaged students become with the material. In order to achieve maximum value, it is critical that podcasts be closely aligned with clicker quizzes, competitions, and all classroom discussions. Doing so takes time, strategic planning, and detailed execution.

Another challenge for faculty to implement this teaching method is to gain student buy-in and address the class culture. If a professor is going to do something different than the students are used to, the professor needs to explain the logic of the system and how the students will benefit. Gaining student buy-in to this innovation is essential and cannot be overstated.

To accomplish this task, the professor gathers student feedback on great and "not so great" learning experiences. The first class begins with a classroom focus group on excellence in teaching and learning. After the discussion, clicker questions are used to poll the class on their feelings on a numbers of topics. For example, how do the students feel about competition, active learning, and traditional lectures? Experience has demonstrated that student preferences are aligned with this new innovation. During the next class period, the professor presents the latest research findings that support this innovation (which are generally aligned with student perceptions). Because this innovation is aligned with the latest research on learning, it gains student buy-in. Student buy-in is likely to increase if their instructor uses the technology for meaningful exercises in the class regularly throughout the term (Zhu 2007).

While this paper has chronicled the flipping and clicking method of teaching and learning in a market research course, this system of teaching has also successfully been implemented in marketing management and marketing strategy courses, both at the undergraduate and graduate level. We strongly believe that this system can be adapted into any marketing course or other curriculum.

RECOMMENDATIONS

Based on our experiences implementing and supporting these two learning technologies, the following recommendations are offered:

- Have clear learning objectives for the overall course and each individual class period.
- (Re)Design the course to assure all activities are focused on student learning.
- Keep podcasts concise and focused, and no longer than 15 minutes in length.
- The more storytelling you can include in your recordings, the better. Human beings are hardwired to remember stories (Zull 2002).
- Use memorable and applicable images and graphics instead of text to tell your stories.
- Understand the technical side of things instead of relying entirely on a help desk. You are the first person that students will come to for help. Be able to assist them.
- Ask for and consider feedback and advice from students, colleagues, and outside parties.
- Develop a continuous review and improvement plan. Always look for opportunities to update the content and materials.
- Have fun and enjoy the journey. Your students will thank you for it.

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