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Interactive instructional technology to bring art students meaningful museum experiences

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Interactive Instructional Technology to Bring Art Students Meaningful Museum Experiences

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Dedication

I would like to dedicate this book to my fiancé Thomas Clark. He provided constant support during the entire process of completing this thesis project.

Acknowledgements

I think it is most appropriate to first thank my parents. Without both of them my work this year would not have been possible. I want to thank them for all of their support this year, but also for the encouragement and comfort they provided during this entire journey.

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Table of Contents

List of Tables

List of Figures

Abstract

The purposes of this study are to: (1) investigate how pre-service art teachers are prepared to implement instructional technological tools for virtual museum experiences and art lesson plans; (2) determine the impact of preparing pre-service art teachers to use instructional technological deliverables to create a virtual art museum experience for the classroom; and (3) investigate the impact of using instructional technology in art teacher lesson plans and instructional delivery. I believe pre-service teachers need specific training on how they can use technology in their art classrooms. Technology is a necessary tool for teaching creatively and can enhance an art curriculum if used correctly. My action research study includes having pre-service art education undergraduates experience existing virtual museum tours, create new virtual museum tours, and other interactive technologies to be used with their future museum experiences for their students and in their art education classrooms. I used a combination of technologies to present the methodology to these pre-service art teachers in the art education department at James Madison University. The students interacted with the technology learning objects, learn how to create them, and then actually created and shared their own learning objects. These pre-service teachers will have the potential to use the interactive museum experiences and be able to design an art curriculum that will give their students eye-opening, practical experiences.

Chapter I

Introduction

Background of the Study

Three years ago I was visiting the National Gallery of Art in Washington D.C. I was walking around in the East Wing, and happened upon a Henri Matisse exhibit. Matisse's cutouts were displayed floor to ceiling and were breathtaking. I smiled instantly thinking about the recent lesson I had started with my second graders on Matisse. We had just finished a book about Matisse creating the "Tree of Life" windows for the Chapel of the Rosary in Nice, France. Thinking about that book and how my students had recently been inspired to cut out beautiful organic shapes, I stood there with my camera asking myself, "How can I bring this experience back to my kids on the Eastern Shore?" I knew that the majority of my students had never set foot in a gallery or art museum and wouldn't have any idea of what it feels like to be standing where I was standing -- humbled by this artist's work. This is a feeling I know well and would wish for all of my art students to experience.

One of my strengths as an art teacher is my use of technology. I had never thought about using technology as a strength or gift. My mother has been teaching for 28 years, and she recently completed her administration certification. She has seen and been through a lot in the public school systems in Virginia. My mom recently inspired me to make a list for myself. I made a list of technologies I use in my art classroom. I was actually surprised at how long the list was. I incorporate technology into every lesson I create without thinking about it and it has come naturally to me to make my instructional

delivery as interactive and exciting as possible. I believe that the use of technology specifically in the art classroom greatly enhances an elementary art curriculum.

This study explored specific technological tools that can be used to introduce students to a museum setting in the classroom as well as gave pre-service teachers tools to use in a gallery setting with students. Three, two-hour workshops were held to teach pre-service teachers about the experience of interacting with instructional technology tools that they can now use to create rich museum-like deliverables and experiences for their own students. During the workshops, I taught them the skills necessary to create presentations as well as teaching tools and technology strategies to incorporate into any lesson. Through the use of technology, I wanted to teach them how to bring artists' work from real gallery walls to their students when actual museum experiences are not practical.

From the time I was able to walk I have been visiting history, science, or art museums with my family during vacations. Today we still travel together with a variety of museum destinations across the country and abroad as our primary goal. When I studied art history in southern Italy during my time at JMU, my father (who is also an artist) traveled to Europe to join me after my coursework was completed. We took a train to Rome and Florence and we spent the majority of our time visiting the art museums.

One particular experience I will never forget was being in the presence of my absolute favorite painting. Being up close and personal before "The Birth of Venus" (painted in 1846 by Sandro Botticelli) made such an impact, it brought me to tears. The entire room full of other paintings commissioned by the famous Medici family in Florence captivated my attention for hours. I was very unwilling to leave with the tour

group to continue with the rest of the Uffizi galleries. To this day, I still appropriate Botticelli's work and have numerous artifacts, prints, and souvenirs from my trip to the Uffizi. I have always felt very connected to original artwork that I experience in museums and often have emotional experiences when I am in the presence of a masters' work.

Part of me wishes I could relay this love for viewing original art better with my art students at the elementary level. I can show them pictures from my trips, I can show them websites, but I long to give them an experience that will make an impression on them as much as being in the presence of a master work has made on me.

My goals for this study were to create deliverables and then teach pre-service teachers how to use a variety of technological deliverables to bring students on virtual, interactive museum experiences, or when available, enhance real museums or galleries field trip experiences with interactive technologies. The pre-service teachers had real experiences in an on campus art gallery and interacted with the art. I wanted to share the knowledge and experience I have had using technology with pre-service teachers in hopes that they will use this kind of interactive technology one day with their own students. It was my hope that this kind of training of pre-service teachers would eventually transfer to countless students across Virginia having meaningful experiences with studying museums in their own schools.

This study was inspired by many aspects of my life -- as an artist, student, and as an elementary teacher on the Eastern Shore. After studying for a year at James Madison University and trying to decide on a major, I met the head of the art education department, Dr. Kathy Schwartz. I immediately enrolled in the art education licensure program. I

instantly fell in love with the meaningful concepts and methods of teaching visual culture that the JMU art education faculty introduced. I knew that art education was going to be my life's work and that I had found my passion. Looking back on my experience as an undergraduate art education student at JMU, I think it would have been useful to have more hands-on, practical knowledge about how to use technology in the art classroom. We were required to create PowerPoint presentations; however, there are so many more useful technological tools that really support teaching art. I wanted to create an entire experience consisting of multiple, interactive technologies and deliverables to show the pre-service teachers in the art education program at JMU. My hope is that they will potentially add one element they learn to their own teaching strategies and be empowered to give their students new experiences they will carry with them forever.

Statement of the Problem

The purposes of this study were to: (1) investigate how pre-service art teachers are prepared to implement instructional technological deliverables for virtual museum experiences and art lesson plans; (2) determine the impact of preparing pre-service art teachers to use instructional technological deliverables to create a virtual art museum experience for the classroom; and (3) investigate the impact of using instructional technology in art teacher lesson plans and instructional delivery. I believe pre-service teachers need specific training on how they can use technology in their art classrooms. I also believe that technology is a tool that can greatly enhance creative teaching and an art curriculum if used correctly. My action research study included experiencing existing virtual museum tours and other interactive technologies used in museums and art

classrooms. I used a combination of technologies to present the methodology to a group of pre-service art teachers in the art education department at JMU. The students interacted with the technology learning objects, learned how to create them, and then actually created and shared their own learning objects. These pre-service teachers will have the potential to use the learned interactive museum experiences, and be able to design an art curriculum including these technologies that will give their students eye-opening, practical experiences.

Statement of Need

I have a license to teach kindergarten through twelfth grade art and have had experience teaching in middle and elementary schools. I completed my student teaching at Pence Middle School and Clymore Elementary School, both of which are located in the Shenandoah Valley. Both schools were rural and had populations that were primarily white and middle class. I began teaching in my own classroom as soon as I finished my undergraduate degree at James Madison University. In the summer of 2009, I moved to the Eastern Shore of Virginia to teach in Accomack County at Pungoteague Elementary School. I immediately noticed that my new school was very different from my past experiences in terms of student population. It was similar in that it was rural, however, the number of Black and Hispanic students outnumbered the White students. As I began teaching, I found that my students did not have the same life experiences that my previous students had living in the Shenandoah Valley. I even found that a few of my students had never even been across the Chesapeake Bay, let alone a city with a population more than five hundred. I began thinking of ways to bring them new vicarious

experiences such as traveling, walking through an art gallery, or flying on an airplane. I designed my curriculum to cater to what I really thought my students needed in terms of broadening their life experiences. I fell in love with this way of working and my students loved my enthusiasm and unique way of teaching art. I had a wonderful first few years of developing relationships with students, co-workers, and parents. In 2012, I received tenure and finished my fourth year of teaching elementary school. I recently asked for a leave of absence in order to complete my master's degree in art education at James Madison University as a full time graduate assistant. This leave of absence was granted for the 2013-2014 school year, and I planned to be back in Accomack County teaching art by August 2014.

I was interested in pursuing this study because I believed it would enhance my own art curriculum when I return to teaching, but my hope was that it also made an impact on the pre-service teachers I taught during my time at JMU. By showing the pre-service teachers how to bring a new experience to their students, such as virtually visiting an art gallery, I will be potentially be impacting many more students than just my 550 students on the Eastern Shore. My hope for this study was that the pre-service teachers would find my collected resources and developed methods a valuable way to reach their students and their subsequent discoveries would open up more ways for the pre-service teachers to incorporate meaningful, interactive technologies when creating their art curricula.

I believe it is the duty of the art teacher to show students what is going on in the world, and instruct them in the visual literacy skills necessary to make informed decisions about their visual world. With developed decoding skills, imagery from around the world

can be understood as a universal language that helps students see and comprehend a world far beyond the limitations of their small town. The overall goal for designing a methodology for using technology in the classroom to introduce the museum setting is simply to give my students on the Eastern Shore, as well as pre-service teachers at James Madison University, new experiences, tools, and perhaps a new set of goals as they open their eyes to a world they have not previously explored.

Research Questions

The purposes of this study are to: (1) investigate how pre-service art teachers are prepared to implement instructional technological deliverables for virtual museum experiences and art lesson plans; (2) determine the impact of preparing pre-service art teachers to use instructional technological deliverables to create a virtual art museum experience for the classroom; and (3) investigate the impact of using instructional technology in art teacher lesson plans and instructional delivery. In order to explore theses objectives, the following were the questions to which I sought answers:

1. How are pre-service art teachers currently prepared to use and implement instructional technology deliverables in virtual museum experiences?
2. How are pre-service art teachers currently prepared to use and implement instructional technological deliverables in their art lessons?
3. How will teacher preparation in instructional technology inspire teaches to create a virtual art museum experience for the classroom?
4. Will learning about instructional technology related to virtual museum settings encourage pre-service teachers to incorporate technology into their art lessons?

Assumptions

There were some initial assumptions that I took into account as a part of this study. As the instructor and an active participant in this study, I assumed that the pre-service art teachers in the JMU art education program had a basic understanding of technology. I further assumed that the majority of the pre-service teachers involved in this study would have the technologies needed available to them in the settings where they begin teaching. In order for this study to make an impact on pre-service teachers, they needed access to certain technologies. A computer, a projector, a screen, and a Smart Board were some of the tools needed to develop and share the instructional technology tools I taught them to create, and that I assumed would be available to the pre-service teachers in their future classrooms.

Another of my assumptions concerning the pre-service teachers was that they would be enthusiastic about learning and implementing new technologies into their art lessons. My belief is that technology enhances any art curriculum by making the art lessons more interactive and more visually stimulating.

Limitations

The information presented in this study was limited to: (1) A group of pre-service art teachers studying art education at James Madison University. There were ten participants in the study from the art education program. All students who participated in my study were enrolled in ARED400, the last course they are required to take before student teaching; (2) A total of four training and feedback sessions which took place in a

classroom in the Art Education Center in Duke Hall on the JMU campus; (3) an open-ended, qualitative, action research study.

Definition of Terms

Learning Object -- a tool created and shared for educational purposes

Deliverable -- a term used in project management to describe a tangible or intangible object produced as a result of the project that is intended to be delivered to a customer (either internal or external). In technical projects, deliverables can *further be* classified as hardware, software, or design documents.

Pre-Service Teacher -- an education student in an undergraduate program, studying to be a teacher

Virtual Museum Tour -- a presentation using a combination of media technologies to give students an interactive experience that simulates being in a gallery or museum setting

Technology -- a computer program, a device, or any other tool that is a digital component of the lesson. Merriam-Webster defines it as:

a. the practical application of knowledge especially in a particular area : engineering
b. a capability given by the practical application of knowledge <a car's fuel-saving *technology*>

Interactive Technology -- a tool that requires elements of hands-on options or choices built in within a program

Virginia Standards of Learning -- a list of required, discipline specific content and skills for teachers in Virginia to include in their curriculum. Taken from the Virginia Department of Education:

> "The Visual Arts Standards of Learning identify the essential content and skills required in the visual arts curriculum for each grade level or course in Virginia's public schools. Standards are identified for kindergarten through grade eight and

> for four core high school courses. The standards are designed to be cumulative, progressing in complexity by grade level from kindergarten through the sequence of high school courses.
> Throughout visual arts education, course content is organized into four specific content strands or topics: Visual Communication and Production, Cultural Context and Art History, Judgment and Criticism, and Aesthetics. It is through the acquisition of the concepts, content, and skills that the goals for visual arts education can be realized. A comprehensive visual arts education program provides students with multiple means of expression as well as with analytical skills to evaluate information that is conveyed by images and symbols.
> The standards are not intended to encompass the entire curriculum for a given grade level or course nor to prescribe how the content should be taught. Teachers are encouraged to go beyond these standards and select instructional strategies and assessment methods appropriate for their students. Teachers will consistently model appropriate use of copyrighted and royalty-protected materials."
> (Virginia Visual Arts Standards of Learning p.9
> Retrieved from
> http://www.doe.virginia.gov/testing/sol/standards_docs/fine_arts/index.shtml)

Action Research --systematic observations and inquiries that a teacher-researcher uses in order to gather information about their particular school, teaching environment

Lisanby Museum -- an on-campus art gallery at James Madison University

Sawhill Gallery -- an on-campus art gallery in Duke Hall at James Madison University

Procedural Overview

This study investigated the use of technology and how it could potentially be used in the art classroom to introduce students to a museum setting. The pre-service teachers in the art education program at JMU participated in several technology-based workshops and one review session where they were able to reflect on what they learned, as well as use one of their created deliverables in a lesson they were required to teach as part of their practicum experience. They began with a tour of the Lisanby Gallery, using an interactive iPad program that I created to enhance the museum experience for kids. The

show was titled “Rembrandt and the Mennonite Community” and it hung from January 15 to February 28, 2014. A list of technologies and strategies used in the creation of the museum tour was provided to the students as well as specific step-by-step directions and modeling with the goal that these resources would help the students understand how to create a specific aspect of a museum tour. My hope was that the experience was a positive, eye-opening one that would give these pre-service teachers a special set of skills and at least one interactive, technology deliverable to use in their own classroom one day. It may even open the door for them to use other interactive technologies when creating their own field trip to an art museum.

Following the on-campus field trip to the Lisanby Museum, the pre-service teachers involved in the study participated in a series of three workshops and one review session in which they: (1) learned the tools for, created, and used an interactive smart board lesson; (2) learned the tools for and then created an iPad presentation to use in the Sawhill Gallery; and (3) learned the tools for and created a virtual museum tour for use in the Sawhill Gallery. I explained and used these deliverables with pre-service teachers in a series of workshops during their ARED400 course. I gathered data in the form of questionnaires before beginning the workshops to gather information about the pre-service teachers’ perceptions of themselves as a teacher. I also want to find out how the James Madison University Art Education program had prepared them to use technology as a part of their art lessons. I interviewed each pre-service teacher before they began the workshops to gauge their experience with teaching and using instructional technology. During the workshops, I took observational notes and also asked students to send me all of the learning objects they created so I could review them. After completing the

workshops, the pre-service teachers created their own versions of technological deliverables to incorporate in an art lesson they subsequently used in their practicum lesson with middle school students. During the last workshop at the end of the semester, I asked the pre-service teachers to work with me to create a technology assessment with rubrics I used to score them as I observed their practicum lessons. I observed and video recorded the pre-service teachers as they taught their lessons to their practicum students. The technology assessment and rubrics were also employed as another form of data collection. I asked each pre-service teacher participant to complete an exit survey, as well as an exit interview, to gauge the effects of their experience with technology throughout the course. I also collected, reviewed, and reported on my own observations and reflections from the entire course.

I used a mixed-method data collection employing predominantly qualitative methods. I journaled through the process of creating my own instructional technology deliverables as well as took notes while the pre-service teachers created and used their own technology tools. I surveyed the pre-service teachers before and after the experience to gauge how effective they found the workshops. I also interviewed the pre-service teachers about their previous experiences with technology. The analysis of the data provided an overall set of conclusions and recommendations about the experience of working with a methodology introducing museum studies. By completing this study, an extensive list of instructional technology possibilities was made available to the pre-service teachers to use in their own classrooms. This study will also be extremely helpful at informing my own practice with middle school art students whom I expect to begin working with in the fall.

Chapter II

Literature Review

The purpose of this review is to identify research conducted in the areas of using instructional technology, using the museum setting for education, and instructing pre-service teachers in the uses of technology tools and deliverables. These three areas of research have been influential in guiding me through conducting my study at James Madison University. In the following chapter, I explore various ways for art teachers to bring meaningful museum experiences to their students. There are endless reasons why art teachers might not engage museums. For many teachers, difficulties such as distance, lack of school support, and lack of parental support keep them from using museums as a teaching tool. Digital learning may be the key for many teachers struggling with obstacles such as distance. I acknowledge that the authentic gallery visit is ideal; but when the real thing is not practical, I believe teachers do have the benefit of replicating a gallery space for students by using a combination of digital media and teacher created deliverables recreating the museum experience. I wanted to research alternative approaches to teaching art history and art criticism by way of virtual museum tours. My research in this chapter supports teachers at all levels using instructional technology to create and use tools, whether teaching in a gallery or in an art classroom, that support the experience for students. All of the following studies support my case that using technology deliverables for instruction enhances student learning.

Organization of the Review

This chapter argues the value of using technology to incorporate museum experiences into an art education curriculum. Encouraging student interaction through museum experiences is supported by the following studies. I have focused on numerous articles and journals that examine university studies completed with pre-service teachers using technologies in classroom and museum settings. Many studies discussed in this paper are predominantly action research studies completed in the past decade. The three areas I explored in this review are: (1) Specific uses of instructional technology; (2) Engaging pre-service teachers in instructional technology; and (3) Student interaction through museum experiences. I conclude with ideas for educators facilitating meaningful museum experiences to art students. Each journal article or study shared in this review relates in a unique way to my proposal for training pre-service teachers at James Madison University in specific instructional technological tools to introducing museum studies into their art curricula.

Specific Uses of Instructional Technology

Instructional technology can be defined many ways. In this first section of my review, I would like to propose several definitions that I find helpful when explaining how technology can be used during instruction with art students. In the most basic sense, instructional technology is any media that aids teachers in the development and implementation of their content area. Technology is not limited to the classroom and should not be constrained to certain subject areas or devices. The term deliverable for the purpose of my study can be defined as a tangible or intangible object intentionally

produced to be delivered and shared with either an individual or group and can be classified as hardware, software, or design documents.

Pre-service art teachers need specific instruction on how to not only use instructional technology effectively, but they should also have experiences creating their own instructional technology to use with art lessons. The following studies make the case for the effective use of educational and instructional technology across all subject areas, with all school age groups, and in various locations.

David A. Wiley, from Utah State University wrote "Learning Objects and Instructional Design Theory" as part of the Digital Learning Environments Research Group. I read Wiley's paper as part of a course I took fall semester 2013 titled "Design and Development of Digital Media." I was introduced to the term *learning object* and how I could use such objects to complete my own project. The three learning objects I created as deliverables have to do with what Wiley (2000) describes as "instructional tools." First, I developed an interactive PowerPoint to introduce museums to young students, then, an interactive iPad activity in Prezi that allowed students to see the inside of a gallery and experience each work on the walls, and lastly, I created a virtual museum tour using iMovie to replicate what it would feel like to walk around a gallery. These projects were considered learning objects because I was able to save them in several formats, upload them to the internet, and use them in various settings and on various devices. Wiley argues that technology has changed the way our society works, saying:

> Technology is an agent of change, and major technological innovations can result in entire paradigm shifts. The computer network known as the Internet is one such innovation. After affecting sweeping changes in the way people communicate and do business, the Internet is poised to bring about a paradigm shift in the way people learn. Consequently, a major change may also be coming in the way

> educational materials are designed, developed, and delivered to those who wish to learn. (Wiley, 2000, p.2)

The idea behind learning objects is that instructional designers can create components that can be reused in a variety of learning contexts. Learning objects are generally deliverable over the Internet, meaning that the public can access and use them. Sharing new instructional materials online as opposed to traditional media, (such as a videocassette) bring learning objects to teachers around the world. Teachers who incorporate learning objects in their instruction can collaborate with other educators and also benefit immediately from updates in educational material. These are significant differences between learning objects and other instructional media that have been used in the past (Wiley, 2000).

A specific tool that is commonly used as a learning object, and deliverable, and is readily available and user-friendly is Microsoft's PowerPoint program. Throughout my study I found that many teachers, myself included, use the PowerPoint program on a daily basis. It is a program with a lot of potential for creating interactive, exciting presentations, but I have found that many teachers who choose to use the program do not have experience beyond the basic tools and settings, and therefore do not use the software to its full potential.

In the article titled "Pedagogy Meets PowerPoint: A Research Review of the Effects of Computer-Generated Slides in the Classroom," authors Levasseur and Sawyer (2006), write about this specific presentation tool well known to teachers across the country. What Levasseur and Sawyer (2006) found was that computer-generated slides lead to instructional messages with greater appeal to the human senses. The question they then try to answer is "how might this increased stimulation either improve or inhibit

information processing?" Levasseur and Sawyer conclude with, "when analyzing an audience, speakers should not simply focus on the audience's desire for computer-generated slides; rather, they should focus on whether or not such slides allow the audience to more effectively process the speaker's message" (p.119).

Knowing what research has been done on specific presentation tools has helped me make informed decisions about the methods that I used for my own project. "Interactive technology tool" is a broad title that can be narrowed by using a select group of programs and media. The PowerPoint presentations the pre-service teachers made could be used for independent learning or used as part of class discussions -- the object itself does not determine how it is best utilized for instruction. I relayed this idea to the participants of my study in hopes that they would also consider which technologies would be most helpful to them in various situations. Many of the participants decided to use their smart phones rather than tablets for our museum tour in the Sawhill Gallery. The current mobile technologies influences how students learn and how teachers deliver information.

The *International Journal of Software Engineering and Its Applications* published "A Study on the Paradigm Shift in Exhibition Culture Facilities by the Smart Device Technologies" in 2013. In this study, the authors focus on the activation of mobile technology. This new technology enabled audiences to interact with the cultural facilities for a new type of exhibition. The combination of the personal mobile device and interactive technology brought a new paradigm. The authors wrote their goals as follows: "The purpose of this study is to suggest the necessity of the establishment, development and designing of the contents in consideration of the paradigms of exhibition due to the

development of the mobile technology in order to overcome the limitations of the interactive technology devices in the most representative of the cultural spaces, the museum" (Shin, Sung, and Byun, 2013, p. 238).

The journal writes that museums are tourism destinations where the visitors may experience culture in a place where the historical relics are displayed but has also become a multi-dimensional educational space. But, the museums, which previously were a place of learning, are turning into a space of entertainment. After a comparison of mobile applications designed for museums across the world, the authors include their implications of their study by summarizing. They argue that the coming of new technology in our "Smart society" is making it necessary for museums to establish a more practical form of education. The instructional technologies that the museums need are more portal-like, using Smart technologies and devices that will not be limited by time or space. The authors conclude their study by stating, "Developing technologies to improve the convenience of the visitors in response to the changing environment is no longer an auxiliary service apart from the exhibition itself. It is a core element to ensure optimized exhibition experience" (Shin, Sung, and Byun, 2013, p. 246). Focusing on the new smart technologies as they come in contact with museum education, the following sections of the literature review will cover how pre-service teachers interact with the technologies as learning objects.

Engaging Pre-Service Teachers in Instructional Technology

I propose that technological programs and apparatus' should be included in explicit ways in the art teacher education curriculum. With the knowledge of how to use specific tools, pre-service teachers in the visual arts will have the knowledge they need in order to incorporate the demands of twenty-first century literacy. Technology in the classroom is beneficial on many levels. Every art teacher, (no matter who their students are) needs images with which to teach. The availability of images today has become overwhelming, but I think that Google images have become the easy image database -- especially for art teachers. Taking more effort to find museum collections and sharing those with students takes more energy, time, and planning. It also involves some knowledge in how to use museum websites. But, the benefits of using the art museum as a tool to teach art history and art criticism are numerous and sometimes overlooked by many art teachers. In this chapter alone, I mention nine teacher-researchers who write about the importance of the museum as a teaching tool. Unfortunately, but often understandably, not all art teachers are able or willing to take field trips to art museums. Teacher limitations often keep students from traveling to actual museums, however online resources give teachers a lot of practical access to the museums they wish they could visit with their students. Whether to accompany a museum visit or used in place of a museum visit, an online museum tour can be an invaluable tool to teach many aspects critical to an art education, such as art criticism, art history, and aesthetics, to name a few.

A 2011 *Teaching Artist Journal* article presenting a museum podcast posited that there was a way of extending the learning and aesthetic experience of a museum visit (Toth, 2011). In this qualitative research study, pre-service teachers created an interactive

audio-visual podcast as a presentation tool. During the process of using the podcast students had to describe, analyze, interpret, imagine, sketch, and reflect. There were four instructional design activities in which students were to participate. Using an iPod, students engaged with this tool as an extension of a museum experience to make it more meaningful. The pre-service teachers used this tool in their own art curriculum and analyzed their students' responses from post surveys and a few volunteer essays. It is important for pre-service teachers to not only use technology in the development of their curriculum, but also to think about how it can enhance the interactions between students and artwork. In this study, Toth (2011) had his pre-service teachers create, implement, analyze, and then reflect on their podcast. These are all important uses of technology for pre-service teachers to practice before they begin teaching so that these methodologies become a routine part of instruction. I began with this research study as a base because it correlates directly to what the pre-service teachers at JMU designed and utilized in my study.

Another important study for these purposes conducted recently was possible through collaborative efforts of the University of Kansas and the Spencer Museum of Art. Pre-service teachers in the Visual Arts Education program taught Saturday Museum programs during the spring of 2010. Stone (2013) wrote that the goal of the program was to train pre-service teachers how to implement museum-based lessons in their own curriculum. By working in the on-campus art museum, pre-service teachers found their experience very beneficial, and Stone described the feedback to the methods as overwhelmingly positive. She analyzed data from her observations, anonymous surveys, as well as reflections from pre-service teachers, and found patterns of positive,

confidence-building, teaching experiences in the art museum. Museum visits can close the gap for pre-service teachers (Stone, 2013); and by using hands-on interactive teaching strategies, pre-service teachers will have the confidence to bring this type of instruction into their own classrooms.

Also taking place at the Spenser Museum of Art, Barry (2012) conducted an action research study using artwork as a path to literacy. Fifty-one pre-service middle and high school education teachers created and taught 75-minute activities at a community museum. The question at hand was whether pre-service education teachers would accept the use of an art museum as a tool for literacy and learning content. Anecdotal notes, observational field notes, informal interviews, student artifacts, and a written assignment all informed the instructor during the course "Reading and Writing Across the Curriculum." Attitudes of the pre-service teachers were reported to have changed dramatically throughout the course. The students began the course with little understanding of how their time in an art museum might help them teach their content, however, throughout their experience they realized how exciting and worthwhile viewing art can really be for teaching any content area. One student reported that it was their "favorite class of the summer." All pre-service teachers can benefit from looking at and criticizing art, and it is important for art teachers in particular to know how to guide students in talking and writing about art. But it is the visual, pictorial aspects of art that make it a universal language, and therefore, it can apply to all subjects. Art teachers should use this point to their advantage and captivate students by introducing what for many might be a new life experience -- visiting an art museum.

Also exploring art criticism with pre-service teachers, Heidi C. Mullins (2008) wrote "At the Crossroads of Pre-service Teacher Education, NAEA, and Terry Barrett: Exploring Metaphors of Meaning, Narratives of Hope." A piece of her abstract explains her interest in the relationship between pre-service teachers and art: "The purpose of this study was to examine the relationship between pre-service teachers and art, as well as art's role in accessing the learners' knowledge communities. These pre-service teacher experiences take place in an Art for the Elementary Classroom within a university setting" (p.73). Mullins goes on to explain how important criticism is to her education program and what she experienced at a National Art Education Association Conference in 2006.

Mullins (2008) explains how she exposes her pre-service teachers to multiple methods of art criticism. She included the Feldman model (1970) of criticizing art (description, analysis, interpretation, and evaluation) and Terry Barrett's (1994) method of criticizing art (including more analysis of meaning making). However, as a result of experiencing the session at NAEA with Terry Barrett, she said she began to see interpretation in a new way. She describes her experience saying, "Dr. Barrett asked the participants to engage in looking at art through the use of metaphor" (p. 76). Mullins claims her teaching pedagogy began to be re-shaped -- she wanted to immediately explore this new way of looking at art with her students.

In conclusion, Mullins (2008) found that students took the opportunity to draw upon their previous knowledge to be able to discern relationships between the object, symbols, and metaphors. Mullins stated that the sequence of classroom activities at the elementary level gave the pre-service teachers a foundation of understanding. Her students began to think in narrative form and it opened up a dialogic response to how art

is experienced (p.80). The pre-service teachers moved beyond their preconceived notions of art. The experience helped the pre-service teachers find meaning for art in their personal and professional lives. It is important for pre-service teachers to experience hands-on art criticism activities so they can fully engage in how to best teach. The elementary teachers who participated in the art criticism activities with Mullins will have a better grasp of how they can introduce art into their own classrooms. It is important to read about instructors who are providing training for pre-service teachers. Art criticism plays an important role in how students will interact with the work in a gallery, museum, or even in the classroom. The way Mullins expanded and changed the way she taught art criticism with pre-service teachers provides a good model for those of us who are completing training with pre-service teachers. Pre-service teachers first must learn the basics of teaching art criticism so that they will be successful in creating interactive deliverables for their students. Without great content, the technology becomes ineffective. Art teachers should bring great art to students in a way that is exciting and engaging. The following section explores what types of educational programs have been studied in the museum setting across North America in the past two decades.

Student Interaction through Museum Experiences

It is instructive to study what others in the museum field are accomplishing with technology and how they use technological tools for teaching. In an article published in 2008 by the Illinois Press, authors Scott Sayre and Kris Wetterlund explore the topic of "*The Social Life of Technology for Museum Visitors*." In their article, they examine some technology models for museums to use with groups of learners. Sayre and Wetterlund

(2008) claim that unlike research on individual learning models in museums, very little has been written about group learning potential in the museum setting. They mention Draper (1984), who conducted a study and found that between 75 and 95 percent of people visiting museums were actually parts of a larger group or family. Children are always most likely visiting the museum with a school trip or with their family touring a museum. The authors go on to explain the reasoning for their study:

> Visitors who come to the museum together usually fall into two types of groups. Informal groups with no selected mediator include, for example, families who represent a range of ages within the same group, friends who are not participating in any planned museum activity, and some school groups who explore the museum independently but share a common learning goal. Formal groups led by an appointed mediator include a school group guided by a teacher or docent, or a group of friends or family who participate in a docent-guided tour or organized class or presentation. (Sayre and Wetterland, 2008 p. 85)

Sayre and Wetterlund claim that in cases where technology is mediated by a person, the mediator most commonly: (1) fosters awareness, (may be as simple as pointing out the availability of an in-gallery interactive or Web resource); (2) defines a sequence (defining the order in which technology-based resources are incorporated into a tour, lesson, or other activity or experience); and (3) fully integrates technology into a learning plan (takes sequencing to the next level, with mediator-designed learning experiences that integrate one or more technology-based resources into a larger educational strategy to support the learner's investigation or inquiry). The authors point out the importance of the mediator by referencing Joseph and Reigeluth (2002): “In educational definitions, technology integration goes beyond using technology to support the way teaching and learning has always been done. Rather, truly effective and fruitful technology integration transforms teaching and learning in ways that weren't possible before” (Joseph and

Reigeluth, 2002). Student learning is not all about the technology and the technology should never be the focus. The authors write a section in their article titled “Classroom Materials” in which they explain the evolution of technology in teaching:

> Inside and outside the museum walls, classroom teachers often play a critical role as mediator between students and museum content. Classrooms form communities of learners because of shared learning goals among students, even if students work on activities individually, by sharing an environment whether in the classroom or in the museum, and by sharing a teacher as mediator. Museum and classroom educators have long understood the benefit of pre- and post-visit activities for school groups (Gennaro, 1981). Many museums offer educational resources specifically for preparing students coming for a visit and others for review and further exploration after a museum visit. For resources connected to a museum visit to be effective, the teacher is required to mediate the contextual continuity between the lives of students and the museum experience. This is particularly true for younger children (Anderson & Piscitelli, 2000). Over the last decade, museum-produced classroom resources have rapidly transitioned from hardcopy print pieces, slide sets, and videos to CD-ROMs, DVDs, and online resources such as downloadable PDFs, online videos, interactive learning units and games, and Web 2.0 tools. The Internet has been revolutionary for museum educators and teachers, eliminating the many material and temporal restrictions of physical resources. Today a simple Google search for "museum pre- and post-visit activities" returns thousands of classroom materials offered by museums around the world. (Sayre and Wetterlund, 2008, p. 86)

Sayre and Wetterlund compare art and history museum education programs saying “Art and history museums might take a page from their science museum peers when designing socially engaging learning environments.” They argue that most art museums have gravitated towards the individual-centered audio tours in order to avoid negatively affecting the gallery experience for other guests. Although they understand these decisions and how they may be justified, there is a need to cater to the social learning style of many visitors. “Numerous evaluations have revealed that most museum visitors appreciate the integration of media in museum galleries as long as it is well thought out” (Sayre, 2005 p.93). Many of the deliverables created by the participants of my study could be considered individual-centered or group-centered. The programs were carefully

and thoughtfully constructed for specific target visitors. The participants considered their audience when creating their deliverables based on their previous art education experiences in the James Madison University art education program.

Looking at the importance of art education and museum education for small children, Chang (2012) studied how museum educators and pre-service teachers in elementary art methods courses expose elementary school children to artwork across cultures and styles in multiple, artistic experiences. Using the ArtTrek program at the Metropolitan Museum of Art, students were fully engaged during the museum tour with an interactive tour guide. The study explored how important art criticism and art making is to an early childhood art curriculum. Chang (2012) found that children are more comfortable in science museums than art museums, so the idea for the ArtTrek program was to make art criticism more interactive for students, and similar to the ways that science museums engage students with artifacts. The findings of this research pointed to the fact that museum education can provide more meaningful and quality art experiences for young students.

Similar to the ArtTrek program, a group of educators questioned how to develop responsible, interactive experiences in a museum setting. Through casual observations and public surveys from visitors, Adams, Moreno, Polk, and Buck (2003) found that museums need to be in touch with visitors' and students' experiences so they will interact in meaningful and intentional ways. One specific observation of a family showed that the children seemed more comfortable when they came upon the interactive area of the museum. It allowed them to feel free to explore and discover. The methods of interactive stations were successful, however it was decided the methods of using interactive stations

in the interactive gallery may not transfer to the museum proper. Part of what I tried to accomplish as part of my study was to show the pre-service teachers that the interactivity in the gallery space could take place on mobile devices such as phones, tablets, and laptops. These mobile devices can be easily transported and used in a gallery space to help facilitate trips.

A well-known author in the art education world, Terry Barrett wrote an article titled *"Interactive Touring in Art Museums"* in (2008) which he wrote about adults walking and touring through the "museum proper" (the Los Angeles County Museum of Art). He described the article saying it "provides examples of individuals making personal meanings of works of art. When visitors share their individual understandings of artworks with their touring groups, they see artworks in unique ways" (p.76).

Barrett (2008) notifies the reader that his article is situated with a post-modern view of art education in museums. Barrett stresses that the activities that take place in the interactive tour are examples of museum practices that do not pass on interpretations by scholars that position visitors as "the general public," but instead cater to people's individual learning styles and agendas. One woman on the tour wrote a poem in response to the painting "Yosemite Valley" by William Keith. In her poem, the woman speaks as if she is the mountain, describing her surroundings and digging deep into how she was formed. Another visitor wrote a narrative imagining she was a figure in the painting. Both of these writing examples begin to exemplify objectives of the constructivist learning. The museum-goers were no longer passive receivers, but they constructed their own meanings and made sense of the work in their own way.

Barrett has a gift for suggesting ideas to be used in facilitating art criticism activities. In his article, he lists several procedures helpful in facilitating group discussions in a museum setting. A few of them are as follows: (1) Concentrate on being an excellent facilitator rather than an art expert; (2) Situate the group so everyone can see and hear one another; (3) If you ask a question do not answer it yourself; (4) Redirect questions to the whole group to receive input; and (5) Allow some time for closure by allowing individuals to articulate what was most meaningful to them. Barrett's strategies for facilitating group tours in a museum are easily transferable to group discussions in the classroom. Pre-service art teachers should practice these methods of facilitation in order to have confidence leading in their own classrooms. An important conclusion Barrett draws at the end of his writing is that for many museum visitors, this type of museum education will present the realization that community, including the world community, depends on a diversity of views (2008).

An author who focuses on the diversity of visitors, Maggie Stonger writes about the various on-site technologies available in museums. As part of the *International Journal of the Inclusive Museum*, Stonger (2011) wrote an article titled, "The Immersive Cultural Museum Experience-- Creating Context and Story with New Media Technology." Stonger's paper explores a range of immersive media technologies that are being used to engage museum visitors in narratives about artifacts found in museums. The "on-site" experiences she cites are in particular cultural museums. She focuses on the use of advanced media technologies being used to "raise issues of representation, authenticity, integrity, and inclusivity" (Stronger, 2011, p.117). Her emphasis on narrative storytelling in the museum is part of a larger effort to make the viewer a character. Stonger argues

that the days of one-size fits all museum programs are gone because visitors bring a range of personal and cultural experiences with them to contemporary museums. Through the use of new media technologies, museums can better suite visitors' needs.

What are the potentials of virtual reality technologies considering the nature of a museum space itself? A collaborative research project between the University of Leicester and the Virtual Education Partnership explore this question. The collaboration was established based on an earlier paper written by Parry (2002) which focused on two points: (1) new technologies are products and agents of cultural change; (2) "space" is one of the enduring currencies of museums; and (3) virtual reality technologies have had varied use and success in supporting learning inside and outside of the museum (Parry and Hopwood, 2003, p.69). Between the years of 2001 and 2003 these two groups put together four projects in several museums across Leicester City, UK. Data collected through recorded soundtracks of students using technologies, personal accounts by students, as well as photos of student interactions provided information to be analyzed. Parry & Hopwood (2003) found that technology helped students question and reformulate what they saw in the museum and, in a sense, to rebuild their own digital exhibition. The projects provided a way of managing a variety of multimedia data (images, sounds, web links) but also a means for learners to effectively re-curate the space on their own terms (Parry and Hopwood, 2003, p.76). They concluded that overall the interactive technologies had the potential to empower and motivate learners. Using interactive deliverables in my own art classroom, I also found that the interactivity helped me motivate and empower my students.

In her chapter titled “There’s More To It Than Just Looking: The Art Museum as an Integrated Learning Environment,” Debra Attenborough (2002) explores the history of museum education as well as applies her personal experiences in Ontario, Canada to recent changing trends in art museums. As a featured author in the book, “Contemporary Issues in Art Education” by Gaudelius and Speirs (2002), Attenborough begins with her overview of the constant effort of galleries and museum to define and re-define their own concepts of the arts and arts education. She explains the role of education in traditional art museums and galleries and argues that these existing roles no longer function in today’s society. Using the Niagara Falls Art Gallery as an example of how a museum has re-defined what education should be in an art gallery and the relationship of the gallery as it concerns the community, particularly the schools, she goes on to explain that education in the art museum has developed apart from the ways early museums were established and run. “Education and interpretation, particularly in art museums are basically products of the twentieth century” (Attenborough, 2002, p. 86).

Attempting to bring museum literacies to the elementary classroom, Eakle & Dalesio conducted a qualitative research study in 2008 questioning what kinds of literacies were made available by museums and schools as well as how museum literacies were used and constructed by students. In a second grade classroom, students at school created their own museum exhibits. The teacher incorporated the standards of learning to promote authentic learning experiences through museum literacies. Over a nine-month examination of students in action, findings of the study were that students were engaged and motivated by museum literacies (Eakle and Dalesio, 2008). These students were using a museum to inspire how they learned all year long. It was through the process of

learning how a museum works and runs that they were able to adapt what they learned to curate their own museums from Standards of Learning content. The study's teacher used the idea of the museum for her own purpose of motivating her students to be active in their own learning.

All art students should be able to experience art in a gallery space. Museum and gallery visits cannot be replaced, but they can be enhanced. Students will have more positive experiences if they are motivated, excited, and prepared. In the following section, I argue that student attitudes can help determine the successfulness of a gallery visit or a virtual tour of a gallery space. I believe it is the job of the educator to set students up for success. A good method of doing so is to use interactive technologies to excite students about learning. In the last area of the review are personal notes in which I reflect upon the research. How do you effectively facilitate museum experiences for art students?

Facilitating Museum Experiences for Art Students

Students learn better when they are motivated and excited about the learning activity. It is the job of the teacher to motivate students and inspire them to have an attitude of learning. The art teachers who are successful find a teaching style that speaks to students' interests and needs. Students will eventually feel some ownership of the artwork and be able to be an informed art critic if the teacher and method are effective. The way to accomplish these interactions is through exposing students to new experiences where they feel free to explore and discover what the artwork means. Successful art criticism models will lead students to think in depth about the work and

take ownership of it. Using technology to bring art to life is a perfect way to get students out of their seats, up close and personal, and interested in the work itself.

Obstacles such as distance, lack of school support, lack of parental support, and the like keep art teachers across the country from taking their art students to actual museums or galleries. The lack of support and funding for the arts in public school systems is often a burden for art teachers. Many art teachers find creative ways to make such trips happen for students. My goal in this research is two-fold: (1) to show alternative ways for pre-service teachers to bring museum experiences to the classroom setting; and (2) help pre-service art teachers plan tools useful for a trip to a gallery and develop meaningful technology to use before the trip, during the visit, and after the trip. In my workshops with the pre-service teachers, I attempted to educate them on how to effectively use technology tools, such as virtual museum tours, in their teaching. Such strategies will allow art teachers to expose students to rich, dynamic, and practical experiences both inside and outside of the museum setting.

Chapter III

Methodology

The Research Design

Data was collected and analyzed from a group of ten pre-service art teachers who were studying art education at James Madison University. This was an action research study of those students and how they interacted with and learned the process of creating instructional technological deliverables. Mixed methods were used in data collection and analyzing that data. Primarily, a qualitative approach to researching will give the best insight into this specific group of education students. For the purposes of this study, I attempted to answer the following questions:

1. How are pre-service art teachers currently prepared to use and implement instructional technology tools in virtual museum experiences?
2. How are pre-service art teachers currently prepared to use and implement instructional technological tools in their art lessons?
3. How will teacher preparation in instructional technology inspire teaches to create a virtual art museum experience for the classroom?
4. Will learning about instructional technology related to virtual museum settings encourage pre-service teachers to incorporate technology into their art lessons?

Context of the Study

Undergraduate students in the art education program at James Madison University were presented with the opportunity to take part in this study. The pre-service teachers had the opportunity to participate in this study as a part of their coursework in the ARED400 course titled “Art Across the Curriculum.” As a requirement for their Art Across the Curriculum course, the students spent 30 hours observing, providing one-on-

one assistance, and delivering one model lesson in a local middle school for their last practicum placement in the art education program. In the course's classroom setting, the pre-service teachers used their own education experiences to complete initial pre-instruction surveys and interviews for this study. Then they completed a series of workshops that focused on using and creating interactive technology deliverables to introduce the museum setting into the art classroom. After the workshops were complete, the pre-service teachers incorporated a specific instructional technology into their own practicum lesson to be delivered with their middle school students. I acted as the instructor for the ARED400 class during a series of three, two-hour workshops on the use of technology and was the observer for the practicum lessons, video recording pre-service teachers in action, and providing them feedback on the delivery of their lessons. After the pre-service teachers finished their practicum placements, they were asked to complete an exit survey as well as participate in an exit interview to gauge their reactions to the workshops.

The Assignment

During the undergraduate art education course, ARED400 in the Spring semester of 2014, a short introduction was presented for the research idea concerning the use of instructional technology, focusing on the museum setting. During the first week of class, as an introduction, students were posed a series of questions about themselves. Used as a time of reflection, students were encouraged to respond honestly and without judgment. During the discussions at the beginning of the semester I was able to add my research topic to the discussion during this time. The purpose was to have the pre-service teachers

begin to think about the power of museum experiences in their own personal lives. It was important to know what types of museum experiences the pre-service teachers have had and how their experiences might have changed their lives.

After researching existing technologies and interactive deliverables used in museums and classrooms, I developed my own instructional technology deliverables that I then shared with the pre-service teachers. The pre-service teachers who took part in the workshops learned several technologies in both an education classroom with computer link to a Smart Board and a computer lab that had the same capabilities, but also had individual, student computer stations. The students were instructed on how to create specific instructional technology deliverables for their own lesson planning and instructional strategies. In the last session, students helped make a list of what they considered to be important criteria to include in a technologically advanced lesson and they helped create an assessment used for their delivered practicum lessons. The pre-service teachers used tools such as Smart Boards, laptops, iPads, and a variety of other technologies to complete interactive instructional technology deliverables they could potentially use in their practicum lesson and their own art lessons for future students.

Content of Instructional Technology Workshops

In order to interpret my data and make judgments, I first need to describe the content of the workshops. In this section of the chapter, I will report on what took place during each workshop with the participants of the study. I will include the instructor's procedure as well as describe the learning object created by the participants.

Workshop#1. Before the workshop the participants signed the consent form, signed up for an interview time, and completed a pre-instructional survey. I read a section from Chapter I of my thesis to explain the background of my study. Participants were asked to respond to a question about their personal experience interacting with museums. To begin the first workshop, I used a Prezi presentation to introduce the thesis project and cover my definition of learning objects. I briefly went over what to include and what not include in a good presentation. An instructional handout was provided on using PowerPoint, and participants watched a video demonstration on how to create an interactive PowerPoint. I chose to utilize Microsoft's PowerPoint program because of its practical application for art teachers. In my study I taught the pre-service art teachers at JMU to use the PowerPoint program in a variety of ways that can turn their simple presentations into *learning objects* by adding an interactive element as well as posting them online to share with other educators. Students had approximately one hour to create a PowerPoint and ask for assistance when necessary. The option was provided for students to continue working outside of class time on their PowerPoint. Finished presentations were sent via e-mail to the instructor.

Workshop #2. Before meeting, the three strongest interactive PowerPoint presentations were chosen and embedded into the workshop presentation so that each of the students who created the learning objects had the chance to use the Smart Board in presenting their PowerPoint. As each student came up to the Smart Board to present their learning object, the rest of the class was asked to give each student presenter some advice

about what they could change or enhance in their presentations. It was also asked that they think about other situations where these presentations could be used for instruction.

After approximately twenty-five minutes viewing and interacting with the PowerPoint presentations, the group was asked to brainstorm in what type of settings they could potentially use these presentations. Their ideas included: in a gallery on a tablet, in a history museum, in a classroom preparing for a field trip to a museum, in a class discussion, and as an assignment students could access through the internet. After a short discussion on audience and user ability, I moved the discussion into the ability of teachers to use their resources. The participants spent the next thirty minutes listening to instruction about the functions of the Smart Board and a brief description of how to use the Smart Notebook software.

A webinar on basic functions of a Smart Board was a useful way to open the discussion with the pre-service teachers. The animated instructor kept our attention while going over the basics of how Smart Boards were designed and simple precautionary steps to ensure user safety. This was an important place to introduce the consideration that many of the pre-service teachers would have the opportunity to use a Smart Board in their practicum placements and also during student teaching. After the short video, we went through the motions of starting a presentation in the Smart software, Smart Notebook. I covered simple tasks such as adding slides, adding images, and turning hand written words into text.

The Smart webinar went over the basics for those students who have no experience with Smart Board technologies. We were able to pause and explain certain aspects more in depth and I think the students felt more comfortable with the Smart

Board. After the webinar we went through the Smart Notebook program to show participants a presentation I created, and showed them what types of games and interactive activities are possible with the program. I showed them the basics of how to start a Smart Notebook presentation.

Following the Smart Board demonstration, I sent students to the Sawhill Gallery, located in Duke Hall (down stairs from the classroom). The instructions for students were as follows: take pictures of at least three pieces of art and take at least one minute of video footage around the gallery. They were then asked to spend at least ten minutes walking around the gallery and to meet in the computer lab at the end of that time.

In the lab, participants signed up for a Prezi account and also uploaded all of their images and video onto a desktop computer. Each computer was labeled with their names so that the participants could keep track of their work and leave everything saved on the desktop over multiple workshop meetings.

After providing an instructional handout on learning objects for a gallery walk, a brief Prezi presentation was used to show participants how to create such a presentation for guests to use in the Sawhill Gallery. Participants worked for about thirty minutes on their Prezi using the images they took in the gallery.

Workshop #3. Before the workshop, three iPads were borrowed from the Educational Technology and Media Center in Memorial Hall. Participants were directed to meet in front of the Sawhill Gallery for the beginning of class.

During the time in the gallery, students logged into their accounts in Prezi and shared the presentations with their classmates. They walked around the gallery with a

partner and traded programs. Every student participated in at least three gallery walks using the Prezi presentations their classmates had created. Students had approximately twenty minutes to explore the gallery using the presentations and were able to ask for assistance when necessary.

After reconvening in the lab, the participants were split into three groups. They were told to explore the Smart Notebook Software available in our three locations in the art education center. They were given the goals to create a five-slide presentation, to incorporate an interactive game, and also to use a pre-existing activity available in the software and modify it to fit their need. Using the smart boards, each group collaborated to begin creating an artistic presentation. I rotated between locations and answered questions and gave suggestions. The students seemed to rely on the information they learned in the previous session to complete their task. All of the participants exceeded my expectations with what they were able to create in a short amount of time. I gave them twenty minutes for exploration on the Smart Boards.

Back in the computer lab, participants were instructed to Google "Google Art Projects." After everyone had created a Google account (if they did not already have one) they were directed to the website and where to find gallery tours provided by museums all over the world. They were able to explore virtual museums and navigate the website independently for about ten minutes on the computers.

Participants were then asked to open iMovie on their computers. It was explained that what they just saw on Google Art Projects is one type of virtual tour. I then showed them my version of a virtual experience of the Sawhill gallery. I had created a two-minute video combining text, images, video, and music to give a viewer an overall

impression of the gallery space. Students watched this video and game me immediate feedback about how they would use this type of learning object. They were then led using a PowerPoint in step-by-step instruction with starting their own virtual tours of the Sawhill Gallery. After getting them started with the basics, they received an instructional handout with additional information on using iMovie software. Students had an additional thirty-five minutes to work on their movie. They were asked to upload the presentations to YouTube.

Workshop #4. The last workshop was designed to spend time in wrapping up loose ends and having participants brainstorm how to use the instructional technology in teaching. They reported what they remembered about what they learned then shared in small groups and with the whole group. The pre-service teachers were also presented with the opportunity to collaborate with the instructor in creating an assessment to use in reflecting on their practicum lessons.

Instrumentation

Throughout the process of learning and creating interactive teaching technologies, the pre-service teachers completed a pre- and post-instructional survey as well as a pre- and post-instructional interview. A class-generated assessment helped identify what specific criteria should be included in their instructional technology deliverable and how well it was used to facilitate their lessons. Instructor's journal entries were also used to record observations of students in class, and in their practicum lesson delivery, to analyze and corroborate behaviors across the data.

Pre-service teachers participating in the study were at minimal risk as the assignments they are asked to fulfill were not any more than what they would be expected to complete in a 400 level Art Education course. Pre-service teachers were informed of the study and had the option to participate. All of the pre-service teachers in the course chose to participate, making a total of ten undergraduates I worked with during my study. Some students were absent during specific workshops, so information was provided to them when they returned. I also posted all of the presentation and instructional handouts on the class online Blackboard site through James Madison University.

Role of the Researcher

My role in this study was that of an active researcher and instructor. I adopted what Lincoln and Guba describe as "human as instrument" and was a participant in my study. Because I was the one analyzing the data collected in the study, Lincoln and Guba say that the researcher should prepare a design statement that demonstrates that he/she is an effective instrument. I studied theory and practice of instructional technology tools in the education and museum settings as well as created my own deliverables that I used to teach the pre-service teachers. I shared my experiences as an elementary art teacher and my previous usage of technologies to introduce pre-service art teachers to bringing museums into an elementary art lesson. I advocated for the use of technology in the art room and used my own lessons to make the case that using technology enhances the participation and interaction of art students.

I recently graduated from the James Madison Art Education program and still had a good idea of what it was like to be a pre-service teacher learning how to teach art. I had spent the past five years designing, developing, and implementing my own art lessons that I argue are saturated with rich technological tools I use to engage students. I had used many technologies in my own classroom for the purpose of teaching and having the students make art at the elementary level. I had seen the direct correlation between student participation and the use of interactive technologies in the elementary art classroom.

As part of my coursework in the Master of Arts program at James Madison University, I was able to take a course titled "Design and Development of Digital Media" which was a way for me to learn how to create advanced technological tools. I was able to create projects such as instructional podcasts, a movie, an interactive learning object, as well as develop my own website to act as a portfolio for all of my work. Many of these projects are very useful for teaching art in a classroom and would particularly help pre-service teachers feel more comfortable with incorporating new technologies into their own art lessons. This course was what allowed me to create specific learning objects that I later used to teach the pre-service teachers.

Throughout my first semester of graduate school in the art education program, I was given the opportunity to design and develop an interactive iPad program for the Lisanby Museum on the James Madison University campus. The show titled "Rembrandt and the Mennonite Community" was on campus January through February of 2014. The interactive iPad deliverable that I developed for this exhibition incorporated specific artwork in the gallery accompanied by my program installed on available iPads. Each

selected work of art had an iPad installed in front of it for viewers to use and learn about the work on the wall. My deliverable consisted of an interactive PowerPoint presentation for art students to use and enjoy while walking through the art gallery. Along with the program, I created a paper packet for individual students to complete that corresponded with the technology. This was a way of individualizing the audience experience and demonstrating a new way of interacting with the art. I took the pre-service teachers in my study on a tour through the gallery so they could see first-hand how the PowerPoint program could be used to enhance the museum experience outside of the classroom. I taught the pre-service teachers how to create this type of deliverable through the series of workshops in their coursework already described.

Data Analysis

Data drawn from two surveys per student and two interviews per student were used to create simple graphs to show how the responses and opinions of students changed from the beginning of the study to the end of their experiences. My own journal entries and observational collection forms and notes were also factored into the results. Another method of data collection was written notes from my observation of their lesson at their middle school practicum placement. The last item to be analyzed was the standards and assessments that were used to assess the lesson each pre-service teacher delivered during the practicum experience (Appendix E).

The purpose of the data collected for this study was to determine the following: (1) How are pre-service art teachers currently prepared to use and implement instructional technology tools in virtual museum experiences?; (2) How are pre-service

art teachers currently prepared to use and implement instructional technological tools in their art lessons?; (3) How will teacher preparation in instructional technology inspire teaches to create a virtual art museum experience for the classroom?; and (4) Will learning about instructional technology related to virtual museum settings encourage pre-service teachers to incorporate technology into their art lessons?

Comparisons were made between student opinions before attending workshops and after students created their own deliverables and used them with middle school students. Individuals were assessed separately but the responses appear on a condensed graph of the overall student opinions (Appendix G). The student's specific qualifications and past experiences with technology are included in the analysis.

Criteria for Judging Trustworthiness of the Research Design

The instructor worked along side the professor for the ARED400 course in planning for the preparation of the study. However, as the instructor of this research study, I was the teacher implementing the information during the study. The advice of professors in the art education department was sought for insight on how to approach the pre-service teachers about the study. The instructor obtained permission from the James Madison University Internal Review Board prior to the study. A committee of three faculty members at James Madison read, reviewed, and approved the proposed study as well. These techniques in recording data and analyzing data establish validity. Lincoln and Guba named four criteria for judging the trustworthiness of a naturalistic research design: credibility, transferability, dependability, and confirmability (Lincoln, YS. &

Guba, EG., 1985). The explanation of these terms as they apply to this study will establish that the trustworthiness criteria have been met.

Mixed method, action research methods were used in the study, which was an evolutionary process. Data unfolded as the process became more deep and evident. Validity is an important consideration for an action research study. This study follows guidelines set by Guba (Lincoln, YS. & Guba, EG., 1985, p. 5). Several data collection techniques were used to establish triangulation. Throughout this process of inquiry, credibility was established by using a combination of student surveys, interviews, and instructor observations/journal entries analyzed across information sources.

After completing the sessions, students were given the post-instructional survey (Appendix C) and took part in an exit survey about the study (Appendix D). I analyzed and graphed the results but also conferenced with my "peer-debriefing group" consisting of the other graduate students in the program. The meeting with my "peer-debriefing committee" consisted of: clarifying questions, corrections recorded, and processes explained. This process helped point out any biases or data overlooked by the instructor and helped establish the integrity of the study. Advisors and the thesis committee members also helped ensure that the final writing was cohesive as they had access to the data to confirm its analysis.

Validity is made in relation to the transferability of the study (Lincoln, YS. & Guba, EG., 1985). It is helpful to the reader to know the context of the study to know which aspects of the study could be transferable to another situation. A description of the University and the workshop setting is necessary. This study was conducted in a distinctive setting at James Madison University in Virginia within the art education

department with the undergraduate pre-service teachers. This unique situation is an important factor in this study. The group of pre-service teachers at JMU participated in an action research study in which they were observed while learning new technologies to use in their teaching. This information helps the reader understand the ways in which the techniques used in this study (Appendix H) with pre-service teachers might be transferable to use with art students at any level.

Dependability is important to validity as well. Guba states that it is important to show that the findings are consistent and were repeated (Lincoln, YS. & Guba, EG, 1985). The instructor's data collection methods overlapped and complimented each other. The surveys followed by interviews contained richer content in which students could expand on their answers. The video recording helped back up the descriptions written by the instructor during observation of students working on their projects. The data collections were made available to outside auditors who reviewed the analysis of data to confirm triangulation.

The study needs confirmability according to Lincoln and Guba's evaluative criteria. The ways to confirm a study is by triangulating the data and also to begin the study by admitting initial assumptions. From the questions being used in this study, it is clear that one initial assumption was that pre-service teachers and their future students could benefit from learning new technologies included in the art curriculum. Another initial bias would be that I believed that the use of interactive technology in the art classroom is necessary to a comprehensive art curriculum.

It is very important to display research ethics while completing a study. No harm may come to subjects and their privacy must not be violated. Anonymity is very

important to maintain for subjects so that they will feel they can be honest during interviews and surveys. Student names were not presented in this thesis. Instead, each student was assigned a number. Names, assigned to numbers, were collected by the instructor and stored on a password-protected computer in the Art Education Center. These code numbers were used for all data collection. After the completion of the data collection process, the participant's numbers were scrambled and they were assigned a random letter. This assigned letter is what represents participants throughout the final thesis.

Informed consent was obtained and documented for all participants. Because the subjects of the study were over the age of 18 years, a parental consent was not necessary. This document was very clear regarding the requirements of participation in the study, outlining confidentiality steps, and also explaining what type of credit/compensation would be included after completion.

Chapter IV

Results and Analysis

Results

Data was collected and analyzed from the group of ten pre-service art teachers who were studying art education at James Madison University. The data is meant to show how the group of pre-service teachers interacted with instructional technology, how they learned the process of creating instructional technological deliverables, and their response to what they learned. Mixed methods were used in data collection as described in Chapter 3, and analyzing that data included the examination and triangulation of pre- and post-instructional technology surveys, pre- and post-instructional interviews, observation journal entries, reflections written by the researcher, as well as the standards and rubrics created by the entire research group and completed by both the researcher and participants to assess performance in relation to technology in the students' practicum experience.

This chapter reports on several areas found in the pre- and post-instructional data collection. This information was gathered through technology surveys and interviews with each participant. The purpose was to find out how engaged the pre-service teachers were in technology, what they produced during their time in the workshops, and then what they reported at the conclusion of the workshops. Before beginning with technology, the students were asked to respond to a personal question. The question posed to the pre-service teachers was, "What kind of educational experience have you had that made you excited about a museum? How did that experience change you?" The entire study was based on the premise that art museums should be used as instructional deliverables in an

art curriculum, so it was important to understand the personal importance of museums to the participants.

Personal Experiences with Museums

The following are a few excerpts from the responses of the pre-service teachers when asked the question: "What kind of educational experience have you had that made you excited about a museum? How did that experience change you?" The honesty with which the students described their experiences helped in understanding what to accomplish during the workshops. The responses from many pre-service teachers correspond directly to what was found in the literature review in chapter two.

Student Z: When I was in Elementary school, I remember we used to go to museums a lot. I was always pretty excited to get out of class, be in DC, and eat lunch on the National Mall. However, the museums were normally pretty boring. We went to the same ones year after year and it was generally for something like history, and I wasn't especially interested in anything there. I do remember one time though, we went to this museum, and I think it was called the Japanese Children's museum, or something to that effect. It was really exciting because it was all about Japan, and the Japanese culture that I was learning about and excited about, but it was specifically engineered towards children. There were lots of interactive exhibits, and where most other museums had giant DO NOT TOUCH signs all over the place, this one encouraged participation with all the aspects of the exhibits. There were things on the walls and floor, there were 2D and 3D things, you could move things around, and it was like no other museum I'd ever seen. Suddenly museums were FUN.

This quote from one participant about her childhood experiences with most museums sums up how many children express their feelings about the majority of museums they visit...bored. What was found in the research was that it is not in the nature of most art museums to be interactive. Many young art students have a difficult time enjoying their early art museum experiences. Part of what drew me to this study is my

belief that it is possible to bring an element of interactivity to an art museum using a combination of strategies. Through use of interactive technology, students of any age can be engaged and excited in the art museum experience. It was one of the goals of the semester to show the pre-service teachers how to use, create, and then implement these interactive technologies inside of a gallery, or when that direct experience is not possible, to virtually recreate the interactive museum experience in the classroom through thoughtful, educational, and fun technology deliverables tied to lesson objectives. The following pre-service teacher responses directly relate to the kinds of transformative experience that can take place within the museum when confronted with the actual work.

Student R: This past winter break I went to the Metropolitan Museum of Art in NYC with my dad and sisters. I quickly became frustrated with them wanting to travel so swiftly past each painting and eventually told them I would catch up with them. Seeing pieces I had studied only weeks before in my art history class gave me chills and I felt like I wanted to share random pieces of art historical information with the strangers next to me. I was nerding out. It took every bit of self-control not to touch the paintings (and I'm 21 years old). The older I get and the more I learn, the more I wish I could revisit old pieces and see new things. There's a lot to be said about visual culture and learning about what's going on right now, but museums give us the opportunity to be humbled by those artists who came before us and see ideas that were once so original that they were considered crazy (literally). I love that.

This participant beautifully narrated her longing to be in the presence of original artwork and even expressed her longing to teach those around her about the work. Reading this narrative aided in deciding strategies to teach the pre-service teachers ways they could enhance student interactions with original art. The ultimate goal for planning a trip to an art gallery is to allow students an "Ah ha" moment where they feel connected to the work.

Student U: A trip we took to New York would be the most memorable museum visit. We went to the MET, MoMA, and the Whitney, I believe. We did a few scavenger hunt like activities which got us thinking about the artwork in more depth than if we were just set loose to look around without any guidance. Also the fact that most of the exhibitions on this trip included contemporary art, which was and exciting change from most of the collections we had seen in the museums in DC. The trip to New York helped solidify in my high school brain that being an artist and creating work as a lifestyle really was an acceptable path for your future. Especially seeing contemporary work where the artist was still alive. It helped open up my mind to the vastness of the museum world and how artistic interests and collections can have a wide variety. It was nice to be able to see something completely new in a museum setting and ask the teacher about it, and even to see how it was related to anything we had previously done in that class.

This pre-service teacher appreciated art as a career by visiting the contemporary art museums in New York City during high school. She claims that this specific trip opened her mind. This story illustrates the power of physically being in a museum. The possibilities for what students will take away from their experience are really endless, and can be both positive and negative. For the purposes of this study, it was important to discover what experiences in the museum setting were seen as positive, and which negative.

There is no doubt that the real experience cannot be replicated. After realizing this, the ultimate goal to find ways to enhance a museum-centered curriculum using instructional technology that would engage students in the classroom and the museum space. The goal was to share these deliverables with the pre-service teachers in hopes that the knowledge would enhance their teaching, and ultimately lead their students to similar experiences.

Preparedness of Pre-Service Teachers to use Technology in their Lesson Planning

The pre-service teachers participating in this study used their own art education experiences to complete initial pre-instruction surveys and interviews. The undergraduate students in the art education program at James Madison University presented various levels of preparedness in terms of using technology in the implementation and preparation of their art lessons. These pre-service teachers were teaching in a middle school for their last practicum placement in the art education program. In preparation for the observation of their lessons tan assessment (Appendix E) was collaboratively created which the pre-service teachers would use to rate their use of technology during the lesson.

Pre-Service Teachers' Previous Use of Technology in Writing and Implementation of Art Lessons

Using the data from the pre-instructional technology survey (Appendix A), it was easy to compare the percentage of pre-service teachers who used technology in every lesson and the pre-service teachers who only occasionally use technology in their lessons. Only 40% of the polled pre-service teachers claimed to use technology in every lesson. Keep in mind, there were only 10 participants. Therefore, 60 percent of participants means that 6 out of 10 claimed to use technology in every lesson.

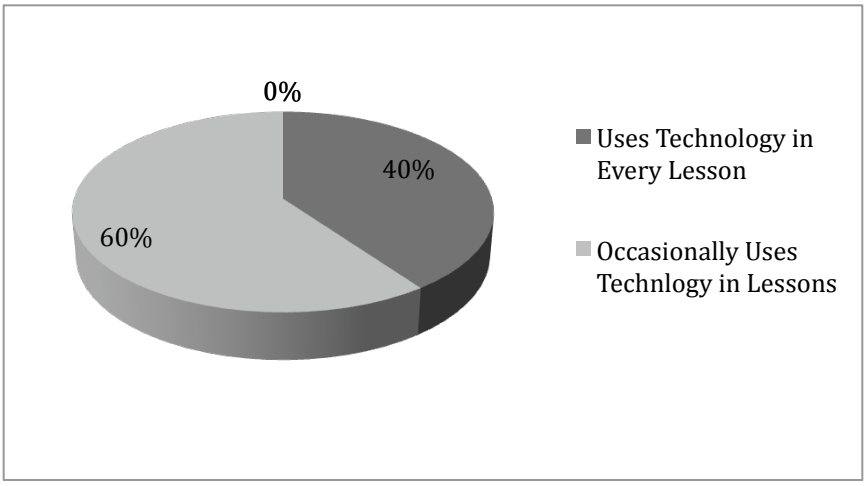

Figure 1. Pre-service Teachers Use of Technology in Art Lessons

What this result immediately indicates was that all of the students claimed to use some technology in their lessons already. They were familiar with Microsoft's PowerPoint program and all claimed to have used it in their art lessons. It was interesting to see that only 4 out of 10 students said they used technology in every lesson. A higher number was expected considering that all of them said they typed their lessons on a computer. The only way to account for this percentage is thinking that when answering the survey questions, they did not consider one of two things: (1) using a computer to be using technology; or (2) they only used the computer for lesson planning rather than implementing their lesson. The question on the survey did ask about planning versus implementation. If the wording of the question asked "Do you use technology in lesson planning?" the data might have showed a higher percentage of students reporting "every lesson."

Specific Technologies used by Pre-Service Teachers Before Technology Workshops

The pre-service teachers used a variety of tools in planning and implementing their art lessons, however, the most commonly used are what is reported. The varying numbers in the bar graph show how the pre-service teachers were all at varying levels of technology usage. All of the participants used their computer in typing their lessons; all of them used PowerPoint presentations for implementing their lessons. The rest of the tools, however, showed varying degrees of usage. The most used include websites, white boards, and digital photography. While the least used tools are listed as virtual museum tours, digital cameras, and Smart Boards.

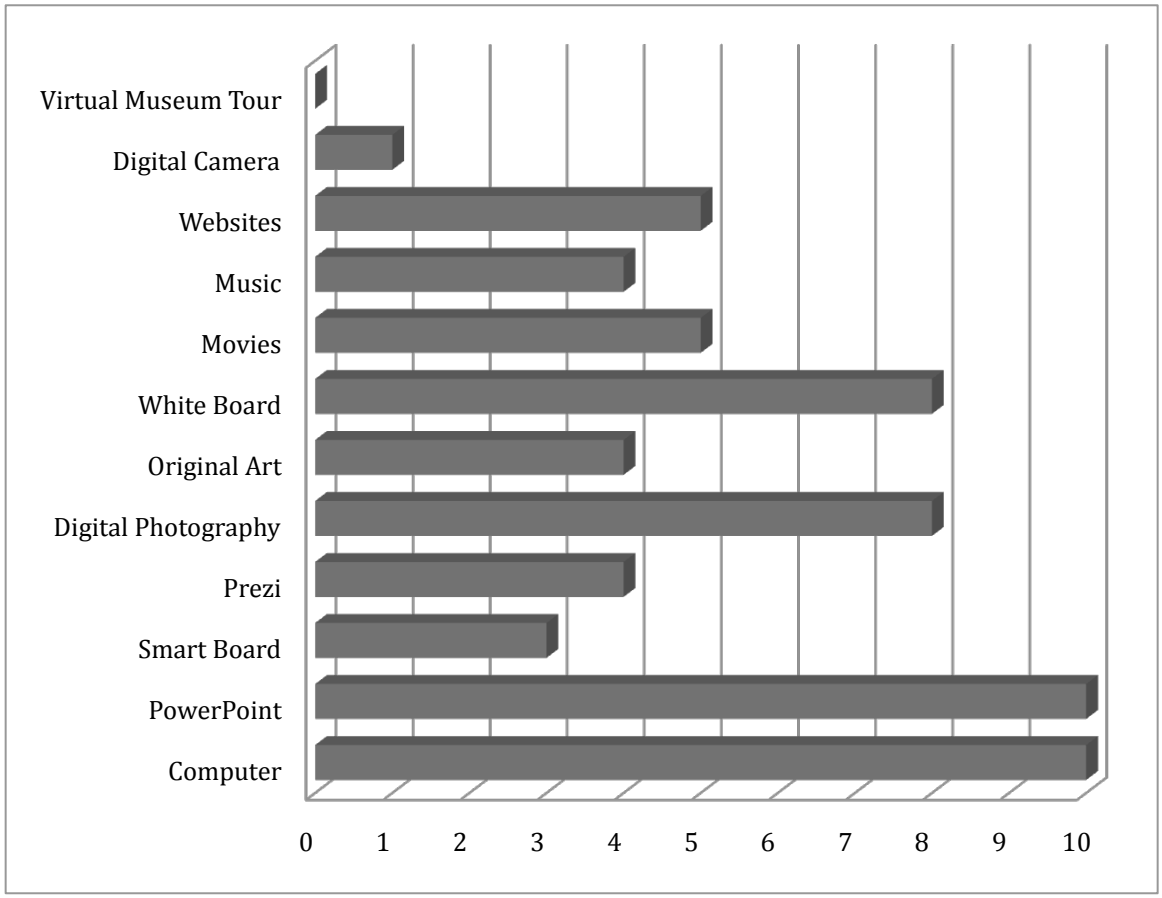

Figure 2. Tools Used by Pre-Service Teachers Before Workshops

Favorite Technologies Used by Pre-Service Teachers When Writing and Implementing Art Lessons

The pre-service teachers had similar experiences using many of the specified technologies. The following graph shows the most commonly used technologies in art lesson planning and implementation before they attended the workshops. It is clear to see a trend in the dependency on PowerPoint to plan and implement lessons. This piece of data was helpful when creating the content of the subsequent workshops.

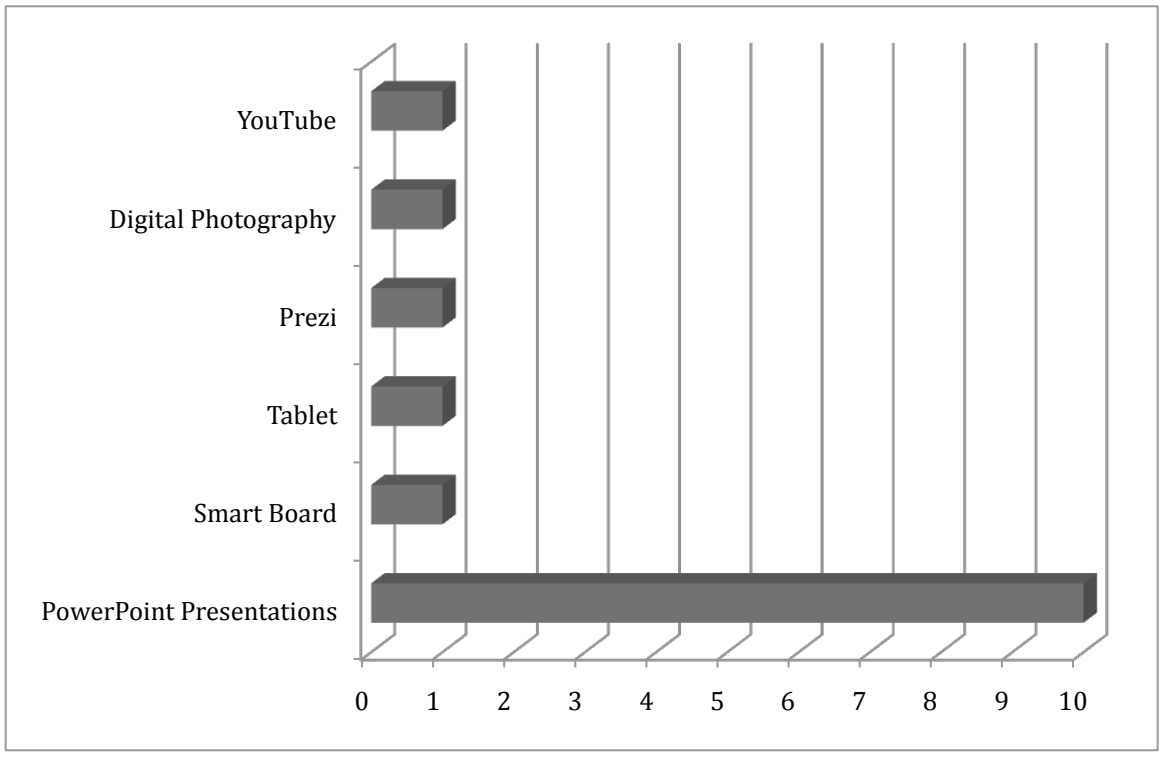

Figure 3. Favorite Technologies used by Pre-Service Teachers in Lesson Planning an Implementation before Workshops

Technologies Pre-Service Teachers Were Interested to Learn More About

There were specific technologies pre-service teachers claimed that they would like to learn more. They were all asked whether learning about new technologies to incorporate in their lessons was something they were interested in and I had 100% positive feedback. The most popular responses for which technologies they were interested in learning included Smart Boards, iPads, and Prezi. The chart below shows the varying responses. This data was also very important when designing the content and timeline of the workshops.

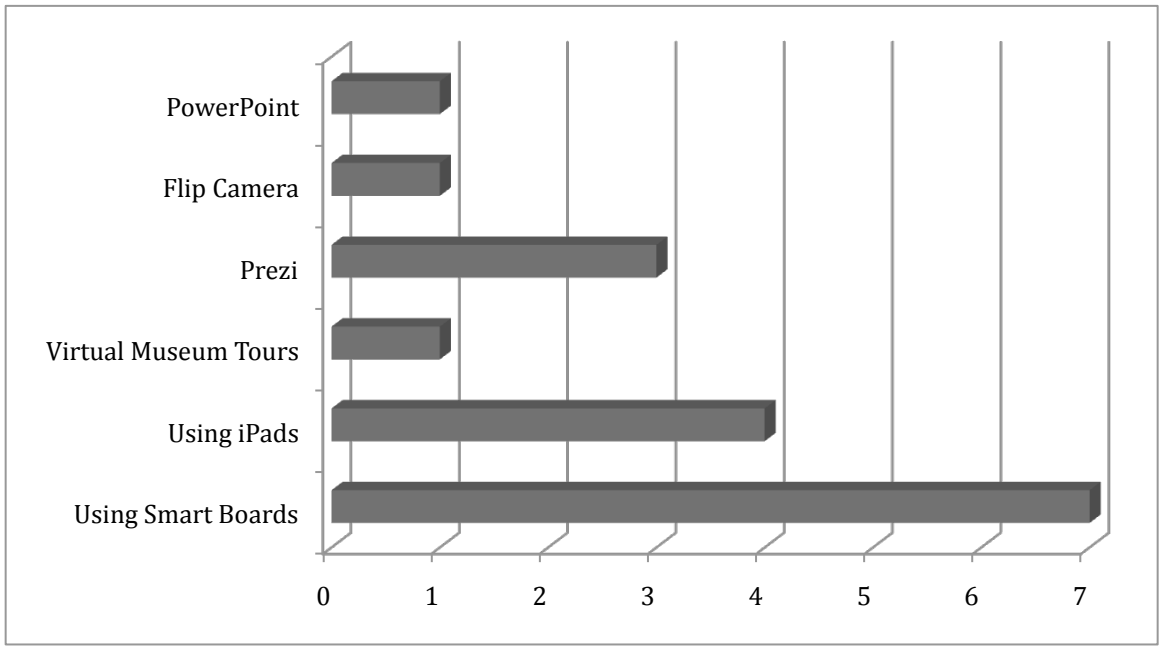

Figure 4. Technologies Pre-Service Teachers Were Interested to Learn More About

Emerging Themes Expressed by Pre-Service Teachers Through Interviews

A pre-instructional interview (Appendix B) was conducted with each participant to determine the relationship between their responses and my hypothesis about their previous preparation in educational technology. I predicted, and the entire premise of this

research study was based on my belief, that pre-service art teachers at JMU needed more hands-on, specific instruction for how to use technology in a creative way in their own art lessons. The hypothesis was based on my own recent experience in the education program and also being out in the teaching field for four years prior to conducting this study. My assumptions were that the pre-service teachers, who were about to enter student teaching would need some guided practice to be able to use more interactive teaching technologies in their art lessons. The themes that emerged from the interviews supported that my hypothesis was reasonable. Some background information was needed from each participant in order to build a reference point. It was important to understand where each was coming from and how they saw themselves in relation to the teaching field. It was also helpful to gauge how enthusiastic they were about their education program and whether or not they felt comfortable with their decision to be an art teacher. Their opinions and past experiences in the art education program were recorded in order for the subsequent workshops could build upon them in the most effective way.

The following table shows the emerging themes from selected questions and responses acquired from pre-service teacher interviews prior to students participation in the technology workshops. Each theme is stated followed by supporting direct quotes.

	Table 1: Pre-Instructional Interview Themes	**# of Selected Quotes/Statements**
1	Decision to go into art education	5
2	Experience in the JMU art education program	4
3	Personal importance of technology	3
4	Lack of technology training at James Madison University	4
5	Interest in learning new technologies	4
6	Personal teaching styles	6

Theme 1: Decision to go into Art Education

Student T: In high school I knew I wanted to teach. I met Kathy (head of the Art Education Center) early in my JMU career because I knew I wanted to do art education.

Student U: I started hearing about art education sophomore year and I had never thought about teaching art, but I had thought about teaching.

Student X: Around sophomore year my parents were worried about being "marketable." I figured since I was already here it would be smart to get licensed to teach art.

Student W: I didn't decide to switch from graphic design to art education until I was a sophomore. I heard about the art education program in another general art class.

Student Y: I already graduated from a smaller college and worked with a family for a year. I met with Kathy Schwartz, the Art Education Director, and decided to come to James Madison.

Theme 2: Experience in the Art Education Program at JMU

Student T: I feel like I am where I belong. I love the practicum experiences cause they help me see a future in art education.

Student W: It's about what I expected. It is a lot of work but it doesn't feel like work because I enjoy it.

Student X: I struggled with lesson plan writing during my time in elementary methods but I have come a long way. It has gotten easier to communicate as I have gotten older.

Student Q: I feel like I still have a lot to learn in student teaching.

Theme 3: Personal Importance of Technology

Student S: I love technology and use it all. It is important for me to keep up to date and incorporate technology into the visual culture of my art lessons.

Student U: Personally, it's pretty important for me to have my laptop with me but my phone is not as important. I just want to have Internet access for research when I am writing lesson plans.

Student X: I use technology constantly. I am always on the laptop, my cell phone, twitter, and tumbler. I always use resources for ideas in lessons and have always been interested in teaching technology.

Theme 4: Lack of Technology Training at James Madison University

Student S: I learned specific technologies in graphics, but not necessarily for teaching but I could apply what I learned for teaching.

Student T: I think we went over the basics of what to do and what not to do in PowerPoint presentations during two of my art education classes. My general communications class helped my use PowerPoint. I had never used it in high school.

Student U: No, I have not had any special training at JMU. Other students have shown me Prezi and we have gone over PowerPoint structure as far as showing images with an art lesson.

Student Q: No real training. Coming to JMU I felt already expected to know about technology.

Theme 5: Interested in Learning New Technologies

Student R: I think it will make me more confident. I would be scared to start from scratch.

Student U: I would like to know how to work a Smart Board before student teaching. My elementary practicum had a Smart Board and the teacher used it just as a screen.

Student X: I want to learn iMovie, Prezi, and iPads.

Student W: Yes, I would like to get away from always using PowerPoint- that can get old fast. I need to be hands-on. I need to do it.

Theme 6: Personal Teaching Styles

Student R: I think using technology can help a teacher relate to kids better. It could be a positive impact on the kids- they really know about technology.

Student S: It will not change what I teach, but how I teach. I don't think it will change my teaching style, but students will benefit from the interactive qualities.

Student T: I think students will be excited by using technology and its uses in their daily life. My teaching style might change a little- make me more in tune with today. There are so many cool tools to get the same lesson across.

Student U: I think it will be easier to incorporate more museum and art history activities. Students would have more access to museum experiences and have more student choice.

Student X: Learning technologies will enhance my existing teaching style. It will be more out of my comfort zone and will give me more options.

Student W: I want more in my teaching tool belt. I'm bored with PowerPoint. Students will be able to experience a lot more.

After completing extensive research on educational technology, taking a class in the development of digital media, and creating my own educational technology for an on-campus gallery, a series of three two hour workshops were designed believing they would benefit the needs of the pre-service teachers.

Previous to participating in the study, students in ARED400, Art Across the Curriculum were able to take a trip to the Lisanby Gallery as a required museum visit for their course. In the gallery, they were able to interact with the PowerPoint program that was created the previous semester for the *Rembrandt and the Mennonite Community* show. The program was installed on the iPads around the gallery, which are permanently installed in the space. The class spent approximately twenty-five minutes interacting with the iPads as well as using a packet of paper activities that corresponded with the work. This experience was unrelated to the study in that there was no data collected at this time, but it is important to mention as some background knowledge for my interactions with these ten pre-service teachers and its influence on the subsequent workshops. It was an

important learning experience to witness what aspects of the iPad program that visitors to the Lisanby enjoyed most. It was also important to watch visitors use the program to see what worked and what could be changed about the content and format. The pre-service teachers seemed to appreciate the interactive aspects of the iPad program such as the scavenger hunt and the drawing tools, but also were very engaged in the content that was related to other subject areas such as geography and mathematics. Many of them were surprised to learn that it was the PowerPoint program used to create the deliverable on the iPads. They were very interested to learn how it was made. Observing the participants interact with the deliverable in the gallery, helped inform the planning and developing of the interactive deliverables for the subsequent workshops.

Reflections of Individual Workshops on Instructional Technology

The following sections are the reflections written immediately following each workshop with the undergraduate participants. Using a template, the following questions were addressed: "What went well? What didn't go as planned? What needs to be modified? How did students respond to instruction? What surprised me?" Answering these questions allowed time to reflect on the strengths and weaknesses of each workshop individually. In the following sections of this chapter, these reflections are summarized for each workshop.

Workshop #1: Reflections made by instructor immediately following the session with pre-service teachers. The following are comments were made by the instructor following the first workshop.

- Prezi was effective for delivering the information on PowerPoint.

- To make sure all data stays anonymous the students were assigned numbers for the entire study, after all of the data was collected, the numbers were replaced with random letters.

- The instructional screen-cast was the not the most appropriate tool to use in the lab to teach interactive PowerPoint. Explaining the process in person would have been more effective.

- Participants were receptive to instruction and immediately began working on their projects.

- The instructions provided for downloading YouTube videos were too small on the screen.

The following are notes from the thesis advisor about the first workshop:

- Translating is important: always think about how things appear to students (screen size, distance, etc.)

- The more technology you use, the more possibility for glitches- make sure the use of technology does not become ineffective.

- The movie created and delivered as a demo became less effective because of the glitches that occurred. It would have been better to do a live demonstration of PowerPoint in the computer lab.

- The Prezi and video will help those students who were not in attendance- they were able to access the Prezi online.

- By the end of the semester, the Art Ed 400 students made all of my information their own, so it was be beneficial to make my Prezi and video demo available on Black Board.

- Don't let technology replace human interaction. Research says: presentation + guided practice + feedback = greatest impact on professional development. Technology has to be practical and do-able for teachers to be able to make and use themselves.

- Keep it simple when it can be simple!

Workshop#2: Reflections made by instructor immediately following the session with pre-service teachers.

- The three students who shared their presentations were able to use the smart board as if they were teaching the class.
- Students expressed a longing to explore Smart Notebook for themselves.
- Participants watched the Smart Board intently, asked questions, and were on task as they started a Prezi account.
- A few students e-mailed their links so it was assumed the rest of them wanted to work on their Prezi at home. The participants were very enthusiastic and focused on working on their presentations.
- After reflecting on Workshop 2, I revised my plans for Workshop 3- to use the docked computers to explore the smart boards.
- Allowing them to have time to explore the technology themselves will help them become more confident.

Workshop#3: Reflections made by instructor immediately following the session with pre-service teachers. The following are notes from the instructor immediately following workshop 3.

- Each student was able to have someone else use their Prezi program and also use at least two other programs in the gallery.
- The participants taught each other and shared their knowledge while being open to suggestions from me as I rotated between groups.
- A successful time during the workshop was the time the students got in groups of three to explore and create a short Smart Board presentation.
- Afterwards, they expressed how valuable they thought the time was to explore and create on the Smart Boards.
- Students needed to take more time in the gallery for gathering photos and video for their movies.

- The participants immediately expressed their gratitude for the time to explore and use the Smart Boards because they all felt it was a valuable lesson they would need in the future.

- It was surprising how quickly the students seemed to remember the Smart Board functions that they learned last week.

- A lot of the participants were interested in working on their project more in their free time.

Preparedness of Pre-Service Teachers in Use of Technology After Workshops

The pre-service teacher participants were asked to reflect on their experience after viewing, creating, and sharing the technology tools they learned over the semester. First the students individually wrote a list of what they remembered creating and learning (Appendix F). Next, they were asked to rank them according to what they believed they would use again, what they might use again, and then what they do not think they will use again. There were trends in how the participants responded to these questions. There was not a list provided from which they could choose; the point was to know what they would remember from their experiences. All technologies they listed were based on their memory and which technologies stood out to them as the ones they will use in their teaching. The following charts show the common threads in how they responded to rating the technology tools.

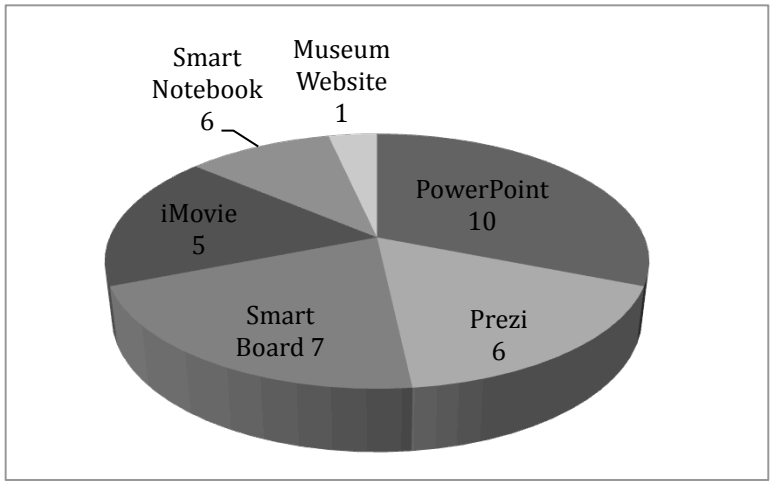

Figure 5. Will Definitely use Again

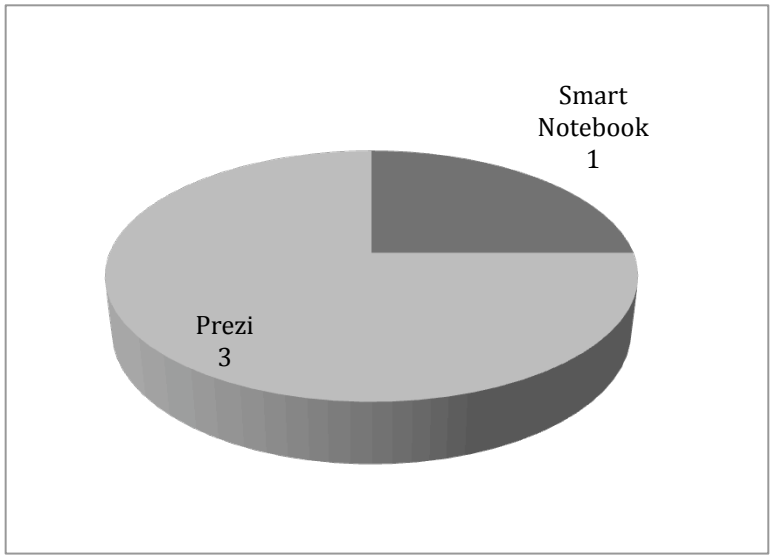

Figure 6. Will Probably Not Use Again

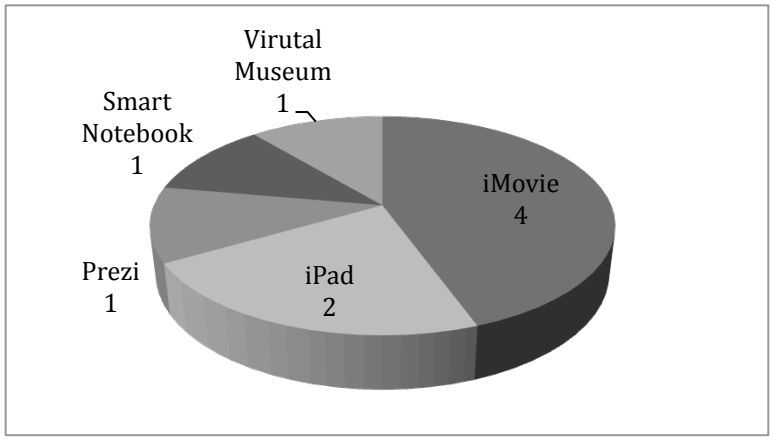

Figure 7. Might Use Again

When filling out their technology tools list individually, many students realized they had forgotten about certain tools they learned, and after sharing with their small group wanted to add to their list of tools they will remember. They were told not to add those tools to their lists since the data should show their initial responses to what they could remember and what they will take with them into their student teaching. The previous charts show which tools the students remembered and rated on their own and how they might use or not use the tools again.

As the students shared in the large group about what they learned in the workshops, a tally count was taken of their favorites and their least favorites among all of the technologies they used and learned during the workshops. Prezi and Smart Notebook, were the only technologies mentioned as the least favorites by students. The reasoning behind these choices had to do with not having the Smart Notebook software available on personal computers and a dizzy feeling brought on by the nature of Prezi presentations. It seemed that Prezi was the most controversial as some students found it to be a nice break from PowerPoint while others did not like the aesthetic of the presentation style. The

technologies listed as favorites by the group were as follows: PowerPoint navigation tools, Smart Board, Smart Notebook, iMovie, and Prezi. Comparing the bar graph below to figure 3, which charts the favorite technologies before the workshops, you will see that figure 9 show a larger variety of favorite technologies. Smart Board and PowerPoint are the two most popular technologies that the pre-service teachers used.

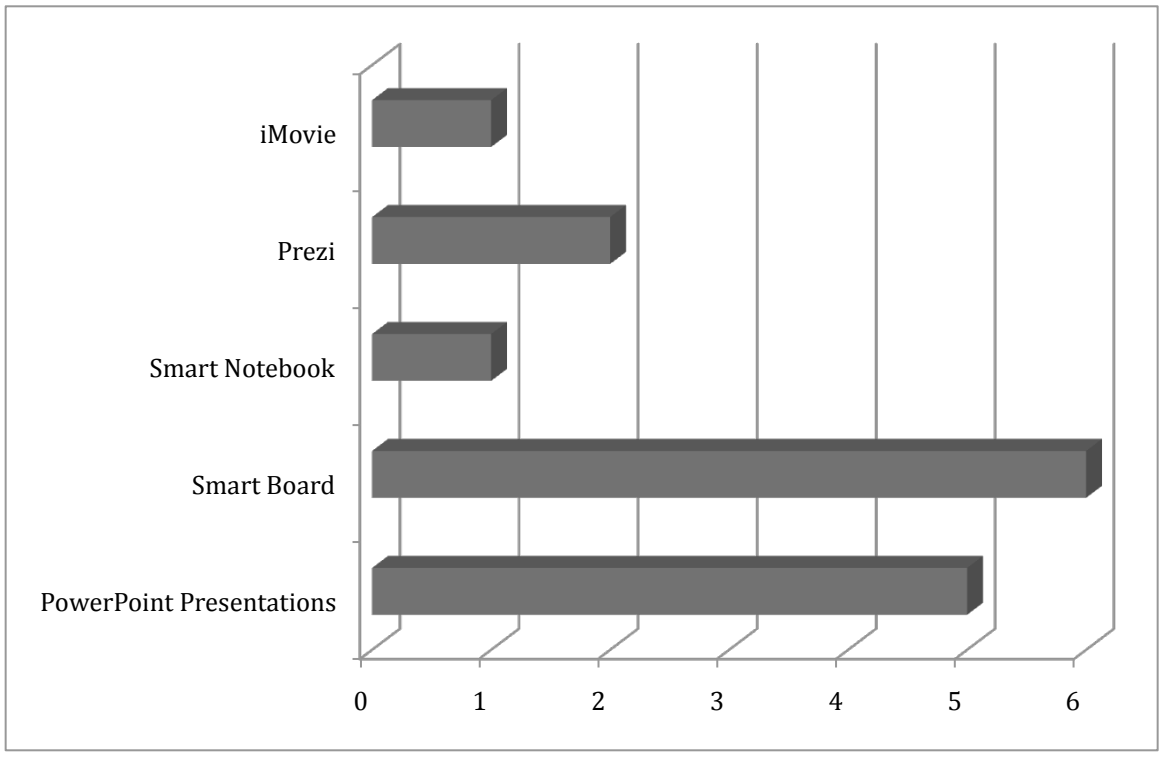

Figure 8. Favorite Technologies Pre-Service Teachers Learned during Workshops

When the participants were asked to complete the post-instructional technology survey (Appendix C), many of the questions were the same as appeared on the pre-instructional survey. The participants were asked to check which tools they used in the development and delivery of their lessons. The following bar graph shows their responses. On the form, there was also an extra line at the end of the question as a place for them to add any additional tools they use. The *Web Design* as well as the *Phone* are listed

because one individual claimed to use both of these as part of his/her instruction or planning as well.

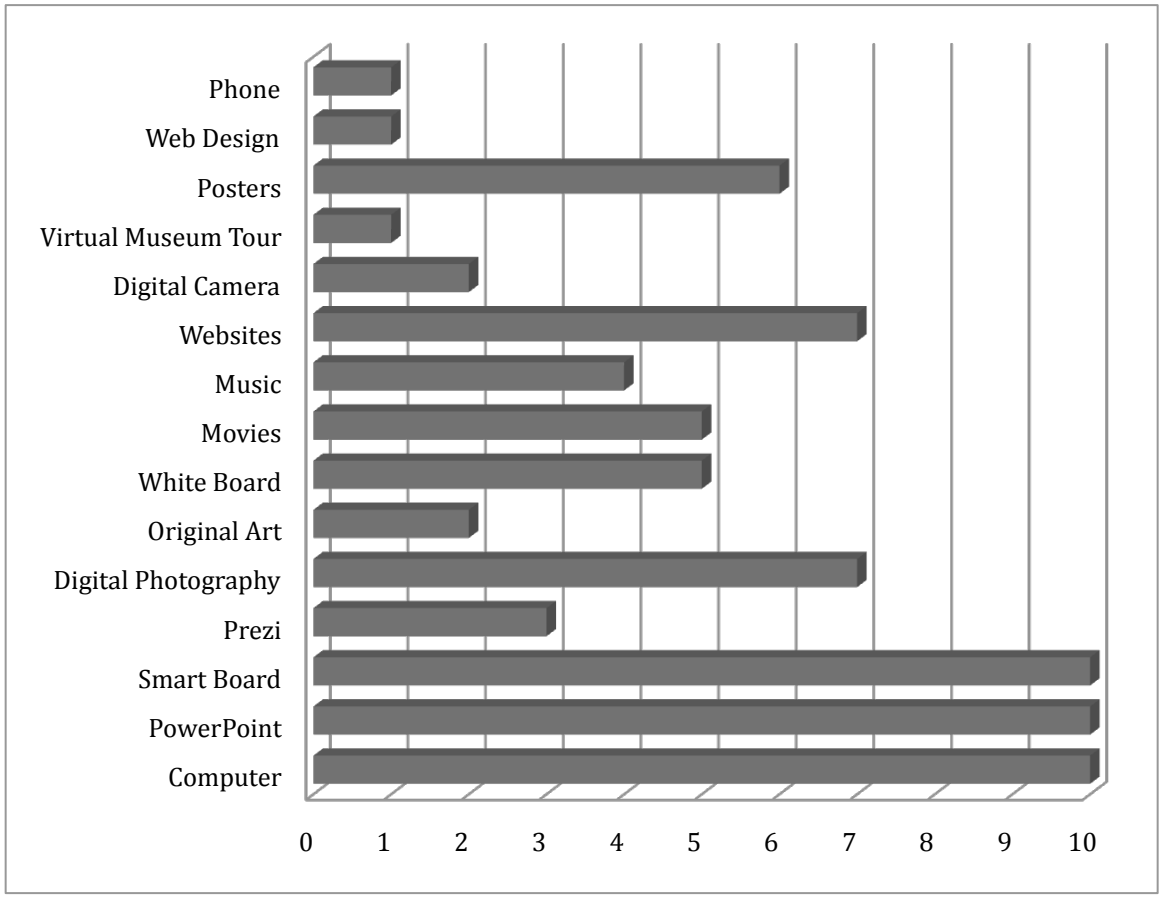

Figure 9. Tools Used by Pre-Service Teachers After Workshops

What Figure 9 reveals is that after several workshops, 100% of participants now claim to use a computer, PowerPoint, as well as a Smart Board as tools in the lessons they develop and teach. Seventy percent of participants said they now use websites in their lessons and a variety of other tools were added to the list of what the pre-service teachers now claim to use in the development and implementation of their lessons.

In addition to the increase in participants claim to use certain technologies, 10 out of 10 pre-service teachers also claimed that they believe technology should be used every day in an art classroom. Out of 10, only 7 actually claimed to use technology in every lesson they develop. Referring back to their initial claims regarding the use of technology (Figure 1) at the beginning of this chapter, the percentage of pre-service teachers who claim to use technology in every lesson (70%) is the slightly higher than before the workshops (60%). All of the pre-service teachers claimed that they would use what they learned during the workshops when planning their own curriculum. In addition, participants were asked if they think that integrating the technologies into their curriculum would affect their curriculum at all. Student Z stated: "I plan on implementing a curriculum that emphasizes creativity and various technologies to engage and spark student creativity. I believe it (the technology) will have a tremendous impact on student learning as it helps engage my students."

The pre-service teachers listed the following that they believe interactive technology will do for their curriculum: emphasize creativity, increase student interest, encourage interaction between students and artworks, create more enthusiasm, add variety and interest to presentation style, appeal to various learning styles, change how to plan and prepare for lessons, and use more visual culture. The affects presented in the responses of the pre-service teachers are hugely beneficial to their curriculum. The overwhelming response from the participants was that yes, interactive technology will enhance student learning.

Participants were urged to expand on what they felt were personal highlights of the workshops. Varied answers were received but there seemed to be common themes

present. The themes are as follows: using Prezi on the iPads in the gallery space, seeing what others had created, creating an interactive PowerPoint with navigation tools, practicing with the Smart Boards, learning how specific technologies work through hands-on activities. Two specific quotes stood out in the responses. These two pre-service teachers shared their positive experiences with what they learned.

Student X: A highlight of the workshops was designing a more interactive PowerPoint. I felt as if that was something I developed that I was really proud of. I loved how interactive it was and how it combined so many things into my PowerPoint.

Student Y: A highlight for me was the various demonstrations of the Smart Board tools. Throughout these particular workshops there were many instances when I had an 'ah ha' moment. I had ideas I could incorporate into my lessons and how I could alter my previous lessons.

These two comments were extremely helpful for the instructor to gauge how the experience of teaching these workshops might impact the participants. The pre-service teachers also had an opportunity say something about how the workshops could be improved. The common themes present in the answers to this question are as follows: needed more class time to work, needed more access to the computer lab, some of the handouts were confusing, and didn't like using Prezi. These responses were helpful for the instructor of the workshops to inform what could be improved upon in order to teach these workshops again in the future.

Finally, the participants were asked to define instructional interactive technology. There was a range of responses, however, like with the other questions, themes emerged. Student X worded it this way: "where the technology becomes a valuable learning object that enhances student learning and the student experience through participation and immersing themselves in learning." Other responses varied in terms of vocabulary, some

other responses were: shared, edited and used to teach, need some degree of user response, technology that includes student participating and enhances learning, can be used for self-guided learning, keeps students involved and engaged with physical interaction, technology used in education or instructional setting that allows students and instructor to manipulate it to enhance a lesson.

Measuring Effectiveness of Instructional Technology in Practicum Lessons

As part of their exit interview (Appendix D), the pre-service teachers were asked to complete a self-evaluation (Appendix E) in the form of assessment standards with rubric statements for their perceived levels of performance in their practicum lessons. The practicum placements for the middle school level are not necessarily in an art classroom. The pre-service art teachers were placed in a variety of non-art classroom settings; all of the participants were split up into special education, math, and computer/technology and were also spread between two middle schools. After teaching their lesson with students, the participants met with me to discuss their lesson. In addition, they edited their practicum video recording of their lesson, and selected a three minute snippet that they felt best represented their teaching, as part of their regular course requirements.

The pre-service art teachers rated themselves on several questions concerning their use of technology during the implementation of their recent middle school lesson. The following data collected was from the questions posed in the assessment (Appendix E). The first question asked to the participants to reflect upon was, “How many interactive technologies were used in implementing your lesson?” The categories given were as follows: none, 1-2, 3-5, or 6-10. Participants were instructed to circle the

numbers after counting all of their combined technologies employed in teaching their lessons. The pie chart below shows a depiction of how the pre-service teachers responded to this question.

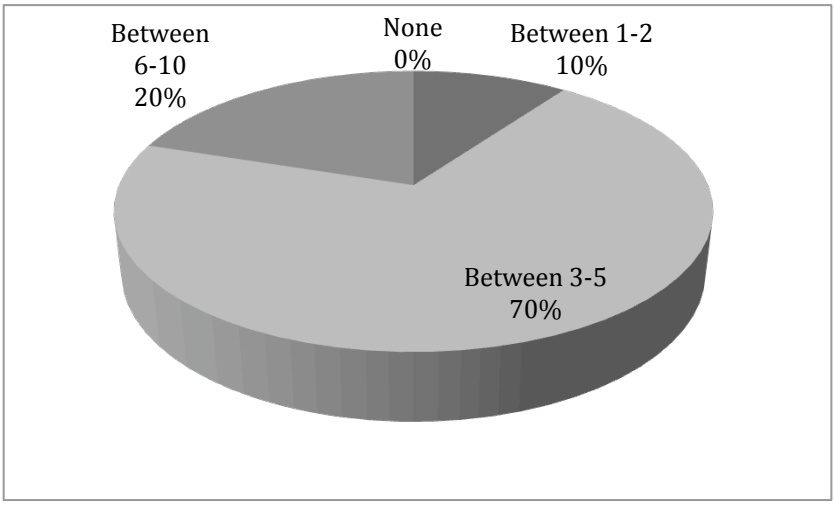

Figure 10. Number of Interactive Technologies used in Implementation of Lesson

Seventy percent or 7 out of the 10 participants claimed to have used between 3-5 interactive technologies during their lesson. Two of ten pre-service teachers claimed to have used between 6-10 interactive technologies. All participants reported using some interactive technology during their lessons.

The following question in the assessment was, "Did the interactive technologies enhance the lesson during instruction?" When thinking about this question, the participants were asked to reflect on how they used their specified number of interactive technologies, and then measure the level of effectiveness of the technology during their lesson. The responses to this question were interesting: only one pre-service teacher reported that they believed "the technology I chose could have been used more effectively." After completing the same assessments upon my observation of the lesson deliveries by the students, I reported that six out of ten pre-service art teachers could have

used their technology more effectively. This variance in the data suggests that the pre-service teachers were more confident that their technology was effective than I believed it was as an observer. As the observer, I was able to take note of improvements needed on slideshows, content, and format of presentations for which students were not aware until I pointed them out. There were very few corrections needed, although there were improvements that I suggested to 6 out of the 10 pre-service teachers.

The lesson assessment was used to display the opinions of the pre-service teachers on the potential benefits of using interactive technologies. The next question on the rubric was, "How would you expect students to benefit from the use of interactive technologies?" The responses to this question were very telling. A total of 8 students (80%) reported that their goal in using interactive technology would be to have "Students comprehend material through using multiple senses and learning styles." There was a correlation in responses between this question and the next question on the assessment. There were 2 students who decided to circle "Students should be more engaged and on task and not divert from learning." These same 2 students also were part of the 5 students who answered the following question with, "I think I still have a lot to learn but I was able to roll with the punches and it was successful." The question asked was, "Were you comfortable using the technology during the planning and implementation of the lesson?" It turned out that 50% of the participants responded with, "I was extremely confident using all of the technology I chose and think it went well." The response to this question showed me that the group was split in half with their confidence in using interactive technologies in their lessons, although all of them did report that the technologies they used as being helpful when teaching their lesson.

Emerging Themes Expressed by Pre-Service Teachers Through Post-Instructional Interviews

Upon interviewing the pre-service teachers after their experience in the workshops and teaching their practicum lessons (Appendix D), patterns were found in the responses and described as emerging themes to share as part of my findings.

	Table #2 Post-Instructional Interview Themes	**# of Selected Quotes/Statements**
1	Visiting Art Museums	4
2	Preconceived Ideas of Instructional Technology	4
3	Workshops	5
4	Bringing Art Students Museum Experiences	5

Theme 1: Visiting Art Museums

Student R: Yes, I just went to MOMA over Spring break and I go to the Virginia Museum of Fine Art several times a year because it is close to home.

Student U: I go to museums several times over school breaks. I go to D.C. mostly to the Smithsonian National Gallery, Portrait Gallery, and the Hirshhorn.

Student X: I love museums. I go all over D.C. the U.S. History Museum. I want to go to the African Art Museum, the Corcoran Museum. I like, the National Gallery of Art. It doesn't have to be art.

Student Z: Yes, I love looking at contemporary art and I enjoy on-campus galleries because they have a mixture of student and professional work.

Theme 2: Preconceived Ideas of Instructional Technology

Student R: I learned that there is more variety within each technology, especially in PowerPoint and a Smart Board. I think it was easier to learn than I thought it would be. I feel more comfortable now.

Student U: Before the workshops, I just thought PowerPoint was a slideshow, I didn't know about integrating a PowerPoint presentation with a Smart Board. I was not expecting to actually make all of these things -- I thought we were just going to be hearing about them.

Student V: I think of interactive technologies differently now. It is more accessible. I can turn an existing presentation interactive without much effort. I thought the technology would be over my head.

Student X: I was able to break down the layers of technology and discover new tools within it. I used to group and lump technology together. It was nice to integrate my own interests and experiences and combine them with in the workshops. I can actually use what I made during the workshops.

Theme 3: Workshops

Student Q: To be open to changing technologies and being open to learn.

Student R: I've just learned about how technology can help me pace my lesson. It helped me break my lesson into manageable chunks.

Student U: The technical aspects of using the tools in PowerPoint (action settings) and how to apply the technology to your lesson, not just using it as an extra.

Student V: I learned that technology can be a great tool for presenting your material-like a teaching tool instead of just a visual aid.

Student Z: I became more confident and comfortable using various technologies and I will not exclusively limit myself to physical images rather than digital.

Theme 4: Bringing Art Students Museum Experiences

Student V: Before I just thought about 360 degree views as being a museum experience, but now I see how I could incorporate questioning strategies and other tools for actually teaching content.

Student W: I've become more excited about it as I have worked with it, it is a good way for me to get as close as I can to the real gallery. They (students) are going to see so much more. I think my most confident lesson so far has been this previous practicum lesson where I used Smart Notebook. It was like my safety net -- it guided me and helped me organize my thoughts.

Student X: I think this was a good reality check for me. Before, I was a purest about students visiting museums. I thought it was something they needed to do with their parents or in their own time (like I did). I realized I take that for granted. Now I think it is my job as the art teacher to make those experiences happen for students whether it is virtually or organizing a trip.

Student Y: Before, I never would have thought of using these things. I had never heard of a virtual museum tour and now I can give my students a better sense of what galleries are like. It also gives them better ideas of the artists' intentions.

Student Z: It's more possible for me! I never would have tried it on my own. I feel that I can separate interactivity from "tacky" to "useful." I can use less "teacher talk" and more "student doing."

It is not only helpful to know how the participants viewed their experience, but also is helpful to reflect as an instructor. It is important to reflect on the experience of teaching the pre-service teachers. Part of growing as an educator and researcher is being able to reflect on your effectiveness. After completing each of the workshops with the pre-service teachers, reflections were written about how the workshop went. The following section is a collection of excerpts from my journal about the individual workshops.

The conclusion of this chapter displays several quotes from the pre-service teachers' written reflections about their coursework this semester.

Student X: I have gained a large knowledge base of using technology in the classroom. I have learned how to better use Microsoft Word to be able to format my lesson plans and documents properly. I can better use PowerPoint, iMovie, audio-visuals, the Smart Board, and other technology within the classroom to really enhance my lessons and make them more interactive for students. This will help me to really make my lesson plans shine when I am out in Student Teaching, and later, when I am an art educator in my own classroom.

Student Z: I've never been great at keeping up with the technology age, even though I'm part of that generation. This semester, I learned a lot about how to use technology in the classroom and as a result I'm leaving confident in my ability to use smart boards, iMovie, PowerPoint, and Prezi. I think my future students will benefit from this, and my lessons will be infinitely more interesting and interactive.

Student W: Participating in Sarah Brown's graduate study has been a real privilege and a wonderful opportunity for me to better my technological knowledge in the classroom. Taking what we learned in the workshops, my partner

and I were able to use SMART Notebook to create a great visual aid for the lesson we taught the Pre-Algebra class. Working with the technologies and understanding how to use them will help me to create engaging and interactive lessons that I hope will benefit student learning. This study also showed that there is still more that I can learn about teaching and how important it will be to continue my education even after I graduate. Staying up to date and continuing to educate myself will not only benefit me, but also will make sure that my students are receiving the best education possible.

Chapter V

Conclusions and Recommendations

This chapter provides interpretations of the data collected before, during, and after the action research portion of this study. Reactions and journal entries from each workshop in the previous chapter were presented in order to make recommendations. The results and recommendations are provided in the following conclusions.

Conclusions: Overall Effectiveness of Educational Technology Workshops with Pre-Service Teachers

Conducting the interviews after some time had passed was beneficial to gauge what the participants will take with them as they move on in their teaching career. Allowing students the time to reflect on their own lessons using the technologies they learned was a helpful and useful way for them to learn. Seeing their first attempts to use interactive technology during instruction showed how far the pre-service teachers had come from the beginning of the semester in terms of their use of technology. It was surprising how many technologies they incorporated into their lessons and how comfortable they seemed using them. The time allowed for guided practice during the workshops built their confidence and showed them how accessible technology was to use. It was reassuring to hear that they all claimed that they would use interactive technology to help them bring museum experiences to their students in the future. The data presented in Chapter Four provided information that answered the research questions presented at

the beginning of the study. The summary of the data related to each question can be stated as follows.

1. How are pre-service art teachers currently prepared to use and implement instructional technology deliverables in virtual museum experiences?

The pre-service teachers were not currently prepared to implement instructional technology for virtual museum experiences. The students claimed not to have had any special training on how to incorporate virtual museum experiences into their art lessons. This knowledge aided in the creation of the subsequent technology workshops. One goal for the workshops became to introduce virtual museum experiences to the pre-service teachers.

2. How are pre-service art teachers currently prepared to use and implement instructional technological deliverables in their art lessons?

The pre-service teachers had limited knowledge of how to use technology deliverables in their art lessons and they were eager to learn more. The data collected from the pre-instructional survey and interview showed that the participants relied heavily on Microsoft's PowerPoint program for the majority of the technology tools they incorporated into their art lessons. Another goal for the workshops became to introduce the pre-service teachers to multiple instructional technology deliverables.

3. How will teacher preparation in instructional technology inspire teaches to create a virtual art museum experience for the classroom?

The pre-service teachers were inspired to use their creativity to create deliverables for museum experiences after learning more about the software programs. The participants expressed how proud they were of their deliverables and brainstormed how

they will use the tools with their own art students. Throughout their explicit instruction on several interactive technologies, the pre-service teachers brainstormed several ways in which they could adapt what they had learned to art lessons. Many students even commented in person about how they will never return to making linear PowerPoints the way they had done in the past. The workshops conducted will and have had a direct impact on the future teaching styles of the pre-service teachers. The workshops catered to what the pre-service teachers said they wanted and also infused a passion for creating virtual museum tours, with the result being a very effective series of workshops on using interactive instructional technology. The data collected at the end of the workshops showed a positive emphasis on how to use a Smart Board for Virtual Museum Tours. The theme of using the instructional technology to incorporate museums into the art curriculum did not seem to be an emerging theme in the responses of the participants. Although the participants understood how to incorporate the museum websites and virtual tours into their lessons, they were more impressed by their new knowledge of using Smart Boards and creating non-linear PowerPoints. From the surveys and interviews, it was not easy to clearly discern which students would use their new knowledge to incorporate museums into their art curriculum.

4. Will learning about instructional technology related to virtual museum settings encourage pre-service teachers to incorporate technology into their art lessons?

The pre-service teachers claim to use more technology in the planning and implementation of their art lessons after participating in the study. The lessons that were presented in the practicum placements used many of the technologies presented in the

workshops. The pre-service teachers seemed very confident using the deliverables and were enthusiastic about sharing them with art students. Many of them expressed that they look at technology differently because of the workshops and that it changed their minds about how a museum can be used as a teaching tool. The overwhelming positive feedback from the pre-service teachers helped when accessing the successfulness of the project. The pre-service teachers listed the following that they believe the interactive technology will do for their curriculum: emphasize creativity, increase student interest, encourage interaction between students and artworks, create more enthusiasm, add variety and interest to presentation style, appeal to various learning styles, change how to plan and prepare for lessons, and use more visual culture. The affects presented in the responses of the pre-service teachers are hugely beneficial to their curriculum. The overwhelming response from the participants was that yes, the interactive technology will enhance student learning.

Recommendations

After completing the series of workshops on interactive technologies for teaching, the following section shares a few suggestions about how to enhance the experience in the future. These conditions of course would be for the ideal situation. First, lengthen the number of workshops. Second, give students more time in the computer lab for guided practice creating technology deliverables. Last, would be to reconsider using specific presentation styles when presenting the tools to the participants.

As far as taking this study further, it would be very interesting to re-visit these teachers in one year to see how this experience really impacted the teachers. It would be

beneficial to contact them for another interview after one year to see where and what the teachers are doing. Are they implementing the technology they thought they would in their lessons? What are the constraints in their teaching positions to using the technology and deliverables that they envisioned? A longer amount of time provided between my instruction and their exit interview would have served my study well to see what long term affects the workshops had on their teaching.

When asking the participants what could be improved, the common themes present in responses were: needed more class time to work, needed more access to the computer lab, some of the handouts were confusing, and didn't like using Prezi. These responses are helpful as the instructor of the workshops because there will be opportunities for me to teach these workshops again. There will be opportunities to provide professional development in instructional technology after returning to teaching in Accomack County. Locally to my current teaching position, there are plenty of opportunities to continue teaching these technological tools. For example, Eastern Shore Community College would be another venue to share this knowledge and possible teach a technology course. A proposal has already been submitted for teaching a museum studies course or workshop to integrate technology at the Virginia Art Education Associated in Richmond in fall, 2015. Beyond that, proposals have also been submitted to present at the National Art Education Association, which will be held in Louisiana in March 2015.

Appendix A: Pre-Instructional Technology Survey

Technology Questionnaire
Form #1
For pre-service art teachers
Spring 2014

Assigned Student Number_____ Date_____
Age_____
Placement for Practicum
(room/School)_____

Check all that apply to you.
I use the following tools in the development and/or delivery of my art lessons:

_____computer
_____power point presentations
_____smart board
_____prezi presentations
_____URL links within presentations
_____digital photography
_____original art (not prints)
_____posters/prints
_____white board
_____virtual museum tours
_____flip camera/digital camera
_____movies/dvds
_____music
_____ other_____

Briefly describe one of your favorite lessons you have created and taught that utilizes technology. If you do not have a favorite lesson that utilizes technology, please explain.
_____
_____
_____
_____
_____
_____

What is your favorite technology to use when teaching art?
_____
_____

_____
_____
_____
_____

If you had the knowledge to use more technological tools in your curriculum would you use them? Which specific technology would you like to know more about/learn how to use? And do you feel like the art education program at JMU has been sufficient at teaching how to incorporate technology into and art curriculum?

_____
_____
_____

How frequently do you use technology in your art lessons? Check one.

_____every lesson _____occasionally _____hardly ever

Are you interested in learning how to create and use technologically advanced teaching tools as part of your art curriculum?

_____for sure! _____ if it doesn't take long _____no thanks

Appendix B: Pre-Instructional Interview

Form #5
Interview of a pre-service teacher: this interview will take place before beginning sessions on interactive technologies.

Date_____
Assigned Student Number_____
Graduation Date of Student_____
Practicum Placement _____

1. Where are you from originally?

2. Why did you choose to come to JMU?

3. When did you decide to go into art education?

4. How has your experience been so far in the art education program?

5. How important is technology to you and your art curriculum?

6. Do you enjoy using technology when teaching? Why or why not?

7. What is your favorite/least favorite technology to use when you are teaching?

8. Have you been trained by any instructor at JMU on how to use a specific technology to use in teaching?

9. Would it be helpful to get more specific instruction and practice using specific technological tools before you start student teaching? Would you use those tools as part of your lessons?

10. Do you think your teaching style will change with the use of more technology in your art lessons? How so?

Appendix C: Post-Instructional Technology Survey

Post-Instructional Survey on Technology Workshops
For pre-service art teachers
Spring 2014

The undergraduate students who take this survey will have completed the ARED 400 course and practicum.

Assigned Student Number_____ Date_____
Age_____
Placement for Practicum
(class/school)_____

Check all that apply to you.
I use the following tools in the development and/or delivery of my art lessons:

_____computer
_____power point presentations
_____smart board
_____prezi presentations
_____URL links within presentations
_____digital photography
_____original art (not prints)
_____posters/prints
_____white board
_____virtual museum tours
_____flip camera/digital camera
_____movies/dvds
_____music
_____ other_____

How frequently do you *think* technology should be used in the art room? Check one.

_____every day _____occasionally _____hardly ever

How frequently do you use technology in your art lessons?
_____every lesson _____occasionally _____hardly ever

Do you think you will include what you learned about educational technology in your own curriculum?

_____for sure! _____maybe _____ I doubt it

If yes, how do you think it will affect your curriculum? Will it affect student learning?

_____
_____
_____
_____

What was a highlight of the workshops for you? Explain.

_____
_____
_____

What could be improved about the workshops? Explain.

_____
_____
_____

In your own words, define interactive instructional technology.

_____
_____
_____

Thank you for your participation in my study!
Sarah Brown

Appendix D: Post-Instructional Interview

Interview of a pre-service teacher: this interview will take place after completing sessions on interactive technologies.

Date_____
Assigned Student Number_____
Graduation Date of Student_____

1. Was your preconceived idea of interactive teaching technology correct with what you learned through attending the sessions?

2. Do you enjoy visiting art museums in your free time? Which ones?

3. Will you create more interactive programs to use in the future?

4. Was this experience different than what you thought it would be? If so, how?

5. What did you learn from the sessions?

6. How did you find the information valuable to you for your own teaching?

7. What do you think will be the benefit to the students that you teach if you incorporate interactive teaching technology in your art lessons?

8. Describe how your thinking about the incorporation of technology, especially that to give K-12 art education students virtual museum experience has changed as a result of the training you have received this semester.

Appendix E: Assessment for Practicum Lesson

Student Name:	How many interactive technologies were used in implementing your lesson?	Did the interactive technologies enhance the lesson during instruction?	How would you expect students to benefit from the use of interactive technologies?	Were you comfortable using the technology during the planning and implementation of the lesson?
Class:	Between 6-10	The technology I used completed my lesson and I think student learning was enhanced.	Students should be able to comprehend the material through using multiple senses and learning styles.	I was extremely comfortable using all of the technology I chose and think it went well.
Lesson Area:	Between 3-5	The technology I chose could have been used more effectively.	Students should be more engaged and on task and not divert from learning.	I think I still have a few things to learn but I was able to roll with the punches and it was still successful.
	Between 1-2	The technology I chose did not enhance the lesson the way I wanted it to.	Students should benefit because the instructor will be guided by presentation and stay on task.	I liked using the technology but could see how they could improve my lesson with more practice.
	None	I didn't really use any technology.	Students will not directly benefit from the use of technology.	I am still not a fan of using interactive technology during the implementation of my art lessons.

Additional Comments:

Appendix F: Technology Ranking Form

List of Technology Tools I learned:

Ranking	Technology Tools
Will definitely use again	
Might use again	
Will probably not use again	

Appendix G: Agenda for Workshops

Spring Semester, 2014

Workshop 1:

-Students who wish to participate sign the agreement form.
-Students sign up for pre-instructional interview time to be completed this week
-Complete pre-instructional technology survey
-Introduce topic of my thesis by reading from Chapter One (background)
-Begin workshop #1 (in the lab) Prezi to introduce Learning Objects and a video demo on creating an interactive PowerPoint. (1hr)
    -Pass out instructional handout on getting started in PowerPoint
-Allow for independent working time (45 min.) on their interactive PowerPoint presentations. Ask that they complete them and email them to me.

Workshop 2:

-Allow two students (I have chosen) to share with the class and present their interactive PowerPoint presentations. Have students come up and use the SB for each PP. (allow 30 min. for sharing)
Go over SB tools and settings. (10 min)
-Field trip downstairs to the Sawhill Gallery. (bring digital cameras) Have students decide on three images they are drawn to in the show. Take pictures of the work and also of the entire gallery space. If possible, take one minute of video.
(Allow 20 min. in gallery)
-In the lab, Introduction to using a Prezi.
Show students how to create an account and begin a Prezi.
-Allow students to create a short Prezi using the still images for the Sawhill Gallery to be used on the iPads in the Sawhill Gallery to accompany the artwork. The program can cover any information students research about the art, or it can simply help viewers through steps of looking at the work. (art criticism activity). Allow aprox. 45 minutes to create their presentations in the lab and save them in Prezi. Email the link to me. (go over how to share a Prezi)

Workshop 3: (try to borrow a few iPads from the ETSC)

-Meet in the Sawhill Gallery, with Prezi presentations loaded on the iPads.
-Students pair up and trade iPads to use each other's Prezi programs in the Sawhill Gallery. (allow 30 min.)
Back in the lab:
-Split students up into three groups and give them each a Smart Board to work on. Ask them to use the tools they learned during the previous workshop to start a presentation in the software Smart Notebook. (25 min)
-Allow students to search the internet for virtual tours of museums-start with Google Art Projects and have them create an account. (allow 10 min)
-Watch my virtual museum tour of the Sawhill Gallery
-Pass out instructional handout on iMovie program and go over basics on video editing and have students begin adding their images and video from their time in the Sawhill Gallery.
(at least 5 images and 1 minute of video- still shots can be taken from video)
-Students create a short movie that they will use as part of their virtual museum tour. (allow 1 hour)
-Students will include a title for their movie.
-Save movies on desktop and post them to YouTube and send me the link. (short demo/handout on uploading to YouTube if necessary)

Wrap Up
-Students will watch three successful virtual museum tours made by class members using iMovie and view two successful Museum tours using Prezi. Ask for constructive criticism for all learning objects. (15 min)
-Brainstorm in small groups- make a list of all of the technology tools they learned during the workshops and how can they best use the learning objects? (15)
-Students will work together to create a rubric we will use to score their effective use of technology in their practicum lesson. (they will fill out the rubric in their exit interview. (I will also fill out the rubric for each student)
-Students will fill out a post-instructional technology survey
-Students will be notified of their post-instructional interview time (after their meeting with Roger)

Finishing up:
-I will provide written feedback as well meet with them individually about their lessons.

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