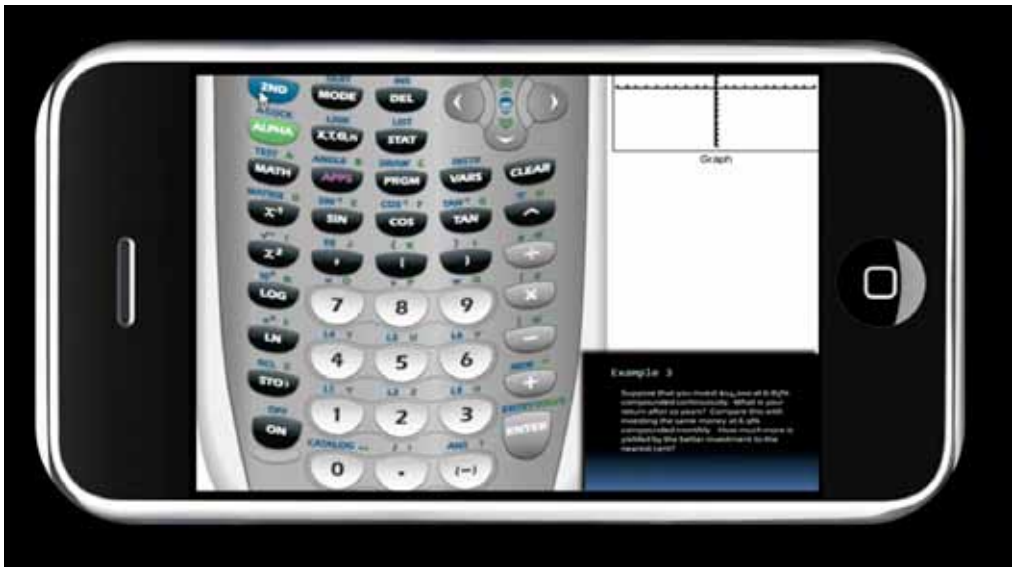
What I Learned from… Catching iPhone Fever

By John Ehrke

In the fall of 2008, Abilene Christian University distributed Apple iPhones and iPod Touches to each of its 964 incoming freshmen. The campus was abuzz with the anticipation of the innovation these devices offered. I found it hard to imagine any device, even one as heralded as the iPhone, could make a meaningful difference in how my students experienced mathematics at the undergraduate level. "What could the iPhone possibly have to offer students in mathematics?"



One of the TI-84 emulator podcasts running on an iPhone.

Not one to summarily dismiss the iPhone's promise, I observed the first semester impact of the device on campus. By semester's end, I witnessed a campus that had fully embraced the idea of mobile learning. Soon, words like podcast and app became standard in conversation. I must admit my interest was piqued, and so I vowed to find a way to integrate these devices into my normal classroom routine.

With the spring semester approaching, I decided the best course of action was to begin with the university general education mathematics course. If events progressed well, I would extend the experience to majors. In preparation for the semester I jotted down a list of things I hoped to accomplish. My goals included increasing student engagement during class and keeping students engaged once they left class. Admittedly, I had more on the checklist than this, but past experience had taught me that if I could accomplish these goals, then the devices would have proven their worth.

The first day of classes finally arrived. I strode confidently into the classroom, iPhone in tow, and began the class by detailing the multitude of ways in which students could use their devices to access course materials, interact with other students, and contact their professor via a cleverly designed mobile web portal (courtesy of the IT folks on campus). I was even able to take attendance with the device while students located their course syllabus.

Everything seemed to be running smoothly, so I concluded the course introduction with an interactive poll of key items discussed in the syllabus. The experience was like laying carpet. Some of the students didn't have devices (which I expected even though the class was predominantly freshmen). Some students did not have the app loaded on their phone (we used the free *ResponseWare* app from Turning Technologies). Some of the students couldn't figure out how to submit their responses. Needless to say, my hopes for a seamless integration of student and device were unrealized, but I was undeterred.

We continued on with intermittent hiccups for the next few weeks, but as the semester progressed I became increasingly efficient in moving my students from lecture content to online content, to interactive polling, and back again. Midway through the semester, I had successfully managed to engage my students in actively experiencing mathematics in the classroom.

But how well was I succeeding in engaging them outside the classroom? My plan of attack for delivering content outside the classroom was quite simple: give students the confidence to do mathematics on their own, at their own pace. I tackled this in two ways.

Since the course relied heavily on the use of the TI-83 and TI-84 calculators, I developed a series of screen casts using *TI-SmartView*, a TI-84 emulator, to guide students through many of the various financial and statistical applications we used in class. By narrating the screen casts, I afforded students the convenience of being able to access their professor's instructions on a wide range of calculator questions with a certain level of comfort and familiarity, anytime, anywhere.

Course lecture content consisted primarily of LaTeX and Power Point slides. These slides were offered to students exactly as they appeared in class, with one addendum. Where appropriate, audio or video annotations to the discussions held in class were directly embedded into the slides in the exact context they were encountered in class. This afforded the students the opportunity to review class material in its original context as opposed to simply just videotaping class.

In the span of a few months, the course had undergone a complete transformation. I anxiously awaited the course feedback to see if things had gone as well as I had thought and for the most part student responses were extremely favorable. One student said, "I loved the videos! It made understanding and working through the problems much easier so that I could move into the homework at a quicker pace because sometimes it takes me a while to recall exactly where we left off in class," and another added, "It's always nice to be able to hit pause."

So what did I learn from taking the mobile learning plunge? I learned that the iPhone (or any mobile device for that matter) will not make students suddenly proficient in operations involving fractions. It will not provide clarity to students struggling with expected value or enable a student to successfully prepare a loan amortization schedule.

The power of mobile learning is rooted in its familiarity, in its ability to take an anxiety-riddled subject like mathematics and intertwine it with the tweets and blogs to which our students have become accustomed. It is for this reason I changed the way I teach mathematics and will continue to explore the untapped potential of these devices in the future.

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Found Math

When the going gets tough, the tough get their math books out. Many of the diehard optimists on Wall Street have been beaten to a pulp by now, but those still standing have fallen back on a nifty bit of calculus. The second derivative, they say, is turning positive. That means that although the economy is spiraling down, it is doing so more slowly.

"Reasons to be cheerful, Part 2," *The Economist,* February 21–27, 2009

(Thanks to Sommer Gentry, United States Naval Academy)

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