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Art history with a click of a mouse or a flip of a page?

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ART HISTORY WITH A CLICK OF A MOUSE OR A FLIP OF A PAGE?

by
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ABSTRACT

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ART HISTORY WITH A CLICK OF A MOUSE OR A FLIP OF A PAGE?
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The primary purpose of this study was to explore the impact of three research methods. It examined online materials, as well as contextual research based on printed texts in the elementary population. The researcher sought to determine what the most effective method is for helping students to learn art history content, whether it is in the virtual environment of the Internet, the confines of various textbooks, or a combination of both technology-based and text-based research. The subjects of the study were fifth grade students who attended Bells Elementary School, Turnersville, NJ, in the fall of 2006.

The researcher used multiple data collection instruments to verify findings: pre-tests and post-tests, a pre-research and post-research Student Attitude Survey, district standard grading scale, observation output, and class discussions.

This paper will examine the effects of text-based research, technology-based research, and a combination of both mediums. It will uncover the best method of research development in an elementary art context.

ABSTRACTETTE

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The purpose of this study was to examine the differences between the use of text-based research, technology-based research, and a combination of both mediums in the subject of art history. The subjects of the study were fifth grade students. The researcher sought to determine the most effective method to help students learn art history content.

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CHAPTER ONE

INTRODUCTION

Education in Art History has been around since the Renaissance, initially in the setting of art collections and art academy lecture halls. Technology has shaped and guided the discipline of the arts, especially over the last 150 years, with the invention of the printing press, photography, cinematic films, and Internet digital images. One constant has been the desire to learn more about the history of art. However, research techniques have changed over the years. At one time, a trip to the library to search through periodicals, books, and microfiche was the norm.

Today, many historians who study and teach art do so with the use of technology (Witcombe, 2001). Technology has evolved, and so too have research techniques. The Internet, as a research tool, is a broader based resource, allowing the student to choose the environment and search options. The Internet can quickly lead the researcher to data found worldwide.

The use of computers seems positioned to enhance instruction in the arts, including Art History. It is well documented that the arts are considered a critical component to an education that emphasizes creativity, decision-making skills, and confidence in approaching new or unfamiliar tasks. Similarly, research has been conducted that suggests that computer technology helps develop some of these same skills, particularly critical-thinking skills. Seymour Papert believed in the idea of using computers to teach children to think by developing a programming language called Logo.

Fostering teamwork and leadership skills is an outcome that is also accomplished through a comprehensive arts education. Researchers have found that as students work together at the computer, the interaction among the students is just as important as the interaction the student has with the computer (Clements & Nastasi, 1985). Elementary students have better results at uncovering valid data when working together in groups on the Internet, than those students that work individually (Lien, 2000). This is also an important benefit found in a comprehensive arts curriculum.

Teachers of Art History can make tremendous use of the expanded visual images and information available from software programs and the Internet. However, there continues to be debate about which medium is most effective for learning: computer or textbook. Research has shown that lessons enhanced by the use of technology are helpful to students; while other research shows no noteworthy distinctions in the student's learning to use technology, than those students in a traditional classroom (Kozma, 1991). In a subject that requires text-based study as well as visuals, the art history instructor has the opportunity to choose from a variety of computer-based tools to enhance his curriculum. The benefit of utilizing the multi-media approach applies to both students and teachers. Frey and Birnbaum (2002) conducted a study where a number of students felt that there was a positive effect with lectures, note taking techniques, and reviewing for test when technology was applied to the classroom.

It is incumbent upon the teachers, however, to incorporate the use of technology into their teaching toolbox. When teachers have experience using computers regularly in the classroom, it becomes the norm, and is used more frequently (Ertmer, Addison, Lane, Ross, &Woods, 1999). Students that are experienced with computers are better at finding

information than those students who have less experience with computers (Guinee, 2004).

Recently, students find themselves overwhelmed by the vast amounts of data found on the Internet. The data found is sometimes undefined and difficult to manage (diSessa, 1988). This may lead to feelings of confusion and losing tract of the content (Postman, 1995). If the student has previous understanding of the subject, they are better able to comprehend the new wealth of information (Alexander, 1996). This previous understanding of the subject and current research may lead the student to form a new or different perspective (Pichert & Anderson, 1997). Studies on learning preferences illustrate that students vary in their approach and preferences in learning and that no strategy is best for all students (Paul, Bojanczyk, & Lanphear, 1994).

The State of New Jersey's Department of Education (2006) in their Vision statement states that, "An education in the arts is essential part of the academic curriculum for achievement of human, social, and economic growth." It is imperative that New Jersey is vigilant in its support for education in the arts. The arts are not just the paint on the canvas or the clay that a student forms into pottery, it is what a child feels when completing a finger painting or what an artist wishes society to think over and try to correct. The arts are everywhere. It makes you think, feel, and question your surroundings. Art History is an important subject that continues to develop with the improvements of technology. While it is important that the State of New Jersey has publicly supported arts education, including art history, it is equally important that these subjects remain relevant in today's high-tech world.

It is impossible to ignore the impact that technology has had on our lives and the arts. In particular, music and visual arts have been significantly changed. Not only have the composition elements of music and art been affected, but access to them has also expanded. Video sharing websites such as Google, Yahoo, and YouTube are becoming very popular with students and teachers alike. I-tunes, Napster, and other music websites are widely used for music, videos, radio podcasts, and most recently the downloading of full-length movies. The iPod, almost unheard of five years ago, has revolutionalized the way we access and appreciate music. Will art appreciation and art history be next in this technological revolution?

Statement of the Problem

Teachers are always searching for new connections in instructing Art History. How could technology help or enhance in bridging that connection? Why do some teachers take to using technology more than others? In school, students typically learn art history in a variety of different ways. They may be listening to lectures, reading from textbooks, and/or seeing slide presentations on art history. As educators, it is our goal to find the best medium to properly educate our students in the curriculum of Art History.

This study investigated the various mediums used in conducting research in art history. The uses of textbooks were compared to the use of computers and Internet access. The goal of the study was to find the most effective method that is best suited to the student's needs and abilities. In this study, we investigated the needs and abilities of the student, as they understood the process of researching Ancient Egyptian Art.

Significance of the Study

The findings of this study may provide insight for curriculum planners, school administrators, and teachers, as attempts are made to modernize methods of research, and ultimately positively impact scores on standardized tests as a part of the Elementary and Secondary Education Act, which is better known as No Child Left Behind (NCLB). New Jersey's answer to compliance with No Child Left Behind in the elementary population is the NJ ASK. The NJ ASK is a comprehensive test intended to assess student's achievement in the knowledge and skills defined by the New Jersey Core Curriculum in language arts literacy, mathematics, and science. The NJ ASK test contains various picture prompts that are used to engage the students in a creative writing activity. Some of the picture prompts are famous works of art. Many students use picture prompts in Art History classes as a way of interpreting art. The student is shown a work of art and asked, "How do you feel about this work of art?" "What is happening in the picture?" "What do you think the artist is trying to say to their audience?" This technique sparks ideas in the students and helps them put these ideas into written words. The NJ Ask, which replaces the Elementary School Proficiency Assessment, was implemented in 2003 to meet the requirements of the No Child Left Behind Act.

Purpose of the Study

This study examined the impact of various research techniques. It investigated online materials, as well as contextual research based on printed texts in the elementary classroom. The researcher sought to determine what the most effective method is for helping students learn art history content, whether it is in the virtual environment of the

Internet, in the confines of various textbooks, or a combination of both research mediums.

Assumptions and Limitations

The scope of the study was limited to 130 fifth grade regular education, special education, and basic skill students at Bells School, Turnersville, New Jersey. For this population, who took the NJ Ask Test 4 in the Spring of 2006, during their fourth grade year, Language Arts Literacy scores resulted in 4% of the students being Advanced Proficient, 78% of the students being Proficient, and 18% of the students being Partially Proficient. This is relevant because students need a foundation of research skills to participate fully in this study.

Parent permission was obtained to participate in the study. It was assumed that all students have a basic understanding of computer-based and text-based research techniques. This assumption was based on Washington Township Public School's curriculum, which provides computer education classes to third through fifth grade students.

The researcher prepared the pre-test, post-test and handout with open-ended questions. Since the researcher had control over these materials, there is potential for researcher's bias. This project used multiple data collection sources to ensure that the data are valid; signifying that it measured what it was supposed to measure. The data were presented factually and free of bias.

Definitions of Important Terms

1. Art History: the study of works of art, architectures, social and cultural environments expressing the spirit of its age.
2. Ancient Egyptian Art History: covers the pharaohs, the pyramids, their gods, and their artifacts.
3. Conceptual Understanding: In conceptual understanding, fine details of a concept may be lacking, while an overall idea is understood.
4. Interactive Technology: Interactive technology involves more than one computer such as networks like the Internet and World Wide Web.
5. Internet: The Internet is a global network that connects local area networks, wide area networks, and regional networks from all over the world together into one global network.
6. Logo: Logo is a high-level programming language originally designed as an artificial intelligence (AI) language.
7. Students: Fifth grade children attending Bells Elementary School during 2006-2007 academic year.
8. Technology: Technology is any created device used as a means of artificially reproducing and distributing images and information.
9. Virtual Environment: The Internet is a virtual environment.

Research Questions

This study addressed the following research questions:

1. Based on the results of the three tested groups of students (technology -based, text-based, or a combination of both mediums), what were the differences in the achievement levels in each of the tested groups researching Ancient Egyptian Art history?
2. Is there a significant relationship between the type of instruction and the attitude of the student conducting research?

Hypothesis

There will be no significant differences in the student's gained knowledge of Ancient Egyptian Art History concepts or their motivation to do research among technology-based research (Group A), text-based-research (Group B), and the combination of both technology and text-based research (Group C).

Overview of the Report

Chapter one is the introduction of the study. The study compared three tested groups (text-based, technology-based, or a combination of both mediums), to determine if statistical differences occur in the achievement levels in each of the tested groups researching Ancient Egyptian Art history. Also contained in the chapter is the statement of the problem, the purpose of the study, the significance of the study, the assumptions and limitations, the definitions of important terms, the research questions, and the overview of the report.

Chapter two provides a review of scholarly literature pertinent to this study. This section includes a brief summary on Seymour Papert's research on the brain, a summary of research prepared on computers in the classroom and the Internet, and studies conducted on text-based learning and its impact on students.

Chapter three describes the study methodology and procedures. The following details are included in this description: content of the study, the population and sample selection and associated demographics, the data collection instruments, the data collection process, and an analysis of the data.

Chapter four presents the findings or results of the study. The focus of this chapter is to address the research questions posed in the introduction of the study.

Chapter five summarizes and discusses the major findings of the study, with conclusions and recommendations for practice and further study.

CHAPTER TWO

REVIEW OF LITERATURE

Numerous educators feel that existing textbooks are no longer sufficient for what students need in today's constantly changing world. But, is technology the answer to education's future? Kneeder (1993) declared, "Textbooks have been a mainstay in education for decades, but their role as an anchor in curriculum is changing" (p. 1). Educators as well as students feel that textbooks are limited to either broad or inadequate information on various subjects and do not increase "knowledge" in the student's learning process. Kneeder (1993) stated, "Traditional texts do not actively engage students, appeal to a variety of senses, or cause students to develop life-long interest" (p.2). If traditional textbooks are decreasing in popularity how then should educators revamp their school curriculum? How should educators manage their contemporary school environment?

The flexibility computer-based learning provides to an art history curriculum enables teachers to tailor the curriculum to meet the needs of students' varying learning styles. Teachers should assess which kind or kinds of intelligence each student has and guide the students to the learning activities that focus on these "multiple intelligences" (Gardner & Hatch, 1989).

Basic Learning Research

Armstrong and Casement (2000) utilized research conducted on children's brain development and the effects of the children's early interaction with computers. This study

referenced research by Seymour Papert, who believed in the idea of using computers to teach children to think. Papert, along with Marvin Minsky, co-founded artificial intelligence studies at Massachusetts Institute of Technology (MIT). They developed a new programming language called *Logo*. The basic principle of Logo, also known as "turtle geometry", is an exercise in which a student programs the computer to input commands to a turtle icon on the screen, which cause it to walk the commanded number of steps in a straight line or angle. Based on the commands, the turtle draws a line as it goes, creating various geometric shapes. *Logo* could transform the way children learn. By programming the computer, children would perceive the computer "as instruments to work with and think with, as the means to carry out projects, the source of concepts to think new ideas" (Papert, 1993, p.168). Papert described his work at MIT as "playing like a child and experiencing a volcanic explosion of creativity. Why couldn't the computer give children the same kind of experience?" (p. 33).

Researchers have found no reliable evidence that students learn to think in a logical or chronological way, develop problem-solving skills, or apply those skills as a result of programming in Logo. Problem-solving skills can be taught, but skills learned in one condition do not inevitably mean students will be able to transfer those skills to another field of study. Yet without the transfer of problem-solving skills, where is the advantage of teaching Logo to children? The relationship between children programming Seymour Papert's "turtle geometry" is similar to a child surfing various websites seeking information about Art History. In Art History, students make and study images, these images affect the student's needs, their daily behavior, their hopes, their opinions and their ideas of the world around them. Each child has the potential to achieve higher

learning skills. As Papert's Logo programming helps, children develop problem-solving skills, so too can children guide their way through various websites and develop their knowledge of Art History.

There are two different ways that transfer of skills can happen (Salomon & Perkins, 1987). One way is to practice a skill through rote memorization. It can then be passed on to another situation subconsciously, such as jumping rope. The other way skills are transferred is the conscious awareness that skills learned in one context can be applied to another. The child makes a conscious effort to use a skill that is learned and generalize to another situation. For example, a child learns to read music while taking guitar lessons, and can apply that skill to piano lessons.

Clements and Nastasi (1985) stated that numerous studies have revealed that students who work in partnership at a computer correspond more with each other and ask each other more questions than students working in a conventional classroom setting. Several researchers have acknowledged that this type of relationship among students is just as important as the interface between the students and the computer (Clements & Nastasi, 1985). This collaborative work environment among students can cultivate teamwork and leadership skills. A comprehensive education in the arts can also help in constructing these important skills.

Several educators feel that children younger than 12 are not yet ready to understand abstract thoughts and ideas (Krasnor & Mitterer, 1984). Papert (1980) believed that the use of computers could accelerate cognitive development by changing the borders between concrete and abstract, allowing children to transfer to adult thinking at an earlier age.

The first three years of a child's life are the most significant. This is when the stages for thinking, language, vision, and emotional well-being are established. There is a small window of opportunity that allows information to reach the brain and make changes in its configuration. This change in the brain only happens during brief periods of time at various stages of child development. When these windows close, the brain loses its ability to reform itself. The brain's configuration is now locked in place and cannot be changed (Kotulak, 1996). Children exposed to Art History at an early age may have the potential to link a relationship of both a visual and a conceptual manner that may be a significant association to the child's future learning. However, further research is needed to establish this connection to art history and early childhood brain development.

Some researchers feel that it is fine for very young children to learn easy tasks on the computer at an early age (Brinkley & Watson, 1988). Other researchers strongly disagree; Katz and Chard (1989) argue, "Just because children can do something when they are young does not mean that they should do it" (pp.18-19). Some computer tasks may cause more harm than good and have adverse long-term effects if done too often. Healy (1991) feels that children, who over stimulate their visual senses while using the computer or watching television deprive themselves of the opportunity to obtain listening skills. This is crucial to the child's overall cognitive development. However, research also illustrates that students working in small groups while interacting and communicating with the computer shows better leadership and communication skills and less moments of isolation. This is also crucial in a child's overall cognitive development.

Children are beings of the senses, developing the importance of learning by using physical sensations and using physical materials. Naturalist Diane Ackerman

(1990) observed that: "There is no way in which to understand the world without first detecting it through the radar-net of the senses. What is beyond our senses we cannot know? Our senses define the edge of consciousness," (p. xv). In order to make sense of our environment we must use our senses to find meaning in this world. Art and Art History help children develop their senses, and enable them to find meaning and express themselves in the world. The arts are rich disciplines that include a vibrant history, an exemplary body of work to study, and compelling cultural traditions.

The New Jersey Department of Education's (2006) visions on standards states:

> "Experience with and knowledge of the arts, including Art History, is a vital part of a complete education. The arts are rich disciplines that include a vibrant history, an exemplary body of work to study, and compelling cultural traditions. An education in the arts is an essential part of the academic curriculum for the achievement of human, social, and economic growth...The arts offer tools for development. They enable personal, intellectual, and social development for each individual. Teaching in and through the arts within the context of the total school curriculum, especially during the formative years of an elementary K-6 education, is key to maximizing the benefits of the arts in education."

While it is important that the State of New Jersey has publicly supported arts education, including art history, it is equally important that these subjects remain relevant in today's high-tech world.

Technology in the Classroom

Since the 1970s, when computers started to become part of the K-12 classroom environment, the use of this technology has steadily grown (Puma, Chaplin, & Pape, 2000). Many recognize the important impact computer technology can have and appreciate its flexibility in a learning environment (Bereiter, 2002). In a Report to President William Clinton on the use of technology, the Panel (1997) wrote:

> While a number of different approaches have been suggested for the improvement of K-12 education in the United States, one common element of many such plans has been the more extensive and more effective utilization of computers, networking, and other technologies in support of a broad program of systemic and curricular reform. (p.6)

Coley, Cradler, and Engel (1997) conducted surveys on technology in American schools, which provided evidence that some computer-based teaching was beneficial to the learning process. The data collected from four meta-analyses of tutorial-based computer assisted teaching applications establish the average gain between 25% and 41% of standard deviation (Kulik & Bangert-Drowns, 1990). However, there is still a lack of studies with broad enough scope or duration to properly determine the effects of technology in education. There is a definite need for further research as technology continues to evolve and become more commonplace in the classroom.

As documented by Nobel (1998), it is evident that integrating technology into the classroom has many challenges. Cuban, Kirk, and Peck (2001) detailed some of these challenges, identifying the cost and reliability of technology products, the current structure of schools to support technology integration, and the need for increasing

technical support. If these challenges are not met, "...only modest, peripheral modifications will occur in schooling, teaching and learning. Teachers will adapt innovations to the contours of the self-contained classroom. New technologies will, paradoxically, sustain old practices" (p. 830).

The evolving development of interactive and collaborative instructional software, as well as the inception and growth of the World Wide Web, has made technology a more powerful and flexible tool in the classroom and beyond. However, despite this growth in technology use and availability, there are various levels at which teachers use computers and integrate their use into their practice (Faison, 1996). The more experience teachers' gain in using computer applications in the classroom, the more commonplace the use of technology becomes, and it is used more often and with more flexibility (Ertmer, Addison, Lane, Ross, & Woods, 1999). Cuban et al., 2001 have discussed whether teachers' computer use is complementary to their established teaching styles. Hadley and Sheingold (1993) state that the computers used in the classroom are viewed as outside the core learning environment and are considered an "add-on activity or simply technological versions of the workbook approaches that are already prevalent..." (p. 265). It is important to understand the depth of teachers' instructional use of technology to fully understand the implementation of technology in the classroom.

Technology-based training provided to teachers is another major factor influencing the incorporation of computers in the classroom (Chin & Hortin, 1994). Teacher's aptitude with computer usage is greatly influenced by the training they receive (Gilmore, 1995) and it also affects teachers' opinions about computers in education (Becker, Ravitz, & Wong, 1999). Other research has ascertained that there is a correlation

between the amount of technology use in the classroom and the amount of technology-based in-services (Gilmore, 1995; Zambo, Buss, Wetzel, 2001). Teachers have expressed the need for training that can have practical applications, not just skill development, so that they can more effectively teach students how to accomplish a task or learn these applications via the available technology.

Access to dependable and useful technical support and resources determines the extent to which computer technology is used for instructional purposes in the classroom (Gilmore, 1995; Jaber & Moore, 1999). Marcinkiewicz (1996) states that increased availability may not necessarily lead to increased classroom use. Becker et al. (1999) surveyed 4,083 teachers; the data revealed that only 5% of upper-elementary, 4% of middle grade and 13% of high school teachers were presently using computers, even with increased accessibility. Another study conducted by Cuban et al. (2001) supported this finding. Access to the computers, for both students and teachers, is an important indicator in measuring actual technology integration in the classroom (Jaber & Moore, 1999). Integration is hampered by lack of access, when both students and teachers have to take turns on the computer.

Teachers can also be challenged with technology integration when faced with the lack of policy and/or strategy on how to accomplish this (Cuban, 2000). In studying technology integration in "high-tech" schools, Cuban et al. (2001) cautioned that "...the prevailing assumptions guiding policy on new technologies in schools are deeply flawed and in need of re-assessment" (p. 830). The research community needs to provide a well thought-out plan and sense of direction to help schools acquire curriculum plans and policies that are appropriate to the incorporation of computers into the classrooms.

School administration must be active in both leadership and policy development to facilitate the adoption and adaptation of technology in schools. Marcinkiewicz (1996) recommend that teachers' must recognize the necessity of computer incorporation as a component of their profession. The more that administration, colleagues, students and the larger professional community demonstrate the use of computers, the more easily this perception can be established (Coley et al., 1997; Wiebe, 1999). It is also important that students learn how to successfully navigate on the computer, because it will most likely be an essential tool in their future employment.

Researchers have reported that relationships exist between the teacher's use of technology in the classroom and various demographic characteristics, including age, gender, race, educational level of teachers, students' socioeconomic status, years of technology use, teacher specializations, and school size. These important factors were identified in studies by Ely, 1999; and Jaber & Moore, 1999.

There have been studies conducted looking at the influences on teachers' willingness to broaden their practices, including incorporating technology, how hard they work to do this, and how they accomplish this incorporation over time (Ertmer et al., 1999). Studies have included examining how teachers' perceptions and feelings about their role in classroom are affected by the use of technology (Chin & Hortin, 1994). Marcinkiewicz and Regstad (1996) looked at the relationship between real time computer use in the classroom and teachers' beliefs and confidence in themselves. Bradley and Russell (1997) studied teachers' comfort levels in using computers. Additional research studied how computer use in the classroom is impacted by teachers' individual teaching philosophies (Briscoe, 1991). Teachers may express positive attitudes about technology

in education, but their method of teaching may not support their use of computers in the classroom.

These are just a few studies that focus on teacher's attitudes towards computer technology. The strongest indicator of technology use in the classroom is based on the teacher's own personal use of the computer outside the classroom. Jaber and Moore (1999) research states that teachers' computer use at school is positively correlated with their access to computers at home.

Teachers use computer resources like the World Wide Web, word processing, and online journals to gain information and express themselves (Becker et al. (1999). Cuban et al. (2001) found that research alleges that instructional practices are not different whether the teacher uses a computer or not; information is transmitted but learners do not actively gain knowledge. The computer, including access to resources such as the World Wide Web, is the tool that teachers can use to help students gain knowledge, but it is the way that the student uses that knowledge that is the important foundation of education.

Many teachers use multimedia, such as text, images, sound, and video clips as part of PowerPoint slides to help present information (Karakaya, Ainscough, & Chopoorian, 2001). "Multimedia" generally means using some blend of text, graphics, video, animation, music, voice, and sound effects to communicate to the context being learned (Gaytan & Slate, 2002). Multimedia has also found its way into the presentation of Art History. A curriculum with its slides, collection of picture books, and text on numerous subjects from painting techniques, artists, and cultures can be merged with multimedia. Multimedia is becoming an important tool in elementary classrooms in presenting various subjects including art history.

This multimedia approach has helped teachers find alternative ways of conveying information to meet the needs of various learning styles in the classroom. It is well established that the use of various methods of instruction enhances students' ability to process information and gain a better understanding of the content (Lambert & McCombs, 1998). When used appropriately, multimedia instruction can create a deeper understanding and benefit students with different learning styles by presenting materials in a more complete rather than limited manner (Mayer, 2003).

The consensus among a majority of students is that instruction, enhanced by the use of computers, has positive effect on lecture-style learning, particularly with note taking and test preparation (Frey& Birnbaum, 2002). Researchers suggest that students view teachers who are using multimedia methods more positively, and that test scores and student feedback indicate considerable advancements in student learning (Smith & Woody, 2000). Teachers who encourage students to create their own multimedia presentations in art history and other subjects allow the student to develop a deeper understanding and conceptual learning of the subject matter.

There is no way to get around it - technology in the classroom is here to stay. However, technology needs to be integrated into the classroom effectively if it is going to improve the way teachers teach and students learn. As educators, it is important to focus on the way in which these technological tools are used, not just the fact that they are present in the classroom. Saettler (1990) urges that we remember:

> The historical function of educational technology is a process rather than a product. No matter how sophisticated the media of instruction may become, a distinction must always be made between the process of developing a technology

of education and the use of certain products or media within a particular technology of instruction. (¶4)

American schools are undergoing a dramatic change with the introduction of computers in the classroom. This calls for a radical reconstruction of the educational system and changes in the way children learn about and experience the world. In the 1970s, students used drill-and-practice programs. In the late 1980s, CD-ROM technology was developed. Now, instead of drill-and-practice programs, there are simulation programs and electronic encyclopedias, which are more advanced than ever before. Meta-analytic research advocates that computer-based instruction improves student achievement as well as traditional text-based instruction across all subjects (Kulik & Kulik, 1991). However, some research suggests that computer-based instruction is more effective with lower ability students (Moore, 1993).

The Internet

Created as a tool for only a selective group of people, such as engineers and scientists associated with academic or government circles, the Internet rapidly evolved into the World Wide Web now in use today. The Internet has changed the way humans communicate, appreciate music, art, and are entertained through video and audio streams. It assists researchers, and enables purchases ranging from music, movies and groceries to clothes and airline tickets. The World Wide Web promotes social interaction and provides a means of communication between teachers, students and students' parents, producing an enriched teaching and learning environment.

The Web is an enormous resource of multimedia information, tutorials, and live data for both teachers and students. These tools not only replicate the traditional

classroom, they expand it. The Web is also a tool for storing, distributing, and retrieving important course information and is readily available at the students' or teachers' convenience (Aggarwal & Bento, 2000). Some research reveals that technology–assisted lessons are beneficial to the students; other studies do not indicate significant differences in the student's learning between the technology-assisted classes and the traditional classes (Kozma, 1991). Computer-assisted teaching was beneficial to some students, while other students performed better under traditional lecture methods without computer-assisted instruction (Ott, Mann, & Moores, 1990). Art History can be presented in the use of text-based study as well as the computer-based study; the instructor has the option of using one or the other methods of instruction to enhance his visual curriculum.

Research reveals that many students utilize the Internet and are more Internet-experienced than their parents and teachers (Tapscott, 1998). Guinee (2004) discussed and supported, with other researchers, the various interactions between teachers and students with computers. Studies have shown that elementary students (Kafai & Bates, 1997) like to conduct research for school projects by using the Web (Eagleton, Guinee, & Langlais, 2003). Recent research indicates that more school-age children in the United States use computers at school than at home (Newburger, 2001). As students graduate to higher-grade levels, their use of the Internet to complete work for school increases (Lien, 2000). Students commonly use a combination of computer-based and text-based resources today (Fidel, Davies, Douglass, Holder, Hopkins, Kushner, 1999; Large & Beheshti, 2000), while research indicates that some students' favor using the Internet as their main source for information (Large & Beheshti, 2000). One-reason students prefer using the Web instead of text materials is the speed at which they can locate information

(Large & Behesti, 2000). Many students lean towards using the Web for finding current or very hard to find information, and use printed text for acquiring thorough and organized information on general subjects (Large & Beheshti, 2000). However, despite the increasing use and popularity of the Internet, there are students who would rather use only traditional text material for their research (Large & Beheshti, 2000).

The Internet with its multimedia presentations is a constructivist style of teaching and learning, with its ability to reach students in various levels not currently done in the traditional classroom setting. It is common to find teachers using technology in a wide range of purposes, including record keeping, organizing lesson plans, creating study guides, creating PowerPoint presentations, and emailing parents. Students are also found using technology to write term papers, collecting and analyze data, linking to experts in the field, and conducting research. Students taught in the omni style of technology have the opportunities to visit a range of websites, and link to numerous sources quickly.

In a traditional method of teaching the stress learning is placed on individual achievement. Where as is a constructivist method of teaching the stress in learning is on collaboration and group work. This method of learning can help in promoting social skills and co-operation skills in the student's future. The teaching method in a traditional setting is to teach sequences of skills graded from low-level to high-level. Constructivist method of teaching is to assist the student to learn through problems and explore various possibilities. The environment of a traditional classroom is a formal instruction, lectures, worksheets, mastery activities, and test. However, the constructivist classroom has an informal atmosphere, open-ended questions, research and development, learning portfolios, and descriptive assignments.

In the traditional or linear style of teaching/learning, students do not expect to participate in a teacher-delivered lecture. Students expect the teacher to tell them what they need to know, what materials will be on the exam. The student only needs to copy the information and memorize it for the test. The student has no reason to analyze or synthesize the material.

The student in a constructivist classroom is in control of their learning experience. It is a "Democratic" vs. algorithmic structure. Teachers must not merely give the student the facts but guide and coach them in the direction of the answer. The student in a constructivist classroom has the chance to observe different worldviews and alternative solutions. Giving the student to obtain worldly skills and technical training for future careers.

One strategy that students use for Web-based research is working with search engines (Guinee, Eagleton, & Hall, 2003). By the time they are in fifth grade, students can locate information using the Web without any assistance (Kafai & Bates, 1997; Lien, 2000). Students most often use one search engine or another when locating sources on the Web (Vansickle, 2002). Compared to younger students, older students utilize more than one search engine at a given time, possibly, because the older students have more practice on the Web and know the location of more search engines (Lien, 2000). Many students become annoyed by the slow speed of the search engines and by their failure to find the required information in a given time period (Fidel, et, al, 1999; Wallace, Kupperman, Krajcik, & Soloway, 2000). The students that learn to create better search strings can avoid this frustration while researching topics in Art History.

Students who have more computer experience are better than their fellow students at creating and defining search strings (Bowler, Large, & Rejskind, 2001). Students' universal computer skills may be connected to their access to computers (Vansickle, 2002). The study by Kafai and Bates (1997) indicated that students who had previously been able to work with the Internet were more advanced in their computer skills than those who had not been exposed to the Internet, particularly in a group work setting. The more skilled the students were with the computer, the better they were at fact-finding skills than their fellow students (Guinee, 2004). Elementary school students who work together in groups on Web searches are more successful at finding the correct information (Lien, 2000).

Today, students teach themselves how to use the Internet or they learn from each other (Vansickle, 2002). As a result, they are able to measure their own abilities against their peers. Therefore, most of the students see themselves as average in their Internet searching ability and are satisfied with their skills (Fidel, et al., 1999; Vansickle, 2002). Students will stop and ask for help if they find themselves having difficulty, but for the most part feel they can successfully navigate the Web independently (Vansickle, 2002). When asked if they want to improve their searching skills, most often they reply that they already know everything they need to know to search the Web (Fidel, el al., 1999). Experts disagree, and many believe that instruction that is more explicit is required (Eagleton & Guinee, 2004; Wallace, et al., 2000). Students prefer an informal, independent learning approach, using one on one instruction or written guidelines rather than in a classroom or lab setting (Vansickle, 2002). This teaching environment can be

accomplished and should be considered by educators as an alternate approach to teaching the Internet.

Traditional paper textbooks have been the foundation for instruction, but electronic "hypertext" is becoming more and more common. One of the newest developments is "e-texts"; books that are published and circulated electronically, that are intended to support, but may replace traditional paper textbooks (Hane, 2000). Course-management learning systems such as WebCT (www.webct.com) and Blackboard (www.blackboard.com.), which supply and incorporate on-line reading assignments directly into a course, are becoming more frequently utilized at universities. These systems are accessible through links to external Websites or stored on the university servers.

There are major advantages of hypertext as compared to paper text (Mercieca, 2004). Traditional hard copy paper is unable to provide the hyperlinks that can guide the reader to wide-ranging supplemental information, simulations, tutorials, glossaries, dictionaries, tests, and other resources that are routinely available through hypertext.

Text-Based Learning

Text-based learning has been around before chalkboards were in schools. In order to understand text-based learning, it is necessary to look at the world of readers today. Text-based learning involves the student's acquisition of knowledge and understanding from textbooks, encyclopedias, periodicals, and handouts. These are important skills to possess when conducting research in art history for future assignments. Jetton and Alexander (2001) convey the trials and tribulations of the reader and the research that supports their theories. Today's readers are besieged by a wealth of information that can

be difficult to organize and control (diSessa, 1988). As a result, students may lose focus while reading as a way of compensating for this rush of information (Postman, 1995). Therefore, students can have problems sorting out important information. The student may not be able to tell the difference between significant and insignificant information and factual to untested information (Alexander & Jetton, 2003). A textbook provides an in-depth examination of a particular subject, but reading straight from a text can make processing the information difficult for students, and they have difficulty relating it to their everyday lives (Whitehead, 1957). Students may find themselves overwhelmed without additional resources or methods to help with their comprehension. A subject such as Art History may be hard for some students to fully understand if their sources are based solely on textbooks.

Three genres of text have been the focus in countless research studies: narration, exposition, and mixed (Graesser, Golding, & Long, 1991). Narration is a writing style that is without embellishment, written in a story form that is intended to entertain. Exposition style is straightforward writing meant to express information, and the mixed style incorporates the use of information written in a story form. Genres are important because they offer different ways for students to process information. For example, students will determine how important or interesting the information is based on the text genre through which it was communicated (Schellings, van Hout-Wolters, & Vermunt, 1996). The mixed genre is the most difficult for students to process because the factual information is delivered in a story or narrative format (Jetton, 1994). Art History with its narrative text and visual enhancements can draw a student's interest and help maintain and build on their academic skills.

Knowledge a student already has about a subject will have a significant impact on their understanding of the content (Alexander, 1996) and can influence the student's point of view on the content of the text (Pichert & Anderson, 1997). Research was conducted on the attention students paid to information within a text and concluded that when distractions, such as irrelevant thoughts or emotions are eliminated and students concentrate on their assignments they are more successful in learning (Reynolds & Shirey, 1988). Studies have also examined the interest the students had in the text. The results showed that the student's attention was diverted from the important information contained in the text to text that was found to be more interesting detail, sometimes irrelevant to the main topic. Where the interesting detail was placed did not affect the student's recall, but the overall interest factor did, especially if the student knew little about the topic of the text (Garner, Alexander, Gillingham, Kulikowich, & Brown, 1991). In addition, research was done to discover what students found to be important when questioned by the teacher; the findings determined that students were able to recognize the important points of the topic (Alexander, Jetton, Kulikowich, Woehler, 1994).

Many factors motivate a student to read. Two that are essential to learning from text are goals and interest. Goals are motivations students have for their actions (Pintrich & Schunk, 1996). As students take the steps to learn from a text, they are motivated by the goal achievement found in getting a good grade, appearing intelligent, or just trying to satisfy the teacher (Dweck & Leggett, 1988). Other students may have a higher goal, such as gaining the necessary knowledge or skills to master certain content (Meece, Blumenfeld, & Hoyle, 1988). Unfortunately, other students' goals are merely to do the bare minimum with the least amount of effort. Students with the drive to set higher goals

tend to perform better with text than students whose goals are to please the teacher or just complete a given assignment with the least amount of work. In an Art History class, students can be motivated to learn about other cultures and their works of art by reading the text found in Art History books. The narrative plot of the story is played out to the reader and the student becomes engaged within the text.

Kintsch (1980) states that students use emotional and cognitive interest during reading. Emotional interest is when the student is enthused or inspired by the actions of a character found in the text. Cognitive interest is when a student is drawn into the text by the author's passion or ideas on a particular subject. Hidi (1990) found that interest could be described as either individual or situational. Individual interest is characterized by a student demonstrating passion for certain text content, such as fishing or painting, or a topic that they find attractive. Students that have an individual interest are deeply driven in obtaining knowledge and skills because they are dealing with a subject that they relate with their own interest (Alexander, 1997). Artists are inspired by their surroundings. The works of art created by the artist in turn inspires the students. Both the artist and the student must maintain interest in the subject in order to keep the drive alive.

Situational interest is characterized by a student being captivated by the circumstances in which the actual reading takes place. The text content could be the interesting factor, or the teacher motivating the student to read could create situational interest (Murphy & Alexander, 2000). Sometimes, either the teacher or the text grabs the student's attention, and endeavors to keep them energized about reading. Researchers caution that a teacher making a topic exciting may not be enough to maintain the reader's interest in the subject (Dewey 1913). Others believe that it is more important to develop

an internal inspiration for the student to read than trying to create inspiration from an outside influence (Jetton, Alexander, & White, 1992). Art History has both the emotional and cognitive interest that keeps students passionate about reading text.

Alexander (1997) studied how text based learning has changed over time as students become more educated. Alexander developed and tested readers with his "Model of Domain Learning". Readers advance through various stages of learning, starting with acclimation, then through competence, and possibly to proficiency or expertise in certain fields.

Acclimated learners are new readers that wish to understand an unfamiliar field of study. They have little knowledge about the subject and little experience about the domain. Their knowledge is fragmented and without direction. The reader struggles with concepts to determine whether they are important or not, frequently because the text does not supply the reader with an adequate clarification or does not elaborate on the concept (Sinatra, Beck, & Mc Keown, 1992). Using various texts to research art history requires students to refer to an assortment of other texts, rather than just one textbook. This task may be difficult for the student to comprehend or complete. The student does not use reading strategies efficiently and effectively due to their lack of knowledge (Alexander & Judy, 1988) Readers in the acclimation stage have not developed the interest or discovered the value of the content, so they are not motivated to learn the skills or use the strategies effectively. Therefore, they are not ready to master the content (Palmer & Goetz, 1988).

Competent learners are students that have gathered subject-matter knowledge and strategies so that they can effectively read certain fields of study. They have a better

foundation of knowledge on which to build their learning. Competent learners are more engrossed in the topic and less interested in trivial points than acclimated readers are. They are able to apply higher order reasoning strategies as opposed to the lower-level strategies employed by acclimated readers (Alexander, Murphy, Woods, Duhon, & Parker, 1997).

Proficient or expert learners have substantial knowledge of the subject, are attentive to the subject matter, and are focused on gaining a deeper understanding of the text. Alexander (1997) states that because the demands of meeting this level are so high, especially in terms of the actual knowledge base, the ability to obtain it and the motivation to reach that level, that the actual number of proficient or expert learners is low. Schools do not provide students with the necessary time or resources required to achieve this proficiency. Therefore, students are unable to build an in-depth knowledge base and are unable to apply the strategies needed to process the information at this level.

Now that we understand the various stages of domain learning, how do schools go about applying this to text-based learning? The answer is focused on three characteristics of the classrooms: instructional support, instructional materials, and learning autonomy.

The teacher's instruction of content information needs to be clear to all levels in the classroom. Acclimated readers approach text with disjointed knowledge, a low interest, and little or no understanding of strategies. These students need the teacher to guide them in constructing a framework of strategies to help build a foundation of content knowledge and nurture a seed for the student's own interest (Mitchell, 1993). As students grow into competent learners, teachers should always be sensitive to the student's needs. Teachers must build frameworks of strategies as necessary, and as the student progresses

to expertise, they must look for indicators that students are able to pursue subjects with a deeper understanding. Art History builds upon prior knowledge. The teacher must build upon the student's background knowledge; if one does not exist, one must be provided. A narrative approach can lay the foundation to a solid background and deeper understanding of the subject, nurturing the student's interest and building on their knowledge

Another characteristic of the classroom involves the use of instructional materials. Acclimated learners need texts and instructional materials that express basic appropriate standards in basic ways so that they can sort out the important information and discard trivial details (Anderson & Armbruster, 1984). Teachers need to support the reading of this text through the framework of questions, classroom discussions, and helpful explanations (Jetton & Alexander, 1997). All students, no matter what stage they find themselves in, should have the ability to choose what text they should read, the reason for that text, and the means by which the text will be evaluated. By having this chance, the students become more motivated and autonomous (Deci & Ryan, 1991). Not all students can handle complete independence, but they should be given guided options. This will allow the teacher to guide the students towards their own self-direction in selecting appropriate Art History books.

Summary of the Literature Review

Seymour Papert believed that children using the *Logo* program could accelerate their cognitive development. This would allow children to transfer to higher level thinking at an earlier age. Other researchers found there was no real evidence that

children think in a logical or chronological fashion. These studies did not support Papert's theories on Logo.

Research on the brain shows that the first three years of a child's life are significant to a child's development. This change in the brain only happens during a brief period of time. Some researchers feel that it is appropriate for children at an early age to learn easy tasks on the computer, while other researchers argue that some tasks on the computer may be harmful to young children.

Schools today are going through drastic changes with the introduction of computers in the classroom. The Internet has changed the way humans communicate, entertain themselves, and the way they learn about the world. Teachers as well as students are teaching themselves how to use the Web. Research finds that elementary students who work together on the computer have a better success rate of finding information that is pertinent.

Reader's today are overwhelmed by massive amounts of information, making it hard to organize and manage. Due to this overwhelming rush of information, student's views on reading text may diminish. There are many factors that motivate a student to read. Students having goals and interests are essential to learning from text. There are many stages in domain learning. Teachers need to understand these stages of each student in order to teach them the proper learning strategies. Readers need to build a better scaffolding of knowledge to direct their learning. Text-based learning helps build the student's knowledge and research skills.

Clements & Nastasi, (1985) established that the knowledge the students gain by working on the computer is just as important as what they learn by working in small

groups at the workstation. These interactions with computers and students help to foster teamwork and leadership skills, an outcome that is also accomplished through a comprehensive arts education.

Multimedia tools are the missing pieces that can merge easily into the art history curriculum. Numerous teachers present information in their PowerPoint slides by using various helpful multi-media tools such as text, images, sound and video footage (Karakaya, Ainscough, & Chopoorian, 2001). Art history with its mix of text-based information and visual images are standard instructional tools that seem to be a perfect match to enhance this curriculum.

Research has found that higher test scores and positive student feedback occur because the teacher uses multimedia methods in a positive manner (Smith & Woody, 2000). Teachers and students found the multi-media approach supportive in the various presentations conducted in the classrooms. Many students found that instruction, enhanced by the use of computers, has constructive results on traditional lecture-style tutoring, largely with test preparation and note taking (Frey & Birnbaum, 2002).

The training acquired by teachers increases their abilities to use computers, (Gilmore, 1995) which may affect teachers' attitude toward computers in education (Becker, Ravitz, & Wong, 1999). The more knowledgeable the teachers' gain in using computer applications in the classroom, the more routine the use of technology becomes (Ertmer, Addison, Lane, Ross, &Woods, 1999).

The Internet and many software programs offer a remarkable collection of tools to the Art History curriculum with its numerous expanded visual images and information. However, the dispute persists about which medium is most efficient for learning:

computer or textbook. A few researchers feel that technology-assisted teachings are supportive to the students. While other studies illustrate insignificant differences in the student's learning between the classes using the computer and those classes that do not (Kozma, 1991). Working with a curriculum that involves text-based study as well as computer visuals, the art history teacher must choose what best fulfills the needs of his students, whether it is computer-based or text-based instruction.

Research established that elementary students (Kafai & Bates, 1997) like to conduct research for school projects by using the Internet (Eagleton, Guinee, & Langlais, 2003). Students also enjoy using the Internet for assignments dealing with Art History.

Lien (2000) states that elementary students who work together conducting Internet research are more successful at finding the accurate information, which can be of benefit when teaching Art History, particularly to this age group. However, access to computer-based instruction is an important component in the confidence and self-esteem the student gains in conducting this research. The more trained the students were with the computer; the greater their success rate at finding facts than their fellow students (Guinee, 2004).

There are many stages to domain learning, and teachers need to understand the stages of each student in order to teach them proper learning strategies. Art History teachers must incorporate this as students' interest in this subject can vary widely. Creativity in delivering the information on the subject can help meet the students needs better, and computer based learning tools offer that flexibility.

Not only have the opportunities for research increased because of the new technologies, but students also have the option to use varied approaches in their learning

process. These new approaches and preferences can positively influence the learning of Art History.

Research supports the use of both text-based learning and computer-based learning. Research also identifies flaws in text-based learning and computer-based learning. What is the real answer to educating students? The gap in research may lie somewhere in between. Educators cannot sit back and wait to see what happens. They need to observe, evaluate, read studies, and conduct their own research if they are to find the best pedagogy, whether the most beneficial education is found in a textbook, a computer screen, or both.

CHAPTER THREE

METHODOLOGY

Context of the Study

This study was conducted at Bells Elementary School, in Turnersville, NJ. The school is part of Washington Township Public School District in Gloucester County, and is one of six elementary schools in the district. The NJ Department of Education (2000) listed the District Factor Group (DFG) for Washington Township as "FG," based on the 2000 Decennial Census data. The DFG is an approximate measure of a community's socioeconomic status (SES), and is ranked from "A" to "J;" districts with the classification closer to the latter classification have the highest SES. In 1996, Washington Township School District embarked in an unprecedented building project committed to the integration of technology into the daily curriculum; known as the Five Year Technology Plan:

> Washington Township Public Schools' students will attain the educational technology and information literacy skills that will assist them in achieving the goals of the New Jersey Core Curriculum Content Standards. Washington Township Public Schools' educators will attain the skills and knowledge necessary to effectively use Educational Technology to assist students to achieve the goals of the New Jersey Core Curriculum Content Standards. Washington Township Public Schools' students, teachers, and administrators will have access to Educational Technology in all learning environments: including classrooms,

media centers, laboratories, faculty rooms, conference rooms, training centers, and community centers. (Flemming & Ramondetta, 1996)

Population and Sample Selection

The target population for this study was fifth grade regular education, special education, and basic skill students who attend Bells School. The available population was all six fifth grade classes, which consisted of 130 students. A convenience sample was the six fifth grade classes that are part of the researcher's daily teaching schedule. These classes were organized into three groups, each group consisting of two classes each. Group A consisted of 45 students who conducted their research on Ancient Egyptian Art History using only technology-based research methods. Group B consisted of 42 students who conducted their research on Ancient Egyptian Art History using only text-based research methods. Group C consisted of 43 students who conducted their research on Ancient Egyptian Art History using a combination of both technology and text-based research methods.

Instrumentation

Following approval from the Institutional Review Board of Rowan University, a pre-test (Appendix C) was conducted to assess the student's prior understanding in the subject of Ancient Egyptian Art History. A post-test (Appendix D) was created to compare and contrast learned concepts. The pre-test and post-test each consisted of 12 multiple-choice questions. Both tests contained the same questions, with a variation in the placement of the questions, to avoid memorization of the content. To determine if the contents of the test were applicable to the students' knowledge base, both pre-test and post-test copies were reviewed by six of the fifth grade teachers and the reading specialist

to determine for readability and efficacy. The reviews from the teachers and reading specialist found it very readable and compatible to the students' level of knowledge.

To determine if the pre-tests and post-test were reliable 25 fourth grade students were randomly given the pre-test. A week later the same 25 fourth grade students were given the post-test. The student's overall scores in both pre-test and post-test were similar. The pre-test average mean was 4.71 and the post-test average mean was 4.24. These calculations determined that both test were valid and appropriate in testing the student's knowledge on Ancient Egyptian Art History.

The instrument used to guide instruction was a researcher-prepared study guide (Appendix F) consisting of 12 topics, each addressing a question assessed in the pre-test and post-test. Six fifth grade classroom teachers and the school reading specialist were asked to determine the reading level of the study guide (Appendix F) to make sure all students were likely to be able to respond consistently to the topics. These teachers found the study guides reading level to be appropriate for fifth grade students. This was confirmed in the student responses, all of which directly answered the questions as posed.

The validity of the study guide was determined by correlating the topics explored and the questions presented in both the pre-tests (Appendix C) and post-tests (Appendix D). In presenting the handout to the six fifth grade teachers and reading specialist, all understood the connection of each question to the topic under consideration. Subsequently, in all student responses, the questions assessed by the researcher were appropriately answered.

Presentation of Material

To avoid any form of bias, including a differentiated teaching style, the researcher was the primary administrator of the test. The students in Group A researched Ancient Egyptian Art using only the Internet. The relevant websites found on the Internet were pre-selected by the researcher. The students in Group B researched Ancient Egyptian Art using only text, such as resource books, periodicals, and magazines. These texts were pre-selected relevant to the topic. The students in Group C researched Ancient Egyptian Art using both the Internet containing relevant websites and text, such as resource books, periodicals, and magazines pertaining to the topic. All texts and websites used in the study were pre-selected. In all three Groups A, B, C the same study guide was provided to the students to use in gathering information for their research.

Collection of Data

The principal of the school granted permission to distribute the pre-test and post-test to the fifth grade students. Parent permission slips (Appendix B) were given out and collected before administering the pre-test (Appendix C). The pre-test was given to students to measure student's prior knowledge. A study guide (Appendix F) with open-ended questions was given to students to help focus their direction in the research. The time given to the students to research was limited to three 40-minute classes. After the (A, B, & C Groups) conducted their research on Ancient Egyptian Art, a post-test (Appendix D) was given to assess the student's knowledge gained from the research. No identifying information was gathered on the pre-test and post-test. The pre-test and post-test were collected and analyzed.

In order to develop a baseline of the current topics in the art class about art history, a Student Attitude Survey (Appendix E) was distributed to the students along with the pre-test and post-test. The survey was attitudinal in nature, and reflected how the individual student felt about Art History and the various methods of collecting research. The findings were compiled from collective responses, and data was compared to surveys that were distributed after the interventions took place. Because results were compiled from collective responses, participants were informed that they were completely anonymous, and there was no risk of their identity being revealed. They were simply participants in a study.

Analysis of Data

The independent variable was the number of fifth grade students in the study. The dependent variable was the measurement in the change of the knowledge base. Group A consisting of 45 students, was measured using technology-based research, while the Group B consisting of 42 students, was measured using text-based research, and Group C consisting of 43 students, was measured using a combination of both text-based research and technology-based research. After the research was completed, each group was given a post-test. The researcher designed two Student Attitude Surveys that were given during pre-test and post-test, these were also analyzed for statistical differences. A frequency table of the results from the pre-test, post-test, and both pre-research Student Attitude Survey and a post-research Student Attitude Survey were generated and the means for the data were calculated and entered into Chapter 4.

A full analysis of the data was entered into Chapter 4. The hypotheses of the study were considered analyzed and appropriately accepted and/or rejected. The results of which were entered into Chapter 4. From the analyses presented in Chapter 4 conclusions were drawn and recommended for further study were made and entered into Chapter 5.

CHAPTER FOUR

FINDINGS

Profile of the Sample

The subjects of this study were fifth grade regular education, special education, and basic skills students who attended Bells Elementary School. The available population consisted of all six fifth grade classes. A convenience sample was selected from classes that are part of the researcher's daily teaching schedule. The researcher used multiple data collection instruments to verify findings; pre-tests and post-tests, a pre-research and post-research Student Attitude Survey, district standard grading scale, observation output, and class discussions.

Research Questions

Research Question 1: Based on the results of the three tested groups of students (technology-based, text-based, or a combination of both mediums), what were the differences in the achievement levels among each of the tested groups researching Ancient Egyptian Art History?

Table 4.1 contains the mean scores of the pre-test and the post-test for each of the three groups. Group A (45 students) conducted technology-based research, while Group B (42 students) conducted text-based research, and Group C (43 students) used a combination of both text-based as well as technology-based research. Each group showed a gain of knowledge from the pre-test to the post-test.

In comparing the mean scores of the pre-test and post-test for each group, one can see a significant increase in the pre- and post-test scores. However, not all students saw an increase in their scores. In Group A, 0% of the students scored lower on the post-test. In Group B, 9.5% of the students showed a decrease in their scores and Group C, 2.3% of the students had a decrease in their scores. In addition, the percent of increase of each group from pre-test to post-test yielded the following results: Group A had a 122% increase, Group B a 78% increase, and Group C a 107% increase. Group A, the technology-based research students, showed the highest percentage of increase from their pre-test to post-test.

Table 4.1

A comparison of the differences and the percent of the increase of the means between the pre-test and post-test of (Group A) technology-based research, (Group B) text-based research, and (Group C) technology and text-based research.

Group	(n=)	Pre-Test Mean	Post-Test Mean	Percent of Increase
Group A: (Technology)	45	4.49	10.00	122%
Group B: (Text)	42	5.07	9.05	78.5%
Group C: (Both Tech. & Text)	43	4.49	9.30	107%

Table 4.2 shows the results of the ANOVA test preformed on the pre-test and post-test of Groups A, B, and C. Group A's gain in scores from pre-test to post-test was (5.47), Group B's gain in scores from pre-test to post-test was (3.89), and Group C's gain scores from pre-test to post-test was (4.95). This is consistent with the percent of increase discussed above. Since the f-value of the ANOVA test was 4.059, as shown in Table 4.2, is greater than the critical value of 3.00, found in the statistical table, the null hypothesis

which stated that there would be no significant difference in the student's gained knowledge of Ancient Egyptian Art History concepts, no matter which research was conducted, is rejected.

Table 4.2

Results of ANOVA preformed on pre and post-test of (Group A) technology-based research, (Group B) text-based research, and (Group C) technology and text-based research.

Group	(n=)	Gain Mean (Differences)
Group A: (Technology)	45	5.47
Group B: (Text)	42	3.89
Group C: (Both Tech. & Text)	43	4.95

Results of ANOVA

Differ ANOVA	Sum of Squares	(df)	Mean Square	(f)	Sig.
Between Groups:	49.486	2	24.743	4.059	.020
Within Groups:	774.083	127	6.095		
Total:	823.569	129			

Table 4.3 shows the t-test paired differences of the means between the pre-test and the post-test of Groups A, B, and C. The data shows that the t-value of the paired differences between Group A and B is 2.262, which is higher than the critical number 1.960, found in the statistical table. This means there is a significant difference when a paired sample test was preformed on the results of each student's pre-test and post-test scores of Group A and Group B. The t-value of the paired differences between Group A and C is .815, which falls within the boundaries of the critical number 1.960, found in the statistical table. This means there is no significant difference when a paired sample test

was preformed on the results of each student's pre-test and post-test scores of (Group A) and (Group C). The t-value of the paired differences between Group B and C is -1.789, which falls within the boundaries of the critical number 1.960. This also means there is no significant difference when a paired sample test was preformed on the results of each student's pre-test and post-test scores of Group B and Group C. This is consistent with results found previously in this study.

Table 4.3

The T-Test paired differences of the means between the pre-test and post-test of (Group A) technology-based research, (Group B) text-based research, and (Group C) technology and text-based research.

Paired Samples Statistics		(n=)	Mean
Pair 1:	Diff Group A	42	5.38
	Diff Group B	42	3.98
Pair 2:	Diff Group A	43	5.37
	Diff Group C	43	4.95
Pair 3:	Diff Group B	42	3.98
	Diff Group C	42	4.98

Paired Samples Test

Paired Samples Test	Mean	(Std. Deviation)	(df)	(t)
Pair 1: (A-B)	1.405	4.025	41	2.262
Pair 2: (A-C)	.419	3.369	42	.815
Pair 3: (B-C)	-1.000	3.622	41	-1.789

Research Question 2: Is there a significant relationship between the type of instruction and the attitude of the student conducting their research?

Table 4.4 examines the students' attitudes toward their research before and after the study was conducted. The paired sample test shows that there is no difference in attitudes of students in Group A, B, or C in conducting research. In comparing Group A to Group B, the t-value (-.331) indicates that there was not a significant shift in the student's attitudes toward research. The analysis is similar when comparing the t-value in the paired samples test of Group A to Group C (1.209) and Group B to Group C (1.374). These t-values were compared to the critical number 1.960, found in the statistical table. The results of the paired sample test of this study established that all of the t-values fell within the boundaries of the critical number. This study showed that there was no significant relationship between the type of instruction and the attitude of the students conducting research among Groups A, B, C.

Table 4.4

The T-Test paired differences of the means between student attitude survey pre-research and student attitude survey post-research of (Group A) technology-based research, (Group B) text-based research, and (Group C) technology and text-based research.

Paired Samples Test

Paired Samples	Mean	(Std. Deviation)	(df)	(t)
Pair 1: (A-B)	-.310	6.055	41	-.331
Pair 2: (A-C)	1.140	6.182	42	1.209
Pair 3: (B-C)	1.238	5.839	41	1.374

After each of the pre- and post-tests were given, the students were asked to complete a survey about their attitude toward conducting research as well as their feelings about studying Ancient Egyptian Art History. There were differences in the

student's attitude towards conducting research and studying Ancient Egyptian Art History is shown in Table 4.5. In the survey, students were given a statement; where they were given five choices and only allowed to pick one: strongly disagree, disagree, no opinion, agree, or strongly agree. The students' raw attitudinal data was collected, averaged, analyzed, and entered in Table 4.5.

In the survey, the statement number two states *I find doing research interesting.* In pre-research Group A, 26.7% of the students disagreed with the statement and 40% agreed with the statement. In post-research Group A, 33.3% of the students disagreed with the statement and 37.8% agreed, showing a decline in the students' attitudes. In pre-research Group B, 28.6% of the students disagreed with the statement and 40.5% agreed with the statement. In post-research Group B, 33.3% of the students disagreed with the statement and 42.8% agreed, showing an increase in the students' attitudes. In pre-research Group C, 16.3% of the students disagreed with the statement and 41.9% agreed with the statement. However, in post-research Group C, 27.9% of the students disagreed with the statement and 39.6% agreed, showing a decline in the student's attitude. The data shows that Group B, even after conducting research, contained the highest number of students that agreed with the statement: *I find doing research interesting.* In Groups A and C, there was a slight decrease in student's attitudes.

In the survey, the statement number four states *I would research Ancient Egyptian Art on my own, for my own interest.* In pre-research Group A, 64.5% of the students disagreed with the statement and 22.3% agreed with the statement. In post-research Group A, 60.0% of the students disagreed with the statement and 17.8% agreed, showing a decline in the students' attitudes. In pre-research Group B, 64.3% of the students

disagreed with the statement and 19.0% agreed with the statement. In post-research Group B, 69.0% of the students disagreed with the statement and 16.6% agreed, showing a decline in the students' attitudes. In pre-research Group C, 53.5% of the students disagreed with the statement and 25.6% agreed with the statement. However, in post-research Group C, 62.8% of the students disagreed with the statement and 11.6% agreed, showing a decline in the students' attitudes. The data shows that Groups A, B, and C, after conducting research the students' attitudes declined. All the groups disagreed with the statement: *I would research Ancient Egyptian Art on my own, for my own interest.*

In the survey, statement number five states *I would be interested in studying other Art History Topics.* In pre-research Group A, 40.0% of the students disagreed with the statement and 17.8% agreed with the statement. In post-research Group A, 44.5% of the students disagreed with the statement and 31.1% agreed, showing an increase in the students' attitudes. In pre-research Group B, 26.2% of the students disagreed with the statement and 28.6% agreed with the statement. In post-research Group B, 28.6% of the students disagreed with the statement and 40.5% agreed, showing an increase in the students' attitudes. In pre-research Group C, 30.2% of the students disagreed with the statement and 41.9% agreed with the statement. However, in post-research Group C, 32.6% of the students disagreed with the statement and 41.9% agreed, showing no increase in the students' attitudes. The data shows that Group A and Group B, even after conducting research showed an increase in student's attitude toward the statement: *I would be interested in studying other Art History Topics.* Where as Group C, even after conducting research, showed that the student's attitude remained the same.

In the survey, the statement number eight states *I find research to be frustrating.* In pre-research Group A, 42.2% of the students disagreed with the statement and 26.6% agreed with the statement. In post-research Group A, 55.6% of the students disagreed with the statement and 17.8% agreed, showing an increase in the students' attitudes. In pre-research Group B, 42.8% of the students disagreed with the statement and 21.5% agreed with the statement. In post-research Group B, 40.5% of the students disagreed with the statement and 21.4% agreed, showing a .1% increase in the students' attitudes. In pre-research Group C, 55.8% of the students disagreed with the statement and 16.3% agreed with the statement. However, in post-research Group C, 51.1% of the students disagreed with the statement and 21.0% agreed, showing an increase in the students' attitudes. The data shows that Group A had the highest increase in students' attitudes when it came to the statement: *I find research to be frustrating.* Group B and Group C showed a slight decrease in the students' attitudes.

Table 4.5

The results of the Student Attitudinal Study toward conducting research of Group A, B, & C before and after research was conducted

Q2. *I find doing research interesting.*

	Disagree %	No Opinion %	Agree %
Group A-Pre:	26.7	33.3	40.0
Group A-Post:	33.3	28.9	37.8
Group B-Pre:	28.6	31.0	40.5
Group B-Post:	33.3	23.8	42.8
Group C-Pre:	16.3	41.9	41.9
Group C-Post:	27.9	32.6	39.6

(Cont. Table 4.5)

Q4. *I would research Ancient Egyptian Art on my own, for my own interest.*

	Disagree %	No Opinion %	Agree %
Group A-Pre:	64.5	13.3	22.3
Group A-Post:	60.0	22.2	17.8
Group B-Pre:	64.3	16.7	19.0
Group B-Post:	69.0	14.3	16.6
Group C-Pre:	53.5	20.9	25.6
Group C-Post:	62.8	25.6	11.6

Q5. *I would be interested in studying other Art History Topics.*

	Disagree %	No Opinion %	Agree %
Group A-Pre:	40.0	42.2	17.8
Group A-Post:	44.5	24.4	31.1
Group B-Pre:	26.2	45.2	28.6
Group B-Post:	28.6	31.0	40.5
Group C-Pre:	30.2	27.9	41.9
Group C-Post:	32.6	25.6	41.9

Q.8 *I find research to be frustrating.*

	Disagree %	No Opinion %	Agree %
Group A-Pre:	42.2	31.1	26.6
Group A-Post:	55.6	26.7	17.8
Group B-Pre:	42.8	35.7	21.5
Group B-Post:	40.5	38.1	21.4
Group C-Pre:	55.8	27.9	16.3
Group C-Post:	51.1	27.9	21.0

CHAPTER FIVE

SUMMARY, DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

Summary of the Study

This study explored the impact of three research methods. It examined online materials, as well as contextual research based on printed texts in the elementary population. The researcher sought to determine what the most effective method is for helping students to learn art history content, whether it is in the virtual environment of the Internet or the confines of various textbooks or a combination of both technology-based and text-based research.

The subjects of the study were fifth grade regular education, special education, and basic skills students who attended Bells School. The available population consisted of all six, fifth grade classes, which comprised a total of 130 students. The classes were selected by convenience. Two classes became the technology-based researchers (Group A), two classes the text-based researchers (Group B) and two classes became both technology and text-based researchers (Group C).

Following approval from the Institutional Review Board of Rowan University and the building principal who granted permission to dispense the pre-tests, post-tests, and student attitude surveys to the fifth grade students, parent permission slips (Appendix B) were given out and collected before administering the pre-test (Appendix C) and a student attitude survey (Appendix E). The pre-test and student attitude surveys were collected, and a handout (Appendix F) with open-ended questions was given to the

students to help direct their group research. After the completion of three 40 minute classes where the researchers gathered their data which were conducted each week for three weeks, the students were given a post-test (Appendix D) and student attitude survey (Appendix E). The pre-tests, post-tests and student attitude surveys were collected and analyzed.

Washington Township and its public schools operate under the slogan a "Premiere Community" with initiatives to increase technology inclusive to education. Often with these inclusive measures added to education, there is a lack of tie-in to special area classes. This guided the researcher to examine art history in the curriculum to measure the benefits of art history research. Art history research was measured by comparing technology-based research (Group A) to text-based research (Group B) to a combination of both technology and text-based research (Group C) by comparatively finding the impact of all three methods of research. Before the groups conducted their research on Ancient Egyptian Art History, the students were given a pre-test to assess the student's prior understanding in the subject of Ancient Egyptian Art History. A Student Attitude Survey was also given to measure the student's attitude on research methods and Art History before conducting their research. When the research was completed, all three groups were given a post-test and a student attitude survey. Frequency tables of the results from the pre-tests, post-tests, and both pre-research and post-research student attitude surveys were generated and the mean for the data was calculated.

Discussion of the Findings

Studies on learning preferences illustrate that students vary in the approach and preferences in learning and that no single strategy is best for all students (Paul, Bojanczyk, & Lanphear, 1994). Students commonly use a combination of computer-based and text-based resources today (Fidel, et al., 1999; Large & Beheshti, 2000). Researchers have found that as students work together at the computer, the interaction among the students is just as important as the interaction the student has with the computer (Clements & Nastasi, 1985). Elementary students have better results at uncovering valid data when working together in groups on the Internet, than those students that work individually (Lien, 2000). Research indicates that some students favor using the Internet as their main source for information (Large & Beheshti, 2000). One-reason students prefer using the Web instead of text materials is the speed with which they can find information (Large & Behesti, 2000; Vansickle, 2002). Many students lean towards using the Web for locating current or very hard to find information, and use printed text for acquiring thorough and organized information on general subjects (Large & Beheshti, 2000). However, despite the increasing use and popularity of the Internet, there are students who would rather use only traditional text material for their research (Large & Beheshti, 2000).

As educators it is important to focus on the way in which the tools are used, and not just the tools and material used that promotes educational technology. Saettler (1990) urges that we remember:

> The historical function of educational technology is a process rather than a product. No matter how sophisticated the media of instruction may become, a

> distinction must always be made between the process of developing technology of education and the use of certain products or media within a particular technology of instruction. (¶4)

In education there is never one complete or absolute approach that works for all students.

In the study, Group A, using technology-based research alone gave the highest percent of increase from the pre-test to post-test. This could be due to the students' interaction with any type of technology in this case a laptop computer. The television is how the student is used to getting their information from the outside world. Group B, the text-based research, had the lowest percent of increase, maybe due to the fact that students would rather watch television than read a book. In Group C, the combination of technology and text-based research, the score fell somewhere in between Group A and Group B on the percent increases.

The ANOVA confirmed the results found in the descriptive stats comparing the differences and the percent of the increase of the means between the pre-test and the post-test of Groups A, B, and C. In comparing all three groups the null hypothesis was rejected. In examining the groups in pairs, two groups (Group B and Group C) were within the boundaries of the critical value, and one (Group A) was found outside the critical value. This could account for the rejection of the null hypothesis when the ANOVA was applied to the study.

When comparing the t-test paired differences of the means between student attitude survey pre-research to the student attitude survey post-research towards the research methods of Group A, Group B, and Group C, the test shows no significant differences. After selectively examining the various statements found in both the pre-

research and post-research student attitude survey, the results showed that there is more movement in the statements between Agree and Disagree in Group C. In the survey, statement number two states *I find doing research interesting.* The number of students who responded negatively to this statement went up for all three groups. This is possibly due to the length of the study or the lack of interest in the assigned content.

In the survey, statement number four states *I would research Ancient Egyptian Art on my own, for my own interest.* The interest level in all three groups went down. In Group C, the percent in interest went down the most. This could be due to the fact that the students felt it was too much trouble doing both technology and text-based research methods. Students may have felt more comfortable utilizing one method over another.

However, in the survey, a change in the students' attitudes occurred with the statement number five which states *I would be interested in studying other Art History Topics*. The interest went up in both Group A and Group B, with Group C remaining the same. Group A and Group B seemed to feel that art is more than just a pretty picture. They also expressed that there is meaning behind the pictures shown in Art History. Group C showed the most change toward not being interested in Art History. This could be due to the change in research methods in the middle of the study. This change in methods may have hindered their progress.

In the survey, the statement number eight states *I find research to be frustrating.* Group A showed that they were the least frustrated in conducting research. Students in Group A, are more comfortable in using computers to find information. Students in Group B, showed no change in frustration toward conducting research using only text. Students are used to reading books to find information. Students in Group C had an

increase in frustration toward conducting research. This could be due to the switching of research methods from technology to text-based research in the middle of the study.

Conclusions

The attitudinal survey indicated that Group C demonstrated the most changes in both interest and disinterest in research methods. Although Group C's attitude was influenced by both technology and text-based research methods, they still were able to increase their knowledge base.

Group B, those students that conducted research using only text-based research, showed the smallest increase in knowledge base and the least activity in the student's attitude. This could be due to the limitations that text-based research provides.

The most effective method for helping students to learn Art History was Group A, the technology-based research method. This group had the largest increase in knowledge and changes in student's attitude. As a result of this study one can conclude that technology had the most effect on the students; whether combined with textbooks or used in isolation.

There is not one fool proof or perfect method to learning. A successful teacher will make available a variety of research methods to meet the needs of all learners. Perhaps an understanding of a variety of different teaching and learning techniques would be a better means in building a stronger foundation in holistic learning.

Recommendations for Further Practice and Research

Based upon the findings and conclusions of the researcher, the following suggestions are presented:

1. Further studies should be conducted with larger populations to confirm the findings in this study.
2. A follow-up analysis could be done using the same subjects to compare the findings of the different studies.
3. Further studies should be conducted which may seek to determine the differences in students of other age levels.
4. Further studies should be conducted to compare the achievements and attitudes of students of different genders on research and technology.
5. Further studies should be conducted to compare the achievements and attitudes of special needs students on research and technology.
6. An additional study should be conducted to replicate this study, but to expand the scope to change the subject content to Ancient Greek Civilizations or the Renaissance or Modern Art.
7. Administration should set up curriculum committees to integrate technology into the art curriculum to increase instructional computer use.
8. Districts should improve current technology plans to include increased computer training and support for faculty.

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APPENDIX A
Institutional Review Board Disposition Form

Rowan University
INSTITUTIONAL REVIEW BOARD
HUMAN RESEARCH REVIEW APPLICATION

RECEIVED FEB 08 2007

INSTRUCTIONS: Check all appropriate boxes, answer all questions completely, include attachments, and obtain appropriate signatures. Submit an **original and two copies** of the completed application to the Office of the Associate Provost.
NOTE: **Applications must be typed.**
Be sure to make a copy for your files.

FOR IRB USE ONLY:
Protocol Number: IRB- 2007-137
Received:_____ Reviewed:_____
Exemption: 1 Yes ___ No
Category(ies):_____
Approved _____ (date)

Step 1: **Is the proposed research subject to IRB review?**
All research involving human participants conducted by Rowan University faculty and staff is subject to IRB review. Some, but not all, student-conducted studies that involve human participants are considered research and are subject to IRB review. Check the accompanying instructions for more information. Then check with your class instructor for guidance as to whether you must submit your research protocol for IRB review. If you determine that your research meets the above criteria and is not subject to IRB review, **STOP**. You do not need to apply. If you or your instructor have any doubts, apply for an IRB review.

Step 2: **If you have determined that the proposed research is subject to IRB review, complete the identifying information below.**

Project Title: Art History With a Click of a Mouse or a Flip of a Page?

Researcher: Richard Herzog

Department: Educational Technology Location Bells Elementary Schools

Mailing Address: 115 East Ardmore Terrace (Street)
Collingswood, NJ 08108 (Town/State/Zip)

E-Mail: rherzog@comcast.net Telephone: (856) 854-6448

Co-Investigator/s:

Faculty Sponsor (if student)* Dr. Louis Molinari
Department Elementary Education Location: Educational Building
E-Mail: lmolinari@rowan.edu Telephone: 856-881-0585

Approved For Use by Rowan IRB: 7/04

Step 3: Determine whether the proposed research eligible for an *exemption* from a full IRB review.

Federal regulations (45 CFR 46) permit the exemption of some types of research from a full IRB review. If your research can be described by one or more of the categories listed below, check the appropriate category(ies), complete questions 1-5, and complete the Assurances on the last page of the application.

If your research cannot be described by any of these categories, your research is not exempt, and you must complete the entire "Human Research Review Application."

__X__ **Category 1** - Research conducted in established or commonly accepted educational settings, involving normal educational practices, such as: (a) research on regular and special education instructional strategies; or (b) research on the effectiveness of, or the comparison among, instructional techniques, curricula, or classroom management methods.

_____ **Category 2** - Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior, unless: (a) information obtained is recorded in such a manner that the human participants can be identified, directly or through identifiers linked to the participants; and (b) any disclosure of the human participants' responses outside the research could reasonably place the participants at risk of criminal or civil liability or be damaging to the participants' financial standing, employability, or reputation.
*(**Note:** Exemption for survey and interview procedures does not apply to research involving children. Exemption for observation of public behavior does not apply to research involving children except when the investigator does not participate in the activities being observed.)*

_____ **Category 3** - Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior that is not exempt under Category 2 above if: (a) the human participants are elected or appointed public officials or candidates for public office; or (b) federal statute requires without exception that the confidentiality of the personally identifiable information will be maintained throughout the research and thereafter.

_____ **Category 4** - Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that participants cannot be identified, directly or through identifiers linked to the participants.

_____ **Category 5** - Research and demonstration projects which are conducted by or subject to the approval of department or agency heads, and which are designed to study, evaluate, or otherwise examine: (a) public benefit or service programs; (b)procedures for obtaining benefits or services under those programs; (c) possible changes in or alternatives to these programs or procedures; or (d) possible changes in methods or levels of payment for benefits or services under those programs.

_____**Category 6** - Taste and food quality evaluation and consumer acceptance studies: (a) if wholesome foods without additives are consumed; or (b) if a food is consumed that contains a food ingredient at or below the level and for a use found to be safe, or agricultural chemical or environmental contaminant at or below the level found to be safe by the Food and Drug Administration or approved by the Environmental Protection Agency or the Food Safety and Inspection Service of the U.S. Department of Agriculture.
*(**Note:** Exemption categories cannot be applied to research involving fetuses, pregnant women, human in vitro fertilization, or prisoners.)*

Please answer Questions 1-5 below

1. WHAT IS THE OBJECTIVE OF THE RESEARCH?

The objective is to determine what the most effective method is for students to learn art history content, whether it is in virtual environment of the Internet or in the confines of various textbooks or a combination of both methods.

2. DESCRIBE THE DESIGN OF THE RESEARCH INCLUDING WHAT WILL BE REQUIRED OF SUBJECTS (ATTACH ADDITIONAL SHEET IF NECESSARY):

Children will be invited to complete a pre-test of multiple-choice questions concerning Ancient Egyptian Art. The students will be given a worksheet guiding them to collect information on Ancient Egyptian Art. One group (two classes) will conduct research using only textbooks. Second group (two classes) will conduct research using the Internet, PowerPoint, and CD-Rom programs. Third group (two classes) will conduct research using both methods. After the research is collected, the students will be given a post-test of multiple-choice question on Ancient Egyptian Art (same identical questions). Paper will be collected and tabulated. Data will be reported in terms of group results. There will also be distributed a Likert scale that will be answered by all the students during their pre-test and post-test. The Likert scale was created to measure the student's feeling about conducting research in Art History.

3. DESCRIBE THE SUBJECTS WHO WILL BE PARTICIPATING (NUMBER, AGE, GENDER, ETC):

The subjects are comprised 129 students with a variety of academic levels, ranging from special needs students to gifted and talented students. The students are divided into three groups of 43, representing text-based research, technology-based research, and a combination of both methods of research.

4. DESCRIBE HOW SUBJECTS WILL BE RECRUITED (e.g. ADVERTISEMENTS, ANNOUNCEMENTS IN CLASS, E-MAIL, INTERNET)

Six fifth grade classes were chosen from Bells Elementary School's fifth grade classes. A convenience sample was selected from classes that are part of the researcher's daily teaching schedule.

5. WHERE WILL THE RESEARCH BE CONDUCTED:

The study will take place in the Art Room at the Bells Elementary School, in the Washington Township Public School District, located in Turnersville, New Jersey.

NOTE: IF THE RESEARCH IS TO BE CONDUCTED IN ANOTHER INSTITUTION (e.g. A SCHOOL, HOSPITAL, AGENCY, etc.) A PERMISSION LETTER FROM AN ADMINISTRATOR ON THE LETTERHEAD OF THAT INSTITUTION MUST BE ATTACHED.

IF THE RESEARCH IS TO BE CONDUCTED AT ANOTHER UNIVERSITY, A SIGNED COPY OF THE IRB APPROVAL FORM FROM THAT UNIVERSITY MUST BE ATTACHED.

ATTACH THE CONSENT FORM TO THIS APPLICATION. The Consent Form must address all of the elements required for informed consent (SEE INSTRUCTIONS).

NOTE: IF THE ONLY RECORD LINKING THE SUBJECT AND THE RESEARCH WOULD BE THE CONSENT DOCUMENT, AND THE RESEARCH PRESENTS NO MORE THAN MINIMAL RISK OF HARM TO SUBJECTS, YOU MAY USE AN ALTERNATIVE PROCEDURE FOR CONSENT. IF YOU WISH TO REQUEST PERMISSION FROM THE IRB TO USE AN ALTERNATIVE PROCEDURE, ATTACH A COPY OF THE FIRST PAGE OF YOUR RESEARCH INSTRUMENT OR A LETTER WITH THE REQUIRED INFORMATION (see Instructions).

If you are requesting an exemption from a full IRB review, STOP. Complete

the last page of this application ("Certifications"), and forward the completed (typed) application to the Office of the Associate Provost for Research, The Graduate School, Memorial Hall.

IF YOU CANNOT CLAIM ONE OF THE EXEMPTIONS LISTED ABOVE, COMPLETE ALL OF THE ABOVE AS WELL AS THE FOLLOWING ADDITIONAL QUESTIONS FOR A FULL IRB REVIEW.

Does your research involve a special population?

_____ Socioeconomically, educationally, or linguistically disadvantaged racial/ethnic group
_____ Pregnancy/fetus
_____ Cognitively impaired
_____ Elderly
_____ Terminally ill
_____ Incarcerated
_____ No special population

At what level of risk will the participants in the proposed research be placed?
*(**Note:** "Minimal risk" means that the risks of harm anticipated in the proposed research are not greater, considering probability and magnitude, than those ordinarily encountered in daily life or during performance of routine physical or psychological examinations or tests. The concept of risk goes beyond physical risk and includes risks to the participant's dignity and self-respect as well as psychological, emotional, or behavioral risk.)*

_____ Minimal Risk _____ More than Minimal Risk _____ Uncertain

1. HOW WILL SUBJECTS BE RECRUITED? IF STUDENTS, WILL THEY BE SOLICITED FROM CLASS?

_____
_____
_____
_____

2. WHAT RISKS TO SUBJECTS (PHYSIOLOGICAL AND/OR PSYCHOLOGICAL) ARE INVOLVED IN THE RESEARCH?

_____
_____
_____
_____

3. IS DECEPTION INVOLVED IN THE RESEARCH? IF SO, WHAT IS IT AND WHY WILL IT BE USED?

4. WHAT INFORMATION WILL BE GIVEN TO THE SUBJECTS AFTER THEIR PARTICIPATION? IF DECEPTION IS USED, IT MUST BE DISCLOSED AFTER PARTICIPATION.

5. HOW WILL CONFIDENTIALITY BE MAINTAINED? WHO WILL KNOW THE IDENTITY OF THE SUBJECTS? IF A PRE-AND POSTTEST DESIGN IS USED, HOW WILL THE SUBJECTS BE IDENTIFIED?

6. HOW WILL THE DATA BE RECORDED AND STORED? WHO WILL HAVE ACCESS TO THE DATA? ALL DATA MUST BE KEPT BY THE PRINCIPAL INVESTIGATOR FOR A MINIMUM OF THREE YEARS.

CERTIFICATIONS:

Rowan University maintains a Federalwide Assurance (FWA) with the Office of Human Research Protection (OHRP), U.S. Department of Health & Human Services. This Assurance includes a requirement for all research staff working with human participants to receive training in ethical guidelines and regulations. "Research staff" is defined as persons who have direct and substantive involvement in proposing, performing, reviewing, or reporting research and includes students fulfilling these roles as well as their faculty advisors.

Please attach a copy of your "Completion Certificate for Human Participant Protections Education for Research Teams" from the National Institutes of Health.

If you need to complete that training, go to the Web Tutorial at http://cme.nci.nih.gov/

Responsible Researcher: I certify that I am familiar with the ethical guidelines and regulations regarding the protection of human participants from research risks and will adhere to the policies and procedures of the Rowan University Institutional Review Board. I will ensure that all research staff working on the proposed project who will have direct and substantive involvement in proposing, performing, reviewing, or reporting this research (including students fulfilling these roles) will complete IRB approved training. I will not initiate this research project until I receive written approval from the IRB. I agree to obtain informed consent of participants in this project if required by the IRB; to report to the IRB any unanticipated effects on participants which become apparent during the course or as a result of experimentation and the actions taken as a result; to cooperate with the IRB in the continuing review of this project; to obtain prior approval from the IRB before amending or altering the scope of the project or implementing changes in the approved consent form; and to maintain documentation of consent forms and progress reports for a minimum of three years after completion of the final report or longer if required by the sponsor or the institution. I further certify that I have completed training regarding human participant research ethics within the last three years as indicated below my signature.

Signature of Responsible Researcher: _____ Date: _____

Faculty Advisor (if Responsible Researcher is a student): I certify that I am familiar with the ethical guidelines and regulations regarding the protection of human participants from research risks. I further certify that I have completed training regarding human participant research ethics within the last three years as indicated below my signature (attach copy of your "Completion Certificate for Human Participant Protections Education for Research Teams" from the National Institutes of Health).

Signature of Faculty Advisor: _____ Date: _____

APPENDIX B
Principal Permission
Washington Township Public Schools Request Form
Parent Permission Forms

WASHINGTON TOWNSHIP PUBLIC SCHOOLS
BELLS ELEMENTARY SCHOOL

Barbara M. Travaline, Principal Frank DeFamio, Counselor Pam Schreiner, Reading Specialist

February 2, 2007

To: The Institutional Review Board
Graduate Office
Rowan University

Mr. Richard Herzog is employed as the art teacher at Bells Elementary School. Additionally, he is doing his thesis under the direction of Dr. Louis Molinari, Rowan University professor.

Mr. Herzog is actively involved in his action research project entitled, *Art History with a Click of a Mouse or a Flip of a Page?* As part of this action research project, he will be conducting classroom meetings, performing a pre-test and a post-test and coordinating a Likert Scale at our school. He has already secured parent permission. All of the above activities are in coordination with the Technology initiatives of the Washington Township Public School District. They will serve to help make our students technologically literate and fluent researchers.

Mr. Herzog has my permission to conduct his action research project at Bells School.

Sincerely,

Barbara Travaline
Principal

WASHINGTON TOWNSHIP PUBLIC SCHOOLS

REQUEST TO CONDUCT SCHOOL-BASED RESEARCH/SURVEY

This form must be completed and submitted to the building principal for approval. Approval for the study must be received prior to the initiation of any school based research or survey. In certain circumstances, notification must be given to the parent(s)/guardian(s) of students involved, including the following information: project description, duration of project, administrator who approved said project and sample question if applicable. In order to protect the privacy rights or the student and/or staff member participating in the research, the student or employee number must be the only source of identification. If the Superintendent or designee determines that a parent must provide written consent to have the student participate in the research or survey, this notification must be included with this request. Any parent may request to review the materials that their student will be reviewing

Project Title : Art History with a Click of a mouse or a flip of a page?

Type of Project: Research ☒ Survey ☐ Other ☒ pre-test, post-test, likert scale

Purpose of Project: Thesis Masters in Educational Technology

Proposed Start Date: 2/5/07 **Proposed End Date:** 5/1/07

School and/or Department: Bells School Art Department

Target Population (including # of Staff/Students: Bells School 5th Grade Students (129 students)

Sponsoring Group/Organization: Rowan University

Individual Conducting Research: Richard Herzog

Contact Phone No: (856) 854-5448 **Contact E-Mail:** rherzog@wtps.org rherzog@comcast.net

Please attach the following:

☐ **Abstract/Prospectus** (which includes the following):
- Title of project
- Brief description of research project
- Procedure for selecting students and staff for project
- Extent and nature of staff and/or student involvement
- A description of how the results will be used, disseminated, and/or publicized

☐ **Copy of Survey to be Administered**

☐ **Copy of Parent Notification Letter** (if applicable)

I have reviewed Washington Township Board of Education Policy 2623 *Student Surveys and School-Based Research* and agree to comply fully with all of its provisions.

Signature _____ Date 1/29/07

FOR OFFICE USE ONLY

PRINCIPAL'S RECOMMENDATION

☒ Recommended for Approval ☐ Not Recommended for Approval

Comments:

Barbara Scarzlini
Principal's Signature Date 1/30/07

SUPERINTENDENT'S RECOMMENDATION

☒ Approved ☐ Approved with Revisions (see Comments) ☐ Not Approved

Comments:

Cheryl A. Fiume
Superintendent's Signature Date 2/2/07

WASHINGTON TOWNSHIP PUBLIC SCHOOLS
BELLS ELEMENTARY SCHOOL

Barbara M. Travaline, Principal Frank DeFamio, Counselor Pam Schreiner, Reading Specialist

February 2, 2007

Dear Parent/Guardian:

I am a graduate student in the Education Technology Department at Rowan University. I will be conducting a research project under the supervision of Dr. Louis Molinari as my instructor in Research Seminar Ed Tech II part of my thesis concerning the effectiveness of various research techniques. I am requesting permission for your child to participate in this research. The goal of the study is to determine what the most effective method is for students to learn art history content, whether it is in virtual environment of the Internet or in the confines of various textbooks.

Children will be invited to complete a pretest of multiple-choice questions concerning Ancient Egyptian Art. The students will be given a worksheet guiding them in collecting information on Ancient Egyptian Art. One class will conduct research using only textbooks. The other class will conduct research using the Internet, PowerPoint presentations, and CD-Rom programs. After the research is collected, the students will be given a post-test of multiple-choice questions on Ancient Egyptian Art. A Likert Scale will be handed out: this is a questionnaire on how they felt about the research. The papers will be collected and tabulated. To preserve each child's confidentiality no names will be used to identify individuals. All data will be reported in terms of group results; individual results will not be reported.

Your decision whether or not to allow your child to participate in this study will have absolutely no effect on your child's standing in his/her class. At the conclusion of the study, a summary of the group results will be made available to all interested parents. If you have any questions or concerns please contact me at 856-589-8441. Thank you.

Sincerely,

Mr. Richard Herzog

Please indicate whether or not you wish to have your child participate in this study by checking the appropriate statement below and returning this letter to me by February 9, 2007

____ I grant permission for my child_____ to participate in this study.

____ I do not grant permission for my child_____ to participate in this study.

_____ _____

(Parent/Guardian signature) (Date)

APPENDIX C

Pre-test

Ancient Egyptian Pre-Test

Name: _____ Date: _____

1. **The Great Pyramids at Giza were built for which pharaoh?**
   a. Pharaoh Tutankhamen
   b. Pharaoh Rameses
   c. Pharaoh Khufu
   d. Pharaoh Mentuhotep

2. **The Sphinx of Giza has the head of the ruler and the body of what animal?**
   a. Lion
   b. Bull
   c. Jackal
   d. Eagle

3. **Osiris is the Egyptian God of what?**
   a. War
   b. The Dead
   c. Love
   d. Medicine

4. **Which famous archeologist discovered the tomb of King Tutankhamen in the Valley of the Kings?**
   a. Lord Carnarvon
   b. Howard Carter
   c. Boris Karloff
   d. Carl Sagan

5. **The Egyptian God of the sun is?**
   a. Osiris
   b. Isis
   c. Ra
   d. Anubus

6. **The canopic jars found in King Tutankhamen's tomb contain what items?**
   a. Grain
   b. Wine
   c. Fruit
   d. Vital Organs

7. **How old was the Pharaoh Tutankhamen when he became king of Egypt?**
    a. 25 years old
    b. 9 years old?
    c. 15 years old?
    d. 50 years old?

8. **Which two animals are found on King Tutankhamen's burial mask?**
    a. Vulture and Cobra
    b. Lion and Eagle
    c. Crocodile and Hippo
    d. Crane and Jackal

9. **What organ was removed from the pharaoh that the high priest and embalmers felt was not important and was thrown out?**
    a. Heart
    b. Lungs
    c. Brain
    d. Liver

10. **Ancient Egyptian writing is known as?**
    a. Scribe
    b. Hieroglyphs
    c. Gothic
    d. Tyke Writings

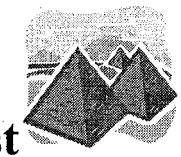
11. **What river supported the civilization of Egypt?**
    a. Amazon
    b. Tigris
    c. Nile
    d. Rhine

12. **What is the importance of the Rosetta Stone?**
    a. It is the cornerstone of the pyramid at Giza
    b. It told how the pyramids were made
    c. It told about the life of King Tutankhamen
    d. It helped in breaking the code on hieroglyphs

APPENDIX D

Post-test

Ancient Egyptian Post-Test



Name: _____ Date: _____

1. **What is the importance of the Rosetta Stone?**
   a. It is the cornerstone of the pyramid at Giza
   b. It told how the pyramids were made
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    b. Isis
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12. **The Great Pyramids at Giza were built for which pharaoh?**
    a. Pharaoh Tutankhamen
    b. Pharaoh Rameses
    c. Pharaoh Khufu
    d. Pharaoh Mentuhotep

APPENDIX E

Student Attitude Survey

Art History and Research Methods
Richard Herzog

Name:_____ ***Date:_____***

Teacher:_____

Student Attitude Survey:

1. **I enjoy studying Art History.**

Strongly Disagree *Disagree* *No Opinion* *Agree* *Strongly Agree*

2. **I find doing research interesting.**

Strongly Disagree *Disagree* *No Opinion* *Agree* *Strongly Agree*

3. **I find studying Ancient Egyptian Art fascinating.**

Strongly Disagree *Disagree* *No Opinion* *Agree* *Strongly Agree*

4. **I would research Ancient Egyptian Art on my own, for my own interest.**

Strongly Disagree *Disagree* *No Opinion* *Agree* *Strongly Agree*

5. **I would be interested in studying other Art History topics.**

Strongly Disagree *Disagree* *No Opinion* *Agree* *Strongly Agree*

6. **I find using the Internet for research easier than textbooks.**

Strongly Disagree *Disagree* *No Opinion* *Agree* *Strongly Agree*

7. **I find using textbooks easier for research than using the Internet.**

Strongly Disagree *Disagree* *No Opinion* *Agree* *Strongly Agree*

8. **I find doing research to be frustrating.**

Strongly Disagree *Disagree* *No Opinion* *Agree* *Strongly Agree*

APPENDIX F

Study Guide

Ancient Egyptian Study Guide

Name: _____ Team: _____ Date: _____

Find information on the following topics:

1. **The Great Pyramids at Giza:** _____
2. **The Sphinx of Giza:** _____
3. **What do the Egyptian Gods: Ra, Osiris, Isis, and Anubus represent?**
4. **Who is the famous archeologist who discovered the tomb of King Tutankhamen?**
5. **What are Canopic Jars for?** _____

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6. **Who was King Tutankhamen?**

7. **What are the steps taken to prepare a mummy?**

8. **What is Hieroglyphics?**

9. **What river supported the civilization of Egypt?**

10. **What is the importance of the Rosetta Stone?**