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<div align="center">**Emerging Technologies Project**</div>

In a world where students have instant access to limitless information presented in a variety of multimedia formats, it becomes clear that educators must find ways to teach students in similarly appealing ways. Traditional ways of teaching are becoming less effective as new levels of media –rich content is shared digitally. There are numerous innovative, technology resources that can be used to enhance, expand, and enrich learning experiences for students at every level. The Apple iPad is an emerging technology resource that has the potential to transform daily learning experiences and ultimately, enhance student achievement.

Apple estimates that approximately 1.5 million iPads are being used in classrooms across America. In their first day of sales alone, approximately 47,000 iPads were sold into education ("Why the ipad," 2012). With these devices being sold in record quantities, the statistical impact of these resources on student learning is becoming more readily available. Because this is an emerging technology, longitudinal data is not yet available. However, data trends emerging suggest that iPads enhance student learning. One study in Auburn, Maine found that a kindergarten student group that was taught with iPads outperformed a similar student group taught without iPads in every literacy category on a state mandated assessment (Washuk, 2012). Furthermore, significant data on the impact of these devices is expected out of Pepperdine University later this year after an extensive study of student attitudes, beliefs, and achievement after iPad integration. This research analysis, even in the preliminary stages is indicating a correlation between attitudes, beliefs, and higher levels of achievements in classrooms utilizing this device.

iPads are a series of tablet computers created and distributed by Apple Inc. These devices feature 7.31" by 9.5" touch screens that allow users to navigate a vast array of programs and resources with the tap of a finger. Weighing in approximately a pound and half, these devices can operate on Wi-Fi networks or on 3G and 4G provider networks. In the education setting, iPads function primarily as a platform for accessing textbooks, literature, movies, periodicals, applications, and other web-based content. In classrooms across the world, iPads are replacing traditional textbooks as the primary source for written content. Apple describes the value of digital textbooks on the iPad saying, "With engaging layouts, interactive images, 3D graphics, and more, a Multi-Touch textbook on iPad is one book students won't want to put down" ("Apple in education," 2012). Applications, available exclusively through Apple serve to enhance and extend learning experiences inside and outside of the classroom. And, with the introduction of iTunes U, students can put all of their assignments and materials for each course directly on their iPad. iPads feature a rapidly expanding repertoire of resources that can be used to facilitate and enhance learning experiences.

The Cobb County School District's Technology Plan clearly outlines goals related to technology integration and usage. After analyzing these goals and the potential iPad uses, it is evident that iPads would be an effective tool to utilize in working to achieve these technology goals. For example, according to the Cobb County School District Technology Plan, one of the goals is to "Increase student engagement through higher order thinking experiences using digital tools and resources in exploring real world issues and solving authentic problems." With the iPad, students can tackle any challenge-based learning experience, building links between the content, devising a plan to solve the problem, conducting research, developing multimedia

presentations of the solution, and communicating and collaborating with others across the world. This device has the potential to facilitate limitless higher order thinking experiences and provides connections to real world situations. Another component of the district technology plan is related to collaboration and assessment. The goal is to "Increase teachers' 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." With the iPad, teachers can instantly gather authentic assessment data. Applications and programs through Apple provide support for instantly analyzing this data and using it to drive instruction. Furthermore, the iPad breaks through the walls of classrooms and schools, connecting users to others around the world. It provides teachers a platform for collaborating on a global scale. iPads are a resource diverse enough to be used for the administrative tasks of teachers and administrators, and to be used to facilitate student driven learning experiences. With the ultimate goal of the Cobb County Technology Plan being to get the technology into the hands of students for meaningful learning experiences, the Apple iPad is an ideal device.

  Apple iPads are highly adaptable devices, making them appropriate for any age or ability level. Data and case studies suggest that these devices are being successfully integrated in kindergarten through college and beyond. With their ease of use and an increasingly technologically literate generation of students, even the youngest of students are utilizing iPads for learning. Adding value to these devices as an educational tool is the fact that they can support the learning of diverse student populations. According the Apple Education website, the "iPad comes with a screen reader, support for playback of closed-captioned content, and other innovative universal access features — right out of the box. There's no additional software to buy or install. These features make iPad easier to use for students who have a visual impairment, are deaf or hard of hearing, or have a physical or learning disability." As an elementary school teacher, I envision the screen reader as being a great way to support early reading experiences for students struggling with literacy. The iPad possesses great potential for differentiation. Using an iPad for instructional purposes allows for differentiation in the process (how the information is conveyed or constructed) and the product (how the knowledge and learning is demonstrated.) With the iPad's adaptability and accessibility, schools can meet the needs of a diverse community of learners without additional costs or modifications.

  Just as the iPad comes with standard features that allow it to be accessible for nearly all learners, the device requires very little, if any peripheral equipment. When purchased, the device comes standard with a USB cable and power adapter. Featuring built in microphones, cameras, and speakers, nearly all learning experiences can be facilitated without additional purchases. Additional resources like cases, keyboards, and plug-ins are available, but not completely necessary. Apps are the primary additional purchases for iPads. Developers from across the world have designed and developed applications geared towards education. It is estimated that there are over 20,000 education based applications exclusively for iPad and iPod users ("Largest Deployment of," 2012). Apps for iPads are available exclusively through iTunes and The App Store (without significant software modification.) Apple does offer education rates that make purchase bulk quantities of applications more affordable.

  The primary challenge to outfitting students with these devices is cost. School districts often have very limited resources available to purchase these devices and struggle to financially provide long-term support (training, updates, and technical support.) While Apple does provide discounted educator pricing for devices and bulk purchases, these devices can be considered a more costly tablet. According to the Apple website, an iPad Learning Lab, complete with 10

16GB iPads and storage/charging cart costs between $6,300 and $7,000 (dependent upon warranty.) iPads traditionally come with a one year Apple Care Warranty, but additional coverage is an added cost. Another great resource offered by Apple Inc. is onsite training by professional educators. The Apple Professional Development Program costs approximately $4,500 and provides two day workshops focused on full device integration. While this is an added cost, it provides meaningful support needed to integrate the technology. Several case studies indicate that the Apple Professional Development Program was used for the initial training, and then further training was conducted by school/building technology leaders. For Cobb County educators, there are several added benefits of purchasing the iPads as opposed to other devices. One added benefit of purchasing the iPad is that technical support, through the county, is available. Unlike with other tablet devices, the technical support team has the training necessary to support the iPad. Additionally, through Atomic Learning, staff members have access to extensive training and tutorials designed to help individuals utilize this device.

There are many funding sources available for outfitting schools with iPads and other technology based resources. Many schools in Cobb County use Title I funds to purchase these devices. This allows for the purchasing of devices and technical support, without taking away funding from general operating accounts. For larger scale iPad purchases, there are numerous grants available. The federal government lists multiple Twenty-First Century grants focusing on technology devices that support and increase student learning and achievement. Apple Inc. even has a webpage devoted to Federal Funding Research. On this page, it breaks down learning standards (by age group and content) and provides precise descriptions of their devices that can be used to meet the standards. Furthermore, many companies and corporations offer grants and funding awards to support student learning through technology. While the process for applying for these grants and funding sources is rather lengthy and complex, it has proven to be successful for many schools in the United States.

Using iPads in the Classroom

It is evident that the Apple iPad possesses great potential as an educational device. The iPad, singlehandedly, has the potential to revolutionize today's classroom. Because of its nearly limitless potential, it is challenging to establish most common classroom uses. Studies suggest that these iPads are used for everything from behavior management to direct instruction digitally. Simply put, iPads can be used in the classroom for nearly anything with nearly any type of student.

As established in the third paragraph, one major use of the iPad in schools across the country is as a library of various texts. At all levels of education, textbooks play an important role in guiding learning and providing a primary reference source. With the iPad, textbooks can be digitally loaded onto the device for instant access and browsing. Taking these textbooks beyond the pages, students can interact with text, images, video clips, and demonstrations. This adds interactive, multimedia features to the content being presented, increasing engagement and motivation, and providing additional information. Other literary texts, like books, periodicals, magazine, reference texts, etc. can be added to iPads. Again, increasing student engagement and providing further information on a topic.

The Apple iPad is an ideal device for student driven learning because it connects students with an endless world of information that can be used to support meaningful learning experiences. The iPad also provides a platform for students to creatively and uniquely express their learning in a variety of ways. With the iPad, students can build connections between the

content, easily linking information found online to other information and applications. Because it is a multi-functional device, students can establish learning goals or task and can use the device to study the content, devise a solution, conduct research, develop a product (presentation, video, audio, report, etc.) and ultimately share the product with others. Unlike most devices, the iPad offers a multitude of resources, programs, and applications that allow students to take a project from start to finish. Students do not have to follow a "one size fits all" process to problem solving because with the iPad, they have all the necessary resources to complete the task. The Apple website introduces the concept of "Challenge Based Learning." With this model, students address real life challenges and develop solutions for the problem using the iPad to support the problem solving process.

iPads have the potential to drastically enhance communication and collaboration among students, teachers, parents, and other individuals. Because these devices are web-enabled, students can communicate thoughts and ideas instantly and can share their work with a limitless audience. An example of this would be a student composing a piece of literature on an iPad, then instantly sharing this work digitally, with others. iPads can also connect students through Face Time, which is face to face communication via built-in cameras. Students can discuss assignments with others, gain insight through conversations and interviews, and share their learning with others. Many case studies referenced global ePenPals, which connected students across the world. Students collaborated with similar aged students in other countries to accomplish a specific task. In addition to constructing knowledge and experience through these ePenPals, students have the opportunity to develop a global awareness. While security concerns can present themselves with global communication, with the safeguards and blocks available through the iPads combined with teacher monitoring and facilitation, students can safely engage in digital conversations.

With the advanced programs on the iPad, combined with the vast library of apps, there are so many potential educational uses. Here are some ideas for using iPads in an elementary school classroom: interactive read alouds (individual or whole group), practicing letter formation with guides and tutorials, paint and draw to represent concepts and content, presentation development and sharing, collecting-organizing-analyzing data, dictation of voice to text for shared and independent writing, practicing of math concepts, taking or recording classroom notes, blogging, create graphic organizers or other maps/charts, play and stream videos, navigate places using maps and GPS, monitor and track student behavior, monitoring student reading fluency, IEP/RTI checklists and data keeping, etc. As previously stated, it is impossible to establish the best uses of the iPad in the classroom because there are so many possibilities and endless potential.

Implementing iPads

As with all change and advancement, there is initial resistance. When beginning a plan to implement iPads in the classroom, soliciting buy-in is among the first steps. Participants need to know the expectations, the reasons, and the data that supports the cause. They also need to know that they will have the support and training necessary to being implementation. It takes leadership that establishes the importance and sets the progressive goals. As Walsh explains, "First among these (steps to integration) is the proper mindset for both leadership and faculty. "Visionary and nimble senior leadership", and faculty who are "committed to teaching excellence and becoming active learners in emerging technologies", are essential. It also calls for an innovative technology leader ("predicting what technology will be like three to five years in

the future and which investments will pay off then, requires leadership willing to take risks") (Walsh, 2011). When these individuals are in place and prepared, the implementation can begin.

There are four primary steps necessary to integrate any change, especially technology related. For the purposes of this paper, these are the necessary steps for fully implementing iPads in the classroom. These steps are planning, preparing, implementing, and evaluating. There needs to be a clear and thorough plan in place before anything else can happen. The detailed plan needs to include everything from necessary training and timelines to planning for problems and challenges. Next, the staff and faculty need to be prepared through training, exploration, practice, and immersion. After the leaders are trained, the students, the most important users of the iPads, need to be equipped with the necessary skills and knowledge. They not only need to be trained on the technical aspect of using iPads, but they need to be trained on appropriate usage and netiquette. It is at this point that the expectations for student usage need to be made exceptionally clear. Finally, evaluation needs to occur. In depth analysis on usage to determine progress levels as well as areas of need/improvement is necessary. Implementing iPads in education without analysis and evaluation of effectiveness and impact is troublesome. This evaluation should be used for assessment **of** learning and usage and assessment **for** learning and usage. The process of integrated iPads into the classroom is not instantaneous. Rather, it is methodical and carefully orchestrated over an extended period of time. Generally speaking, the more effective the implementation process, the more successful the process. With this emerging technology, it is evident that the implementation process is vital to the success of the program.

Reflection

In researching potential emerging technologies on which to focus this project, I came across numerous resources that I have an interest in further exploring. I selected the iPad as my emerging technology to research due to the fact that my school is beginning the process of integrating iPads (on a small scale.) I was hopeful that by exploring the implementation of iPads in other schools and districts, that I would get ideas for helping as iPads begin to be used at Water Creek. In doing this research, I came across numerous ideas for helping facilitate the integration of these resources and ideas for using in the classroom. Both of these pieces will definitely help me as a technology leader within my school. Another valuable piece of information I gained from this research was related the vast amount of federal funding available to support technology integration. There is so much money out there that can be used to enhance technology within low-income schools. In doing this research, it became overwhelmingly evident that the process for securing these funds is incredibly lengthy and extensive. I wish that I had the time and support necessary to write a grant that could provide more technology, specifically iPads for my school. I will definitely continue looking into funding opportunities that are available. This emerging technologies project definitely opened my eyes to the new, "up and coming" technologies that are hitting classrooms everyday. I look forward to learning more about these resources and how they impact student achievement and attitudes.

References

Apple in education. (2012). Retrieved from http://www.apple.com/education/ipad/

Walsh, K. (2011, July 17). ipads in education – implementation stories and lessons learned. *Emerging Ed Tech*, Retrieved from http://www.emergingedtech.com/2011/07/ipads-in-education-implementation-stories-and-lessons-learned-continued/

Washuk, B. (2012, February 16). Report says giving ipads to auburn kindergartners increases test scores. *Sun Journal.* Retrieved from http://bangordailynews.com/2012/02/16/education/report-says-giving-ipads-to-auburn-kindergartners-increases-test-scores/

[Web log message]. (2012, March 2). Retrieved from http://www.ipadinschools.com/

Why the ipad won't transform education just yet. (2012, January 20). *CNN Technology*, Retrieved from http://www.cnn.com/2012/01/20/tech/innovation/ipad-wont-transform-education/index.html