The Journal of Private Enterprise 29(2), 2014, 129–139

Multimedia Technology for the Next Generation

Tawni Hunt Ferrarini
Northern Michigan University

G. Dirk Mateer
University of Arizona

Abstract
Today's multitasking media generation of students, the M^2 generation, has widespread and historically low-cost access to media players, smartphones, computers, and gaming units. This article explains how content that is rich in economics can help instructors connect in meaningful and purposeful ways with students through television and movie clips, classroom polling, audiocasts, and social media.

JEL Codes: A22
Keywords: Alternatives to chalk-and-talk, Technology in the classroom, Multimedia, Online education

I. Introduction

Economics has a generally well-deserved reputation for poor instruction, and this reputation has seeped into popular culture. It was immortalized in *Ferris Bueller's Day Off* (1986), for example. In the movie, Ben Stein plays a high school economics teacher who famously puts his class to sleep while droning on about macroeconomics. Stein's character ends up pleading for student input, repeatedly uttering, "Anyone?" to try to get a response.

The disconnect between the way economists model decision making and the way the world actually works limits how effective traditional approaches to lecturing are at reaching students. More broadly, economists are seen as being painfully dry. This perception was reinforced in a 2009 television commercial for T-Mobile staring Catherine Zeta-Jones.[1] At the opening we see a group of economists in suits going door-to-door trying to sell new cellular coverage. The people hide from them, squirt them with garden hoses, and slam the door in their faces. Then, we see Zeta-Jones approach a door and ask

[1] See http://www.youtube.com/watch?v=Q7DZkYrgPDk.

the homeowner if he has time for a "mobile makeover." Startled by his good fortune, he responds, "I believe I do."

We like to think of multimedia as the foundation for a classroom makeover. Students have low expectations when they take economics for the first time. Incorporating multimedia into the learning experience is one way to add value and also dispel the notion that economics is boring. Learning economics can be fun, exciting, and engaging, especially when instructors enter their students' preferred multimedia environments.

II. The Multimedia Craze

In a national survey conducted by the Kaiser Family Foundation, the amount of time today's youth spend with the technology is approximated. "Generation M^2: Media in the Lives of 8- to 18-Year-Olds" reveals that three out of four of surveyed 8- to 18-year-olds own MP3 players and almost seven out of ten of them have cell phones. Surprisingly, only three out of ten kids have computers in the home. Overall, they spend almost 7½ hours a day of their recreational time (time outside of the classroom) with some form of technology. When multitasking is considered, students spend almost 11 hours with media content. This generation spends a meager 38 minutes daily with print materials, a historic low according to the Kaiser report.

College students most likely bring many of their secondary habits with them into higher education classrooms, especially their survey and principles courses. So we can learn something from the Kaiser report: there appears to be a bottom-up demand for multimedia technology. Today's students, the M^2 generation of preteens and teens who enjoy 24/7 access to multimedia, freely choose to consume much of their leisure time interacting with some combination of multimedia technology. College instructors should take note and leverage these revealed preferences. If instructors provide interesting, meaningful, and engaging content, students using multimedia devices may be drawn into economics inside and outside of the classroom. In other words, instructors may plug into student fascination with the technology and, at the same time, help students learn the subject matter by simply employing the technology students "demand." The technology and technology-accessed content are readily available and can be supplied by economics instructors to students with relative ease and at historically low cost.

III. Technology for the Face-to-Face Classroom

Dirk Mateer is a senior lecturer in economics at the University of Arizona who is known for his use of pop culture in his Principles of Economics course. His website, DirkMateer.com, brings together media clips related to economics from film, television, and music. The site's purpose is to create a single resource that instructors can use to identify media elements relevant to their courses, and it provides a much richer user experience than related sites like The Economics of Seinfeld, TV for Economics, and Movies for Econ. With Mateer's site, users can now access a broad array of economics-related content online in one spot. The website is a portal that can be used to effectively show economics-related media during class or to assign the media to be viewed outside of class as homework.

The site's searchable database allows the visitor to sort the media by topic, type, most viewed, most helpful, and most recent, or to simply enter a search term and bring up all matches. The primary advantages of presenting this information on the web are the ability to easily access a current media database and the ability to solicit suggestions from visitors.

The use of multimedia to enhance teaching and learning complements traditional approaches to instruction. Effective instruction builds bridges between students' knowledge and the course's learning objectives. Using multimedia engages students, aids student retention of knowledge, sparks interest in the subject matter, and illustrates the relevance of many concepts. While historians continue to debate the origins of the term "dismal science," there is little doubt that Thomas Carlyle's antipathy toward the discipline of economics continues to resonate in the community. Bad teaching practice reinforces the notion of economics as an abstract science out of touch with the modern world.

Multimedia can create an interactive learning environment and improve student learning. Research shows that the use of multimedia or popular culture (commercials, movies, music, YouTube) can stimulate discussion in introductory classes (Becker 2004), illustrate basic concepts (Hall and Lawson 2008), and explain abstract concepts like game theory (Dixit 2005) at an advanced level.

The use of multimedia benefits teachers and students alike. A genuine interactive learning environment prompts two-way discussions between the instructor and students, allowing the latter to assume greater responsibility and accountability for their learning (Bransford, Brown, and Cocking 1999). Media sources are usually

more effective than intensive lecture-based modes of teaching in illustrating complex ideas in a short time, connecting learners with events that are culturally relevant, and advancing students' understanding of how theories taught in the classroom help explain real-world events and policies (Mateer 2011).

The Hudsucker Proxy (1994) provides a wonderful example of how media can enhance the face-to-face learning experience. The film chronicles the introduction of the Hula-Hoop, a toy that set off one of the greatest fads in history. According to Wham-O, the hoop's manufacturer, when the toy was first introduced in the late 1950s, over 25 million were sold in four months. The movie contains a scene that illustrates the difference between a movement along a demand curve and a shift of the entire curve, a subtle point with which many students struggle.

The Hudsucker Corporation decided to sell the Hula-Hoop for $1.79. In the key scene, we see the toy store owner leaning next to the front door waiting for customers to enter, but business is slow. Next, the movie cuts to the company president, played by Tim Robbins, who is sitting behind a big desk waiting to hear how the Hula-Hoop's launch is going. It does not go well. The price starts to drop: first to $1.59, then $1.49, and further down until the Hula-Hoop is "free with any purchase." Even this price is not enough to attract consumers. So the toy store owner throws the Hula-Hoops out into the alley behind the store, and one of them rolls across the street and lands at the foot of a boy who is skipping school. He picks up the Hula-Hoop and tries it out. He is a natural.

About this time, school finishes for the day and a throng of students rounds the corner and sees the boy playing with the Hula-Hoop. Suddenly, everyone wants a Hula-Hoop, and there is a run on the toy store. Preferences have changed; overall demand has increased. The Hula-Hoop craze is born, and we account for it by shifting the entire demand curve to the right. The toy store responds by ordering new Hula-Hoops and raising their price to $3.99, the new market price after the shift in demand.

The entire scene lasts three minutes and provides a memorable way for students to learn. Since most students have never seen the movie, showing the clip in class provides a fresh reference point that aids retention.

Classroom response systems, or what are commonly referred to as "clickers," provide another means of engaging students and increasing learning in the classroom. Response systems allow the

instructor to ask questions during class and receive electronic answers from all students. The results can be saved for generating grades at a later time or used solely for formative assessment. Students submit their answers via the system, which subsequently generates a histogram displaying the distribution of answers for the entire class or shows individual free responses. Both the instructor and individual student receive immediate feedback on the extent of concept comprehension in the form of a visual summary, and in this way the data "teach the teacher" (King and Sen 2012). The instructor can leverage the responses to ensure that students fully understand a topic before proceeding on in the course. Questions can be embedded into a PowerPoint presentation or asked as stand-alone questions posed throughout the class period.

Instructors can use this technology in conjunction with other strategies to enhance student learning. However, simply inserting questions facilitated by using a personal response system into an economics lecture is not likely to produce the desired results. This tool, like all others, must be carefully combined with an overall pedagogical strategy; response devices are most effective when they are viewed as an improved *way* of teaching, not just a new technology to add to a class.

Response systems can also change the classroom culture. Trees and Jackson (2007, p. 38) suggest that "the final effectiveness of the clicker will rest with each student accepting the potential of these systems to positively affect their learning. The success of these devices is in many ways dependent on social, not technological, factors. Instructors must work to facilitate student acceptance and to frame student perceptions of the technology."

Determining the role a personal response system will play in the classroom environment is a critical decision for lecturers. Salemi (2009) proposes the following clicker strategies for the principles course: (1) sampling student opinion; (2) asking "Are you with me?" questions; (3) acquiring economic data from students; (4) peer instruction activities; and (5) games and simulations.

A. An Example: "Are You with Me?" Questions

One of the most common points of confusion for principles of economics students is the difference between demand and quantity demanded. After a careful presentation of these ideas, an instructor may be inclined to ask, "Does everybody understand the difference?" A specific question can be a more effective substitute in that it

requires students to demonstrate their understanding immediately. Consider the following question as an example:

> 1. When economists say the demand for a product has increased, they mean that the:
>
> a) demand curve has shifted to the left.
>
> b) price of the product has fallen, and consequently, consumers are buying more of it.
>
> c) cost of producing the product has risen.
>
> d) amount of the product that consumers are willing to purchase at various prices has decreased.

When the distribution of answers is revealed in the histogram, both the instructor and students will know if students understand. High incorrect response rates suggest that students don't know the difference as well as they should, information that is valuable for the instructor in determining whether to move on to the next topic or engage students in additional reviews of demand and quantity-demanded concepts.

Combining media and personal response systems can be powerful. Consider the increase in understanding that is likely to occur when the instructor adds these two techniques to a traditional lecture about demand and quantity demanded. After a brief introduction of the concepts, the instructor shows the *Hudsucker Proxy* video clip. Then the instructor provides more detail and demand curves. Finally, he or she asks a clicker question to gauge student understanding. The concepts have now come alive in a new way, and the instructor can assess student understanding before moving forward. In addition, if a majority of the class correctly answers the posed question, it signals to those who answered incorrectly the degree of effort they need to put forth in the future.

Many response systems also allow students to submit open-ended questions or responses. This feature facilitates a two-way exchange of information between the instructor and the student. For example, when covering the economics of crime, the instructor could ask, "How many of you have ever exceeded the posted highway speed limit?" Predictably, students will respond overwhelmingly that they have. But with an open-ended question like, "What is the fastest speed you have driven on the highway?" the breadth of the responses will be much more illuminating. Now the instructor will receive a wide range of answers, reflecting how fast students actually drive.

This response makes the class much more engaged because students are finding out something unique about each other. In addition, content-related periodic polling allows instructors to check to see if students are understanding the material during class.

IV. Technology That Extends Learning Beyond the Classroom

The overwhelming majority of college students are on Facebook. Over half use Twitter. Generation M^2 is connected and technologically savvy. Tapping into social media outlets will engage your students outside of class. We have two suggestions: form a class Facebook page and establish a presence on Twitter.

Use a Facebook page for class communication in lieu of a course management system. Facebook's popularity makes it an ideal communication platform since it leverages positive network externalities. Once students become members, they can post questions to the wall, answer other questions, participate in polls, and "like" other comments. This interaction creates a dynamic communication channel that resides in a platform that most students already use regularly, increasing the effectiveness of messaging and almost totally eliminating direct student-to-instructor email communications involving class-related learning issues. This system also empowers students and encourages them to take a more active role in the learning process.

Use a Twitter account to inform students about the latest real-world events that interest you and to encourage students to follow you and other influential economists. (Shameless plug alert: You can follow us @dirkmateer and @CSE_Econ.) More broadly, encouraging your students to follow some of the best-known economics sources, such as @freakonomics (The Freakonomics blog), @WSJ_Econ (real-time economics from the *Wall Street Journal*), @planetmoney (NPR's Planet Money), @TimHarford (Tim Harford, the Undercover Economist), @Bill_Easterly (Bill Easterly, economics professor at New York University), @TylerCowen (Tyler Cowen, author of the Marginal Revolution economics blog), will give them a feel for the ideas that are driving the profession. Finally, using Twitter hashtags for your class can provide a place for your students to interact with one another about content directly related to your course.

Social media continues to evolve and enhance teaching in ways few of us could have imagined. For example, Pinterest is being used to develop learning projects that can connect art and economics, as

best evidenced by the Dismal Art Project (Holder 2012), which provides a way for students to artistically express what they learn in economics. Similarly, Econmemes (Murphy 2012) provides a pop culture link to economics by archiving economics-themed memes. If you have not visited Econmemes, you should! Many of the memes are laugh-out-loud funny and make valuable points with a minimum of words.

Today's young people like to multitask, and this includes listening to audio files like podcasts while performing other tasks. Economics instructors can encourage students to use their MP3 players and smartphones to listen to economics podcasts and to use the economic way of thinking to analyze song lyrics. This behavior often ripples into students independently searching for economics in the lyrics, finding new ways to illustrate economics in their personal musical choices, and sharing economics podcasts with peers and parents. AudioEcon (Moryl 2012) is designed to serve as a clearinghouse of podcasts that can enhance economics instruction in a variety of courses and at a variety of levels. Pedagogical research indicates that the narrative format, which is what makes podcasts so engaging, can enhance students' understanding of important or challenging concepts. Research on learning styles also suggests that some students have a preference for learning, or learn more effectively, via audio (Moryl 2012). Another great resource, EconTalk (Roberts 2012) hosts weekly podcasts on a variety of topics in economics.

V. Moving from Multimedia-Enhanced Classrooms to Online Environments

Enrollment in online courses continues to grow at a rate faster than that of the total student population in higher education. Plus, a record number of colleges and universities report that their long-term growth strategies include increasing the number of online course offerings (Allen and Seaman 2010). The institutional demand for online for hybrid courses is present, and it appears that there is an administrative top-down pressure to match the bottom-up pressures from students for instructors to deliver not only content but courses through new technology.

According to a recent investigation of teaching and assessment methods in different undergraduate economics courses, the bulk of economics instructors are still largely wedded to the chalk-and-talk mode of instruction (Watts and Schaur 2011). This method presents

challenges for both administrators and students looking for hybrid or online courses in economics. Fortunately, a plethora of resources are readily available, and they are easy to use. Interested instructors with minimal background in online teaching can step toward offering fully online instruction in economics by first integrating multimedia resources like those mentioned previously into their face-to-face courses. When comfortable, they can proceed to offering online assignments with the goal of hosting an online class. Before they know it, instructors once wedded to the sage-on-the-stage style of teaching will be ready to go online.

From the experienced to the uninitiated, online or hybrid instructors of economics courses can turn to learning companies and to publishers of economics textbooks to quickly gain access to multimedia-rich content in economics, to easily find user-friendly and engaging classroom experiments that simulate for students how markets work, and to cost-effectively utilize learning-management systems for students built around electronically published textbooks. Aplia.com is a prime example of one place for instructors to access a variety of textbooks with complementary classroom experiments, flash cards, and other multimedia-enhanced tools.

For the first-time instructor of an online survey course, CommonSenseEconomics.com provides an easy start. Instructors can access all the materials needed to offer a fifteen-module multimedia course when they adopt *Common Sense Economics: What Everyone Should Know About Wealth and Prosperity* (2010). The course shell provides instructors with interactive modules that couple standard reading assignments and PowerPoint presentations with video clips, podcasts, assignments, quizzes, and exams. Each module is carefully laid out to make economics relevant and engaging for students while helping them meet standard course objectives. Detailed answers are provided for essay assignments, correct answers are given for automatically graded quizzes and exams, and supplements are provided to help students overcome predictable deficiencies in crucial areas like demand and supply, fiscal versus monetary policy, and national debt versus national deficit. More can be achieved in less time during the online teaching and learning periods. Both instructor and students benefit. High-quality resources delivered effectively to M^2 students motivate them to learn in and outside of the course. Plus today's technology makes it relatively easy for instructors to engage, assist, and, possibly, excite today's students learning economics more deeply and broadly.

VI. Conclusion

These are exciting times for economics students and their instructors. Gone is the need for each instructor to sift through vast amounts of online and multimedia-enhanced materials only to find mediocre resources from which students may or may not benefit. Rich economics content exists electronically. Research on how to access it and engage students with it has been done. Both rich content and efficient technology simplify the teaching process. And this multimedia-enhanced process has effectively moved thousands of students along their economics learning curves, as evidenced by the authors' positive course evaluations, high course retention rates, and solid distributions of grades. So, say "Yes!" to the effective use multimedia in the economics classroom. We, the instructors of the "dismal science," have an unmatched opportunity to excite students about the economic way of thinking inside and outside of the classroom.

References

Allen, I. Elaine, and Jeff Seaman. 2010. *Class Differences: Online Education in the United States, 2010*. Sloan Consortium.

Becker, William E. 2004. "Good-bye Old, Hello New in Teaching Economics." *Australasian Journal of Economics Education*, 1(1): 5–17.

Bransford, John D., Ann L. Brown, and Rodney R. Cocking, eds. 1999. *How People Learn: Brain, Mind, Experience, and School.* Washington, DC: National Academy Press.

Burch, Linda. 2010. *Generation M^2: Media in the Lives of 8- to 18-Year-Olds*. Menlo Park, CA: Kaiser Family Foundation.

Dixit, Avinash. 2005. "Restoring Fun to Game Theory." *Journal of Economic Education* 36(2005): 205–19.

Ghent, Linda S., Alan Grant, and George Lesica. 2010. The Economics of Seinfeld.

Ghent, Linda S., Misty Stone, and G. D. Mateer. 2011. TV for Economics. *Journal of Economic Education,* 42(2): 207.

Gwartney, James, Richard Stroup, Dwight Lee, and Tawny Hunt Ferrarini. 2010. *Common Sense Economics: What Everyone Should Know About Wealth and Prosperity*. New York: St. Martin's Press.

Hall, Joshua, and Robert A. Lawson. 2008. "Using Music to Teach Microeconomics." *Perspectives in Economic Education Research* 14(2): 23–36.

Holder, Kim. 2012. The Dismal Art Project.

King, Gary, and Maya Sen. 2013. "How Social Science Research Can Improve Teaching." Concepts and Methods working paper series 37.

Mateer, G. D. 2005. *Economics in the Movies*. Mason, OH: South-Western, Thomson.

Mateer, G. D., and Herman Li. 2008. Movie Scenes for Economics. *Journal of Economic Education*, 39(3): 303.

Moryl. Rebecca. 2012. AudioEcon.

Murphy, Ryan. 2012. Econmemes.

Roberts, Russ. 2012. EconTalk.

Salemi, M. 2009. "Clickenomics: Using a Classroom Response System to Increase Student Engagement in a Large-Enrollment Principles of Economics Course." *Journal of Economic Education*, 40(4): 385–404.

Trees, A. R., and M. R. Jackson. 2007. "The Learning Environment in Clicker Classrooms: Student Processes of Learning and Involvement in Large University-Level Courses Using Student Response Systems." *Learning, Media, and Technology*, 32(1): 21–40.

Watts, Michael, and Georg Schaur. 2011. "Teaching and Assessment Methods in Undergraduate Economics: A Fourth National Quinquennial Survey." *Journal of Economic Education,* 42(3): 294–309.