DIGITAL TOOL CAPABILITIES: VISUAL ART AND MUSIC EDUCATION

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By

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ABSTRACT

The findings and conclusions of this study provide educators with an informed toolbox to draw from when integrating technology in visual art and music learning experiences. Following an assessment of 35 digital arts and music education tools identified through open source research, the six strongest tools (as determined by parameters set by the researcher) were presented to a focus group composed of visual art/music education instructors and administrators. After the focus group participants interacted with the six tools, they provided their professional opinions and feedback regarding various elements of each tool in a moderated discussion, which was videotaped and archived online.

By having access to a curated list of technology tools evaluated by professionals, educators will have the information necessary to effectively incorporate digital learning when teaching, thereby enhancing the learning experience for students and educators.

I dedicate this thesis to my family, my husband, Joseph,

my amazing friends, and my three cats

ACKNOWLEDGEMENTS

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FIELD OF STUDY

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INTRODUCTION

Becoming increasingly pervasive, new technologies are constantly emerging and changing the way we experience the world around us. Social media has provided a means by which individuals can exercise their influence, and has become a powerful tool in both social and political decision-making. Such innovative technologies have re-defined the climate in which governments, organizations, and families exist, and the presence of new technology continues to shape the world in which we live. Long-established institutions such as public education must adapt to these changes, and while technology has proven quick to change, it is a much different process for others who must adapt as a result of technological innovation.

Classroom teachers have experienced many challenges with regard to effectively incorporating technology into classroom instruction, which is regrettable (yet understandable) considering the fact that technology has yielded consistently positive patterns when effectively used as a tool in classroom environments (Keengwe 2009). Technology has also facilitated learning opportunities beyond the classroom, extending students' education to their lives online. According to a 2005 Pew Internet & American Life survey, over half of

American teenagers contribute to the Internet by way of writing creatively, video editing, and engaging in artistic activities online (Roland 2010). This suggests that there exists an urge for children to participate in creative endeavors while having new and educational experiences delivered to them through technology. While the literature suggests that integration of technology in arts education experiences depends on educators' abilities to a focus on outcomes rather than tools, there exists limited resources speaking to specific instances of successful arts and technology integrated learning experiences.

I propose to identify forty online and application-based visual art and music education technology tools that will be drawn from both online and application-based platforms. Of those forty tools, I will and research and curate six visual art and six music educational technology tools, and will then present the six most exceptional of these tools (as assessed by the researcher) to a six-member focus group comprised of educators, artists, musicians, and art and music education professionals. Each member of the focus group will be provided with a description of the six selected tools (see Appendix A), and will then be instructed to interact with each of the six tools for a period of ten minutes as they rotate through the six stations. This focus group exercise will inform their opinions and thoughts surrounding use and implementation of these tools in educational environments.

After every member has engaged with every tool during the exercise, the focus group will convene and respond to a series of questions (see Appendix B.) Participants will also be given the opportunity to provide unprompted feedback as

well. Upon assessing the findings of the focus group, which will be captured on film and will accompany this study, the final product will be a curated list of tools with commentary that can be presented to arts and non-arts educators to use in arts education integration learning. The purpose of this study is to assist those seeking to provide and receive arts and technology integrated learning experiences by providing these individuals with professionally reviewed list of tools, aiming to deepen learning experiences of those utilizing the tools.

The findings and conclusions of this study will act as an informative body of work, providing arts and music and non-arts and music educators with an informed toolbox to draw from when implementing technology-integrated education in learning. By thoughtfully implementing technology in learning experiences, educators will have the means necessary to most effectively incorporate digital learning in teaching those they seek to educate, thereby enhancing how individuals experience and learn.

LITERATURE REVIEW

An examination of the literature reveals some notable trends in the area of the Millennial Generation and their relationship with new media. Also known as Generation Y and the Internet generation, there are several different theories regarding the actual definition of what makes someone a Millennial; however, according to *New Media and Technology and Youth: Trends in the Evolution of New Media,* the Internet generation is defined as those born after 1994 (Frank 2000). Having grown up alongside rapidly developing technologies that have altered the way we experience the world around us, Millennials are being affected socially as well as cognitively by their interaction with computers (Frank 2000) and have led the Internet to surpass television as the favored form of entertainment in the United States (Watkins 2009). It is interesting that television has been so slow to adapt to the changing needs of American youth, but busy teens and young college students have found a convenient and flexible way to experience media by way of the Internet, and social media sites have proven to be more gripping than television (Watkins 2009).

Children's waning involvement in television viewing has come in the wake of developing communication tools ranging from instant messaging, to such

social media outlets such as Twitter and Facebook. A *New York Times* article commented on the pivotal role of instant messaging (IM) and its tendency to lead young people to be considered what it calls "the overconnecteds," causing teens to spend many a late night burning the midnight oil while pouring over the dramas of the day with their peers on IM (Watkins 2011). While today's youth identifies Facebook as their "lifeline" and say that they would be "lost" without the Internet (Cooper 2011), researchers such as Naomi Baron are asking such questions as, "Could it be that the more we write online, the worse writers we become?" (Ito 2011)

As with any major innovation, there are supporters and there are critics of the shift in the younger generation's preoccupation with emerging digital media. Conversely, many argue the benefits of a youth steeped in a technologically based world. For example, research conducted by Duke University revealed that there is a correlation between increased Internet use and low-test scores (Anonymous 2010). One major difference between how previous generations experience technology and how the Millennial generation experiences technology is that fact that adults separate their lives online and offline; however, to the Millennial generation, there is no separation between the two (Cooper 2011). Some view this reality as a benefit to today's youth, who are going to need the proper preparation for the 21st century workforce (Ito 2011). This immersion in technological experience and contribution to online platforms are also allowing youth to explore language, social experiences, personal expression and methods of problem solving (Ito 2011) while having access to a virtually limitless amount of

information (Frank 2000). The findings of a nationwide survey of teachers support the idea that computer use is beneficial to students, revealing that such activities allow youth to develop skills such as project research and communication (Anonymous 2010).

Those who provide media-based education experiences are beginning to see patterns that demonstrate the potential for media to mold the way in which today's youth experience and interact with culture through media. The effect is the role of youth transforming from consumers of media experiences to becoming active producers of media (Ito 2011). Research conducted in 2005 for the Pew Internet & American Life Project revealed that Millennials are avid creators of Internet-based material, and refers to these youths as "Power Creators." (Watkins 2009) In addition, Millennials' use of several different media platforms (email, instant messaging, Facebook, etc.) has resulted in their ability and tendency to "media stack" (Cooper 2011). This has led to an increasing popularity of smart phones due to their access to the Internet, social media outlets, and texting. The literature points out that the calling feature on a cell phone is most commonly used for children to check-in with their parents, and is not the primary use of the phone (Cooper 2011). In fact, the Apple iPhone is described as "the world's most capable pocket computer" rather than just a phone given the phone's access countless third-party applications (Fairlie 2010).

With regard to technology and the family dynamic, today's youth have become stewards for technology, and act as veritable trainers for the elders in their households (Watkins 2009). In general, adults are increasingly likely to

enhance their understanding of technology through receiving instruction from young people, allowing them to increase their comfort level when navigating digital media and new technologies (Watkins 2009). Surprisingly enough, many parents are even helping their children break the rules of social media. In an online survey conducted with 262 children, it was found that 53% of 8-12 year olds have Facebook accounts despite Facebook's regulation that all users be 13 or older. Survey participants indicated that their Facebook accounts had been created by their parents in order to avoid the conflict with this Facebook regulation (Cooper 2011). The relationships that young people have with such social networking sites are often portrayed as dangerous and risky by the media at large; however, research has suggested that such sites provide young people with social and emotional affirmation as they stay in touch with their real-life friends, demonstrating that parents' and the media's portrayal of social networking sites is not entirely accurate (Dunkels 2011). This is consistent with the finding that 91% of teens accessing social media sites are communicating with individuals that they already know (Watkins 2009).

Technology has had an undeniable impact on today's youth, but the pervasiveness of technology in the present day is something that is experienced by all. Digital media and networks have become inextricably linked with our daily activities and have altered not only our knowledge production, but the way in which we engage in communication and creative expression as well (Ito 2011). In a 2010 survey conducted by Burst Media (a leading provider of advertising representation, services and technology to independent Web Publishers) it was

revealed that technological tools such as smart phones, tablets, e-reading devices and netbooks notably improve the way in which users of the tools complete daily activities. The survey respondents totaled 1700 individuals ages 18 and older. Other findings within the study were that 71% of gadget users recognize the technological devices as their primary resource for news (Anonymous 2010) which is understandable given the shift that has occurred over the past ten years from reliance on printed news within magazines and newspapers to online journals and news sources (Fairlie 2010). This transition from print to digital has been developing throughout the last decade, as indicated by the 2004 Carnegie Corporation survey which found that only 19% of respondents claimed that they read a daily newspaper while 44% claimed they referred to the Internet on a daily basis for their news. Even more fascinating is the fact that only 10% of respondents believed newspapers to be a trustworthy source of information (Watkins 2009).

In addition to influencing the way in which we consume news, technological gadgets have also had an impact on the way women manage their household according to the Burst Media study. 60.7% of women between the ages of 45 and 54 claim that such gadgets have positively impacted the way in which they manage their households, and 56.1% of women between the ages 35 to 44 make the same claim (Anonymous 2010). This is consistent with findings that have shown that households are primarily where fluency with new media and information technology is developed and honed, particularly in households considered "privileged," where the integration of computers and technological

tools have become seamlessly intertwined with the activities in domestic spaces (Ito 2011). Surprisingly, it is not schools where familiarity with technology is occurring primarily, despite the pressure that has been put on educators by policymakers, parents, administrators, educators and students to revamp in-school learning by way of technological integration. Furthermore, findings in 2006 by the National Center for Education Statistics (NCES) indicated that only 50% of public school teachers with computer and Internet access in the classroom actively utilized these resources during classroom instruction (Keengwe 2009). This is an unfortunate truth, given the wealth of information available to students online through search engines such as the dynamo Google, through which over one billion searches occur each day (Fairlie 2010).

The creation of Wi-Fi has made utilizing the Internet a more accessible venture than ever, and has even led to the sale of laptops overthrowing the sale of desktops (Fairlie 2010). The rapid diffusion of the Internet occurred at a rate even more exponential than that of the computer. US Census data indicates that while in 1997 only 18% of American households reported that they use the Internet, by 2001 this percentage skyrocketed to 50% (Watkins 2009). With broadband connections available, the way we experience the Internet has redefined some of our most commonly held notions regarding media consumption and communication. For example, broadband has allowed Internet users to view videos on demand, place phone and video conference calls, make online purchases, and download audio and video segments. The invention of technological tools such as TiVo has taken control from the hands of broadcasting

agencies, and has put the media consumers in the driver's seat (Fairlie 2010). This shift of power has been compared to the slow response on the part of the music industry to consumer's buying habits (Watkins 2009) which was capitalized on by Apple through the invention of the iPod. This device has forever changed how music is experience, allowing users to keep their entire music library in their pocket (Fairlie 2010).

The computer has replaced the television as the focal point within households, and is now a portal for not only the accomplishment of work-based activities, but for the use of leisure time activities as well (Watkins 2009). According to the previously-mentioned study performed by Burst Media, 61% of respondents indicated that technological gadgets enhance their use of free time, and 57% claim that the way they experience entertainment is improved by these devices. When asked if technological devices improve how they keep in touch with their family and friends, 74% of respondents replied positively (Anonymous 2010). Facebook alone has been described as a veritable small town where everyone knows everything about everyone. It is where people find out who has gotten married, who is engaged, who is expecting, who has received a promotion, and who got stuck in traffic on the way to work (Fairlie 2010).

According to a study conducted by the Pew Internet and American Life Project, those who use Facebook exhibit certain positive trends as a result of their Facebook usage. For example, Facebook users tend to have 9% more close relationships in their overall network compared with others who use the Internet. In addition, Facebook users are deemed more politically engaged than most

people, and are 43% more likely to express that they plan to vote (Hampton 2011). Social networking sites are also reaching Internet users aged 74 and older, a demographic that has quadrupled its social networking usage between 2008 and 2010 from 4% to 16% (Zickuhr 2010).

Trends in technology education integration have had far-reaching implications, ranging from government policy to in-school activities. There exist three uses of technology in school settings: the preparation of instructional materials, technological support for delivery of classroom instruction, and the use of technology as a tool for learning (Inan 2010). The presence of technology in education has been deemed essential by agencies such as the International Society for Technology in Education (ITSE), whose CEO Don Knezek has described a lack of keeping pace with changes in technological developments "silly" given the change that has occurred in students' learning styles (Miners 2009). In addition, standards are actively being put in place by accrediting organizations such as the National Council for Accreditation of Teacher Education (NCATE) as well as state boards (Bauer 2003). Despite these actions and assessments, the International Society for Technology in Education has determined that the integration of technology in the education curriculum is lacking from present practice (Keengwe 2009).

Currently, classrooms are primarily print-based (Scherer 2011). One reason that has been identified regarding this trend is the skepticism on the part of teachers when it comes to technology integration in the long-term (Miners 2009). In addition, research has been conducted that points to a lack of necessary skills

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amongst teachers as the leading cause for insufficient technology integration in classroom instruction (Inan 2010). In support of this fact, findings in the Department of Education's 2010 National Education Technology Plan, which is titled *Transforming American Education: Learning Powered by Technology,* reported that technology integration is only successful when accompanied by effective implementation by a classroom teacher. The technology itself can only be considered a tool, and without the confidence on the part of the teacher in the ability to embed it in the learning process, the technology is without sufficient usefulness (Miners 2009). Technology can also be used to enhance existing teaching methods such as questioning, brainstorming and role-playing (Musawi 2011).

There is conflicting information regarding the success of technology integration in classroom education. For example, research conducted with children between 3 and 4 years old demonstrated that when these children used computers in addition to supporting educational activities, they exhibited increases in verbal and nonverbal skills, problem solving, abstraction, and conceptual skills (Keengwe 2009). While the research demonstrated these measures of success, there is currently a lack of empirical support that substantiates technology's ability to increase test scores or improve the delivery of classroom instruction (Inan 2010). This could be due in part to the previously mentioned lack of training and understanding that many teachers in the United States currently have regarding technology integration in classroom instruction, and many claim that the fault for this rests on the shoulders of those administering

(or not administering) appropriate professional development opportunities for teachers.

A report from the *National Staff Development Council, Professional Learning in the Learning Profession* claims that the United States has "failed to leverage professional development to ensure that every educator and every student benefits from highly effective professional learning" (Miners 2009). While even the U.S. Secretary of Education acknowledges in the Department of Education's 2010 National Education Technology Plan, which is titled *Transforming American Education: Learning Powered by Technology,* that "our nation's schools have yet to unleash technology's full potential to transform learning" and that "we need to leverage technology's promise to improve learning," the issue of teacher professional development still plagues progress. Other researchers have tried to better assess what factors determine a teacher's readiness or lack of readiness to employ technology in classroom teaching. The findings have concluded that readiness is greatly influenced by the teacher's individual beliefs and the availability of a computer in their classroom. In addition, as the teachers' years of experience with teaching increases, their sentiments regarding technology integration negatively decreases. Interestingly, age of the teacher did not significantly affect teacher readiness. Most strongly effecting teacher readiness to integrate technology was computer proficiency, followed by availability of technical support, years of teaching, and availability of technological resources (Inan 2010).

It is a necessity for teachers to acknowledge the technological literacy needs of those they teach, and opportunities need to be seized so that both digital and non-digital learning can take place in a complementary way (Alvermann 2004). With almost every school able to access the Internet, and approximately one computer being available to every four students across the United States, technology is more readily accessible than ever to both teachers and students, and this availability of technology positively affects teachers' beliefs and readiness to integrate technology with classroom learning (Inan 2010). Many look toward the future of technology integration in education, and although they acknowledge that current online learning experiences tend to be isolating, they see online learning of the future as a very participatory experience where students engage in learning both in and outside of the classroom (Scherer 2011).

Measures are being taken by individual states to ensure that teachers have the appropriate level of education to implement technology in their instruction, and currently over forty states have established standards calling for professional development that puts technology integration in the forefront of these programs. In fact, the federal government has also expressed the importance of technology integration, having included $650 million within the federal stimulus package toward the Enhancing Education Through Technology grant program, one quarter of which was allocated to professional development opportunities for classroom teachers (Miners 2009). Further displaying the federal government's investment in furthering technology integration in education, the Department of Education's 2010 National Education Technology Plan, which is titled *Transforming*

American Education: Learning Powered by Technology, attempts to address issues such as the rise of digital content and social networks, accessibility of technology, and mobility of technological resources.

Just as there have been conversations surrounding the integration of technology in general education, there have also been discussions surrounding the integration of technology in art-based learning experiences. Trends in this area demonstrate similar developments as trends in general education, such as the ability for technology to reach those with different learning styles, the importance of reaching Millennial students, and the need for educators to make meaningful connections between technology and the subject being addressed. In addition to linking technology with the art-based subject, sound pedagogical practices must still remain a constant in art-based education practices. For instance, it has been asserted that even in art-based learning, the Internet alone has not affected student achievement and learning (Roland 2010). Realizing that today's global reality consists of virtual worlds (Partti 2010) it is understandable that virtual experiences can provide twenty-first century learners with opportunities to showcase their art, conduct a symphony, and interact with artists from around the world; however, there are misconceptions that non-arts enthusiasts have about the capabilities of technology's role in art, such as the emphasis of technology integration in the arts being to make live performance "less people-power intensive (Roman 2009)." It is important, however, for artists to lead innovations in incorporating technology in enhancing art-based learning experiences (Feldstein 2001).

The argument is presently being made that ignoring today's technologies in teaching contemporary visual art is like not teaching photographic techniques to photography students (Buffington 2010). Not only does incorporating technology in such instruction allow artists to meet students at their existing level of technological proficiencies (Feldstein 2001), it also gives art instructors on a budget innovative and affordable ways in which to showcase student art and allow students to interact with one another's work. Flickr, Blogger, and Diigo are all free web-based applications that "permit students to engage in innovative forms of communication, expression, and learning using contemporary media rooted in their everyday lives (Roland 2010)." Also, such online platforms allow student's visual art to be displayed to the world, promoting the importance of the student work to a worldwide audience. Instructors can also include a wealth of information regarding the background of the artwork through use of online media tools, providing a context for casual viewers of the online artwork. There also exist technologies that allow art instructors virtual hanging space to exhibit their students' work (Burton 2010). Online platforms such as SecondLife have also paved the way for innovative online artistic creation, with artists assuming avatar personas and creating virtual work in this virtual world by collecting and assembling discarded objects (Buffington 2010).

In addition to providing student artists with virtual galleries to display their work, the Internet also allows student artists and seasoned artists to comment on one another's work. This enables the exhibiting student artist to answer any questions virtual gallery-viewers may have, and allows fellow artists to give

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constructive feedback. The online platform VoiceThread even allows student artists to record audio feedback in response to work hanging in virtual galleries. The web offers other ways in which to connect seasoned artists with student artists. For example, the free application Skype makes connecting artists with student artists extremely convenient and cost-effective. For example, David Gran (Art teacher at the American School in Shanghai, China) conferred with a Florida high school animation class regarding an international animation project (Roland 2010), giving students the unique opportunity to have access to a professional in their field of interest. Audio technologies have paved the way for the capabilities of Podcasting, a technology being adopted as a part of many museums' education efforts. Because Podcasting gives control of the educational content to the listener, students can rewind, fast-forward, and re-play content based on their own individual learning style. By incorporating interviews with artist, and taking a casual reading approach, museums are progressing toward developing engaging Podcasts that are both informative and spontaneous-sounding (Buffington 2010). Video Podcasts have also been implemented in museum education programs, allowing educational experiences to break free from the confines of the walls of the museum (Lopez 2008).

Interactive virtual music realities have also allowed for music immersion education experiences. A notable virtual experience that has been created provides amateur or non-musicians with the opportunity to conduct virtual musicians as they play from a score. While the virtual experience does not exactly replicate the intricacies of conducting an orchestra, the virtual musicians respond

to the gestures of the participant, creating an innovative multimedia experience (Schertenleib 2004).

My interest in pursuing the topic of technology integration in arts education experiences was further piqued upon witnessing the lack of material currently available on the subject. There is limited literature available surrounding arts education technology integration in K-12 education experiences, but even less information is available regarding arts organizations and integration of technology in their education programs. Much research has been conducted regarding the way in which technology has become embedded in everyday life, as well as the trends in usage of emerging technological tools across various demographics. In addition, research exists that supports the importance of the integrating technology in education experiences. My proposed research will provide substantial information pertinent to arts and music and non-arts and music educators seeking examples technology integration tools, a resource that is currently scant at best.

PRE-FOCUS GROUP RESEARCH

Through conducting open source research, 35 digital arts and music education tools were identified (see Appendix C). While assessing the tools, the following factors were assessed:

- Ease of use/ accessibility

- Cost effectiveness/affordability

- Relevance

- Educational/experiential content

Of the 35 digital tools, the following twelve tools (six arts education tools and six music education tools) ranked the highest amongst the 35, because of their success in meeting the above-mentioned criteria. The twelve tools are described below:

Music Digital Learning Tools

Karajan Beginner- Music & Ear Trainer (iPod App)

A free application for the iPhone, Karajan contains various training tools related to aural theory skill building. Users of the application can access lessons that will prompt them to identify intervals, chords, and various scales. Karajan solves the problem of quizzing oneself on discerning various musical elements when another

person is not available to play the intervals, chords, and scales for them. Because the application is available on the iPod, it can be accessed virtually anywhere, negating the need of having access to a piano, keyboard, or other instrument (Eliette and Herbert von Karajan Institute).

Bloom (iPod App)

Although this application is not available for free, it can be purchased from the Apple Store for $3.99. Truly taking advantage of the abilities of touch screen, Bloom offers users the opportunity to learn through creating. Trained musicians and musicians at heart will find this tool to be an accessible means to experiment with sound. By touching the screen, the user influences the ambient sound of the application, affecting the pitch and rhythm of the music as it repeats and cycles through the input from the user. Based on how, where, and when the finger touches the screen, different sonorities and rhythms can be produced. Visualizations and rhythmically relevant colors provide an artistic backdrop to the Bloom experience (Opal Limited).

Band (iPod App)

Available from the iPod store for $3.99, Band can best be described as a miniature-recording studio. The user is able to record virtual instruments through use of touch screen technology. For example, as the user touches strings on a bass guitar, the strings of the bass vibrate. As piano keys are played, the user can see the keys depress. A close-up view of frets and keyboards allows and can also layer tracks on top of one another. Overdubbing can be done multiple times, and tracks can also be saved for later playback (MooCowMusic Ltd.).

Exploratorium (Online Tools)

This online virtual exhibit features six interactive music tools, aimed at allowing those who may or may not have a strong musical background the opportunity to explore and interact with the process of creating and experiencing music. The website strongly encourages the use of headphones while using the online tools, as it enhances the experience for the user.

Dot-Mixer: Dot mixer allows users to select various colored dots, and drag them into an open space on the screen. Once the dots have been put on the open space, they begin to come to life, producing different musical sounds and rhythms. The user can click on the dots to change the sounds they produce (which also alters the dots' colors), and can then build a virtual soundscape.

Kitchen Sink-O-Pation: A typical kitchen scene turns into a music-making portal. Users can hover over objects in the kitchen to hear the sound that each object makes, such as a wine glass, refrigerator, a clock, and a can of coffee beans. Each object can be turned on so that it will continue to sound after the user stops hovering over the image. The user can also click each kitchen accessory and watch it turn into another similar-sounding, but non-kitchen related object. The other categories of noisemakers are musical instruments (accordions, maracas, violins, etc.) and surreal objects (grasshopper, snake, crab, robot, etc.). The website offers information on the concept of visual dominance, and how many times our ears hear music, but what we hear then becomes influenced by visual cues.

Take the Beat Back: This portal examines the djembe, cajon, berimbau and steel pan. Included in the virtual exhibit are "devolutions", scientific information behind each instrument, demonstrations, history of each instrument, countries of origin, and biographies of each musician performing demonstrations (At the Palace of Fine Arts).

A History of African American Music (Online Tool)

Essentially an interactive timeline, this tool is available on Carnegie Hall's website and features historic figures, dates, songs, and performances. The timeline provides an excellent visual depiction of African American music and its place in history, dividing the traditions into sacred, secular, and jazz secular. By selecting a genre from the timeline, the user can learn more about the key contributors to the genre, and can also listen to examples of the genre. Also indicated on the timeline are key dates and programs from African American performances at Carnegie Hall. Users can determine the depth in which they investigate each genre, allowing for a flexible learning experience (Maultsby).

Creating Music (Online Tool)

An interactive portal for children (or a curious adult), Creating Music offers opportunities for the user to play educational games, compose, perform with Beethoven using computer keys, and learn and play major, natural minor, and harmonic minor scales.

Creating Your Own Music: Users can select an instrument, and "draw" a melody on a sketchpad. The horizontal space reflects note lengths, while the vertical space reflects pitch. The user has the option to select from multiple instruments such as

percussion, keyboard, clarinet, and trumpet, and also has the ability to adjust tempo during playback.

Playing With Music: The user is presented with Beethoven's Piano Sonata Op. 31, No. 3, and is prompted to tap keyboard keys to control the rhythm and sound of the piece, allowing the user to virtually play a Beethoven Sonata without a piano, or piano lessons. In addition, through using the numerical keyboard keys in the Playing With Scales section, users can play three different types of scales, using three different instrument types.

Hearing Music: Interactive learning modules allow users the opportunity to engage in skill building in the areas of pitch, melody, and rhythm. Colorful portals create a lively environment to improve on identifying these key musical concepts (Subotnick).

Visual Art Digital Learning Tools

Meritum Paint Pro (iPod App)

Available from the iPod store for $1.99, Meritum Paint Pro offers users the ability to create limitless pieces of visual art. This portable application responds to the force, speed, and direction of strokes across the screen. The user controls color and size of strokes as they press their finger against the screen. Completed art can be saved and used as backgrounds for mobile devices such as iPads and iPods (Meritum Soft d.o.o.).

Tate Kids Arts Lab (Online Tool)

Users learn about painting restoration and maintenance, while also getting to experience the process of actually dusting, cleaning, removing varnishing and

fixing cracks on artwork. The user selects from real works of art when choosing what to restore, and learns the names of several different paintings and artists during the selection process. The activity is educational, but also fun, since each step in the restoration process is timed, and the user receives a grade for how well, or how quickly they completed the step of the restoration. As an added bonus, the portal includes a link to an interactive online safety guide for young people (Britain).

JacksonPollock.org (Online Tool and Mobile App)

This interactive portal allows the user to paint virtually in the famous drip-style that Jackson Pollock is known for. By clicking the mouse while creating original Pollock-style paintings, the user is able to alter the color of the drip-style strokes, allow for a varied use of "brush" stroke and color (Manetas).

Smart History (Online Tool)

"In 2011 named one of Time's top 50 websites. It focuses on art history, from cave paintings to Warhol. And while the site calls itself a textbook, it's not the text — or even the illustrations — that make it special. It's the growing library of videos that feature spirited, unscripted conversations among historians about notable works. You can start in ancient times and work your way forward or browse the collection by artist, theme or medium." (Harris)

Line Match: Connect Artists to Their Work (Online Tool)

Aimed at increasing children's ability to recognize the work of noted painters and sculptors, the line match online activity provides a safe place for children to play and learn. By selecting an answer from a series of options while viewing a

particular work of art, users are told whether or not their selection is correct (Learning Games for Kids).

Artists and Their Origins (Online Tool)

After presenting the user with the name of an artist, the user is prompted to type in the country of that artist's origin. The tool then lets the user know whether or not the selection was correct. The entire activity spans eight questions, and at the end of each question, the user is told whether or not their answer is correct, and if their answer is not correct, they are informed of the correct answer (Learning Games for Kids).

Of the above-mentioned tools, the following tools were presented to the assembled focus group (See Appendix D for link to video coverage of focus group activities on YouTube):

Music Digital Learning Tools

- Band (iPod App)

- Exploratorium (Online Tools)

    o Creating Your Own Music

    o Playing With Music

    o Hearing Music

- A History of African American Music (Online Tool)

Visual Art Digital Learning Tools

- Tate Kids Arts Lab (Online Tool)

- JacksonPollock.org (Online Tool and Mobile App)

- Smart History (Online Tool)

FOCUS GROUP SUMMARY

Participants in the group consisted of a private piano teacher, a music teacher in the public school system, an art teacher in the public school system, and a program administrator of a music education non-profit organization. Three participants were female, one participant was male, and participants ranged in age from 22 to 37. One participant is a mother of two.

Part one of the focus group consisted of assessing the current sentiments that the participants had regarding technology and its role in their personal and professional lives. The most commonly identified technology tools used by the participants in their instructional practices were YouTube, recording software, and PowerPoint. YouTube has provided the participants with ways of sharing musical examples with their students, recording software has allowed the students to hear their own performances, and PowerPoint offers the participants' students to see and experience different works of art without a trip to a museum. In addition, the participants were asked about their use of technology in their personal lives. Tools common to the participants were Facebook, Garage Band, and YouTube.

When asked about their reaction to technology integration in arts education, all of the participants agreed that this practice is important. While the participants all had relatively positive reactions to the role of technology in education, it was expressed that it is not a replacement for traditional educators' methods and tools, but rather, should be viewed as supplemental. Participants also identified technology tools as a means by which students can explore new concepts in a self-guided way, and can use it to share their findings with others. Also, using such tools can create more active learning experiences, which is less passive than listening to a lecture. The group was in agreement that students use technology regularly, so it is a relatable tool in education.

The group was asked if they currently experience any obstacles in their own educational practices when incorporating technology. The most prominently identified barrier was access to appropriate resources, particularly when integrating technology in a school environment as opposed to private teaching experiences. Another surprising observation by a focus group participant was the placement of tools such as smart boards in classrooms. Often teachers are not consulted when a smart board is being installed, and such tools can be positioned in a place in the classroom that makes it difficult for the teacher to use. In this instance, the teacher does not use the smart board because the placement in the room prohibits effective use of the tool.

Following part one of the focus group, the participants were provided with laptops, and iPod, and the list of tool descriptions in Appendix A. Every participant spent time interacting with a single tool, took notes, and then moved

on to the next tool until they had experienced the three music education technology tools and the three visual art education technology tools. After the participants finished interacting with all of the tools, the moderator reconvened the group to discuss everyone's experiences with the tools.

Prior to discussing the participants' experiences with the tools, the moderator asked again about the participants' reactions to technology integration in arts education, as well as obstacles that they would foresee in using the tools they have just finished interacting with. When asked about their reaction to technology-integration after interacting with the tools, one participant stated that they would now be more inclined to use the tools after interacting with them. Also, it was expressed that the participants were not aware of the scope of available tools until having had the opportunity to interact with the six tools during the focus group. After being asked by the moderator to describe obstacles they might face in trying to utilize these tools, the participants again identified the primary obstacle as finances. School districts lacking adequate resources can interfere with teachers and students having successful experiences in technology integration. Another point made by the participants was the need for teacher training. There is a resistance for teachers to use technology in some instances because they lack appropriate training and comfort levels in using the technology tools, and in troubleshooting when things do not go as planned. The participants expressed that technology-integration should be a positive experience for both teacher and student, and if a teacher is not willing to invest in learning how to use

the technology because it is outside of their comfort zone or area of expertise, this can also be a barrier when integrating technology in lesson plans.

After having assessed the group's general thoughts about technology integration and obstacles, the moderator prompted the group to share their reactions to the individual tools:

Band

The participants did not rate this tool favorably with regard to accessibility for various reasons. One such reason was that having enough iPods to supply to students is a difficult feat in a classroom setting, especially if the students do not have access to personal iPods and must be reliant on what the school district can provide. In addition, the small screen of the iPod was not appealing to the participants as it might cause difficulty for adult students trying to decipher and interact with the tool on such a small screen. There was positive feedback with regard to cost effectiveness when implementing this tool in one on one music lessons however, since the application costs only $3.99, whereas other recording software can be expensive, with the exception of Garage Band.

When determining the age appropriateness of this tool, the participants seemed to agree that this is a tool for older students in late middle school and high school. It would provide these older students with a fundamental understanding of recording technology. It was also discussed that this tool could be used as an exploring device for students, allowing them to become familiar with the different sounds and sonorities of the band instruments, such as learning how high and low notes on the piano can be identified; however, this was not seen as a beneficial tool to help students gain more proficiency on their instrument.

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The group did feel that the tool was relevant to music education when it came to reinforcing concepts, and to serve as a teaching tool in developing new skills as students implement knowledge they already have in the use of this tool.

Exploratorium (Dot Mixer, Kitchen Sink, Take the Beat Back)

The focus group found all three tools on the Exploratorium site to be accessible and interactive. The instructions were clear, and made learning accessible to different types of learners, such as visual learners. One noted tool among the three on this site was Take the Beat Back, which took the user on a tour of information as the participants clicked through the links on the pages.

While there were conflicting opinions regarding the age appropriateness of the Dot Mixer, the focus group resolved that the age appropriateness would depend on what you would expect the older versus younger student to take away from using the tools. For example, the Dot Mixer contained information on higher-level concepts such as the science of sound. So while an older student would be able to appreciate and understand the higher-level thinking necessary when grasping those concepts, a younger student could still gain value from the visual cues for sound in the interactive components of the tool. In addition, in teaching younger students, the participants felt that the tool could be useful in helping to correlate sounds to colors. The participants agreed that while younger students might not be able to understand exactly what scientific elements are effecting what is happening on screen, the sensory connection is still being made.

It was expressed by one participant that this website, above all of the other tools examined by the focus group, made the strongest connection in terms of

cross-curricular learning, touching on subjects such as art, geography, and science.

History of African American Music

The focus group felt that this site was very user friendly and accessible in how it was organized. The group commented on the color-coded component and the ability to use the colors to explore various traditions within African American Music. In addition, the participants appreciated the ability to explore the timeline through searching by artist, music genres, and date. They felt that even if a student only knew a few things about what they were researching, the timeline would be an effective tool for filling in missing information.

While the participants agreed that the historical information on this site was very dense, they felt that with the appropriate reading level, students as young as 4th grade will benefit from this tool, and will find it accessible. Beyond 4th grade, the focus group felt that the potential for this site to serve as an effective learning tool was unlimited, with different levels of learning possible. For younger students, or in classrooms that lack computers for each student, one participant suggested that using a projector and investigating and exploring the site, as a class would be a successful use of the tool. All participants felt that the photos, historical information and musical selections allowed the site to appeal to many different senses.

All participants felt that this tool was relevant to music education, and felt that this tool offered a less-dry way to explore history with students. One participant expressed in particular that the musical aspects act as a vehicle to learn

the historical side of African American music history. There was also thought to be a cross-curricular literacy element within the website, since the lyrics of many songs were listed alongside the recordings. With regard to the experiential aspect of the tool, the participants agreed that a lot of exploring was needed to discover all that the website had to offer. The experience of navigating the website was compared to reading a book, and one participant commented that this may be a tool that a student would be inclined to continue to use outside of the classroom.

Tate Kids Art Lab

Incorporated in the Art Lab tool was a timed grading component. The majority of the focus group participants did not respond positively to this aspect, and felt that it affected the accessibility of the tool, as it made them feel hurried and unable to really experience maintaining the various works of art. The participants that reacted poorly to the grading and timing aspect of the tool also felt that younger students who might otherwise enjoy the art lab would find it too challenging, and would not understand the concept of being graded. However, one participant remarked that it might motivate students to go back and try the tool again. The other participants did think there might be merit to this concept for some students.

The focus group participants agreed that this tool offered information related to art history, in addition to information on what happens during the restoration process when facilities work to restore and maintain pieces of art. One participant commented that the tool brought to light to a concept that young people studying art might not think of, making the concept of art restoration more

understandable for students. It was also stated by a participant that it is difficult to provide students with the real-life experience of restoring a painting, and this tool gives the students the virtual experience and also helps to educate the students on this concept in a virtual environment.

JacksonPollock.org

The focus group came to a consensus regarding the accessibility of this tool, commenting on the ease of use. Also, it was felt that the tool is appropriate for all ages, but because of the lack of background information on the website about who Jackson Pollock is and why his art is important, this tool would need to be contextualized with a lesson plan. While the tool was considered accessible to students of all ages, it was expressed that older students may easily get bored with this tool because of its ease of use. While the focus group felt that this tool provided a positive experience to students, it was felt that the educational value was lacking, and that it should be considered a supplemental tool, and perhaps, a reward-based activity to be reserved for the end of class. The participants did agree that although there is not significant educational value gained from using this tool on its own, that the experiential value still holds a valuable place in the classroom.

Smarthistory

The focus group was in agreement that this tool was very accessible to use. The tool opened with a brief video presentation, and then the user is directed to the website to explore. The biggest take away for the focus group was that the paintings available for viewing on this website are paintings that most people will

never get to see. Having access to these noted works via a website offers the user the opportunity to experience the pieces without having to fly all over the world. The participants also commented on the rich resources available on the site, which included written information, videos, and pictures, providing great visuals to students. Despite the fact that the website would require computers and Internet access for classroom use, the participants felt that the fact that this resource was free made it very affordable, since high quality reproductions are difficult to come by, and most sites like this require paying a monthly fee.

Participants expressed that this website would require an upper reading level, and would be most beneficial to middle school, high school, and even college students. It was stated that not only were there exciting elements to cite, but that it allowed you to pinpoint learning topics. One participant suggested students participating in a guided learning experience with the website, where their teacher would provide them with a list of questions and the students would explore the website to discover the answers.

CONCLUSION

The following is a listing of the six technology tools analyzed by the focus group, with the most noted findings identified during the research process indicated. This list is intended to serve as a resource to classroom teachers, administrators, private teachers, and other music and visual art education professionals when considering technology integration in their instructional practices:

- Band (available for iPod)
    - Cost prohibitive due to iPod use
    - Most appropriate for middle and high school aged students
    - Most beneficial as an exploring and recording device than for instrument proficiency
    - Small screen may negatively impact user experience—best used on iPad
- Exploratorium
    - Accessible and interactive
    - User friendly for students of all ages
    - Strong in cross-curricular learning.

- Older students benefit most from the higher-level educational concepts on the site (history, art, science)

    o Sensory experience

- History of African American Music

    o Well-organized and user-friendly

    o Most appropriate for students in grades 4 and up

    o Effective in classroom teaching through use of a projector

    o An exciting resource for teaching history to students, as musical components are a vehicle for learning about history

- Tate Kids Art Lab

    o Incorporates timed components which are graded

    o Easy to use

    o Timing and grading negatively impacts the experience for young students

    o Highlights a component of art education that students do not normally consider (art restoration)

    o Provides students with a virtual experience that they would be unlikely to replicate in real life

- JacksonPollock.org

    o Very easy to use

    o Appropriate for all ages; older students may get bored

    o Lacks educational value

o Should be paired with a lesson plan on Jackson Pollock to contextualize

- Smarthistory

    o Very easy to use

    o Inexpensive, because high quality reproduction websites normally charge a monthly fee, and this tool is free

    o Best for middle, high school, and college students due to reading level required (good for research projects)

    o Offers user ability to see artwork they may never see in real life

    o Multi-media components add richness to the experience of using the tool

While this list and its descriptions are intended to serve as a resource to educators, it is important that educators continue to explore new technology tools as they become available. Innovative tools emerge with constancy, and as technology evolves and changes, adaptive educators who are able to provide lesson plans and educational experiences that are relevant to youth will be highly valuable. In addition, not every tool that is available will enhance the learning process; so being shrewd when considering the value of technology tools is imperative to the thoughtful integration of technology in arts-based education. Continued discussions amongst colleagues in the arts and education world can pave the way for insightful outcomes regarding effectively implementing emerging technologies in ways that are beneficial to both educators and students.

APPENDICES

APPENDIX A

FOCUS GROUP EXERCISE WORKSHEET

Focus Group Exercise:
Visual Art and Music Education Digital Tool Descriptions

MUSIC TOOL

<u>Band (iPod App)</u>
Available from the iPod store for $3.99, Band can best be described as a miniature-recording studio. The user is able to record virtual instruments through use of touch screen technology. For example, as the user touches strings on a bass guitar, the strings of the bass vibrate. As piano keys are played, the user can see the keys depress. A close-up view of frets and keyboards allows and can also layer tracks on top of one another. Overdubbing can be done multiple times, and tracks can also be saved for later playback.

USER NOTES:

MUSIC TOOL

<u>Exploratorium (Online Tools):</u> http://www.exploratorium.edu/
This online virtual exhibit features six interactive music tools, aimed at allowing those who may or may not have a strong musical background the opportunity to explore and interact with the process of creating and experiencing music. The website strongly encourages the use of headphones while using the online tools, as it enhances the experience for the user.

Dot-Mixer: Dot mixer allows users to select various colored dots, and drag them into an open space on the screen. Once the dots have been put on the open space, they begin to come to life, producing different musical sounds and rhythms. The user can click on the dots to change the sounds they produce (which also alters the dots' colors), and can then build a virtual soundscape.

Kitchen Sink-O-Pation: A typical kitchen scene turns into a music-making portal. Users can hover over objects in the kitchen to hear the sound that each object makes, such as a wine glass, refrigerator, a clock, and a can of coffee beans. Each object can be turned on so that it will continue to sound after the user stops hovering over the image. The user can also click each kitchen accessory and watch it turn into another similar-sounding, but non-kitchen related object. The other categories of noisemakers are musical instruments (accordions, maracas, violins, etc.) and surreal objects (grasshopper, snake, crab, robot, etc.). The website offers information on the concept of visual dominance, and how many times our ears hear music, but what we hear then becomes influenced by visual cues.

Take the Beat Back: This portal examines the djembe, cajon, berimbau and steel pan. Included in the virtual exhibit are "devolutions", scientific information behind each instrument, demonstrations, history of each instrument, countries of origin, and biographies of each musician performing demonstrations.

USER NOTES:

MUSIC TOOL

A History of African American Music (Online Tool):
http://www.carnegiehall.org/honor/history/index.aspx
Essentially an interactive timeline, this tool is available on Carnegie Hall's website and features historic figures, dates, songs, and performances. The timeline provides an excellent visual depiction of African American music and its place in history, dividing the traditions into sacred, secular, and jazz secular. By selecting a genre from the timeline, the user can learn more about the key contributors to the genre, and can also listen to examples of the genre. Also indicated on the timeline are key dates and programs from African American performances at Carnegie Hall. Users can determine the depth in which they investigate each genre, allowing for a flexible learning experience.

USER NOTES:

VISUAL ART TOOL

Tate Kids Arts Lab (Online Tool)
http://kids.tate.org.uk/games/art-lab/
Users learn about painting restoration and maintenance, while also getting to experience the process of actually dusting, cleaning, removing varnishing and fixing cracks on artwork. The user selects from real works of art when choosing what to restore, and learns the names of several different paintings and artists during the selection process. The activity is educational, but also fun, since each step in the restoration process is timed, and the user receives a grade for how well, or how quickly they completed the step of the restoration. As an added bonus, the portal includes a link to an interactive online safety guide for young people.

USER NOTES:

VISUAL ART TOOL

JacksonPollock.org (Online Tool and Mobile App): http://jacksonpollock.org/
This interactive portal allows the user to paint virtually in the famous drip-style
that Jackson Pollock is known for. By clicking the mouse while creating original
Pollock-style paintings, the user is able to alter the color of the drip-style strokes,
allow for a varied use of "brush" stroke and color.

USER NOTES:

VISUAL ART TOOL

<u>Smart History (Online Tool):</u> http://smarthistory.khanacademy.org/
In 2011 named one of Time's top 50 websites. "Smarthistory focuses on art history, from cave paintings to Warhol. And while the site calls itself a textbook, it's not the text — or even the illustrations — that make it special. It's the growing library of videos that feature spirited, unscripted conversations among historians about notable works. You can start in ancient times and work your way forward or browse the collection by artist, theme or medium (McCracken)."

USER NOTES:

APPENDIX B
FOCUS GROUP QUESTIONS

Questions to be asked before focus group exercise
Establishing the focus group's sentiments regarding technology's role in arts-based educational:

1. Describe your current use of technology in your instructional practices.
2. Describe your current personal use of technology?
3. What is your reaction to technology integration in arts-based education?
4. If applicable, describe any obstacles/limitations that currently prevent you from incorporating technology in your current educational practices.

FOCUS GROUP EXERCISE IS CONDUCTED

Questions to be asked after focus group exercise
Assessing the focus group's sentiments regarding technology after interacting with the various arts-based technology tools:

1. Do you see technology playing a role in your future instructional practices? If so, in what ways do you see it playing a role?
2. If applicable, describe any obstacles/limitations that may prevent you from incorporating technology in your future educational practices.

Assessing the focus group's experience with the various arts-based technology tools (The following questions will be asked pertaining to each of the six selected technology tools):

1. How would you describe the tool's ease of use and accessibility?
    a. For what age of student do you feel this tool is most appropriate?
2. How would you describe the tool's cost effectiveness and affordability?
3. How would you describe the relevance of this tool to visual art/music education?
4. How would you describe the educational value of this tool?
5. How would you describe the experiential value of this tool?

APPENDIX C
PRELIMINARY RESEARCH:
DIGITAL MUSIC AND VISUAL ARTS EDUCATION TOOLS

Music/Visual Art	Name of Tool	Internet/App	URL	Description	Citation
M	Ricci Adams' Music Theory . Net	I	http://www.musictheory.net/	Online music theory tools, games, educational guides.	Adams, Ricci. musictheory.net, LLC, "Ricci Adams' musictheory.net." Accessed January 11, 2012. http://www.musictheory.net/.
VA	Learn to Draw!	A	http://itunes.apple.com/app/learn-to-draw!/id308382745?mt=8	With Learn to Draw!, children will learn that drawing ability will improve with practice. If they keep a portfolio of their work, after a few months they will be able to look back and see how much their work has improved since the earlier attempts. This is a vital skill to instill in children, that with hard work, success will come.	Aedeas Group, LLC, "Learn to Draw!." Accessed March 11, 2012. http://itunes.apple.com/app/learn-to-draw!/id308382745?mt=8.
M	Exploratorium	I	http://www.exploratorium.edu/music/exhibits/index.html	Maybe you've never really considered yourself very musical. Maybe you quit the flute three months after you picked it up. That's okay. Music is in all of us, and even just by popping a CD into the stereo, you're tapping into its power.	At the Palace of Fine Arts, "Exploratorium Online Exhibits." Accessed March 11, 2012. http://www.exploratorium.edu/music/exhibits/index.html.
M	PocketGuitar	A	http://itunes.apple.com/app/pocketguitar/id287965124?mt=8	PocketGuitar turns your iPhone or iPod touch into a virtual guitar. You can press and strum strings, just like a real guitar.	Bonnet, Inc., "Pocket Guitar." Accessed March 11, 2012. http://itunes.apple.com/app/pocketguitar/id287965124?mt=8.

VA	Tate Kids Arts Lab	I	http://kids.tate.org.uk/games/art-lab/	Students have the opportunity to help repair the collections in an art museum.	Britain, Tate. Tate, "Tate Kids." Accessed March 11, 2012. http://kids.tate.org.uk/games/art-lab/.
M	Pocket Shaker	A	http://itunes.apple.com/app/pocket-shaker/id31313 9592?mt=8	* Shake along with your iPod music! * Also tap the screen to play it! * 10 percussion instruments * Precise shaking recognition * Realistic sounds * Images of the instruments * Small download size (less than 1MB)	Cam-Hoan Ton-That, "Pocket Shaker." Accessed March 11, 2012. http://itunes.apple.com/app/pocket-shaker/id313139592?mt=8.
M	Turntable	I	turntable.fm	Online virtual DJ-ing community	Chasen, Billy. turntable, "turntable Play Music Together.." Accessed January 11, 2012. http://turntable.fm/.
M	Karajan® Beginner - Music & Ear Trainer	A	http://www.karajan-eartrainer.com/en/	Karajan Beginner is the free version of Karajan, an easy to use music and ear training application for the iPhone and iPod Touch. It provides lessons for learning to recognize intervals, chords, scales, pitch and tempo (bpm) with detailed statistics. Karajan is a great tool for music theory students, whether they are in junior high, high school, or college. It is also very useful for every hobby musician.	Eliette and Herbert von Karajan Institute, "Karajan Music & Ear Trainer." Accessed January 11, 2012. http://www.karajan-eartrainer.com/en/.
M	Drum Session	I	http://www.agame.com/game/drum-session.html	Interactive online drum set	Everything But Sounds kornmangames, "drumsession." Accessed January 11, 2012. http://www.agame.com/game/drum-session.html.
M	Les Paul's 65th Birthday Google Guitar	I	http://www.google.com/logos/2011/lespaul.html	Virtual guitar	Google, "Google." Accessed January 11, 2012. http://www.google.com/logos/2011/lespaul.html.
VA	Smart History	I	http://smarthistory.khanacademy.org/	In 2011 named one of Time's top 50 websites. focuses on art history, from cave paintings to Warhol. And while the site calls itself a textbook, it's not the text — or even the illustrations — that make it special. It's the growing library of videos that feature spirited, unscripted conversations among historians about notable works. You can start in ancient times and work your way forward or browse the collection by artist, theme or medium.	Harris, Beth, and Steven Zucker. Smarthistory, "Smarthistory presented by KHAN ACADEMY." Accessed March 11, 2012. http://smarthistory.khanacademy.org/.
VA	Graffiti Writer	I	http://www.graffwriter.com/graffwriter.php	This graffiti generator allows you to easily create fresh pieces & tags saying anything you choose. Make anything from your name in graffiti to complex banners & designs in a variety of modern graffiti styles.	Highground Industries, "GraffWriter.com." Accessed March 11, 2012. http://www.graffwriter.com/graffwriter.php.

VA	Line Match: Connect the Artists to Their Work	I	http://www.learninggamesforkids.com/music_and_art_games/music_and_art_games_artist_artwork.html	Children play a fun matching game to learn to identify artists with their masterpieces.	Learning Games for Kids, "Art Games and Music Games for Kids." Accessed March 11, 2012. http://www.learninggamesforkids.com/music_and_art_games/music_and_art_games_artist_artwork.html.
VA	Artists and Their Origins	I	http://www.learninggamesforkids.com/music_and_art_games/music_and_art_games_artist_origin.html	Identify the country of origin of the artist named.	Learning Games for Kids, "Art Games and Music Games for Kids." Accessed March 11, 2012. http://www.learninggamesforkids.com/music_and_art_games/music_and_art_games_artist_origin.html.
VA	Mondrimat	I	http://www.stephen.com/mondrimat/	The MONDRIMAT is a simple system which lets you experiment with space, color and visual rhythm in accordance with the theories of Piet Mondrian. For some reason pleasing, stimulating, even exciting results seem to occur quite frequently.	Linhart, Stephen. Stephen Linhart, "Mondrimat." Accessed March 11, 2012. http://www.stephen.com/mondrimat/.
VA	This is Sand	I	http://thisissand.com/	Here you can change the color of the falling sand in order to create interesting sand art.	Lundberg, Johanna, and Jenna Sutela. thisissand.com, "thisissamd.com." Accessed March 11, 2012. http://thisissand.com/.
VA	Jackson Pollock.org	I	jacksonpollock.org	Created by Miltos Manetas, this app lets you try your hand at digital drip painting, similar to the works of the American artist Jason Polllock. This drawing application is simple enough to be used by children of all ages - including toddlers. Has been named one of TIme magazine's top 50 websites.	Manetas, Miltos. MSA Visuals Ltd, "Jackson Pollock." Accessed March 11, 2012. http://itunes.apple.com/app/jackson-pollock-by-miltos/id303254149?mt=8.
VA	Jacksonpollock.org	I	jacksonpollock.org	Created by Miltos Manetas, this site lets you try your hand at digital drip painting, similar to the works of the American artist Jason Polllock. This drawing application is simple enough to be used by children of all ages - including toddlers. Has been named one of TIme magazine's top 50 websites.	Manetas, Miltos. MSA Visuals Ltd, "Jackson Pollock." Accessed March 11, 2012. http://jacksonpollock.org/.
M	Quaver's mArvelous World of Music	I	Quavermusic.com	Online music theory tools, games, educational guides. Interactive with avatar.	Mastran, David V., and Graham Hepburn. QuaverMusic.com, LLC, "Quaver's Marvelous World of Music." Accessed January 11, 2012. http://www.quavermusic.com.
M	A History of African American Music	I	http://www.carnegiehall.org/honor/history/index.aspx	An interactive timeline with audio examples and detailed biographies of great African American musicians and composers.	Maultsby, Portia K. Carnegie Hall Corporation, "A History of African American Music ." Accessed March 11, 2012. http://www.carnegiehall.org/honor/history/index.aspx.

VA	Meritum Paint Pro	A	http://www.ap policious.com/ omg/apps/255 996-meritum-paint-pro-meritum-soft-d-o-o/developer_n otes	Meritum Paint Pro, a place where you create unique artwork with simple strokes of your fingers! Used by both professionals and amateurs, Meritum Paint lets your imagination take you on a fun and exciting journey where everyone is and can be a true artist! Cost is $1.99	Meritum Soft d.o.o., "Meritum Paint Pro." Accessed March 11, 2012. http://itunes.apple.com/us/app /meritum-paint-pro/id378370633?mt=8.
M	Band	A	http://itunes.a pple.com/app/ band/id28385 3762?mt=8	The instruments provide visual feedback, so that piano keys and bass guitar strings animate when pressed. All the instruments can be recorded, overdubbed multiple times, and mixed together into a final track, which can be saved for later playback. Band also features the innovative "Twelve Bar Blues" instrument, that enables anyone to play amazing blues backing and guitar solos.	MooCowMusic Ltd., "Band." Accessed March 11, 2012. http://itunes.apple.com/app/ba nd/id283853762?mt=8.
M	Rhythmati c FREE	A	http://www.ap policious.com/ games/apps/81 4862-rhythmatic-free-thomas-p-mullaney-ii/developer_n otes	Play to YOUR OWN SONGS with the ultimate rhythm game! Rhythmatic is specially designed to analyze and create tracks to your own music library right on your device! This is the moment your inner rock star has been waiting for. Finally, you can play along to all your music -- whether you're a beginner or a seasoned expert, there will be endless challenging and fun gameplay along the way!	Mullaney, Thomas. Revoc Technologies, "Rhythmatic FREE." Accessed January 11, 2012. http://itunes.apple.com/us/app /rhythmatic-free/id464592678?mt=8.
M	Robin Hood Melodic Dictation	I	www.smartbo ardmusic.org/f ree_music_ga mes/EN_robin _hood_domay or_doremifaso l.swf	Interactive melodic dictation tool	Musica Accion, "Smart Board Music." Accessed January 11, 2012. www.smartboardmusic.org/fr ee_music_games/EN_robin_h ood_domayor_doremifasol.s wf.
M	Virtuoso Piano	A	http://www.ap policious.com/ music/apps/52 2572-virtuoso-piano-free-3-peter-nagy	"Another free gem" - Engadget"Producing a surprisingly realistic sound as you tap away" - The Sunday Times"New and Noteworthy" - AppleVirtuoso, the world's most popular Multi-Touch piano ever, is back with amazing new features. Built upon the critically acclaimed app, it's the most beautiful sounding piano you've ever seen. And it's still free.	Nagy, Peter. Peterb, "Virtuoso Piano Free 3." Accessed March 11, 2012. http://itunes.apple.com/us/app /virtuoso-piano-free-3/id391994966?mt=8.
M	Karaoke Party	I	http://www.ka raokeparty.co m/en/	Online karaoke singing that rates your pitch, allowing singers to improve their skills.	Oberg, Mattias. Karaokeparty Online Gaming AB, "Karaoke Party." Accessed January 11, 2012. http://www.karaokeparty.com /en/`.

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M	Bloom	A	http://itunes.apple.com/app/bloom/id292792586?ign-mpt=uo%3D4&mt=8	Part instrument, part composition and part artwork, Bloom's innovative controls allow anyone to create elaborate patterns and unique melodies by simply tapping the screen. A generative music player takes over when Bloom is left idle, creating an infinite selection of compositions and their accompanying visualizations.	Opal Limited, "Bloom." Accessed March 11, 2012. http://itunes.apple.com/app/bloom/id292792586?ign-mpt=uo=4&mt=8.
VA	Editor by Pixlr.com	I	http://pixlr.com/editor/	Online photo editing	pixlr.com, "pixlr.com." Accessed March 11, 2012. http://pixlr.com/editor/.
M	Creating Music	I	www.creatingmusic.com	Morton Subotnick's Creating Music Creatingmusic.com is a children's online creative music environment for children of all ages. It's a place for kids to compose music, play with musical performance, music games and music puzzles. Come discover fun and easy ways to make music!	Subotnick, Morton. Kagi, "Creating Music." Accessed March 11, 2012. http://www.creatingmusic.com/.
VA	Sheffield's Portraits	I	http://www.mylearning.org/intermediate-interactive.asp?type=4&journeyid=144	This is a basic portrait maker where students choose eyes, nose, hair, etc. What I like about it is the ability to print the final portrait, which comes with a place for students to write about the character they created.	The Digital Learning Agency, "Sheffield's Portraits." Accessed March 11, 2012. http://www.mylearning.org/intermediate-interactive.asp?type=4&journeyid=144.
VA	Destination Modern Art	I	http://www.moma.org/interactives/destination/#	From the Museum of Modern Art, this interactive online website speaks to students about art — literally reading out the instructions, a help for students who do not read well. Students of all abilities can explore and use this site to learn about different interpretive ideas, practice vocabulary, learn how art is created, and much more.	The Museum of Modern Art, "Destination Modern Art." Accessed March 11, 2012. http://www.moma.org/interactives/destination/
VA	Brain Training Games	I	http://www.zefrank.com/dtoy_vs_byokal/	Draw on the virtual radar and see your animated kaleidoscope come to life.	zefrank.com, "zefrank.com MANY HAVE COME, BUT I LIKE YOU THE BEST!." Accessed March 11, 2012. http://www.zefrank.com/dtoy_vs_byokal/.

APPENDIX D
VIDEO OF FOCUS GROUP ACTIVITIES

http://youtu.be/Ph8KoLpREyY

APPENDIX E
FOCUS GROUP CONSENT FORM

Consent to Participate in Focus Group
DIGITAL TOOL CAPABILITIES:
VISUAL ART AND MUSIC EDUCATION

Investigator
Lindsay Fletcher will be conducting this study. Ms. Fletcher is a Master's degree candidate in the Arts Administration program at Drexel University.

Purpose and Invitation
Your participation is requested in a focus group that will examine digital tool capabilities in arts-based education.

Voluntary Participation
Your consent to participate in this study is voluntary and unpaid, although refreshments will be available to participants during the focus group activities. If you choose to withdraw your consent at any time, any feedback or information that you provide during the focus group will be deleted from the study.

Methods/Procedures
Data will be collected during a focus group, which will include:
- A moderated group question and answer session
- An exercise where participants will interact with several web and application-based arts education tools
- A post-exercise group question and answer session

All activities related to the focus group will take place on a single day, and will be videotaped and archived using YouTube. No names will be used in the making of the video, and if names are used, they will be edited out of the finished video. Unedited footage will be permanently deleted. The researcher will refer to the footage while analyzing the subjects addressed during the focus groups, but no names will be used in any written materials.

Confidentiality

You will not be asked your name during focus group sessions if you elect to participate in this study. Strict confidentiality will be practiced throughout the evaluation and no names will be disclosed in any written or videoed materials; however, direct quotes may be referenced in written materials, but no names will be specified in relation to these quotes. At the conclusion of the focus group, you will be asked to indicate in writing if there is anything you said during the focus group that you would not like included in the edited video, or that you would not like to be quoted as saying in any written materials. At this time, information you indicate to the researcher that you would not like included will be stricken from the video, and it will be ensured that your comments will not appear in any written materials.

Risks and Benefits
No anticipated physical risks are anticipated in conducting this study. Participants in the focus group will be asked to keep focus group activity and discussions confidential. If for any reason you are not able to participate in the group question and answer session, you may request an individual interview so that your responses will not be accessible to the other group participants.

Participants in the focus group will benefit from learning about the technology-integration practices of other visual art and music education professionals, while also getting to experience and provide commentary on web and application-based visual art and music technology tools. The information derived from the focus group will also result in critical findings that will provide the field with the ability to make better-informed decisions regarding technology-integration in visual arts and music education.

Questions
Should you have questions about this study, you may contact Lindsay Fletcher at lindsayfletcher88@gmail.com and she will be happy to assist you.

Authorization
Your signature below acknowledges that you have read this consent form in its entirety and are in agreement with the guidelines and information described above.

_____
Participant Name (Printed)

_____
Participant Signature

_____
Date

_____
Researcher Signature

REFERENCES

Adams, Ricci. musictheory.net, LLC, "Ricci Adams' musictheory.net." Accessed January 11, 2012. http://www.musictheory.net/.

Aedeas Group, LLC, "Learn to Draw!." Accessed March 11, 2012. http://itunes.apple.com/app/learn-to-draw!/id308382745?mt=8.

Anonymous. Internet overload? 2010. *Scholastic News.*

Anonymous. Left to their own devices: Burst media survey shows technology gadgets have infiltrated daily life. 2010. *Business Wire* 2010.

Alvermann, Donna. 2004. Media, information communication technologies, and youth literacies: A cultural studies perspective. *American Behavioral Scientist* 48 (1): 78,78-83.

At the Palace of Fine Arts, "Exploratorium Online Exhibits." Accessed March 11, 2012. http://www.exploratorium.edu/music/exhibits/index.html.

Bauer, William I., Sam Reese, and Peter A. McAllister. 2003; 2003. Transforming music teaching via technology: The role of professional development. *Journal of Research in Music Education* 51 (4) (Winter): 289,289-301.

Bonnet, Inc., "Pocket Guitar." Accessed March 11, 2012. http://itunes.apple.com/app/pocketguitar/id287965124?mt=8.

Britain, Tate. Tate, "Tate Kids." Accessed March 11, 2012. http://kids.tate.org.uk/games/art-lab/.

Buffington, Melanie L. 2010. Podcasting possibilities for art education. *Art Education* 63 (1) (January): 11-6.

Burton, David. 2010. Web-based student art galleries. *Art Education* 63 (1) (January): 47-52.

Cam-Hoan Ton-That, "Pocket Shaker." Accessed March 11, 2012.
    http://itunes.apple.com/app/pocket-shaker/id313139592?mt=8.

Chasen, Billy. turntable, "turntable Play Music Together.." Accessed January 11,
    2012. http://turntable.fm/.

Cooper, Will. 2011. Nma research uncovers kids' digital habits. (cover story).
    New Media Age (02/24): 01-3.

The Digital Learning Agency, "Sheffield's Portraits." Accessed March 11, 2012.
    http://www.mylearning.org/intermediate-
    interactive.asp?type=4&journeyid=144.

Dunkels, Elza, Gun-Marie Franberg, and Camilla Hallgren. 2011. Youth culture
    and net culture; online social practices. *Reference and Research Book News*
    26 (3): n/a.

Eliette and Herbert von Karajan Institute, "Karajan Music & Ear Trainer."
    Accessed January 11, 2012. http://www.karajan-eartrainer.com/en/.

Everything But Sounds kornmangames, "drumsession." Accessed January 11,
    2012. http://www.agame.com/game/drum-session.html.

Fairlie, Rik. 2010. The products, services, and technology that defined a decade:
    Thanks to these 10 game changers in the tech world, our daily lives will
    never be the same. 01; 2011/11.

Feldstein, Sandy. 2001; 2001. Music education and technology: Past, present, and
    future. *Teaching Music* 9 (3) (Dec): 26,26-28.

Frank, Biocca. 2000. New media technology and youth: Trends in the evolution
    of new media. *Journal of Adolescent Health* 27 (2, Supplement 1) (8): 22-9.

Google, "Google." Accessed January 11, 2012.
    http://www.google.com/logos/2011/lespaul.html.

Hampton, Keith, Lauren Sessions Goulet, Lee Rainie, and Kristen Purcell. "Social
    networking sites and our lives ." *Pew Internet and American Life Project*.
    (2011). http://pewinternet.org/Reports/2011/Technology-and-social-
    networks/Summary.aspx (accessed November 25, 2011).

Harris, Beth, and Steven Zucker. Smarthistory, "Smarthistory presented by
    KHAN ACADEMY." Accessed March 11, 2012.
    http://smarthistory.khanacademy.org/.

Highground Industries, "GraffWriter.com." Accessed March 11, 2012.
    http://www.graffwriter.com/graffwriter.php.

Inan, Fethi A., and Deborah L. Lowther. 2010. Factors affecting technology
    integration in K-12 classrooms: A path model. *Educational Technology,
    Research and Development* 58 (2): 137,137-154.

Ito, Mizuko. *Hanging out, messing around, and geeking out : Kids living and
    learning with new media*. Vol. (OCoLC)646857127; ebrary 2011.01.

Keengwe, Jared, and Grace Onchwari. 2009. Technology and early childhood
    education: A technology integration professional development model for
    practicing teachers. *Early Childhood Education Journal* 37 (3): 209,209-218.

Learning Games for Kids, "Art Games and Music Games for Kids." Accessed
    March 11, 2012.
    http://www.learninggamesforkids.com/music_and_art_games/music_and_art
    _games_artist_artwork.html.

Learning Games for Kids, "Art Games and Music Games for Kids." Accessed
    March 11, 2012.
    http://www.learninggamesforkids.com/music_and_art_games/music_and_art
    _games_artist_origin.html.

Linhart, Stephen. Stephen Linhart, "Mondrimat." Accessed March 11, 2012.
    http://www.stephen.com/mondrimat/.

Lopez, Laura, Danny Daneau, Susan Merrill Rosoff, and Kristin G. Congdon.
    2008; 2008. The individual video experience (iVE): The iPod as an
    educational tool in the museum. *Art Education* 61 (1) (Jan): 13,13-18.

Lundberg, Johanna, and Jenna Sutela. thisissand.com, "thisissamd.com."
    Accessed March 11, 2012. http://thisissand.com/.

Manetas, Miltos. MSA Visuals Ltd, "Jackson Pollock." Accessed March 11, 2012.
    http://itunes.apple.com/app/jackson-pollock-by-miltos/id303254149?mt=8.

Mastran, David V., and Graham Hepburn. QuaverMusic.com, LLC, "Quaver's
    Marvelous World of Music." Accessed January 11, 2012.
    http://www.quavermusic.com.

Maultsby, Portia K. Carnegie Hall Corporation, "A History of African American
    Music ." Accessed March 11, 2012.
    http://www.carnegiehall.org/honor/history/index.aspx.

McCracken, Harry. "The 50 Best Websites of 2011." *Time Magazine,* 08 16, 2011. http://www.time.com/time/specials/packages/article/0,28804,2087815_208791 5_2087909,00.html (accessed April 20, 2012).

Meritum Soft d.o.o., "Meritum Paint Pro." Accessed March 11, 2012. http://itunes.apple.com/us/app/meritum-paint-pro/id378370633?mt=8.

Miners, Zach. 2009. Classroom technology integration. *District Administration* 45 (4) (04): 35-8.

MooCowMusic Ltd., "Band." Accessed March 11, 2012. http://itunes.apple.com/app/band/id283853762?mt=8.

Musawi, Ali Sharaf Al. 2011. Redefining technology role in education. *Creative Education* 2 (06; 2011/11): 130+.

The Museum of Modern Art, "Destination Modern Art." Accessed March 11, 2012. http://www.moma.org/interactives/destination/

Musica Accion, "Smart Board Music." Accessed January 11, 2012. www.smartboardmusic.org/free_music_games/EN_robin_hood_domayor_do remifasol.swf.

Nagy, Peter. Peterb, "Virtuoso Piano Free 3." Accessed March 11, 2012. http://itunes.apple.com/us/app/virtuoso-piano-free-3/id391994966?mt=8.

National education technology plan. 2010. ,11/12; 2011/11, 2010.

Oberg, Mattias. Karaokeparty Online Gaming AB, "Karaoke Party." Accessed January 11, 2012. http://www.karaokeparty.com/en/`.

Opal Limited, "Bloom." Accessed March 11, 2012. http://itunes.apple.com/app/bloom/id292792586?ign-mpt=uo=4&mt=8.

Partti, Heidi, and Sidsel Karlsen. 2010; 2010. Reconceptualising musical learning: New media, identity and community in music education. *Music Education Research* 12 (4) (Dec): 369.

pixlr.com, "pixlr.com." Accessed March 11, 2012. http://pixlr.com/editor/.

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

Roman, Harry T. 2009. Technology education and the arts. *Technology Teacher* 69 (3) (11): 12-4.

Scherer, Marge, and Karen Cator. 2011. Transforming education with technology. *Educational Leadership* 68 (5) (02): 17-21.

Schertenleib, S., M. Gutierrez, F. Vexo, and D. Thalmann. 2004. Conducting a virtual orchestra. *Multimedia, IEEE* 11 (3): 40-9.

Subotnick, Morton. Kagi, "Creating Music." Accessed March 11, 2012. http://www.creatingmusic.com/.

Watkins, S. Craig. *The young and the digital : What the migration to social-network sites, games, and anytime, anywhere media means for our future.* Vol. PromptCat batch update 2009.10.27.

zefrank.com, "zefrank.com MANY HAVE COME, BUT I LIKE YOU THE BEST!." Accessed March 11, 2012. http://www.zefrank.com/dtoy_vs_byokal/.

Zickuhr, Kathryn. "Generations 2010 ." *Pew Internet and American Life Project*. (2010). http://pewinternet.org/Reports/2010/Generations-2010/Overview.aspx (accessed November 25, 2011).