Emerging Technologies Project:

Transforming Classrooms with the iPad

Tracy L. Efaw

Kennesaw State University

The Apple iPad is a captivating emerging technology that has the potential to revolutionize classrooms as we know and understand them today. While the iPad has been on the market for two years now (the newer iPad 2 appearing only last year, and the newest iPad 3 released just days ago), iPad applications and implications for classroom use are definitely still emerging.

We often hear a great deal about how wonderful the iPad is, but for those of us who haven’t yet acquired one, defining it by what it really is rather than by “all the great and crazy stuff it does,” are two different things. According to Wikipedia (which we learned this semester is a more reliable source than we educators have given it credit for in the past), the iPad is

a line of [tablet computers](http://en.wikipedia.org/wiki/Tablet_computer) designed, developed and marketed by [Apple Inc.](http://en.wikipedia.org/wiki/Apple_Inc.), primarily as a platform for audio-visual media including books, periodicals, movies, music, games, apps and web content. Its size and weight fall between those of contemporary [smartphones](http://en.wikipedia.org/wiki/Smartphone) and laptop computers. The iPad runs on [iOS](http://en.wikipedia.org/wiki/IOS), the same [operating system](http://en.wikipedia.org/wiki/Operating_system) used on Apple's [iPod Touch](http://en.wikipedia.org/wiki/IPod_Touch) and [iPhone](http://en.wikipedia.org/wiki/IPhone), and can run its own applications as well as iPhone applications. Without [modification](http://en.wikipedia.org/wiki/IOS_jailbreaking), the iPad will only run programs approved by Apple and distributed via the Apple [App Store](http://en.wikipedia.org/wiki/App_Store_(iOS)), with the exception of programs that run inside the iPad's [web browser](http://en.wikipedia.org/wiki/Web_browser) (“iPad,” n.d.).

The adoption of iPad technology supports the vision for technology use both at the school level as well as the district level, because our vision involves embracing cutting edge technology to move students forward in success and overall academic achievement. At the district level, the vision of Cobb County’s technology program focuses on improved student achievement through student-centered engagement in authentic tasks using higher order thinking skills. The vision also encourages increases in teacher use of technology to “promote collaboration, to support and clarify conceptual understanding, to provide multiple and varied formative and summative assessments, and to differentiate the teaching and learning process” (“Three year technology,” 2009). The plan also calls to increase e-learning, increase parental and community communication, and reduce the information and technology literacy gap for students. The adoption of Apple’s iPad has the capacity to do all these things and so much more! Acquiring iPads not only makes a good fit for our current technology plan, it fits into the technology *vision* we have for the future. Article upon article suggests that the Apple iPad is the future of educational technology in the classroom. According to the New York Times, of the 5400 middle school educational applications of the Apple iPad, 1000 of these applications are free (Hu, 2011). Ponder the possibilities!! In revisiting the SWOT analysis at our school level that we completed last semester, we found that our school’s main weaknesses are:

* Strong technology use among teachers, but lack of *student-centered* technology practices.
* Lack of parental involvement in technology advances students are making.
* Lack of overall “technology culture” in school
* Lack of accessibility to the technology we have (computer labs, computer carts, etc)
* Student apathy towards their education.

Adopting an iPad program at our school, or better yet, becoming an “iSchool” can and will address each of these weaknesses by giving accessibility, accountability, ownership, and motivation to students. Students can be in charge of their own learning when they can have an iPad of their own. Students and their parents can access the internet and explore all kinds of amazing applications in the comfort of their own homes. Providing iPads to every student and teacher will encourage a culture of technology in the school as everyone is on an even playing field. And acquiring iPads for every student and teacher will enable true technology integration without the frustrating barrier of inaccessibility. Additionally, just this past January (2012), Apple announced the development of a new software that would enable anyone to create a textbook inside the already popular iBooks application. This application allows for “easy highlighting and annotation—and enables quick dictionary lookups. The app has the ability to display full color, interactive, multimedia content which means audio, video, and 3D diagrams can be touched, rotated, and explored” (“*The digital textbook*,” 2012). Just the nature of the applications available to iPads enables students to stretch their critical thinking skills to new heights.

One of the best reasons for investing in Apple iPads is that this technology can motivate and engage students of all ages. Because of the iPad’s versatility and access to so many amazing applications, students from the age of 2 can enjoy what the iPad has to offer. In one article written back in 2010 before release of the iPad 2, forty-four elementary school apps were introduced and described, touching on every academic discipline (“Apps for elementary, 2010). These apps are colorful, interactive, and engaging for students of all ages, from 2 to 92. How exciting is that?! Equitable access these days is a snap, once we can get the iPads into the hands of teachers and students. Even families that cannot afford an internet connection at home can still access the internet in places where WiFi is freely available: schools, public libraries, coffee shops, and the like. The iPad’s lightweight construction enables easy portability, and WiFi is everywhere these days.

In addition to the purchase of an iPad (described above), this emerging technology can be coupled with some other bells and whistles which can be purchased along with the iPad. Below is a table which outlines those peripheral devices, along with the prices. This information was taken from the Apple iPad website.

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| **Device** | **Description** | **Price** |
| Camera Connection Kit | The iPad Camera Connection Kit gives you two ways to import photos and videos from a digital camera: using your camera’s USB cable or directly from an SD card. | $29 |
| Apple TV | With Apple TV and AirPlay, you can wirelessly stream what’s on your iPad 2 to your HDTV. So you can show off just about anything for the whole room to see. Like your favorite flick, that new game, or your latest iMovie masterpiece. | $99 |
| Digital AV Adapter | Put your slides, movies, photos, and everything else that fills your iPad screen on an even bigger screen — your HDTV. The Apple Digital AV Adapter mirrors exactly what you see on your iPad so that everyone in the room can enjoy it on your widescreen TV, video projection screen, or other HDMI-compatible display. | $39 |
| iPad Dock | This sleek dock stand is your personal hub for all things iPad. Get easy access to a port for syncing or charging, and an audio line out port for connecting to powered speakers via an optional audio cable. | $29 |
| Wireless Keyboard | The incredibly thin Apple Wireless Keyboard uses Bluetooth technology, which makes it compatible with iPad. And you’re free to type wherever you like — with the keyboard in front of your iPad or on your lap. | $69 |

As for technical support for the iPad, Cobb County provides all the support that would be needed to teachers, administrators, and students. Once teachers are well-trained, issues of tech support will be relatively insignificant.

The Apple iPad has very few limitations regarding issues with safety, health, or any legal or ethical issues. Teaching students and teachers about Netiquette, and reviewing district policies regarding internet usage are definitely imperatives when adopting an iPad program like this one. The greatest challenge with the idea of giving an iPad to every student in the school is managing issues with possible theft and damage reduction. Allowing students to carry their iPads to and from school everyday increases the risk of both theft and damage, so students would have to be very careful with this property. In addition, parents would have to sign contracts or replacement agreements should the iPads become damaged in any way or stolen.

The cost of the iPad is definitely a shortcoming for the technology. However, over 2-3 years’ time with extensive use (especially once textbook apps come on the scene), the iPads can pay for themselves. According to Daniel Brenner, Roslyn, New York’s Superintendent, “the iPads would save money in the long run by reducing printing and textbook costs; the estimated savings in just two iPad classes alone are $7200 a year” (Hu, 2011). The base price currently for the new iPad 3 is $499 for 16GB. The price jumps to $599 for 32GB, and $699 for 64GB. This is not including 3G capabilities. For 3G service, the base price increases to $629 for 16GB, $729 for 32GB, and $829 for 64GB. Training would not be much of an issue, because students are much more comfortable with this technology than teachers, and most teachers can figure out how to use the iPad intuitively. For those who struggle, other teachers are available to help train and get everyone on board. As for technical support, Cobb County maintains technical support of iPads. So there is very little cost involved with support.

As for potential funding sources, according to an article in the New York Times, “many of the districts are paying for their iPads through federal and other grants, including money from the federal Race to the Top competitive grant program” (Hu, 2011). The Bill and Melinda Gates Foundation also funds a great deal of teacher grants. Education is one of the three focal points of the BMGF, as the foundation strives to “expand educational opportunities globally, and with more access to information technology” (Naples, 2011). As well, perhaps the Cobb County Educational Foundation could work on finding other funding sources and participate in bringing more money for technology into our district. There is also a three year lease-purchase agreement that many are using with Apple to help subsidize the purchase of a number of iPads. While the cost of the iPad is high, one must look at the overall picture. Textbook companies are currently working on building iPad apps for their textbooks. These apps will cost $14.99. Compare this cost with the cost of a hard-back textbook today, often in the range of $150-200. Couple that with the many advantages iPad has over the conventional textbook. It is plain to see which is the smarter investment. (The digital textbook, 2012).

The iPad’s immense versatility and variety of educational applications encourages creative, engaging, and challenging uses for the classroom setting, especially in meeting content standards and student technology standards, in EVERY content area. Instead of lugging around 50 pounds of books, students can use their iPads instead, to manipulate information in new and innovative ways. Because students have access to the internet through the iPad, the sky is the limit in what amazing feats can be accomplished. As mentioned earlier, soon textbooks will be available to iPad users. Imagine “incorporating elements of movies (drama), documentaries, multi-player role-playing games, news casting, encyclopedias, dictionaries, language translators, and more” (The digital textbook, 2012).

The iPad’s educational applications are effective and flexible as well. For the English/Language Arts classroom, they are able to “teach and reinforce (for example) fundamental literacy concepts and skills which are engaging and interactive…[and they can] provide children with immediate feedback” (The digital textbook, 2012). Teachers can even customize applications to meet the needs of their students at their own level and learning pace. Novels can be downloaded. There is even a free app for the entire work of Shakespeare! Because of students’ fascination with the iPad, districts investing in this technology are projecting much better student productivity using the technology, including homework assignments! Thousands of apps exist to allow students to hone their skills in all content areas. Coupling the genius of the Apple iPad and its thousands of educational apps, with the burgeoning Read/Write Web, students are able to explore topics of interest like never before. Scientific inquiry, authentic learning, project-based learning, collaborative learning, higher order thinking skills, research-based learner-centered strategies, writing, listening, speaking, and presenting are all easily accomplished with a well-trained teacher who understands content depth and complexity and the Apple iPad. Utilizing the iPad along with cloud-based systems, “students can work anywhere [on campus or at home] and make sure that their work is saved in a central location and accessible from all of their devices” (Madan, 2011). With adoption of an iPad program in schools, technological and educational barriers to achievement excellence can, at long last, be smashed.

Content differentiation is also made easier using the Apple iPad. Visual learners can explore content using pictures, slideshows and video. Auditory learners can “plug in” to a documentary about their topic, or listen to a speech by Martin Luther King, Jr.. Kinesthetic learners can use apps which help them to move content around in meaningful ways, manipulate data, look at 3D objects from varying perspectives. Students, teachers, parents, and the larger community of stakeholders can share ideas globally by connecting to others through blogs and social media—all in the simple touch of finger to screen. Amazing, huh?!

Research as to the overall educational effectiveness of the Apple iPad is still a bit speculative. Visionaries have embraced the concept of using iPad, understanding that technological innovations will, most definitely, always trump antiquated methodologies. It doesn’t take a rocket scientist to figure out that increases in student achievement are directly proportionate to the amount of time students stay engaged with the content. To date, students are embracing the iPads that have been in schools. Preliminary results are positive. And the demand for iPads in schools continues to grow.

Implementing iPads into the school environment will not be a difficult task, because we can utilize models that other schools, who have already walked through the process, have employed. The most difficult challenge will be in ensuring the safety and security of the iPads themselves. Once this hurdle is overcome, the rest is not very difficult. Perhaps the best way for implementation would be to start small, with the ultimate goal of getting iPads to every student and teacher in the school. This would occur in stages:

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| Pre-Implementation: | Administration and Teacher leaders would investigate and discuss the Stages of Concern with staff (as outlined in the Concerns-Based Adoption Model). Together, teacher leaders and administrators would explore where the rest of the staff fell on the spectrum of Awareness, Self-Concerns, Task Concerns, and Impact Concerns, paying special attention to the areas that would require the most Professional Development for teachers. This can easily be accomplished by meeting with focus groups and conducting surveys. |
| Year One:  Teacher Implementation | Teachers are furnished with iPads. In this first year, teachers would learn best practices for iPad integration into classroom curriculum. In this initial year, there could be professional development sessions (developed during the Pre-Implementation period) with a focus on iPad use, exploration of the educational apps, and discussions about ways to integrate these ideas into teaching pedagogy, making certain to concentrate on higher level thinking skills and interdisciplinary activities. The goal of this first year, would be to begin to move teachers through the Orientation, Preparation, Mechanical, Routine, Refinement, Integration, Renewal stages of the Concerns-Based Adoption Model. |
| Year Two:  Initial Student Implementation | Grade Level 8 will receive their iPads. This would be like the “pilot” program for the entire school. Choosing 8th graders as the first to receive iPads serves a dual purpose: 1) They are more mature and will handle the responsibility of having iPads more conscientiously, and 2) Students in other grade levels will look up to the 8th graders as leaders in innovation and will look forward to their time with iPads. Year Two would also be a time to create a few iPad labs for students of other grade levels to experience iPads for themselves. |
| Year Three:  Full Implementation | Full implementation occurs. All grade levels will receive their iPads at this point in time. From the pilot program of Year Two, administration and teacher leaders can work out any glitches they experienced from initial student implementation, addressing issues with security, maintenance, appropriate student use, etc. |

**Reflection**

Personally, I love the idea of acquiring iPads as a whole school project. I have not yet acquired an iPad of my own, but after doing this research, it is at the top of my list of things to do! During the course of my research, I learned a lot of information that I never considered before. Starting a technology revolution at Griffin Middle School would take a great deal of planning and cooperation from a number of key people. I enjoyed looking at the big picture and imagining myself spearheading the implementation process, and I enjoyed researching things like limitations, funding sources, and effectiveness of the emerging technology. I have learned that there is a LOT more to this massive technology implementation than I originally thought. Frankly I never gave it that much thought before. So in a sense, this has been an excellent process for me to experience from a future technology leader’s perspective. This research has strengthened my professional practice by allowing me to see a piece of emerging technology from multiple perspectives. I had to place myself in an administrative position, a teaching position, and a technology coach position to fully understand what this kind of technology integration would look like. Being able to experience something from multiple perspectives helps me to become a well-rounded professional, and to be much less critical of what often seems like a slow, arduous process of acquiring meaningful tools to revolutionize my teaching. “Evolution of thought” must occur before “revolution of action” can be possible—and these things do take time.

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