EDU 501 Final Paper:

The Issue of Technology Integration in K-12 Classrooms

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The Current Issue

Though the issue of technology integration has been affecting educators for decades, the influx of computer technology in schools has made it more pressing than ever before. Increasing demands, including differentiated instruction, special needs modifications, and complex content standards, have been placed upon public school teachers, and new technologies offer an array of methods for meeting these demands. However, an assortment of challenges accompanies these technologies as well. As a result, teachers need to become equipped to integrate new technologies into their curricula while confronting and overcoming the challenges they bring.

Because of the foothold digital learning now has in schools – whether the school is physical, virtual, or a blend of both – teachers, administrators, and parents are all facing the same question: "Will these technologies help our students learn?" The answers are likely to differ based on the source, and the motive or philosophy held by the source. For example, technology companies will probably tout their products' abilities to enhance learning; similarly, teachers who favor direct instruction will probably approach technology integration differently than a teacher of the constructivist ilk. Regardless of an educator's disposition toward technology integration, the question surrounding the issue is not a question of 'if' they will integrate technology but 'how' they will do so. All who play a significant role in the education of a child must thoughtfully consider where, when, and how to use technology to enrich learning experiences or address learning needs (Bonk, 2012).

As a prospective educator, frequent observer, and substitute teacher, this issue is affecting me because I interact often with educational technologies and am undergoing professional training for becoming an effective teacher. Being effective in the classroom will mean taking

advantage of the available technologies and maximizing their usefulness for improving student learning. Furthermore, I have attitudes and predispositions that I must wrestle with in order to define my values as they pertain to technology. My values will determine how I decide to teach the lessons in my curriculum, and my competency with the available technologies will decide how effectively students are able to learn because of them.

Background of the Issue

In a discussion of the evolution of technology integration in the classroom, it is important to first define technology as it pertains to education. Roblyer and Doering (2013) define educational technology as "a combination of the processes and tools involved in addressing educational needs and problems, with an emphasis on applying the most current digital and information tools" (p. 6). Furthermore, they describe the integrating of educational technology as responding to students' needs by determining the most appropriate tools and methodology for meeting them. They also conclude that instructional technology is a specific type of educational technology involving teaching and learning applications (Roblyer & Doering, 2013). This clarification is significant because it narrows what would otherwise be a broad topic, and limits the range of discussion to the uses of technology for teaching and learning purposes in the classroom.

The entirety of the discussion dates back to 1975 and the age of the microcomputer (Roblyer & Doering, 2013), but this particular discussion of technology integration will begin with the background of mobile technologies and ubiquitous access. This refers to the idea that the Internet is accessible almost everywhere, whether it is through free public Wi-Fi, smartphones with data plans, or a vintage Ethernet cable. Additionally, the Internet can be wirelessly accessed on more devices than ever before, including laptop computers, desktop

computers, tablets (such as the iPad), iPods, and non-smart mobile phones. This provides a multitude of avenues by which teachers and students can access educational materials, whether they are required or inspired by curiosity. The Khan Academy, a non-profit organization dedicated to "the goal of changing education for the better by providing a free world-class education for anyone anywhere" (Khan Academy, 2012), produces educational videos that allow students to enjoy learning whether it is compulsory or not.

In addition to bolstering the accessibility of online resources in the traditional classroom, ubiquitous access has also dramatically increased the presence of distance learning in both higher education and K-12 schools (Roblyer & Doering, 2013). According to Bonk (2012), over one million people in the United States are currently engaging in online learning. This phenomenon is only bound to expand as technology advances and further permeates daily life. Bonk (2012) speculates that blended learning will play a larger role in K-12 education, and that effective school leadership will hinge upon the ability to find the ideal blend of learning options. Even if such predictions never come to fruition, the recent history of technology integration suggests that the current technological trends in education are indeed a glimpse of things to come.

Current Events Surrounding the Issue

The increasing prevalence of mobile technology in everyday life, coupled with the ever-expanding number of available web tools, requires current teachers to consider where they might overlap with academic learning. Silver (2012a) summarizes this increasingly popular attitude toward technology integration: "The direction of mobile technology in the classroom is the obvious one. Kids are already engrossed in their mobile tech, much to the chagrin of their instructors. Why not harness the power of mobile technology to draw students in?" (para. 5). Some schools have demonstrated their alignment with this belief by providing each student with

an individual notebook computer or tablet (Apple Classrooms of Tomorrow – Today [ACOT^2], 2008).

One shining example of this phenomenon resides here in Riverside, California, at Ramona High School, the first school in California and third in the nation to provide a completely digital alternative to textbooks (Straehley, 2011). In addition to containing textbooks, the tablet given to each student has applications that facilitate and save lectures, update their grades, and preserve their work (Straehley, 2011). An interview of a tenth grade World History teacher at Ramona revealed that the main function of these tablets depends on the teacher and the lesson, and that this teacher uses them primarily for research purposes and checking for understanding. The teacher also expressed that the benefits of the tablets – most notably their ability to engage students in learning – outweigh the disadvantages, including distractions during lessons, irresponsibility with the devices, and incompatibility with certain web tools (N. Gruntz, personal communication, December 1, 2012).

Another school experiencing a foray into digital learning is Loma Vista Middle School in Riverside. Querying an eighth grade math teacher illuminated the value of using iPads to help students improve their math scores. After receiving an Apple grant for one cart of iPads, the school purchased two more and offered training for teachers who intended to use them. A single cart has been devoted to the algebra department because greater achievement in algebra represents an accountability goal for the current year. By using iPads roughly twice each week, the teacher can assign students with quizzes or practice using Khan Academy. The technology allows her to keep track of students' grades and give students more individual attention while keeping others engaged. As for their attitude toward the technology, the novelty has worn off for

the students because they realize they are only using the iPads for math (E. Campos, personal communication, November 30, 2012).

Apart from these local occurrences, Roblyer and Doering (2013) identify four general issues surrounding technology integration: lack of technology funding; teacher and student accountability for quality and progress; debate over best practices with technologies; and reliance on distance education. While some teachers justifiably fret about the cost of technology integration and its lack of proven benefits, others highlight the software and web tools available at cost relatively similar to that of non-digital instructional materials. In a time when both innovation and accountability are of similar importance, teachers who recognize the capability of educational technology for driving innovation may discourage the use of technology simply for the purpose of driving up test scores. Educators also hold differing opinions on the purpose of technology in the classroom in terms of instructional practices, as the debate regarding teacher-directed or inquiry-based methods enters the technology integration arena. Finally, virtual high schools and distance learning programs are becoming more prevalent in the K-12 system, and schools are attempting to prepare students for this new wave of educational opportunity (Roblyer & Doering, 2013).

Presentation by Local Media

In recent months, newspaper article have tracked the technological developments in Riverside schools. The most notable event has become somewhat of a sequel to the 2011 digital overhaul at Ramona, as the Riverside Unified School District submitted a proposal for a $30 million grant under Race to the Top. Should the grant be accepted, Ramona would become the centerpiece of what the article referred to as the 'Innovation Zone,' with the goal of "blending online learning with traditional classroom instruction" (Straehley, 2012c). If it gets rejected, this

would mark the second instance in recent years of a grant proposal being rejected, as a similar RUSD grant fell short in 2010 (Straehley, 2012a). The core tenets of this most recent grant proposal include: better preparation for higher education and careers through lessons and assessment; a database aimed at measuring achievement and informing instruction; sustaining effective teaching and administrative leadership; and reversing the progress of low-achieving schools (Straehley, 2012a).

The local media has also taken notice of the reactions to the grant proposal by a key figure in its creation. Straehley (2012b) reported that Board President Gayle Cloud cautioned that the district should give preference to ensuring learning over experimenting with unproven commodities. Discussion with the aforementioned Ramona teacher revealed that many teachers were not in support of the grant because of the sweeping changes that would occur and the new emphasis on technology, to which many seasoned teachers are opposed (N. Gruntz, personal communication, December 2, 2012).

Personalized learning also represented a key focal point of the grant (Straehley, 2012b); this can be a source of controversy among teachers, who, as previously discussed, disagree on best practice principles in the area of technology integration. Coinciding with the transition to digital learning technology at Ramona is the fact that RUSD is a designated District of Choice (Riverside Unified School District, 2012), a feature that would potentially have caused Ramona's student population to dramatically increase had the grant proposal passed. This also represented an area of consternation among teachers, who likely would not have gladly welcomed such drastic changes in the name of technology.

Presentation by National Media

The majority of the opinions expressed in articles pertaining to educational technology cite the positive aspects of technology integration. Most have an answer for the arguments that lament financial constraints or call for a shift toward more traditional pedagogy, and many mention student engagement as an advantage exclusively offered by technology such as iPads and e-readers. Donahoo (2012), after listening to his child's teacher exuberantly discuss the benefits of 1:1 iPads (one iPad for each student) in the classroom, wrote about the teacher's description of "the energy and enthusiasm they had seen in children who previously had been difficult to engage" (para. 4). Silver (2012b) also attests to the engagement factor through the process of 'gamification,' which essentially involves using enjoyable, sociable, learning-centered apps to help students achieve learning goals. In these cases, the role of technology is to convince students that learning can be fun, and that meaningful learning experiences are not limited to those typically defined as 'educational.'

Perhaps the greatest overall advantage offered by technology integration, according to several media sources, is the ability to meets students' individual learning needs using the available technologies. In doing so, they can achieve learning outcomes that were only dreamt of using traditional, non-digital methods. According to Manzo (2012), current technologies can simplify the challenge of effectively differentiating instruction, facilitate the identification of students' strengths and weaknesses, and help teachers address students' individual needs. Larson (2012) promotes e-readers for struggling students because of their ability to support learning through font size modifications, the conversion of text to speech, built-in dictionaries, and the option of digital note taking.

But for every argument there exists a counterargument. Paul (2012b) debates the value of certain functions of technologies, including calculation, automatic correction, and search

engines, and questions their effect on the brain's ability to perform such functions manually. Research cited in her article suggests that the technologies that carry out these tasks will better serve users if they are required to do some of the thinking themselves. Paul (2012a) also writes in defense of more traditional learning approaches, such as drilling for automaticity and handwriting. Proponents of widespread technology integration tend to favor collaborative, constructivist approaches to learning, arguing that these traditional skills seem to have no place in digital learning. However, Paul (2012a) argues that the only way for students to gain access to more complex and interesting mathematics is to develop the ability to quickly retrieve memorized facts, which can only be attained through frequent practice. To be certain, she is not adamantly opposed to technology integration, but advocates not abandoning valuable learning skills in favor of the latest (and untested) trends. Time and research will reveal the long-term effects of these trends, especially in completely digital learning environments, and will more accurately weigh the pros and cons of technology integration.

My Opinion of the Media Coverage

After reading the local media coverage in the Press-Enterprise, I felt more knowledgeable about the issues at hand, but I was also left wanting more information. The articles withheld several opinions, as they presented a very objective, neutral description of events and inserted one opinion on occasion. I applaud them for remaining objective, but the inclusion of opinions, in my opinion, enlivens the text and reveals more of the story. For example, in Straehley's (2012b) article about the board's reaction to the grant proposal, they only included a single opinion expressing caution. Perhaps President Cloud's was the only noteworthy statement, or perhaps the inclusion of her statement intentionally reflected the bias of the journalist. Either way, more opinions would be a welcome addition.

As for national coverage of the issue, Evers (2012) presents a collection of articles regarding technology integration that largely portray the transition to more personalized, digitally infused learning as a positive step for education. Evers (2012) writes that the unit has been assembled for the purpose of exploring the potential benefits and challenges of technology integration for teaching and learning, which is superficially true. The articles, though they intermittently reference challenges of technology integration, generally convey a tone of positivity and support for new technologies in the K-12 classroom. In some ways, such as assistive technology for middle school students with special needs (Zascavage & Winterman, 2012) this is a very good thing; in others, such as expensive ($100 per device), marginally useful handheld electronics (Ash, 2012), it is not as helpful.

My overall frustration with this is not with the fact that it presents technology integration as a noble endeavor. I am indeed in favor of technology integration, if only when careful consideration is involved, but I am also acutely aware of some of the challenges technology integration presents. If more words were devoted to strategies for overcoming challenges presented by technology (as opposed to overcoming the challenges presented by learning needs with technology), I would more deeply appreciate the effort devoted to assembling the articles. I was, however, impressed with the diversity of articles and web log posts presented by *Time Magazine* on their website, because they welcome a variety of opinions and insights, most of which are also supported by research.

My Role as a Leader

I believe that I bring a unique perspective to technology integration in education. Much of my life has been spent learning about computers and engaging with different technologies, and I enjoy using them to find creative solutions to problems. But because of my two years

teaching in China, I have experienced a lack of technology that most present-day Americans have not. Of course, I had my own computer, as well as access to reasonably modern computers in the classroom. However, Facebook, YouTube, and Twitter were (and still are) among the most popular websites blocked by the Chinese government. As such, I was bereft of several useful educational collaboration and integration tools, yet I still effectively used technology to plan and deliver my lessons. Essentially, my experience has taught me how to be effective with fewer resources, and to know how to thrive without certain technologies at my disposal. This qualifies me to be an effective teacher in learning environments flush with technology and in those deprived of it.

Due my combination of experience and skills, I am certain that I will be viewed as a valuable technology resource in whichever setting I end up teaching. I intend to use that distinction to help my colleagues discover creative ways to employ technology to their benefit. My first action in any situation involving technology integration would be to ask the first question posed by the Technology Integration Planning (TIP) Model: "Will a technology-based method offer a relative advantage?" (Roblyer & Doering, 2013, p. 52). In other words, will using technology help you solve a problem or teach a lesson more effectively? If the answer is yes, then all available options should be explored; if the answer is no, then the lesson should be designed without it. My belief is that students need to be as competent without technology as they are with it, and I intend to communicate this value through my interactions with and assistance of colleagues.

Finally, I value a quote from the late Steve Jobs (1996, in Carmody, 2012), and his perspective on technology integration. Over 15 years ago, he was quoted as saying,

> I used to think that technology could help education. I've probably spearheaded giving away more computer equipment to schools than anybody else on the planet. But I've had to come to the inevitable conclusion that the problem is not one that technology can hope to solve. What's wrong with education cannot be fixed with technology. No amount of technology will make a dent. (para. 8)

Essentially, the Apple founder was communicating that technology needs to be viewed with the right perspective. Roblyer and Doering (2013) concur that technology is not a panacea, and that "even the most current, capable technology resources offer no quick, easy, or universal solutions" (p. 10). If the goal is to find effective ways to meet students' individual needs, or to increase student engagement in a way that deepens their understanding of a topic, then available technology is absolutely worth integrating into the curriculum as a way to meet that goal. If the aim is to bring a low-performing school to a place of prosperity within an unreasonable timeframe, then no technology can be expected to deliver such results. As a leader in my educational community, I intend to bring this perspective to my lessons and interactions with my colleagues. Though I may not assist in decision-making in the upper echelons of the education community, I will devote energy to strengthening the perspectives and the pedagogy of individual teachers around me through effective technology integration.

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