

Integrating Technology at Carpenter Elementary

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Abstract

This paper describes the efforts made at Carpenter Elementary to better utilize technology, spearheaded by myself and, in part, by one other colleague, Tuyetnga Bui who is another second grade teacher. Our goal was not only to support teachers in using technology during instruction, but to also encourage them to give students the freedom to present their knowledge using technological tools as alternatives to traditional written assessments. Our work consisted of two tasks which are outlined in this report: a staff presentation based on integrating technology in education and a written application for a STEM (science, technology, engineering, mathematics) grant to provide our school with more technological resources. Many students and teachers in the school have benefitted from the resources we provided which will be described in this paper.

Integrating Technology at Carpenter Elementary

Numerous publications have asserted that America's current educational system is falling behind due to the rapid changes that come with the 21st-century and ever-changing technology. Many experts agree that students are not being adequately prepared for the types of thinking and problem solving that will be necessary in the future. It is my belief that while many educators see the value in utilizing technology in classrooms, they do not feel they have the support or resources to be successful. As a result they simply avoid change and continue doing things the "old fashioned way". The actions taken by myself and Ms. Bui outlined in this paper are the direct results of this belief; we wanted to motivate our colleagues to step out of their comfort zones and inspire change.

Rationale

Friedman (2005) argues that America is falling behind China, India, and other nations due to laziness and a sense of entitlement, graduating fewer engineers and scientists, and companies outsourcing to save money and find more highly skilled workers. Pink shares this notion: "Individuals and organizations that focus their efforts on doing what foreign knowledge workers can't do cheaper and computers can't do faster...will thrive. Those who ignore...will struggle" (2005, p. 246). These ideas are the rationale for promoting the use of technology in schools. In a global society that is constantly changing, it is critical that American students do not fall further behind than they already are. By teaching students to use technological tools, and modeling using them properly, teachers are setting them up for success in the future.

In addition, many experts assert that creative, flexible thinking will be absolutely essential in the future. Pink (2005) states that:

there is a need for people to shift from linear, left-brain thinking to creative, right-brain thinking: “L (left)-Directed aptitudes-the sorts of things measured by the SAT and deployed by CPAs-are still necessary. But they’re no longer sufficient. Instead, the R (right)-Directed aptitudes so often disdained and dismissed-artistry, empathy, taking the long view, pursuing the transcendent-will increasingly determine who soars and who stumbles. (p. 27)

Ms. Bui and I agree that in order for students to meet these new expectations, the way we teach must change. We are doing students a disservice if we send them out into the world lacking the tools they need to accomplish their goals. Thanks to technology, we now have more resources than ever before with which to create global learners. Gaudelli (2003) wrote about his frustrations when trying to instill global perspectives within his high school students over two decades ago when there were not as many technological resources (p. ix). Given the rich store available to educators now, it is somewhat surprising that many are so reluctant to actually utilize them. In this project, our primary goals were to get teachers to move beyond their hesitation, chance the unfamiliar, and take risks trying new things with technology.

Perhaps the most compelling reason that educators should integrate more technology is that students *want* to use it. Research has shown that students crave opportunities to use more technology at school, and when given opportunities to do so, they excel academically (Spires, Lee, & Turner, 2008). Perhaps if policymakers and educators listened to the students they were trying to teach more carefully, they could offer some solutions to educational problems. Rather than avoiding technological advances in schools, educators should embrace them and use them as tools to help accomplish academic goals more efficiently and effectively.

Background

Carpenter Elementary is in Wake County, North Carolina. It has a diverse population and serves students of many ethnicities and socio-economic backgrounds. While Carpenter does serve many students of need, it is not a Title 1 school. This means it does not receive extra federal funding for resources to enhance instruction and student performance. While Carpenter does have some parent support and involvement, there is not enough to enable the school to purchase many technological tools or receive them as donations. In addition to these factors, budget cuts have minimized the amount of money allotted to the school to purchase technology. Thus, Carpenter is stuck in the middle of the resource continuum. The school does not qualify for extra federal funding to purchase technology, but there is not enough from the parents and community (fundraisers, donations, PTA membership, etc.) or the county and state budgets to purchase an adequate amount. Therefore, teachers must share an extremely limited number of technology resources: four document cameras, three Promethean boards, two sets of Turning Point software, six ipads, and one flip camera. In a school with 45 teachers, who are either in regular classrooms or work directly with small groups of students, this is clearly not enough.

Because the resources are so limited and must be shared, they are not available for teachers to use on a regular basis. Consequently, some teachers never even attempt to learn how to use them because they do not feel it is an efficient use of their time; they do not want to spend hours being trained and then only be able to actually use them every once in a while. In their view, the payoff and benefits are minimal for such a large sacrifice of time. The consequence of all this is that the few technological tools that Carpenter does have are often not utilized. This leads to my first goal in this project which was to offer high quality, thorough training in a time-efficient manner so that teachers may be more willing to use the technological tools. I felt that if we could show my colleagues how to use the technology in a time efficient manner at a staff meeting and provide them with resources they

could keep as references, they may be more likely to integrate the rarely used technology in their classrooms. I also wanted to introduce them to other resources on the Internet that are also easy to use. This situation also led to the second project goal which was to find a way to procure more technological tools so that teachers could have more access to them and use them more frequently. After exploring several options, Ms. Bui decided that applying to become a STEM school was our best choice.

Staff Presentation

The first part of the project was to provide a brief staff development session at a faculty meeting showing teachers the benefits of using technology as well as how easy many tools are to use. My hope was that exposing them to new resources may motivate them to try some new things. I wanted to make it very clear that technology should not be taught for technology's sake but should be used as a tool to help cover objectives in content areas. I also wanted them to understand that it is perfectly fine that one does not have to be a technology expert in order to be an effective teacher that utilizes technology. What matters is your willingness to bravely try new things and be open-minded to the changes that come along with the digital era: "your attitude toward learning new things-as well as your willingness to let go of obsolete information-plays an important role in determining your aptitude and intelligence" (Ohler, 2008, p. 7).

After approaching the principal with the idea and getting it approved, I created a Power Point presentation with links embedded so that I could actually show the websites and how they worked. Each staff member also received a handout listing each technological tool along with a brief explanation. Here are the technological resources I presented to the staff:

Name of Tool or Website	Purpose
www.gamesforchange.org	This site helps children think about solving global problems related to social studies by playing

	games.
www.penzu.com	Site where students can keep online journals.
www.toondoo.com	Site enabling students to create comic strips.
www.voki.com	On this site, students can create avatars that speak.
www.xtranormal.com	Students can use this site to make movies.
www.weebly.com	This is a user-friendly site that helps students create websites.
Google Maps	This tool enables students to study geography, social studies, and much more.
http://usawrites4kids.drury.edu/	This site, America Writes for Kids, exposes students to literature.
http://www.uen.org/tours/	This site takes students on virtual field trips.
http://questgarden.com/search/	Many webquests are housed on this site.
http://community.scholastic.com/scholastic?category.id=kidBoards	Students can read and post on blogs about books they are reading.
http://www.spaghettibookclub.org	On this site, students can read and/or post book reviews.
http://www.readwritethink.org/parent-afterschool-resources/games-tools/character-trading-cards-a-30181.html	Students can use this site to create online character trading cards.
http://www.noodletools.com/debbie/literacies/information/5locate/advicengine.html	This site is used to teach students online navigation skills.
http://www.educationworld.com/a_lesson/archives/hunt.shtml	This is another site that can be used to teach online navigation skills.

In the days and weeks following the presentation, several staff members approached me with questions, insights, or comments about the tools they had learned and tried on their own. Shortly after the presentation, a first grade teacher shared her class website she created using Weebly.com, a fourth grade teacher called to ask for tips on how to use Xtranormal.com, and two second grade teachers came to me to talk about the webquest site. I was very pleased to know that some members of the staff actually listened, tried, and were using some of the resources. Of course there were others that made no attempt to use anything in the presentation, but I did not expect everyone to be receptive, and this was no surprise. I accomplished my goal of motivating some staff members to utilize more technology, so this portion of the project was successful in this way.

Another result of the presentation was one that I did not expect, but it pleased me greatly. In the days that followed, the staff began to engage in rich dialogues about if, why, and how technology should play a role in education. People's opinions greatly varied, of course, but these discussions helped staff members clarify their views, goals, and future plans for implementing technological projects in their classrooms. It also created a safe environment in which those who wanted to could bounce ideas off of one another. I got the impression that though there were a few outliers, most of the staff agreed that teaching children how to comprehend information gathered by using technology is vital. I was happy to note that these changing views of the staff align with mounting research stating the importance of developing technological skills. "Our job now is to envision new constructs of reading comprehension that introduce students to strategies for interacting with these new literacies. We must help students...explore digital information environments together in more thoughtful ways" (Coiro, 2003, final paragraph).

This was also a welcome consequence as it promoted a positive working environment at Carpenter. When a school's staff feels safe, comfortable, valued, and productive, the students will reap the benefits. As Barth states, "Show me a school whose inhabitants constantly examine the school's culture and work to transform it into one hospitable to sustained human learning, and I'll show you students who graduate with both the capacity and the heart for lifelong learning" (2004, p. 19). I was both proud and somewhat relieved that I helped create an experience that encouraged ongoing learning, professionalism, and positive culture at my school.

STEM

Ms. Bui and I wanted Carpenter to become a STEM school for several reasons: under enrollment, increased economically disadvantaged population, and a review and analysis of test data.

Carpenter's enrollment has decreased the last two years as a result of the opening of other elementary schools and a middle school assignment that displeased many parents, causing them to pull their children from Carpenter and place them in their traditional calendar option school. Becoming a STEM school would not only improve the quality of learning through technology at Carpenter, but it would also attract more students, thereby increasing enrollment. The majority of Carpenter's economically disadvantaged students do not have adequate access to technology at home, and STEM resources would provide more frequent exposure to them at school. Upon review of Carpenter Elementary School's End of Grade test data, even though high proficiency was achieved, a deeper investigation of disaggregated data indicated that we did not meet high growth with any of our math and reading subgroups. We believed that participation in the STEM Collaborative School Network would allow for additional experiences that would extend children's critical thinking.

Research shows that the set of skills children require to be successful in the 21st century is constantly changing: "Teaching students how to search and how to read on the Internet needs to be a focus of classroom pedagogy for the future" (Henry, 2006, p. 624). In order to ensure that all children at Carpenter have regular access to online resources, more technological tools must be made available to them. We felt that STEM offered solutions to our technology shortage problem. My principal hired substitutes to cover our classes for one day so we could work on the STEM application. We also worked on it together outside of school on evenings and weekends.

Unfortunately, Carpenter was not chosen as a STEM school. While this was disappointing, it was still a valuable learning experience for my colleague and me. It provided us with an opportunity to step up and attempt to help our school, allowing us to be teacher leaders. It also strengthened our writing and networking skills, and provided us with practice for future application and grant projects. As Zemelman and Ross state, "Applying for a grant involves becoming familiar with people and

organizations outside of your classroom, which can be energizing in itself and becomes easier the more you do it" (2009, p. 120). So, even though we were not chosen and lost in that way, we still gained a great amount from the experience.

Discussion

Advocating for technology at my school has been an invigorating, rewarding, educational, and meaningful experience. I believe it has given me some degree of personal power at my school, as evidenced by the number of my colleagues who come to me for advice, assistance, and ideas. My teacher leadership with and positive attitude toward technology also served me well, as I was chosen to receive my very own document camera and Ben Q (an interactive projector) to use in my classroom, with the condition that I train other staff members on how to use it if and when more are purchased in the future. My principal clearly respects my knowledge and commitment to this aspect of teaching by entrusting me with these resources and this responsibility.

I do think that working on this project has helped establish me as a teacher leader in my school. Katzenmeyer and Moller state, "Through their expertise, teacher leaders model effective practice, mentor colleagues, and, through collaboration with others, break down the isolation that keeps many teachers stuck behind their classroom doors repeating the same instructional strategies regardless of the outcomes" (2009, p. 102). I do feel that this project promoted teamwork and positivity at my school, which is a great achievement. While Carpenter still has a long way to go in terms of becoming a technologically savvy school, I am pleased that this project has helped my school make some progress towards achieving both technology and 21st century educational goals.

References

Barth, R. (2004). *Learning by heart*. San Francisco, California: Jossey-Bass.

In this book, Barth encourages people in the field of education to examine themselves and their institutions to see if they are really contributing all they can to maximize positive outcomes. He challenges all stakeholders in education to rise to the occasion and reform schools from within.

Coiro, J. (2003, February). Reading comprehension on the Internet: Expanding our understanding of reading comprehension to encompass new literacies. *Reading Online*. Retrieved April 19, 2012, from <http://www.readingonline.org>.

This article asserts that reading and comprehending online texts is much different than doing so with print texts; therefore, a separate set of skills is required to be successful when using the Internet. Consequently, Coiro argues that educators must change instruction, assessment, and professional development to meet these new literacy demands and set students up for success in their futures.

Friedman, T. (2005, April 3). It's a flat world, after all. *New York Times*. Retrieved August 30, 2011, from <http://www.nytimes.com>

Friedman's tone in this article is urgent; he warns that American schools are not adequately preparing students to be globally competitive in the future. He cites evidence noting that American students are rapidly falling behind those of other nations, primarily because they are unable to be innovative. The use of technology in schools could help students build those creative skills necessary to innovation.

Gaudelli, W. (2003). *World class: Teaching and learning in global times*. Mahwah, New Jersey: Lawrence Erlbaum.

This book examines our ever-growing global society, focusing on how it impacts and is impacted by education. Gaudelli states that as the world becomes more connected, teachers and students must interact on global scales to maximize productivity and learning outcomes. Using technological tools greatly benefits the ease of communication, helping to realize global visions in education.

Henry, L. A. (2006). SEARCHing for an answer: The critical role of new literacies while reading on the Internet. *The Reading Teacher*, 59(7), 614-627.

This article walks teachers through an instructional strategy called "SEARCH" that teaches students not only how to navigate the web efficiently, but how to evaluate whether

or not a website is trustworthy. Henry asserts that online navigation requires strategies and skills that are currently not focused on enough in schools, and offers this approach as a solution.

Katzenmeyer, M., & Moller, G. (2009). *Awakening the sleeping giant: Helping teachers develop as leaders*. (3rd ed.). Thousand Oaks, California: Corwin Press.

This text empowers teachers and principals to make their schools positive environments where student learning flourishes. The authors focus on teacher leaders, pointing out their traits and qualities so that readers can follow their examples and learn from their experience. They encourage educators to find their own leadership opportunities and make the most of them.

Ohler, J. (2008). *Digital storytelling in the classroom: New media pathways to literacy, learning, and creativity*. Thousand Oaks, California: Corwin Press.

This book is rich with ideas, processes, plans, and specific directions on how teachers can use technology to maximize learning outcomes in their classrooms. Ohler insists that not only will students learn more by engaging in these activities, but that they will also be more fully engaged and prepared for the future. It is extremely useful because it gives step by step directions on how to accomplish educational projects using technology.

Pink, D. H. (2006). *A whole new mind*. New York, USA: Penguin Group.

Pink asserts that in the future, people who are innovative and creative will be the most successful. He builds this argument, then offers ideas on how to develop these right-brained skills, many of which utilize technology.

Spires, H., Lee, J., & Turner, K. (2008). Having our say: Middle grade student perspectives on school, technologies, and academic engagement. *Journal of Research on Technology in Education, 40*(4), 497-515.

This article begins by noting that most educational researchers and policy-makers agree that major changes need to be made to meet goals and needs of 21st-century learners. The authors then present their research, in which they discovered that middle school students crave more opportunities to use technology, particularly types of social networking, in schools. The authors then argue that if student perspectives were valued and listened to, it may be possible to accomplish learning goals much more efficiently.

Zemelman, S., & Ross, H. (2009). *13 steps to teacher empowerment: Taking a more active role in your school community*. Portsmouth, New Hampshire: Heinemann.

This book encourages educators to embrace their individualities and fall into different leadership roles at their schools based on strengths, context, and needs. They state that by being a team player and leading naturally where one's strengths can have the most impact (which may not necessarily involve positional power), one will find more job satisfaction

and overall happiness.