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Interactive Web Technology in the Art Classroom:
Problems and Possibilities

Marie L. Oxborrow

A thesis submitted to the faculty of
Brigham Young University
in partial fulfillment of the requirements for the degree of
Master of Arts

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ABSTRACT

Interactive Web Technology in the Art Classroom: Problems and Possibilities

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Research has shown that the use of technology in curriculum, and art classrooms in particular, can benefit students. This thesis outlines these benefits which include the potential for technology to make learning more personal, assist students in their future careers, and allow opportunity for collaboration. Still, several obstacles impede the full-fledged realization of that potential, often leading teachers to avoid or ignore technology in their pedagogical strategies. This thesis addresses these obstacles and provides practical and theoretical solutions. Once these obstacles are overcome, teachers will be better able to incorporate new technology in their lessons, such as social media, podcasts, open-source websites, and online programs. As an example of art teaching that uses technology, this thesis also provides a sample lesson plan for secondary students, incorporating elements of interactive Web technologies that have been recommended by art education scholars.

Keywords: art education, social media, technology

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Chapter 1: Introduction

77.3% of Americans, or just under 240 million people, use the Internet on regular basis, a huge increase from only a decade ago (Internet World Statistics, 2009). The Web is becoming a large part of our lives. Larry Rosen (2011), a professor of psychology at California State University, states “children and youth in this new generation are defined by their technology and media use, their love of electronic communication, and their need to multitask” (p. 12). Students are also using the Internet to a large degree. The U.S. Department of Education (2004) conducted a study titled *Toward a New Golden Age in American Education*, which discovered that students were using the Internet more than watching television (U.S. Department of Education, 2004, p. 17). The Pew Research Center’s Internet and American Life Project directed by Amanda Lenhart (2010) produced a study which showed 73% of teens regularly use social networking sites (Lenhart, 2010, p. 38). Use of the Internet and interactive Web technologies is widespread and growing among school age children. These technologies allow these children to communicate, collaborate, and even learn in innovative ways (Buffington, 2008a; Roland, 2010).

Since so many school aged children use interactive Web technology in their daily lives, including technologies such as podcasts, open-source websites, social networks, and Internet programs, art educators might benefit from including these web technologies in the classroom. Unfortunately, several obstacles can limit the use of these technologies art classrooms, curricula, and teaching. First, because these are emerging technologies, some teachers lack expertise or motivation to understand their use and therefore never implement them. Second, using these technologies can be costly, either because effectively harnessing them takes time, or because these technologies can require significant financial investment in hardware or software. Finally, there is a lack of existing technology-infused art curricula for teachers to use as guides. When

teachers fail to use these technologies, for whatever reason, they fail to provide their students with the benefits of interactive Web technology, like the increased focus or student interest in their learning, including artistic learning that can come from technology teaching (Buffington, 2008a; Gregory, 2009).

I should note here, that in my own teaching experience I recognized the difficulties of incorporating interactive web technologies. As a new teacher it can be overwhelming to become proficient in teaching art, let alone developing a new lesson plan to include interactive web technologies. Because of these experiences, I believe interactive web technologies do not need to be a part of every lesson and that regardless of the amount of technology used by an art teacher, emerging technologies can complement existing education practices and enhance the learning experience.

If educators are shown the benefits of integrating Web technology into their classrooms, they may become motivated to update their curriculum and teaching methods to incorporate Web technologies. This thesis discusses the challenges of incorporating new technology, and discusses student benefits that can come from technology's use, such as making lessons more personal, accessible, and relevant. Many of these benefits stem from student familiarity with interactive technologies (Buffington, 2008a; Shin, 2010). Technology-infused teaching may even provide a few students with tools that will assist them in their future careers (Daggett, 2010). With this information as a backdrop, and relying on existing literature relating to the benefits students gain from using technology in the classroom, conclusions can be drawn that will facilitate the effective use of technology in art education. Since change can be difficult and some teachers may not know where to begin to update their lesson plans to be more technology

literate, this paper presents an example lesson plan that can be used as a template for teachers as they work toward providing a technology-driven classroom experience.

A Relevant Starting Point

Interactive Web technology can help young art students learn, by improving their cognitive skills and even their IQs. Citing various research studies, Steven Johnson, (2005), a bestselling author, suggests video games and television can develop cognitive skills (p. 62). Johnson even attributes rising IQs in the last fifty years to the changed environmental factors such as media and technology (Johnson, 2005, p. 154). He also states, “[t]he rise of the Internet has challenged our minds in three fundamental and related ways: by virtue of being participatory, by forcing users to learn new interfaces, and by creating new channels for social interaction” (Johnson, 2005, p. 117-118). Many educators, researchers, and artists can take advantage of this emerging sophistication and support adapting technology in the art classroom. It should be noted that several educators that I have come in contact with have sought to add Web technology to their pedagogical practices in art education but much still needs to change.

While many issues can arise from examining Web technology in the art classroom, this thesis will specifically consider the following questions throughout: 1. How can it be useful and valuable to incorporate Web technology in curricula? 2. Why is it difficult or challenging to bring technology into art teaching? 3. How can teachers use interactive Web technology in the art classroom to achieve specific outcomes in the service of big ideas? Addressing these questions will help to describe the benefits and possibilities of using technology in the art classroom. This study will explore these questions through four areas: 1. what research literature has to say about the benefits or value for students from using technology in the art classroom; 2. what research or curricula already exists using technology in the art classroom; 3. what the

research literature says about the challenges for teachers to incorporating new technology in their classroom; and 4. how to create an interactive web curriculum.

Web Technology Definitions

Many terms are used when describing technology. Technologies have ranged over time from a pencil to a smartphone. The technologies I will mainly reference are Web technologies. The vocabulary for this technology is vast and continues to grow. Some of the most common terms are given below. Most of the following definitions have been adapted from the study conducted by Lucinda Gray, Nina Thomas, and Laurie Lewis (2010) researchers of the company Webstat (p. 2). They conducted research for the U.S. Department of Education to survey technology used in today's schools (p. 2). Other definitions used here are derived from the work of Tim O'Reilly (2009), owner of O'Reilly Media, Inc. and Melanie Buffington (2008a), a professor of art education at Virginia Commonwealth University. The following are definitions used throughout the thesis:

Technology: Information technology such as computers, including LCD projectors, interactive whiteboards, digital cameras; networks, including Internet and local networks; and computer software (Gray et al., 2010, p. 2). When I use the word technology I am excluding non-computer technologies.

Wikis: Collaborative websites that allow users to freely create and edit Web page content, such as Wikipedia (Gray et al., 2010, p. 2).

Social networking websites: Online social networks for communities of people who share interests and activities or who are interested in exploring the interests and activities of others, such as Facebook and MySpace (Gray et al., 2010, p. 2).

Blogs: Combination of Web logs are websites where an individual or group creates a running log of entries that can be read by others, such as in a journal (Gray et al., 2010, p. 2). Another new form of blogs is called microblogging. An example would be Twitter.

Vlogs: Meaning video blogs. It is a form of Internet television.

Video Hosting: Sites that allow users to post video, such as YouTube or Vimeo.

Video Conferencing: Allows two or more groups to communicate in a voice and video conference. Sites such as Skype or Google Chat allow videoconferencing.

Online Pinboards: A website in which anyone can pin online pictures and websites under certain categories similar to a bulletin board. An example is Pinterest.

Podcasts: Audio files which are compressed and downloaded to the Web.

Social Bookmarking: Users may add labels (or tags) that describe the content of websites. Delicious and Diigo are examples of social bookmarking sites (Buffington, 2008a, p. 307).

Web 2.0: The Web's capabilities of social interaction, including, wikis, blogs, and podcasts (O'Reilly, 2009, pg. 1). Web 2.0 or Web Squared is a key definition used in describing the latest changes of the Internet. Tim O'Reilly (2009) coined the phrases and defines Web 2.0 as "harnessing collective intelligence" (p. 1). It is also "data [that] is being collected, presented, and acted upon in real time" (O'Reilly, 2009, p. 1). Web 2.0 allows a simple and inexpensive way to share their ideas on the Internet. It is a new way of creating and sharing information on the Web. Information is easily tagged and shared with others.

Personal Interest

Computer technology is woven throughout the memories of my childhood, as it will be for today's students. My computers, music players, and phones may have looked different than those technologies appear now, but I was exposed to technology at a young age.

In 1990, when I was seven years old, my father brought home our first computer. It was so exciting to see him unwrap the box and set up the computer on our living room coffee table. My brothers and I all fought over the chance to play the newest computer games, such as *Paper Boy* and *Duck Tales*, with graphics in six different colors instead of one or two.

I also got an early start in digital art by creating artwork to give to my family. My experience with computer technology continued in seventh grade when my family was one of the first on my block to get connected to the World Wide Web. I suddenly became popular with the neighborhood adolescents who wanted to experience Internet-based chatting. Using America Online®, we were able to contact people all over the country. We all thought it was so amazing and we spent hours looking at the glowing screen. It was a privilege to have computer technologies provided for my learning.

My father regularly brought new technologies home and taught me how to properly use them. He became my mentor and example of understanding and incorporating technology into daily life. He took the time to give me lessons in understanding how the computer functioned and he encouraged me to learn as many programs as I could. He taught me how to use word processing and spreadsheet programs. Knowing these programs would help me in obtaining future employment. I took his advice and enrolled in any class available that would help me understand new technologies and software programs. My father also taught me to not be afraid of

new programs, but to solve any problems I encountered while using new programs via trial and error, a method he regularly used.

My experiences with technology have helped me see the benefits it can bring to art teaching. Since Web technology was a vital part of my life, I understand the role it can play in the development of others. Ultimately, I want to help today's art students share in the same experiences and discoveries that shaped my life. Incorporating technology in the art classroom may help students come to love art and technology as I do. It may also inspire them to see the world in new and different ways and solve problems or express themselves in ways that they never thought they could.

Chapter 2: Literature Review

There is extensive research literature regarding computer and Web technology in the classroom, much of it coming in the last twenty years (Buffington, 2008a; Gregory, 1995; Roland, 2010). Some of these articles outline the benefits student receive from classes that include technology, while others have discussed the challenges of including technology in the art classroom. Other literature has highlighted specific objectives that can be achieved through technology. In order to achieve specific objectives, these articles explain there are various types of Web technologies available to teachers, such as blogs, bookmarking websites, social network websites, podcasting, wikis, digital portfolios, and virtual environments.

Student Benefits from Using Technology

Researchers have noted the benefits students can receive from participating in art education that incorporates technology. “Because of the unique nature of art and the emphasis traditionally placed upon creating art in public schools, Web 2.0 may be an addition to art classrooms that brings about numerous benefits for students and teachers” (Buffington, 2008a, p. 311). Diane Gregory (2009), an art education professor at Texas Woman’s University, suggests the use of computers throughout education has sparked improvement in student development, an improvement that can be extended to art education (Gregory, 2009, p.48). Art education has specifically benefitted from increased student investment, since students are growing up with computer technology. Including interactive computer technologies in the art classroom can make learning more personal, accessible, and relevant, thereby possibly making students more invested in their education as well as in their art. “Through Web 2.0, students and teachers are able to engage with the Web in ways that were not possible just a few years ago, and this may be a way to connect school learning with the world of our... students” (Buffington, 2008a, p. 311).

Additionally, including technology in the art classroom may provide opportunities that will assist students in their future careers. Dr. Willard Daggett, CEO of the International Center for Leadership in Education stated, “[t]hrough computer and Internet access, millions of students...around the world have the opportunity to acquire the necessary skill set to compete worldwide for good jobs” (Daggett, 2010, p. 4). Other possible benefits of using interactive Web technology is the opportunity for collaboration and allowing students to create online digital portfolios which allows more people to see their work.

Several researchers have explored the improved learning ability of students that are exposed to technology in the classroom. As one of them, Gregory (2009) bases her claim that computer technology can improve student learning on her analysis of a 2004 study titled *Toward a New Golden Age in American Education* by the U.S. Department of Education (U.S. Department of Education, 2004). She found that “the nation’s schools become more successful as they take computers out of labs and integrate them into classrooms...” (p. 48). The study listed several schools which showed improvement in reading and math scores and showed how students were more involved with the outside world. From this information, Gregory (2009) found the following:

[W]hen 43,000 students and 3,000 teachers in 64 schools in Hendricks County, Virginia were each supplied with laptop computers, students began using primary sources on the web, exploring different points of view of historical events, increasing interactions with teachers and other students, and taking virtual field trips to art galleries and museums. As a result, Virginia schools received the U.S. Senate Award for Continuing Excellence and nine U.S. Department of Education Blue Ribbon School Awards. (p. 48)

Gregory also sites Milbrandt, Felts, Richards, & Abghari (2004), reporting that “students became more personally invested and empowered as they demonstrated higher levels of critical thinking in their remarks and interactions” when the Internet and digital presentations were introduced...” (Gregory, 2009, p. 48). Gregory (2009) concludes that “[b]ased on these reports, it stands to reason that student learning in art will also improve when students are given greater opportunities to use computers as mind-tools and engage in “minds-on” student-centered studies in art production...” (p. 48). Gregory’s studies suggest there are benefits when computer technology is introduced into the classroom.

Since so many children are familiar with a technology-saturated culture, a culture which structures how they learn but is very different than most teachers experienced growing up, teaching with technology can improve student comfort while in the classroom. Ryan Shin, an art and visual culture professor at the University of Arizona, states, “Today’s students are the first generation to grow up with computers, cell-phones, video games, music and video players, and other digital technologies” (Shin, 2010, p. 38). Children are familiar with these technologies and being able to interact with a computer at school presents them with a familiar learning tool. Sixteen years ago, Philip Dunn, a professor of art at the University of South Carolina in Columbia, (1996) stated:

When it comes to computers, children are fearless. They sit down, grab the mouse, and begin clicking on anything that catches their fancy ... [C]hildren grow up in a world replete with computers and video games. They are comfortable with them in their lives. Children have learned to read and interact with computer-generated icons almost from birth, and look for written directions only as a last resort. (p. 6)

Technology has only increased over the last sixteen years and our culture has become even more connected via Web technologies. The familiarity mentioned by Dunn should not be understood to mean that every student is familiar with every technology. Instead it means the vast majority of students have been exposed to some type of technology and are fearless when they are forced to use new ones. Being able to interact with a computer at school presents them with a familiar learning tool. “[T]here may be ways to involve these technologies...to add to our students’ learning and to connect our students’ school learning to their lives outside the classroom” (Buffington, 2008b, p. 40). Including technology in the classroom may help students continue to learn in a way they are already familiar and comfortable, which will be a great benefit to them.

Additionally, by using technology in the art classroom teachers can provide students with necessary tools for success in their future careers. Even though they may not become professional artists, they may have other jobs in which they could greatly benefit from learning interactive Web technologies. Microsoft’s Chairman, Bill Gates, offers an extreme example of the impact that exposure to technology can have on career opportunities. In *Outliers: The Story of Success*, the author, Malcolm Gladwell (2008), discusses how Bill Gates became successful. Gates had the opportunity of being in one of the first schools in the country with the latest in computer technology and “got to do real-time programming as an eighth grader in 1968” (p. 51). Gates had an extraordinary opportunity because some forward-thinking person put in the time and money to help the school have computer technology. “[E]xtraordinary achievement is less about talent than it is about opportunity” (p. 76). Including technology in the classroom can increase the opportunities students have to succeed by exposing them to relevant technologies that are becoming more prevalent in our society. “[T]he reality is that students of the 21st

century need a technology-based education to survive in a technological world” (Daggett, 2010, p. 1).

Students may also benefit from the collaboration that can happen between students, classrooms, or others through interactive Web technologies that allow for the classroom to be opened up to the world. Students may also work with other students on the other side of the world or interview artists in different parts of the country, or can take interactive tours of museums they may never have the opportunity to see from a person they’ve never met.

Buffington (2008a) states:

There are specific advantages of utilizing Web 2.0 in art instruction. Web 2.0 allows students to participate in collaborative projects that may connect them to the world beyond the classroom. Students and teachers can use the tools of Web 2.0 to work with artists, other classes, museums, etc. This ease of collaboration may help students see the relevance of their work beyond the walls of their school. (p. 306)

Collaboration through interactive Web technologies can bring new opportunities to students that they may not have had otherwise.

Online digital portfolios, where students showcase their work, offer another way students can collaborate through technology in the classroom. These portfolios allow more people to see their work than otherwise, and can create greater feedback. “Through various technologies of Web 2.0, including blogs, podcasts, wiki, and YouTube, students can ‘publish’ their work to a broader audience. Parents, other students, and people around the world can interact with students and their work through Web 2.0” (Buffington, 2008a, p. 306). Digital portfolios can also be created online for the student to update from year to year. This is a great way for the student to document their learning.

While implementing technology in the classroom requires time and effort, it can provide students with a familiar setting in which to learn, with a sense of capability, and with learning opportunities that will help them later in life.

Challenges of Using Interactive Web Technologies in the Art Classroom

My own experience has presented some unfortunate examples of the misuse or avoidance of technology in the art classroom. I know of some art educators that have been given expensive technology or equipment but fail to do anything with it. Day after day, this equipment sits abandoned in their classrooms. But their resistance to technology is not inexplicable.

Many understandable challenges face teachers as they try to incorporate Web technology into the classroom. They may lack the expertise or motivation to do so, planning and learning to use it takes a considerable amount of time, providing technology may involve pricey hardware costs, and these teachers may have never seen good curricula using technology. Other teachers may simply resist including technology. There are other reasons as well, according to Gregory (2009), including “unsupportive schools and poor working conditions for art education” (p. 49). The teachers who overcome the challenges of integrating technology in their teaching can benefit their students.

Perhaps the most obvious challenge is that some teachers lack the expertise to use interactive Web technologies in the classroom. Many teachers who are not familiar with using Web programs would have a steep learning curve to be able to understand the programs enough to be able to teach their students. Craig Roland (2010), a professor of Art Education at the University of Florida, organized an online survey done in 2006 about art teachers using technology in the classroom. Most of the K-12 teachers surveyed use the Internet to find images to show to their class and to learn more information to teach their class. “Less popular online

services among these art teachers included photo and video-sharing sites, instant messaging, blogs, social network sites, and chat rooms” (p. 18). Roland (2010) states:

The potential of the Internet as an innovative learning tool for students to post their work to the Web for feedback, design their own websites, explore virtual worlds, engage in socially responsive projects, or exchange work and collaborate with students in other schools of countries, has yet to be realized in many art classrooms today. (p. 18)

Perhaps many of these teachers failed to use Web technologies because they were not familiar with those technologies. If teachers do not have an expertise in interactive Web technology, it might be frustrating for them if their school or school district does not support them in learning these technologies.

Some educators may not be incorporating technology into their curriculum because they lack the time required to do so. Larry Cuban (2001), an educator and researcher, noted as much when he stated, “[o]ne reason often given by teachers and administrators in national data [for not using technology] is the lack of time available... to find relevant software, judge its worth, and try out the products in the classrooms” (p. 97). As a teacher, it is hard to know where to focus your time and energy. Putting several hours of effort into one form of technology simply to have it proven ineffective would be exhausting for an educator. Gregory (2009) believes the problems are short class periods and a lack of professional development to create teaching methods. Teachers would need “more time to plan student-centered computer technology lessons” (Gregory, 2009, p. 49). Most teachers feel their time and energy are already being expended and they cannot possibly fit one more task into their schedule.

Lesson plans using interactive technology in the classroom can take time to find, further compounding the time and expense of integrating these new technologies. “Though there are

many recent publications that relate to teachers using digital technologies in the art classroom (Delacruz, 2004; Emme & Kirova, 2005; Gregory, 1997; Patton, 2005; Shin, 2005), there is little published on the use of Web 2.0 in the art classroom” (Buffington, 2008a, p. 306). Researching for lesson plans proved to be a challenge as I did my own research. Looking through several articles on technology, I did not find many that included lesson plans on how to apply certain technologies. Once a teacher has found a lesson plan, it must be evaluated because some lesson plans lack in-depth learning or interactivity. Many of the lesson plans limit the technology to research or in some another way. Daggett addressed these limitations teachers place on technology, saying, “[r]ather than having students use computers, say, to better understand a math equation through a virtual hands-on activity, teachers may limit the use of that tool to word processing, much as we used the typewriter a generation ago” (Daggett, 2010, p. 1). “In reaching out to students who are so intertwined with the latest technology, we need to ask ourselves, ‘How can we use the Internet or the computer to enhance instruction and engage students?’” (Daggett, 2010, p. 2). Despite these problems, finding and using a lesson plan which includes technology can enhance what teachers are already doing and to help engage students.

Educators also resist technology because of its cost and how quickly it becomes outdated. Buffington (2008a) refers to Cuban (2001) and Delacruz (2004) when he noted that the “cost of technology” is yet another feature that “prevent[s] teachers from using technology in their teaching, including the cost of the technology...” (p. 305). It is true technology is often costly and it becomes more so when it needs to be replaced often. For this reason, it can be a struggle to defend the cost. There are affordable ways to overcome possible cost barriers which will be discussed later.

Another challenge many teachers face is their own unfamiliarity with technology, because many teachers weren't taught using Web technologies. Deborah Greh, educator and author states "[a]ll teachers tend to teach as they have been taught..." (as cited in Gregory, 1997, p. 14). Many teachers lack the examples to teach using Web technologies.

Regardless of whether an obstacle impedes the use of technology in the classroom or particular teachers encounter no obstacles at all, some teachers seem to resist the incorporation of technology. Gregory (2009) states, "Despite evidence that computer technology improves student learning, art teachers have not integrated new learning technologies into their classrooms to a high degree" (p. 48). Initially, Gregory references an Internet survey study by Roland (2006) which found that "only 24% place a high priority on integrating computer technology in the art classroom [and a staggering] 33% consider it a low priority" (p. 48). These resistant teachers may not see the benefits in changing their practice. Roland (2010) states:

While recent advancements in the Web and digital technology are changing what is possible in educational practices, school administrators and teachers to date have been resistant to technological change. This resistance can be seen not only in schools' access to useful websites and tools (e.g., blogs, search engines, and media-sharing sites), but also in teachers' reluctance to modify their teaching practices or curricula to support technological integration. (p. 18)

There may be few options in helping teachers who are resistant. But I believe most teachers want to do what is best for their students and when they are shown student benefits for using interactive technology in the classroom they may make sacrifices to make the necessary adjustments.

As a final note, incorporating technology in the class is also hindered by school administrations that denying full Internet privileges at the school. This particular problem was encountered by two of my colleagues, who teach at two different schools, as they set up a blog for their students. These blogs allowed students at both schools to upload their work and then comment on work posted by those in either class. When the students tried to access the blog from school they realized the school district had restricted access to all blogs, making the assignment more challenging. Special permission usually has to be granted from parents and the school district to try to utilize certain technologies in the classroom. While this problem and others can limit the technology used in the art classroom, they will not be overcome until teachers embrace technology as a viable teaching tool.

Possible Solutions to Technological Challenges

Though the following information is far from comprehensive, I have compiled a few solutions that can help with the many challenges teachers may face when implementing interactive Web technology in their art classrooms. These solutions include training efforts to help teachers who have little or no expertise, collaboration that may help teachers who have very little time to implement technology into the class or lack access to technology-based curricula, and various grants and free options to help those teachers seeking to overcome high technology costs. Finally, resistant teachers and administration may begin to change when shown the benefits of technology.

Training programs may be a solution to teachers lacking expertise in using Web technologies and may be provided by national training programs. The first program available to teachers is the National Educational Technology Standards (NETS) for Teachers created by the International Society for Technology in Education. It is a resource for teachers looking for help

in how to integrate technology in the classroom (Roland, 2010, p. 18). NETS provides teachers with books, webinars, and online courses for professional development. Another program called the National Educational Technology Plan (NETP) was released in April 2010 by the U.S. Department of Education. NETP “describes how information and communication technologies can help transform American education into a model of 21st century learning [and] outlines goals in five key areas: learning, assessment, teaching, infrastructure, and productivity” (Daggett, 2010, p. 1). NETP’s website provides some models for how the goals should be implemented. This national support in incorporating technology in every classroom will hopefully convince administrators to allow for every teacher to have some training or support to meet these national goals.

Additionally, while individual teachers may lack the time or resources necessary to use technology in the art classroom, multiple teachers may be able to pool their time and resources through various forms of collaboration. Collaboration does not have to be a three day meeting, but can be as simple as posting to or reading a district-wide art teacher blog. Many teachers who are already familiar with using Web technologies in the classroom are blogging about their experiences. “[T]here are now numerous blogs that focus on art education and technology, including Web 2.0” (Buffington, 2008a, p. 306). One example is the Ning website of Craig Roland, called Art Education 2.0: <http://arted20.ning.com>. The goal of this website is to connect art educators and to provide a place for educators to share ideas. Collaboration on blogs and websites can also be the solution for the lack of existing curricula on using interactive Web technology in the art classroom.

Providing new hardware in a classroom can be costly on a small art supply budget. If the school district does not have the means of helping a teacher acquire digital projectors, computers,

and other software, then it is left to the teacher. State, Federal and private grants, such as grants provided by the National Endowment for the Arts, are available to help teachers afford technology in the classroom. Teachers can become involved in the Career and Technical Education (CTE) program, which provides federal money for teachers who are CTE certified. Other grants can be written to try to receive money for technology purchases. A few federal grants can be found on the following websites: www.access.gpo.gov, www.nara.gov, and www.ed.gov. Local websites can be found on state education websites.

Other methods are available at no cost to teachers whatsoever. Many schools are using students' cell phones as a means of involving technology in the classroom. Teachers have students send text messages on their cell phones to websites like Polleverywhere.com to take class surveys. Free, open-source websites are another solution to the problem of quickly outdated, expensive computer technology. Roland (2010) states:

The availability of free Web-based applications (like Blogger, Flickr, and Diigo) and open-source software (like Firefox, GIMP, and Blender) distributed at little or no cost for public use and modification, offers art teachers a wide assortment of alternatives to commercially purchased software when planning and implementing technology initiatives in their classrooms. Introducing art teacher candidates to these options better prepares them to work in schools faced with tight budgets. (p. 21)

Many websites offer free products, and when a website is open-source it is continually being updated. Websites are beneficial because they continually improve. William Ferriter (2011), a sixth grade teacher, states “companies offering Web 2.0 services are constantly innovating and improving – or going out of business!” (p. 85). Using free, open-source websites allows teachers to use free and up-to-date programs. “With Web 2.0, cost is not an issue, many of the

technologies are intuitive and have low learning curves, and the software is relatively stable. Though Web 2.0 is free to access, schools must still have computers connected to the Internet” (Buffington, 2008a, p. 305-306).

Most technology can be used a few years before it becomes obsolete. Even if new technologies emerge, outdated technologies may still be useful as a foundation for learning. It would be a great disservice to students to not incorporate any technology whatsoever simply because new technology has appeared on the market. For instance, refusing to incorporate laptops in student learning simply because tablets have appeared on the market would seem ridiculous. Efforts should be made to provide students with the best technology possible, based on the funds available.

Resistant teachers and administration may change when shown the benefits of change, possibly through mentoring programs. Mentoring programs that team up technologically savvy teachers with resistant teachers allows resistant teachers a way to articulate their resistance in a confidential professional setting. For those who are unwilling to meet with mentors perhaps the only option would be allowing them to see the long term benefits students receive from classrooms which are integrating innovative Web technologies, or creating an art teaching culture that accepts technology. Gregory states that mentoring can be a solution because “art educators can serve as dynamic leaders showing other teachers how to implement learning technologies in all content areas to improve student learning radically...They are the ideal educational professionals to lead the way” (Gregory, 2009, p. 48). I believe most teachers want to do what is best for their students and when they are shown student benefits for using interactive technology in the classroom they may make sacrifices to make the necessary adjustments.

Using Computer Technology to Achieve Specific Objectives

Implementing specific computer technology in the classroom can be daunting without understanding how to connect technology with specific outcomes. Some outcomes are obvious, such as using the Internet for research, but this is merely the beginning. Other possible outcomes include building students' critical-thinking skills, connecting art with big ideas, facilitating independent learning, and encouraging out-of-class application. Besides focusing on outcomes, teachers also need to focus on teaching how to be safe and responsible when using the Internet.

Using technology in art education as a learning tool to achieve specific outcomes has been highlighted by several scholars. Technology is a tool for understanding, and interacting with art and “[o]utlining the key concepts [, like the importance of communication, or other big ideas,] behind the technology” (p. 49) will serve the student best. Art education is not meant to teach technology. Roland (2010) also supports this focus on “outcomes, not tools” (p. 19). He believes “...art teachers need to learn that decisions regarding use of the Internet and other new technologies need to be anchored in what they hope to accomplish with their students” (Roland, 2010, p. 19). Sherry Mayo (2007), an artist and educator, emphasized first, “It is not essential that students learn every feature of a software package. It is more important that the lesson is “project driven” (p. 49), focusing on the art pedagogy, not the technology.

Many articles from the early years of classroom computers discussed how students could use the Internet as a means of research in their art projects, but the Internet can be used for so much more than research. Buffington (2007), in her article “Contemporary Approaches to Critical Thinking and the World Wide Web,” promotes applying critical thinking skills to using the Internet. She suggests, for example, that students learn critical thinking skills and explore the Web by researching social issues on the Web and then creating a pamphlet to explore ideas of

design and layout. They also use the Web to investigate differing interpretations of artwork, and by participating in museum WebQuests, which is an information treasure hunt on the Web (Buffington, 2007, p. 20-22). Buffington's curriculum helps students use the Web on a deeper level.

Web tools can be great to use in the art classroom when they are connected to learning objectives or ideas for students. Sydney Walker (2004), a professor at Ohio State University, believes that art-making is about big or enduring ideas (p. 7). According to Walker, "Big ideas can be characterized as themes, issues, or perhaps questions that captivate the artist for extended time periods, often for years" (p.7). Sydney Walker and Marilyn Stewart (2005), a professor of art education at Kutztown University, wrote the book *Rethinking Curriculum in Art*. Walker and Stewart (2005) discuss how enduring ideas, such as identity or power, should be the focus in creating curriculum (p. 25). They state the following:

Long after students have encountered a study of contemporary artworks, they will probably have forgotten many of the details about artworks, titles, dates, artists' names, media, styles, and techniques; but they may well remember the power of artworks to question the society we live in or raise awareness of the complexities of human relationships. (Stewart & Walker, 2005, p. 37)

Web tools connected to learning objectives and enduring ideas are productive ways to use new technology to help students remember the ideas that were taught in the classroom.

Students should also understand how what they learn in school, whether a big idea or a small one, connects to their everyday lives. Daniel Pink (2009), author, economist, and lawyer, argues that since most students do not understand why they need to learn different subjects, the education system needs to change. Curricula should be able to answer the two questions Pink

lists as a test of relevance: “Why am I learning this? How is it relevant to the world I live in now?” (Pink, 2009, p. 179). Shin (2010) has provided at least one technology-based curriculum where students “see and value everyday on-line experiences as vital resources in art classrooms...” (p. 41). Shin goes on to state:

[S]tudents discussed their use of digital technologies addressing various Web 2.0 technologies as well as cell phones, cameras, iPods and other digital devices. They recognized that people can participate in writing, creating, designing, videotaping, communicating and socializing through these technologies. (p. 41)

Students will be able to apply lessons they learned in art classrooms when technology is involved.

While many educators have ideas on what should be included in a curriculum fused with Web technology, allowing students to pursue independent learning can be extremely beneficial as well. Gregory (2009), believes that educators “must get off [their] podiums, turn off teacher-created PowerPoint presentations and turn the reigns of learning [through] social learning technologies over to [their] students so that [students] can construct their own knowledge, meanings and solutions” (p. 47). She supported this statement with stories of how learning technologies within a student-centered approach improved student learning (Gregory, 2009, p. 48). Technology can help students engage and participate in their learning at their own pace and according to their own interests; something not often allowed during highly structured lectures or directed projects. Traditional technologies like drawing, performance, or sculpture allow for students to grow at their own pace, but Web technologies offer yet another avenue for creativity and exploration.

A final objective of any Internet-based lesson should focus on student safety and proper creative use of intellectual property. This is difficult since, as the author Steven Johnson (2010) states, “we have to learn how to break with that most elemental of parental commandments: Don’t talk to strangers. It turns out that strangers have a lot to give us that’s worthwhile, and we to them” (p. 4). Because of this, educators need to teach students to be careful in what they publish, what personal information is okay to release, and to discern between good strangers and bad strangers. Students should know the difference between appropriation, which is borrowing elements in an artwork to create a new artwork, and plagiarism, which is using someone else’s work as your own. The Internet will be a part of their lives, and they will need to know how to navigate the Web safely and responsibly.

While several objectives and outcomes are listed above, some of them seem more relevant to me and will be included in the lesson plan I provide later on. Some of the outcomes I have included in my curriculum are: understanding big ideas, improved communication and collaboration, connecting classroom learning to the world students live in through independent learning, and safety.

Types of Technology to Use in the Art Classroom

The Web provides new opportunities for students and teachers that go beyond the classroom into various interactive forums and programs. Curricular ideas can include social bookmarking websites, blogs, social media sites, and podcasting, to name a few.

Social Bookmarking – Social bookmarking sites allow students to record interesting places on the Web and *bookmark* them on a Web page. Bookmarks allow others to click on a link and travel to the site the student found interesting. This allows for idea sharing and collaboration as students are given quick access to interesting and relevant topics. Sites such as

Diigo, Delicious and even Pinterest, although it is not quite a bookmarking site, could be used as tools for students to share with each other interesting art information they have found on the Web, if integrated into a curriculum or classroom environment.

Blogs – Blogs can become a journal and electronic portfolio for students. In addition to being a personal idea cache, blogs allow for collaboration. Other students can share critiques and comments of art work uploaded to another student's blog. As a collaborative tool, these sites should be appealing to educators as well, both as a classroom tool for their students to comment on one another's artwork or as a professional tool where fellow teachers can exchange ideas and lesson plans with teachers that share their interests. Professional collaboration sites include Art Education 2.0 on Ning, TakingITglobal.org, Edutopia, or VoiceThread.com.

Social Media Sites – Social media sites, such as Facebook, MySpace, LinkedIn, and Ning, provide another avenue for students to share their work in addition to blogs. A creative way social networks are currently being used by students is through the creation of artist accounts for famous painters, sculptors, or other creative thinkers of the past. Amber Ward (2010), a middle school art educator in Shawnee, Kansas, relied on these artist accounts and created a lesson plan where students decide which artists, past or present, they would want to *friend* on an imaginary social networking site called Fantasy Facebook. Students then created a self-portrait they would use as their profile picture (Ward, 2010, p. 47). This idea could not be used on Facebook itself because the site requires its members to only display their actual identity. This activity could be done on another social website if students wanted to post their pages to the Web. Buffington (2008b) also uses social network sites to create online pages for artists but uses MySpace (p. 39). Another example comes from Juan Carlos Castro (2009), an Assistant Professor at the University of Illinois, who set up a site where students could post pictures and videos, create a profile, and set

up a blog (p. 81). This project was to reshape the ways students “engage with each other and with the more-than-human world” (Castro, 2009, p. 184). Social networks can be useful in connecting students to each other and to new ideas and are extremely familiar to most students, as they often use them daily.

Podcasting – Another Web tool is podcasting. Many podcasts have audio and video of artists, art educators, and museum educators giving lectures on a variety of topics. “Podcasts can be a powerful way for teachers to conduct the necessary research to prepare for teaching about a particular artist, to learn about a new technique, or to learn about an art critic” (Buffington, 2008b, p. 40). These podcasts can be played in class as a supplement to a teacher or student presentation or as inspiration for student artwork. Students can also create their own podcasts to share ideas with each other.

The Web is a useful tool in connecting ideas and students. The Internet is more than a library that students can access for research information. It is a place to share ideas, pose creative problems, create unique solutions, and to present artwork. The multi-faceted nature of the Web should inspire teachers to look for unique and engaging ways to incorporate it into their lesson plans to increase student learning and involvement.

Chapter 3: Criteria of Analyzing Research Literature

With so many articles that address technology in the art classroom, a systematic approach is needed to be able to digest their insights, highlight what is most important, and ultimately create a curriculum. More than understanding certain technologies or applications, the methodology used in this paper needs to emphasize key ideas throughout each article, specifically, the use of big ideas in a lesson plan, the creation of an environment for student engagement, and the use of connectivity among students. These major ideas could then be applied in the creation of an example curriculum for educators to use and the formation of conclusions about the use of technology in the art classroom.

Many articles discussed specific Web technologies, such as blogs, bookmarking websites, social sites, podcasting, wikis, digital portfolios, and 3D environments. However, I chose articles which used Web technologies in ways that focused on big ideas or themes and questions. While searching for guiding principles and common themes in the articles, I wanted to search for a way to connect technology to the bigger ideas addressed by Walker, such as themes, issues, or questions. As Walker (2004) noted, big ideas should be the “conceptual focus for art-making” (p. 9). Possible themes included the ideas of identity or power, because these seem to relate well with the underlying concepts behind the use of technology. “Selecting a big idea with personal relevance is a key factor in the efficacy of the big idea for the art-making process” (Walker, 2004, p. 9). Big and enduring ideas are what help students to find meaning in the art classroom. Connecting Web tools in the art classroom to bigger learning objectives and ideas will excite students to learn independently, both in the classroom and long after they leave for home. Ideas, as suggested by Stewart and Walker, could possibly include some of the following concepts:

identity, survival, conflict, power, spirituality, relationships, humans and nature, reality and fantasy, life and death, interdependence, good and evil, life cycles, rites of passage, change, ritual, and justice (Stewart & Walker, 2005, p. 25). Other concepts could include: celebration, freedom, emotions, appropriation, controversial artworks, feminist art, universal values, architecture, and collaborative community art. By evaluating the articles which contained these big ideas, I discovered guiding principles and common themes in the articles.

A review of the research should also present possible methods for engaging students in technology-based classes. As with any teaching experience, technology-based teaching should provide an engaging environment so students, through focusing on the subject matter, walk away from the lesson having gained as much knowledge as possible. “Technology is all about engagement. Watching the intense looks on our children’s and teens’ faces as they play video games, text all day long, Skype, Facebook, watch YouTube videos, and juggle a dozen websites at a time, we can clearly see that they are engaged” (Rosen, 2011, p. 15). Engaging students in their learning is very important. “If students learn best when they are encouraged to generate their own questions, engage in relevant investigations, and reflect upon their learning progress, then teachers need to develop strategies to provide opportunities for such substantive engagement” (Stewart & Walker, 2005, p. 15). Finding out what is important to students is a great way for the students to feel engaged in the classwork. Evaluating articles that deal with this will distill concepts that will encourage greater student engagement.

A final point of interest to be drawn from the literature, and to be evaluated, is connectivity. An educational psychology professor at the University of North Texas, Lemoyne Dunn (2011), suggests “students today are electronically connected, and they expect their learning to be connected as well” (p. 60). These students want instant connection to information

and to their peers because technology has allowed them to be so. By providing students with greater connectivity, as drawn from the literature, classroom participation may increase and students may be more capable of gaining long-term benefits from immediate feedback.

Technology Curricular Methods

I analyzed the articles looking for the themes of big ideas, student engagement, and connectivity, using content analysis, which is a methodology, or analytic method, to study communication. Content analysis helps the researcher discover new insights from the data. This analysis will help guide the formation of the curriculum.

As I reviewed articles and studies about classroom practices in which technology was incorporated in significant ways, I looked for themes and patterns. First, I selected text from the articles which discussed my three concepts that I wanted to use to create a curriculum. Second, I looked for words which were repeated the most often to find patterns from the articles. These multiple concepts and ideas were repeated in literature enough to help me establish significant themes for developing curricula.

To select articles for evaluation, I searched for articles which discussed incorporating technology into art education curriculum, and also for the most current articles on technology in the art classroom. I also screened for articles that discussed my three major points of concern: use of big ideas, student engagement, and connectivity among students. To find the articles, I read through current art education scholarly journals and periodicals. Since I am not a certified teacher, I am limited to reviewing education articles from professional educators instead of gathering information from a classroom. These educators have applied differing curricula concepts in their own classrooms.

Data Organization and Coding

The articles I found were saved digitally, read, coded, and analyzed. To code, I used In Vivo coding, a part of grounded theory. I used free nodes which are open codes that are not attached to other ideas such as tree nodes. This means I took direct language from the teachers who wrote the articles I was coding. In Vivo coding is sometimes called verbatim coding.

Another way I coded the data was thematic analysis, in which I pulled categories and themes from the articles by paraphrasing common ideas. The ideas can then be sorted in categories. I wanted to read the data and get a feeling for which words and phrases seemed to stand out.

I decided these methods would be the most appropriate for my research because I would be gathering concepts from articles and not looking at images or data. In Vivo coding relies more on the analysis of the teachers who wrote the articles instead of my ideas from their research. Johnny Saldaña (2009), a professor of theater at Arizona State University, states “In Vivo Coding is appropriate for virtually all qualitative studies ... that prioritize and honor the participant’s voice” (p. 74). I believe using In Vivo coding will help me to understand the articles and to be true to the author’s intent.

As I started to code the articles, I began by looking for similarities and the frequency of the similar ideas as well as the differences. Evaluating the differences provided much information in the development of my conclusions. Saldaña characterizes coding not simply as similarities, but differences, frequency, sequence, correspondence, and causation (Saldaña, 2009, p. 6). Coding is categorizing, and it usually takes two or more rounds of coding to properly obtain relevant information, so I read through the articles several times to search for coding.

In sorting the coded data, I categorized words and phrases indicative of ideas that teachers considered essential to a technology curriculum. I then found which words were most

prevalent. I kept an open mind to new questions and patterns I found, and which led to some surprising findings. I then selected the words found most often from the three articles and reviewed what was meant in each article.

Analytical Findings

Applying this analytical framework presented a number of big ideas that are important to the implementation of a technology-based curriculum that embraces student engagement and connectivity. After the initial screening process, three articles were selected: Diane Gregory's 2009 article "Boxes with Fires: Wisely Integrating Learning Technologies into the Art Classroom," Ryan Shin's 2010 article "Taking Digital Creativity to the Art Classroom: Mystery Box Swap," and "Preparing Teachers to Teach in a New Digital Landscape" a 2010 article by Craig Roland. These articles presented a number of significant words, but also several ideas that needed to be ignored because they did not present workable information. These findings are presented below.

Of the articles evaluated, a single concept seemed to be preeminent: student-driven learning. This was shown primarily by the preeminence of *collaboration* and *expression*. Individually, the articles showed different results, but the same underlying theme ran throughout. Gregory's work resonated most with this student-driven theme, focusing on independent, student-centered learning. Both Shin and Roland were more vague, but focused on active, non-teacher-driven words like *explore* and *responsive*. Overall, all three papers revealed that technology-based lesson plans that focus on student engagement, connectivity and big ideas, rely on independent student activity over lecture or directed artwork.

Collaboration. The significant word repeated most often was *collaboration*, an important theme to technology-based curricula, but one not often highlighted. Collaboration occurs when

students work together to achieve a goal, a concept closely related to Web technology and well-recognized in the classroom as an important teaching tool. Students can collaborate by working in groups of two or more, as a whole class, or on a much larger scale. Collaboration is also a great way for students to develop social skills and to practice effective communication. Originally, I would not have thought to rely on collaboration in a lesson plan more than a few times a year.

In order to understand the way collaboration was treated in the articles, I re-read the articles to understand the authors' specific meaning. Collaboration was significant to Gregory, who emphasized it over traditional teaching methods. She first noted that collaboration is rarely used even in the art classroom, observing that "art teachers typically use computer technology as teaching of presentation tools rather than facilitating students' creative production and thinking, collaborative learning, problem-solving and higher order learning" (Gregory, 2009, p. 48). This one minded approach to technology fails to meet the responsibility Gregory believes art teachers have (p. 47). She stated, "We must invent new student-centered approaches that use the power of new learning technologies that focus on collaborative learning, real world problem solving, and creative, critical thinking" (Gregory, 2009, p. 47). Both Roland and Shin emphasize collaboration in much the same way (Roland, 2010; Shin, 2010). The collaborative aspects of Web technology can be powerful and should be exploited, as Gregory says, to facilitate creative production. Since collaboration was the word found most often in the articles discussing how to prepare technology-based curricula, I will consider it an important element to the curriculum-creation process.

A variety of technology- and Web-based collaboration methods are available at little or no cost. Perhaps the simplest collaboration method and a major source of online activity is social

networking. Social networking provides students with the opportunity to quickly and easily communicate their ideas, upload artwork, and provide their peers with feedback on individual or collaborative art. Other collaborative methods are available as well, such as real-time video chats and shared documents.

Self-expression. *Express* was another word that might have some significance, but relies heavily on the specific context in which the authors use it. Shin offers the best example of *express*'s context when he states, "By expressing themselves and working with others, they can release unlimited imaginations" (Shin, 2010, p. 38). This particular quote is both exemplary and noteworthy because Shin combines self-expression, as opposed to teacher-directed expression, with collaboration, as opposed to completely independent exercise. Shin (2010) further expounded on the benefits of self-expression:

I noticed that this project helped students understand that art is not just about making something with brushes, paints, wood, or clay, but they learned to express important ideas and experience through everyday objects, forms, and expressions through collecting them in a personal and meaningful way. The most important lesson I was hoping for them to learn was that artwork can also be inspired from new technologies and created from what appears to be frivolous and playful in our daily context, and that art educators, therefore, can make students excited, expressive, and creative, in this case, in the context of participating in the digital world. (p. 42)

Roland (2010) goes even further in his connection between technology-infused teaching and student expression when he states:

It's just that newer forms of technology such as computers, digital cameras, scanners, social networks, and other participatory media deserve special attention in that they

permit students to engage in innovative forms of communication, expression, and learning using contemporary media rooted in their everyday lives. (p. 23)

Gregory also incorporates self-expression into her technology-based curriculum as a means of allowing students to present multiple facets of their own personalities (Gregory, 2009, p. 51). As art teachers incorporate technology to enhance self-expression, students can feel excited about the tasks at hand and driven to see the creative possibilities in our digital world. Self-expression can be a valuable tool that engages students in their artwork, and allows them connect their own lives within the classroom.

Student-centered. Analyzing the articles individually presents several informative points that support the underlying concept of student-driven technology teaching. Gregory's constant use of the word *student-centered* parallels the student-driven focus found in the other three articles. Over and over again, Gregory (2009) champions student-centered teaching, stating:

We must make a 180-degree shift from teacher-directed to student-centered learning approaches. [...] We must invent new student-centered approaches that use the power of new learning technologies that focus on collaborative learning, real world problem solving, and creative, critical thinking. [...] By integrating and infusing computer learning technologies wisely into student-centered or social constructivist art learning environments, art educators can improve student learning and at the same time provide a creative, substantive model for how schools can and should be reformed. (p. 47-48)

Though less connected to the student-driven focus, Shin and Roland notably repeated the word *world*. Their *world*-focus highlights the need for connectivity in student-driven teaching. Shin used *world* by referencing our "digital world," a fast-paced world where students are constantly checking one another's status updates or collaborating about their weekend plans

(Shin, 2010, p. 39). Roland (2010) focuses on the digital lives of the students, which play out in “virtual worlds” (p. 18), a concept inherent in Shin’s use of the word.

Responsive. Roland additionally revealed the use of the word *responsive*, which proved to be significant and supportive of the overall emphasis on a student-driven, collaborative approach. Roland (2010) states:

The potential of the Internet as an innovative learning tool for students to post their work to the Web for feedback, design their own websites, explore virtual worlds, engage in socially *responsive* projects, or exchange work and collaborate with students in other schools or countries, has yet to be realized in many art classrooms today. (p. 18)

Unfortunately many of the words most often were found to be insignificant upon further analysis, despite early promise. Shin’s article repeated the words *explore* and *examples*. He used *explore* as a descriptive word as how he would look into digital creativity, adding little useful insight for teachers seeking to integrate technology in classroom (Shin, 2010, p. 38). The word *social* was initially significant within Roland’s tag cloud, but proved to be unhelpful. Most of Roland’s references to *social* talked about social networking except for one instance where it was used in conjunction with *responsive*, as quoted above (Roland, 2010, p. 18). The word *production*, used in Gregory’s articles, was deemed insignificant, though it showed initial promise.

Other words. It should be noted that though several words were most often repeated in all three articles, they were ultimately discarded for various reasons. *Learning* was repeated nine times, compared to a mere six times *collaboration* was used, but learning was ignored because learning is a concept that arises in most articles dealing with education. Other words which were insignificant were *creative* and *engage*. *Creative* is a basic concept found in most art education

articles. *Engage* may have been a word that was found often because emphasis was given during the article selection process to the concept of student engagement.

Overall, this analysis yielded four key concepts that can be included in curriculum to fashion a lesson plan that incorporates big ideas, encourages student engagement, and connects students with the world around them. These words, *collaboration*, *self-expression*, *student-centered*, and *responsive*, present a student-driven lesson model that allows for students to grow without teacher interference, and with the help of their peers. These models promise to allow students to utilize technology fully while also growing in their knowledge and appreciation of art.

Chapter 4: Basic Principles for a Web Technology Curriculum Design

Since many art teachers “have not integrated new learning technologies into their classrooms...” (Gregory, 2009, p. 48), creating curricula that can be followed by art teachers to achieve this end will be helpful. When designing any course curriculum, there are many theories one could apply and concepts one could incorporate. I will evaluate these theories for their applicability and choose a few to apply. Additionally, the key concepts gleaned from the article analysis, above, will be translated into guidelines that can be used to craft these curricula.

Curricula Approaches and Standards

Properly drafted curricula rely on well-supported educational theories and conform to applicable educational standards. While the educational standards may vary according to the jurisdiction, a vast array of curricula theories are available. Not all of these should or even could be applied in every instance, meaning some analysis of their appropriateness will be conducted. Ultimately, only a few will be used here as guidelines for creating curricula.

Educational standards. Educational standards are generally static within a given school district. These standards can be dictated on the national, state or local levels. These standards will occasionally dictate educational activities in the classroom, such as requiring specific content or establishing specific assessment models. Since these standards can vary from place to place, and since they are static for a particular teacher, they will not be treated here, but teachers should be aware of these whenever they are creating new curricula.

Curricula approaches. Aside from the different standards that can act as a skeleton around which to create a curriculum, several theories and models have been created to guide art teachers as they draft their individual course curricula. Applicable theories can range from a postmodernist approach to a formalist approach. Through these theories, educators can include

interdisciplinary teaching methods, multicultural views, feminist views, visual culture and community and parental involvement. One possible theory or model, the modernist approach, focuses on finding universal meanings in art to understand reality. In contrast, a postmodernist approach decides there is no universal meaning or understanding, but only individual experience. A formalist approach to curricula focuses on the elements and principles to understand art, while constructivist approach builds upon prior knowledge to construct new meaning (Stewart & Walker, 2005, p. 69). The popular opinion of these assessments varies from time to time, most recently “[c]hanges in the approach to art curriculum have taken place within the context of shifts from modernist to postmodernist assumptions about art and the human experience” (Stewart & Walker, 2005, p. 9). The differences and benefits of each of these approaches are beyond the scope of this paper, but each can ultimately help students learn art concepts, though in different ways.

Inspired by the student-driven concepts drawn from the analysis above, a technology-based curricula built on a postmodern approach may be useful to a teacher seeking to implement a technology-based curriculum. Generally, as students learn in a postmodern setting, the interpretive views of the teacher are not forced on them and they are more free to encounter artwork from their own perspective and, perhaps, even without deeper meaning. Additionally, this theory is relevant in the art world today and allows students to understand current artwork from a relevant perspective. One example of a postmodern approach comes from Olivia Gude (2004), an art educator at the University of Illinois at Chicago (p. 6-14). Gude’s postmodernist approach is centered on eight principles: appropriation, juxtaposition, recontextualization, layering, interaction of text and images, hybridity, gazing, and representin’ (Gude, 2004, p. 9-

10). Specific application of these principles will not be treated here, but are offered here if the reader wants to develop their own curriculum.

Additional considerations. In addition to applicable standards and curricula approaches, other considerations should also be addressed by a teacher seeking to use technology in the classroom. Roland (2010) listed several key considerations that he felt were important to address when setting up a curriculum with computer and Web technology:

[Educators should] [e]xpand upon customary ways of thinking about the Web. [...]

Infuse technology into the curriculum, rather than treat it as an add-on. [...] Combine the new with the old, the global with the local. [...] Use free, open-source software and online tools. [...] Introduce creative commons licensing. [...] Encourage flexibility with technology tools and software. [...] Encourage safe and responsible use of technology.

(p. 19 – 23)

These considerations are not exhaustive, but should give educators a substantial starting point as they consider the way they will incorporate technology into their classrooms.

Key Concepts

Based on the analysis given above, four concepts seem to have particular applicability to technology-based teaching and should become guidelines for creating a curriculum. The ideas of collaboration, student-centered teaching, self-expression, and responsiveness are large and can be applied in a variety of ways. For my lesson plan, I will narrow these ideas into a list of goals, drawn from my research relating to technology-based curricula.

Collaboration applied. From the coded articles above, collaboration was shown to be an important aspect of technology-based curriculum design. In “[c]ollaborative [l]earning[,] students work together to address a problem or task, often with assigned roles” (Stewart &

Walker, 2005, p. 79). Furthermore, “[d]rawing upon the recognition that much learning can be enhanced through interaction with one’s peers, educators have implemented collaborative learning strategies, arranging students in groups and assigning roles for investigation” (Stewart & Walker, 2005, p. 16). As a group bounces an idea off one another, greater ideas emerge. A successful technology-based curriculum will help students collaborate with peers by allowing students to work in groups. Collaboration can also help students to learn content, social skills, and effective communication. Curriculum should incorporate student’s connectivity to their peers in the art classroom in order to share ideas with each other, perhaps through social networks, blogs, or video chatrooms.

Student-centered approach applied. Building curricula should consist of helping students build upon their previous knowledge and help them to explore their own thinking. There is inherent value in learners constructing their own knowledge, deepening their understandings, generating and addressing or investigating their own questions (Stewart & Walker, 2005, p. 13). A “student-centered learning environment [is defined by] project-based learning, problem solving, interdisciplinary learning, and cooperative learning” (Gregory, 2009, p. 49). A student-centered approach allows students to really learn and explore instead of just being lectured to. A key guideline to student-centered learning is using a project that inspires interdisciplinary learning and problem solving.

Self-expression applied. An effective technology-based curriculum should inspire student self-expression. Self-expression requires the student to be personally connected with the subject matter, or, in other words, to have connected the assignment with their own lives. This connection to a student’s everyday life is a basic need, as Stewart and Walker noted, “[i]n order to generate and investigate their own questions, students need to see them as relevant to their

own lives” (Stewart & Walker, 2005, p. 13). It is important for students to know why they are studying certain subjects. Stewart and Walker (2005) quoted the Ohio State TETAC faculty as saying “when educators shift from a dominant discipline-based orientation to a focus on “real life” issues, problems, and skills, students will find their learning more meaningful and will be more active participants in it” (p. 25-26). Since student self-expression provides this connection, teachers can encourage students to draw from their own lives in completing their projects, just as contemporary artists are exploring relevant issues, not elements and principles. To do this, the teacher can possibly allow students to choose the subject matter of their projects, the technological medium they will use, or the collaborative method they will employ. The key in any of these methods will be to allow students to make their own choices.

Responsiveness. The final concept I will incorporate in a technology-based lesson plan is responsiveness. Responsiveness exists in a lesson when there is actual collaboration among peers about the material or artwork the students are creating. This allows students to inspire each other, develop their own artistic tastes, or react to current issues. For example, students could give critiques or help each other online and remain anonymous if they wish. Web technologies, such as blogs, video chat rooms, or social networking, are perfectly suited for this interactive communication.

Lesson plan goals. From the evaluations above, I have narrowed these four basic concepts into four simple guidelines I can apply to my lesson plan to provide ample opportunity for collaboration, student-centered learning, self-expression and responsiveness. Below, I listed these goals as a practical, four-part checklist to be applied to my lesson plan.

[] The curriculum requires students work in collaborative groups.

[] The curriculum requires students to work on a project that inspires interdisciplinary learning and problem solving.

[] The curriculum allows students to make choices about the project that are personally relevant.

[] The lesson allows students to receive prompt, constructive feedback from their peers.

One final point is worth restating here, and is applicable to both my lesson plan and lesson plans created by others. Teachers should understand that when creating curricula, technology is a tool. The objective is not just to use technology, but to use technology as a means of fostering student learning to understand content. There are many ways technology could be included in an art curricula, and many key concepts that can be incorporated. For example, curricula could include online competitions as students from different schools compete with each other. It can also be a way of keeping track of old ideas. The primary challenge for educators is choosing what concepts are important and what technologies they will incorporate based on those concepts.

Chapter 5: An Interactive Web Lesson Plan

An example lesson plan is included to provide a guide for other teachers seeking to implement technology in the classroom. This lesson plan is especially designed for an art class at the high school level. Based on the literature reviewed above and subsequent analysis, that lesson plan created will meet the four guidelines listed in the previous chapter. Within the curriculum, the following elements have been incorporated: an outline, various instructional methods, limited assessment guidelines, visual aids, and corresponding assignments. The lesson plan also outlines key concepts, essential questions, lesson objectives, and national INTASC standards that are fundamental to the lesson plan.

Based on the analysis pursued above, my lesson plan will meet each of four guidelines addressed: (1) The lesson must require students to work in collaborative groups. (2) The lesson must require students to work on a project that inspires interdisciplinary learning and problem-solving. (3) It must also allow students to make choices about the project that are personally relevant. And, finally, (4) the lesson must allow the students to receive prompt productive feedback from their peers. If each of these guidelines are met, the curriculum can provide students with an enriching experience that engages them in their learning, connects them with the world around them, and addresses relevant and enduring ideas.

In the assignment presented in the lesson plan below, the students will work together in groups. Inside this collaborative setting, group members will have multiple perspectives on how to approach the physical depiction of their electronic relationships. They can also bounce ideas off each other, have more feedback, and have social learning. The students will also learn how to work with others, an important skill they can apply outside the classroom. Significantly, and in furtherance of the underlying idea behind the project, members will be able to compare their

personal relationships with one another, identifying overlaps, parallels, or divergences. Mutual friends will create converging relationship depictions, whereas people related to only one group member would create interesting divergences. Ultimately, the group will provide an ideal setting for this technology-based lesson.

The lesson will also require students to work on a project that inspires interdisciplinary learning and problem-solving, particularly with social sciences. Through the project, students will be allowed to study human interactions. While social networking has been discussed extensively by sociologists and other social scientists, this project will allow students to develop their own insights into the subject in an art setting.

This project will also provide students considerable autonomy. The curriculum is designed to force students to harness their experiences with social networking to express their lives artistically, but does nothing to force students into a particular artistic medium. This creates ownership. By starting off with relationships they already identify with personally, but allowing students to choose how to express that personal information, the curriculum will inspire personal creativity, decision-making, and learning.

Additionally, the lesson will allow the students to receive prompt feedback from their peers. While any number of avenues may be open to a teacher in order to allow for prompt feedback from students, a few options are given within the curriculum. Class presentations are perhaps the simplest form of feedback outlined in the curriculum and are likely to create the most significant commentary. Another form of feedback is the class blog, where students can upload photos of the project and comment on another team's work. Other options presented below are:

- A worksheet, to be filled out as a group, discussing what was successful each day, what was unsuccessful, and what they should do differently during the next class period

- An open house art exhibit or student show showcasing each groups work

Regardless of the method pursued, feedback is an important part of the learning process.

As shown, the following curriculum creates an appropriate technology-based learning environment. This environment will engage students, allow students to connect with each other and the world around them, and even allow them to contemplate relevant and enduring ideas. It should be noted that the lesson plan that follows draws on the curricular theories posited by Stewart & Walker in 2005, and seeks to focus on a single “big idea” that the students can address in a variety of creative and interesting ways.

A High School Lesson Plan

<h2>The Web That Connects Us</h2>	
Introduction & Rationale	
<p style="text-align: center;">Theme</p> <p>Technology is changing the “norm” for relationships. Perhaps no demographic experiences this more than the up-and-coming generation of students who are so often inundated with new forms of technology-based connection. The relationships these students form online influence their face-to-face interactions and influence their perception of social interaction.</p>	<p>This lesson seeks to give students insight into the relationships they have through social media. Throughout, students will explore a single enduring idea, <i>relationships</i>. The concept of basing lesson plans on a single idea springs from Stewart and Walker’s book <i>Rethinking Curriculum in Art</i>, which posits that the foundation of an art lesson plan should be an enduring idea such as identity, survival, or power, to name a few (Stewart & Walker, 2005, p. 25). While any enduring idea has some relevance to students and can be addressed effectively through technology, the relationships that each student shapes on a daily basis via text message, email, or other social networking have an immediate impact on their lives. By focusing on <i>relationships</i>, art teachers can encourage students to evaluate the way their social connections are shaped through these channels.</p>
Key Concepts	
	<p>Relationships can be created, changed, cultivated, and improved through our use of social media. These relationships can be rich and layered. But technology-based relationships can also be devalued or lack the richness of face-to-face relationships, becoming distant and more difficult to use. This lesson seeks to address these ideas and</p>

several other key concepts including:

- Rich communication with multiple layers and input versus communication that lacks that richness
- Ease of sharing caused by technological distance
- Valuable relationships that should be protected or cultivated versus less important relationships
- Verbal versus nonverbal communication
- Levels of understanding

Essential Questions

The lesson will ask essential questions such as:

- What is a social world and how does it relate to a person's relationships?
- How does the social world influence or reflect a person's values and beliefs?
- What causes the social world to change?
- How does technology change relationships?
- How has technology changed your relationships for better or worse?
- Has it changed you?
- How does it change how we relate in relationships?

	Objectives
	<p>Students will connect their artwork and art learning with interactive Web technology. Students will express how social media alters their relationships and be able to communicate those relationships through their artwork. Students will collaborate to create artwork as a team.</p>
	Standards
<p>Standards Applied</p> <p>Students will analyze, synthesize, and evaluate their online relationships.</p> <p>Students create works of art using the ideas of online relationships.</p> <p>Students defend their artwork in a class critique.</p> <p>The teacher will have the students analyze something in meaningful, online relationships.</p>	<p>National Visual Arts Standards Addressed:</p> <ul style="list-style-type: none"> - 1d: Students initiate, define, and solve challenging visual arts problems independently using intellectual skills such as analysis, synthesis, and evaluation. - 3b: Students apply subjects, symbols, and ideas in their artworks and use the skills gained to solve problems in daily life. - 5a: Students identify intentions of those creating artworks, explore the implications of various purposes, and justify their analyses of purposes in particular works. <p>INTASC Standards Addressed:</p> <ul style="list-style-type: none"> - Standard 1 – <i>Subject Matter</i> – The teacher understands the central concepts, tools of inquiry, and structures of the discipline(s) he or she teaches and can create learning experiences that make these aspects of subject matter meaningful for students.

The teacher will help students to think critically about their artwork.

The teacher will help students to work in groups.

- Standard 4 – *Instructional Strategies* – The teacher understands and uses a variety of instructional strategies to encourage students’ development of critical thinking, problem solving, and performance skills.
- Standard 5 – *Learning Environment* – The teacher uses an understanding of individual and group motivation and behavior to create a learning environment that encourages positive social interaction, active engagement in learning, and self-motivation.

Instruction

Introduction to the “Big Idea”

Discussion of Online Relationships

1. Give an introduction to technology and art. Have the students watch a news clip on social media’s impact on relationships or read the article *Web Privacy: In Praise of Oversharing* by Steven Johnson. Invite the students to think about their own relationships through social media.
2. Have a class discussion. The purpose of the discussion is to get the students to analyze the personal relationships they have through technology. Students can discuss what it means to *friend* someone or *unfriend* someone. Have students evaluate what it means to have a certain number of *friends* on Facebook. How many of those *friends* do they actually care about? How often do they communicate with individuals on social networking sites? Students can evaluate in a

Class Activity

physical way the friendships they have in the class. How many connections are there in the class?

3. The discussion can be held as brainstorming activity with the whole class or as a “listen-think-pair-share” activity. Within the “listen-think-pair-share” activity, students can contemplate any of the essential questions listed above. They will then think about their responses, write their thoughts down, and organize in pairs to discuss each other’s answers. When this is done, they can share their insights with the class.

Group Research

4. Give the students a list of several contemporary artists. Then make groups of 3 students, 4 if necessary. Groups will do a research project on one of the artists that works with technology, either as a theme or a medium. Each group will have until the next class period to present information on their selected artist.

Group Presentation

5. Each group should give a short presentation on the artists they researched, including that artist’s contributions to technology and art. The teacher should then take a few minutes to outline the project that will be assigned, based on the research each group has done and the overall concept of how relationships and technology interrelate.

Blog Demo

6. Have a demonstration on how to use a technology. The teacher will show the class how to participate, in the class blog. If any approval is needed for the students to participate then that can be discussed at this time. Students should understand security precautions when using the

Discussion of Assignment

blog. Students will also be given rights to access the blog with their own password. In order for the students to practice their new skill, they will be required to post as a group about their contemporary artist.

Inspiration Search

7. Each group will need to creatively describe or express their online relationships through a visual or physical medium. This may require group members to download a list of their Facebook “friends” or to reference sites they commonly use. They are not limited to particular media or to a particular size for their project.

Blog Post

8. Have students gather images from books and online sources for inspiration. Have the students post their images to the class blog.

9. They will also come up with three ideas for their final project that they will display on the blog. Students will be required to comment on at least two or more groups (depending on the size of the class) to give groups feedback on what ideas are best or what students can do to improve their projects. Here students possibly can vote for their favorite version of the three each group proposes.

Project Completion Time

10. Have students determine which idea to use, either based the votes received, or on best idea development from the teacher’s perspective for their project, and they can work on their assignment in class until the class critique.

Final Blog Post

11. They will proceed to create their depiction of their online relationships, which will ultimately be presented before the class and

Class Critique

perhaps in other forums. Students can upload photos of their projects and comment on another team's work. Teachers can rotate which group member is responsible to post or comment, perhaps even requiring each student to log on and post a comment on another team's project before each class.

12. Hold a class critique. Have the class present their artwork and discuss what they thought was the most successful and the most unsuccessful part of the assignment.

Additional feedback options:

- Teachers can create a simple worksheet, to be filled out as a group, discussing what was successful each day, what was unsuccessful, and what they should do differently during the next class period.
- As a school, department, or class, teachers can schedule an open house art exhibit or student show showcasing each group's work. This can be attended by family members, administrators, other students, or even members of the community.

Assessment Strategies

- Student self-evaluation and group-evaluation
- Grading sheet including class critique

Materials & Resources

- List of contemporary artists who use technology

- Available materials and mediums for the students to use

List of Artists

Eduardo Kac, “Genesis” 1999

Mel Chin, a conceptual visual artist who works in the themes of political, cultural, and social circumstances, can be found in the Art21 series. “Fundred Dollar Bill” – collaborative artwork

Laurie Anderson, a performance artist and musician, works in the theme of technology’s effect on relationships and communication

Matthew Ritchie, a painter, can be found in the Art21 series

Harrell Fletcher, “Learning To Love You More”

Allan McCollum, mass production

GRL, graffiti research lab, interactive graffiti, Graffiti Analysis 3.0, by Evan Roth

Lauren McCarthy - “Script” She let online followers script a day of her life to respond to the online culture of crowd-sourcing (Xiao, 2010).

Man Bartlett - “24h #BestNonBuy” a street performance using Twitter

Nic Rad – “People Matter” He gave away 99 portraits at his show to respond to the Internet’s culture of free (Xiao, 2010).

Other Possible Social Media Artists: Jennifer Ng, Joanie San Chirico, Jonny Gray, Christi Nielsen, & Nina Meledandri (Xiao, 2010).

Self & Group Evaluation Sheet

Self & Group Evaluation

Name:

Members of Group:

What do you feel is the strongest aspect?

What is your weakest aspect? How can you improve?

Did you feel you contributed to your group? How?

What could you do to improve?

How did your team work together?

What was the most successful attribute of your group?

What was the least successful attribute of your group? Why?

What grade do you honestly feel you deserve for your project and why?

Grading Sheet

	Points Possible	Points Received	Comments
Project depicts the quality of each group member's online relationships	20		
Project is visually interesting and shows effort	20		
Three references used for inspiration	10		
A one paragraph artist's statement – explains the content of the artwork and decisions made in depicting the online relationships	20		
Presentation – must be well-organized, articulate, and involve all group members	30		
TOTAL	100		

Chapter 6: Conclusions, Implications for Education

Connectivity and interactive Web use have become unavoidable parts of our daily lives as well as the daily lives of our students. Regardless of each art teacher's particular affinity for, or feelings toward, these innovations, technology has a part to play in the future of education. Technology can be used in a variety of ways to enhance the teaching experience. Some benefits of using technology in the art classroom can include improvement in student learning, can make learning more personal, accessible, and relevant, (thereby possibly making students more invested in their education as well as in their art), and help students prepare for future careers.

Despite the benefits of technology, it can be difficult to realize the particular opportunities available to teachers for incorporating new technologies, due to the obstacles that impede implementation. These obstacles are not permanent. Through this thesis, I addressed why is it difficult or challenging to bring technology into art teaching, and have proposed the following solutions. With training programs, teachers can overcome their lack of expertise or motivation. Time can be saved through the use of collaboration on blogs or other social media, where teachers will also be able to find and share lesson plans that use interactive technologies. Additionally, costs can be saved through grants or free open-source websites, and resistant teachers may change their minds when they have mentors to help them along the way. These are only a few solutions that teachers can use to overcome those obstacles that limit the use of technology in their classroom.

These solutions relied on existing research, much of which was treated here. This literature shows teachers how to use interactive Web technology in the art classroom to achieve specific outcomes in the service of big ideas. The literature addressed the challenges for teachers

to incorporating new technology in their classroom, and how to create an interactive web curriculum, as well as giving some examples of technology-infused curricula.

Finally, this thesis provides a lesson plan that promises to engage students, connect students together, and explore enduring ideas. This thesis seeks to achieve several guidelines based on the literature, including engaging the students with technology and providing them with opportunities for new insights. The lesson plan accomplishes these goals while focusing the students on an immediately relevant topic, or big idea: their online relationships.

Technology-infused teaching can allow teachers to achieve each of these objectives, but they are only a few of the limitless possibilities that are available and can be achieved. Art teachers must overcome their fear of technology, or any other excuse they have, and make an effort to embrace this new curriculum.

References

- Buffington, M. L. (2007). Contemporary approaches to critical thinking and the world wide web. *Art Education*, 60(1), 18-23.
- Buffington, M.L. (2008a). Creating and consuming web 2.0 in art education. *Computer in the Schools*. 25(3), 303-313.
- Buffington, M. L. (2008b). What is web 2.0 and how can it further art education? *Art Education*, 61(3), 36-41.
- Castro, J. C. (2009). An inquiry into knowing, learning, and teaching art through new and social media. (Doctoral dissertation). Retrieved from the University of British Columbia. (H08-00007)
- Cuban, L. (2001). *Oversold and underused: Computer in the classroom*. Cambridge, Mass: Harvard University Press.
- Daggett, W. R. (2010). Preparing students for their technological future. Retrieved from <http://www.leadered.com/pdf/Preparing%20Students%20for%20Tech%20Future%20white%20paper.pdf>
- Dunn, L. S. (2011). Making the most of your class website. *Educational Leadership*, 68(5), 60-62.
- Dunn, P.C. (1996). More power: Integrated interactive technology and art education. *Art Education*, 49(6), 6-11.
- Ferriter, W. M. (2011). Digitally speaking. *Educational Leadership*, 68(5), 84-86.
- Gladwell, M. (2008). *Outliers: The story of success*. New York: Little, Brown and Company.

Gray, L., Thomas, N., and Lewis, L. (2010). *Teachers' Use of Educational Technology in U.S.*

Public Schools: 2009 (NCES 2010-040). National Center for Education Statistics,

Institute of Education Sciences, U.S. Department of Education. Washington, DC.

Retrieved from <http://nces.ed.gov/pubs2010/2010040.pdf>

Gregory, D.C. (1995). Art education reform and interactive integrated media. *Art Education*, 48(3), 8-17.

Gregory, D.C. (1997). *New Technologies and art education: Implications for theory, research, and practice*. Reston, VA: National Art Education Association.

Gregory, D.C. (2009). Boxes with fires: Wisely integrating learning technologies into the art classroom. *Art Education*, 60(3), 47-53.

Gude, O. (2004). Postmodern principles: In search of a 21st century art education. *Art Education*, 53(1), 6-14.

Internet World Statistics. (2009). *Internet usage statistics*. Retrieved December 14, 2010, from <http://www.Internetworldstats.com>.

Johnson, S. (2005). *Everything bad is good for you: How today's popular culture is actually making us smarter*. New York: Riverhead.

Johnson, S. (2010). *Web privacy: In praise of oversharing*. Retrieved from <http://www.time.com/time/business/article/0,8599,1990586,00.html>, 1-4.

Lenhart, A. (2010). *How do they even do that? A pew internet guide to teens, young adults, mobile phones, and social media*. Retrieved from <http://www.pewinterest.org/Presentations/2010/Jun/How-do-they-even-do-that-A-Pew-Internet-guide-to-teens-cell-phones-and-social-media.aspx>

Mayo, S. (2007). Third millennium: Art technology integration. *Art Education*, 62(3), 45- 51.

- O'Reilly, T., Battelle, J. (2009). *Web squared: Web 2.0 five years on*. Retrieved November 5, 2010 from <http://www.web2summit.com/web2009/public/schedule/detail/10194>.
- Pink, D. H. (2009). *Drive: The surprising truth about what motivates us*. New York: Riverhead Books.
- Roland, C. (2006). Internet survey for art teachers: The results. Available online at: http://www.artjunction.org/atgi/teachers/Internet_survey.html
- Roland, C. (2010). Preparing art teachers to teach in a new digital landscape. *Art Education*, 63(1), 17- 24.
- Rosen, L. D. (2011). Teaching the igeration. *Educational Leadership*, 68(5), 10-15.
- Saldaña, J. (2009). *The coding manual for qualitative researchers*. Thousand Oaks, CA: Sage Publications Inc.
- Shin, R. (2010). Taking digital creativity to the art classroom: Mystery box swap. *Art Education*, 63(2), 38-42.
- Stewart, M. G., Walker, S. R. (2005). *Rethinking curriculum in art*. Worcester, Massachusetts: Davis Publications.
- U.S. Department of Education. (2004). *Toward a new golden age in American education: How the Internet, the law and today's students are revolutionizing expectations, National Education Technology Plan*. Washington, DC: Author. Retrieved from <http://www2.ed.gov/about/offices/list/os/technology/plan/2004/site/theplan/edlite-intro.html>
- Walker, S. (2004). Big ideas: Understanding the artmaking process – Reflective practice. *Art Education*. 57(3), 6-12.

Ward, A. E. (2010). Fantasy facebook: An exploration of students' cultural sources. *Art Education*, 63(4), 47-53.

Xiao, A. (2010). Always social: Right now (2010 -), part three. Retrieved from <http://hyperallergic.com/6648/social-media-art-pt-3/>

Appendix

Highlights used for Analyzing Research Literature

Gregory, D.C. (2009). Boxes with fires: Wisely integrating learning technologies into the art classroom. *Art Education*, 60(3), 47-53.

We must make a 180-degree shift from teacher-directed to student-centered learning approaches. ... We must empower learners, place them in charge of their own learning and allow them direct and frequent access to computer learning technologies. We must invent new student-centered approaches that use the power of new learning technologies that focus on collaborative learning, real world problem solving, and creative, critical thinking. We must show our students how to use computer and social learning technologies as mind tools to help them contrast their own personal meanings. ... By integrating and infusing computer learning technologies wisely into student-centered or social constructivist art learning environments, art educators can improve student learning and at the same time provide a creative, substantive model for how schools can and should be reformed. ... In the following sections, I provide research evidence that integration of learning technologies into a variety of classroom settings improves student learning.

[A]rt teachers typically use computer technology as teaching or presentation tools rather than facilitating students' creative production and (creative) thinking, collaborative learning, problem-solving and higher order learning.

[I]t stands to reason that student learning in art will also improve when students are given greater opportunities to use computers as mind-tools and engage in “minds-on” student-centered studies in (DBAE) art production, aesthetic inquiry, visual culture, art criticism and art history.

Surprisingly, these teachers seemed unaware of the contradictions of combining teacher controlled technology practices and flexible studio approaches. Ironically, they understood the value of putting art making tools within the hands of each student, but seemed unaware of the value and necessity of placing technology learning tools within the hands of each learner as well.

Create and teach within a student-centered learning environment before integrating technology into your classroom. And, understand the difference between this approach and a teacher directed art studio classroom experience. You can do this by gradually including project base learning, problem solving, interdisciplinary learning, and cooperative learning into your curriculum and pedagogy before introducing technology.

Seek to understand the unique capabilities of technologies in promoting a variety of different types of learning. We all know students can use computers to create impressive final products. However, your focus as a teacher should be on how technologies can be used to help students learn. For example, Inspiration is a great computer-based planning and concept mapping tool that helps students not only plan large-scale technology projects, but also reflect upon what they are learning. They can brainstorm ideas, share

their ideas, and get feedback from you or fellow students. They can evaluate their own thinking (metacognition), as well as compare, contrast, analyze, synthesize, and evaluate different components of any creative plan or project.

Immerse yourself in the new communication networking technologies your students use to communicate with each other.

[W]hen I have successfully moved toward a more student-directed approach and using learning technologies, my students have become more involved, empowered, engaged, and enthusiastic. I see that my students learn more effectively when they have used these learning technologies collaboratively to solve meaningful educational problems and I believe your students will learn more effectively as well.

Shin, R. (2010). Taking digital creativity to the art classroom: Mystery box swap. *Art Education*, 63(2), 38-42.

[M]any students “have something in their lives that’s really engaging – something that they do and that they are good at, something that has an engaging, creative component to it. “ An example is Web 2.0, which is a new mode for creating and sharing information on the Web. ... Web 2.0 participants create their spaces to share information, knowledge, and entertainment. By expressing themselves (self-expression) and working with others (collaboration), they can release unlimited imaginations. ... First, I will explore the concept of digital creativity and share three examples related to it that I have observed on the Web. After that, I will showcase an art project, Mystery Box Swap, providing an

example of how art educators might explore the digital world and creativity, from which an art project is drawn, developed, and taught. I will conclude this article by encouraging art educators to explore and experience the creative flow of the digital world and how to take advantage of it for teaching and research purposes.

Contemporary creativity researchers provide three key elements in approaching the concept of creativity, which can also be applied to digital creativity. The three are: the individual person, domain and field, and socio-cultural context. ... Leach (2001) points out that musicians and scholars who have achieved highly regarded creative inventions could not have done so without association and interaction with other creative people, supportive systems, and collaboration. Likewise, any creative inventor in the digital world does not emerge from a vacuum state without having relationships with other influential people. Rather, in a digital world people are connected supporting and critiquing each other in the social context of Web users using the aforementioned technologies.

“Little c” creativity examples include teenagers constructing personal websites through Facebook or Myspace, bloggers creating a cyber group, a teen avatar as a representation of an alter ego, and another teenager text messaging and playing and exploring with images and videos. I describe three examples of creative imagination found on the Web that art educators might introduce in their art classes.

Dimon's art, as an example of digital creativity, can inspire students to think of creative ways to express ideas or concepts and to accept new digital media through a format that traditional art cannot provide.

I noticed that this project helped students understand that art is not just about making something with brushes, paints, wood, or clay, but they learned to express important ideas and experience through everyday objects, forms, and expressions through collecting them in a personal and meaningful way. The most important lesson I was hoping for them to learn was that artwork can also be inspired from new technologies and created from what appears to be frivolous and playful in our daily context, and that art educators, therefore, can make students excited, expressive, and creative, in this case, in the context of participating in the digital world.

As seen in the examples shared in this article, the digital world and new technologies can serve as resources for fostering creative student engagement in open-ended class projects in which creative outcomes are not anticipated by students or their teachers.

Roland, C. (2010). Preparing art teachers to teach in a new digital landscape. *Art Education*, 63(1), 17-24.

Internet connectivity alone makes little difference in student learning and achievement.

Rather, we realize that Internet features such as the World Wide Web, video conferencing and search engines become worthwhile educational tools only when driven by challenging curriculum goals and sound pedagogical practices.

Web 2.0 tools and services like blogs, wikis, podcasts, media-sharing sites, micro-blogging, social networks, and virtual worlds are now used daily by millions of people around the globe to connect, communicate, collaborate, create, and share with others. The challenge is that many educators still think about the Web primarily in 20th-century terms as an “information repository”.

The potential of the Internet as an innovative learning tool for students to post their work to the Web for feedback, design their own websites, explore virtual worlds, engage in socially responsive projects, or exchange work and collaborate with students in other schools or countries, has yet to be realized in many art classrooms today.

In addition to “hanging out” with their friends on social network and gaming sites, many teens are contributing their own content to the Web through creative writing, video editing, and other artistic endeavors. The authors of a 2004 NetDay Survey best summed up the situation with their conclusion that “students are not just using technology differently today, but are approaching their lives and their daily activities differently because of the technology”.

Whereas the original NETS for teachers, introduced in 2000, called for an introductory knowledge of “technology operations and concepts,” the new NETS consists of five standards that require teachers to: (1) facilitate and inspire student learning and creativity, (2) design and develop digital-age learning experiences and assessments, (3) model

digital-age work and learning, (4) promote and model digital citizenship and responsibility, and (5) engage in professional growth and leadership.

[P]romote students' abilities "to learn effectively for a lifetime and live productively in our emerging global society and increasingly digital world."

[1] Focus on outcomes, not tools. [2] Expand upon customary ways of thinking about the Web. [3] Infuse technology into the curriculum, rather than treat it as an add-on. [4] Combine the new with the old, the global with the local. [5] Use free, open-source software and online tools. [6] Introduce creative commons licensing. [7] Encourage flexibility with technology tools and software. [8] Encourage safe and responsible use of technology.