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Improving and enhancing art education and multicultural education using technology as a vehicle

Vincent Ray Delay

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IMPROVING AND ENHANCING ART EDUCATION AND MULTICULTURAL EDUCATION USING TECHNOLOGY AS A VEHICLE

A Project
Presented to the
Faculty of
California State University,
San Bernardino

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts
In
Education: Instructional Technology

by
Vincent Ray DeLay
December 1998
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Approved by:
Sylvester Robertson, First Reader
Jim Monaghan, Second Reader
Abstract

The goal of this project is to use technology as a vehicle to revive, to some extent, student interest in the field of art. Displaying student work on a bulletin board or in a hallway increases student interest level, makes them proud of their work, gives them a feeling of accomplishment, and increases their desire to go even further in art.

If student work is presented as part of a multimedia presentation to people outside of the school it will be an extension of displaying their work, and therefore will increase all of the positive benefits which occur as a result of displaying their work inside the school. It may even lead to students learning more about people from other cultures and places, and it might help students develop a healthy curiosity about the variety of art styles and movements that dominate various world cultures.

Macromedia Director 5.0, and a variety of other software, was used to create a multimedia presentation consisting of student artwork, pictures of the students, and student comments about their own work. This presentation, named 'Spartan Art', was saved in PC format on a CD-ROM and sent to a school in Texas for evaluation. The evaluation determined the success of the project.
ACKNOWLEDGMENTS

I would like to thank Sylvester Robertson and Jim Monaghan, my first and second readers, for their expert criticism as well as their encouragement.

I would also like to thank the students in my advanced art class who made this entire project possible. Without their willingness to participate, the project would have been a failure.

Lastly, I would like to thank the students in Texas who were willing to participate in the evaluation process of the project. Their input was critical in determining what aspects of the project were successful as well as discovering aspects that were not so successful. Because of their participation, this project may lead to other cooperative ventures in the future.
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CHAPTER ONE
INTRODUCTION

Technology’s Influence on Education of the Future
As we approach the year 2000 and look with hope towards the new millennium, educators are preparing their classrooms for the children of the 21st century. Philosophies, curriculums, and teaching strategies are all being scrutinized and evaluated as new educational tools are born.

It goes without saying that this period has produced some of the most interesting and culturally transformative technology of all time, including among many others, the personal computer (Maddux & Johnson, 1997, p. 5). The personal computer itself, and related technologies, such as the Internet and telecommunications, have had a tremendous impact on many aspects of our lives, including our educational institutions. Computers could revolutionize education, [and] could even revolutionize the process of cognitive development of the child (Collis, 1996, p. 21). Actually, whether or not such a revolution could occur (and some might say it has already begun) is not in question. The true question is how teachers and schools will react to the revolution. Will they hold on to the older ways they are comfortable with, will they embrace the new changes, or will
they find some sort of middle ground which lies between the
two extremes.

Some instructors have already realized that how they
handle the inevitable changes will determine to a large
extent whether or not these changes will have a beneficial
or malevolent influence on the classroom. The Internet
itself has opened up new avenues of change which may in turn
lead to improved classroom instruction. As Ward & Tiessen
(1997) put it:

These technologies [Internet and World Wide Web]
have the potential to impact both intentional and
social dimensions of learning by providing exten-
sive computer-based information resources for
students to explore in the pursuit of their own
understanding. (p.22)

The key word here is potential. In and of itself the
Internet is just a tool. Knowing the strengths and limita-
tions of an educational tool, such as the Internet, is what
separates an expert teacher from an amateur. An expert
teacher will be more successful in unlocking and releasing
the full potential of the Internet.

Statement of Problem

Currently, only a few art teachers have even made an
ttempt at becoming even an amateur when it comes to using
the Internet in the classroom, let alone working towards being an expert. According to Heise & Grandgenett (1996), in one group of art teachers polled only 14% reported that they were knowledgeable in how to use the Internet in the art classroom. This is only the result of one study, but if it is any indication of how adept art teachers are at using technology such as the Internet, then teachers themselves may have to receive some sort of training or education before they can even begin to explore the possibilities of this new technology.

In addition to a lack of training, part of the problem is the way in which art classes are commonly perceived in the grand scheme of things. For instance, the school I am employed at is going to receive a grant which amounts to roughly 1.5 million dollars over a period of three years. The money will initially be used to provide every classroom with one computer, television, and Internet access. This equipment will be very useful for teachers that are interested and competent in utilizing this technology.

But the math, English, social studies, and science classrooms will be the first to be equipped with mini-labs of four computers. If there is any money left over, other classes, such as art, might be equipped with a mini-lab, but there is no guarantee that this will happen. The grant is part of a statewide program in California, and the grant
itself specifies the importance of math, English, social studies, and science. The grant does not directly state that other classes are less important, but the implicit message is quite clear.

Because of this attitude, which is not unique to this grant, art teachers and instructors of subjects other than math, English, social studies, or science may find that acquiring the tools needed to become proficient in utilizing technology in the classroom can be a difficult and challenging task.

As it may be an uphill battle just to establish a small lab, or perhaps even one system, in the classroom, art teachers need to consider carefully whether or not the use of such technology is useful or appropriate. It is important that the effort expended to make advances in these areas is used as wisely as possible. It is necessary for art teachers, and others, to experiment with a variety of technologies and find out exactly what is useful in the classroom as well as find out exactly what is not useful. It is vitally important that educators share information with each other concerning successes and failures so that people do not repeat the same mistakes over and over again.

As educators in art classrooms examine the usefulness of the Internet they need to take the next logical step and consider the role that multicultural education plays in
their rooms, and how this role may change, hopefully for the better, with the use of computers and the Internet. The development of new conceptual tools and procedures for responding to needs for creating culturally sensitive instruction is important (Branch, 1997, p.41).

Research, which will be more thoroughly covered in Chapter 2, points to the positive affect that technology may have on multicultural education. But it is clear that technology is not something which should replace the tools currently used in multicultural education, but should instead be used to augment established programs. Wright (1995) warns against substituting interaction through a computer for face to face human interactions and points out that the Net "doesn’t fully gratify the social machinery in our minds" (cited in Roblyer, Dozier-Henry, & Burnette, 1996, p.9). This indicates that the Internet is not the begin-all and end-all education, multicultural or otherwise. But although Roblyer, Dozier-Henry, & Burnette quote Wright, they also write that, "computers have a place in multicultural education that is at once important—and limited" (1996, p.11). Educators need to examine how technology may be used to enhance, although not necessarily replace, the ways in which we learn about cultures, whether they be cultures which exist at our local school site or cultures which exist on the other side of the globe.
These issues are of concern to me because I work at a school site where technology is not used in any way to enhance art education or multicultural education within the art classrooms. The lack of integration of technology into the curriculum is partly my own fault, as I am the one who ultimately controls what goes on in my classroom. This is my first year in employment at this site, I was just transferred, and as I become acclimated to my new surroundings I am beginning to look for ways to enhance the ways in which I teach art, whether by using technology or other means.

I am seeking ways to eliminate what I perceive as shortcomings within my classroom and I am fairly comfortable with using technology to do so when possible or appropriate. Without forcing connections that are implausible or just plain ridiculous, my goal is to find ways that I can utilize technology to accomplish work that I would otherwise be unable to complete. I am especially interested in how using computers and the Internet can enhance not only my art program, but how the use of these technologies can change and improve the way that my students and myself learn about world cultures within the context of art.

My school site does have a wealth of resources which are useful when teaching and learning about European art, but resources for learning about cultures outside of Europe are difficult to find. What I need to find out is the best
way to increase non-European art resources. Is it better to buy slides, posters, videos, and other reproductions of art from various cultures, or is there some way I can use technology, or another tool, in a more successful manner for the same purpose? Which option will have the greatest and most positive impact on the art curriculum?

Project Overview

As stated previously, in the very near future my room will be equipped with a computer, a television, and an Internet connection. This project is my way of testing the waters ahead of time to catch a glimpse of some of the things that may be successful, as well as what may not be so successful, before the equipment is installed in my classroom.

The project itself, which will be titled 'Spartan Art', in honor of the school mascot, is a multimedia presentation which may become a web site in the future. The subject of the presentation is the students in my advanced art class and their artwork. It includes still pictures, sound, and video. Currently, because of the size of the project, it is impossible to upload it to a web server for actual Internet use. The intent is to design a project which will take advantage of the increase in Internet connection speed which is just on the technological horizon.
The project was saved on a CD. It was then sent to a high school in Texas for viewing. Students in Texas critiqued the design of the presentation, as far as ease of use and other factors, and they also answered questions about the usefulness of the project for art and multicultural education. Students from California, in my advanced art class, answered similar questions. Students from both California and Texas were of high school age.

How the students answered the questions will help me to determine whether or not I should pursue using technology in this manner to obtain the results I desire. The students may come up with ideas along the way that will shed light on how I can improve the project, they may even let me know that they think that the entire venture is not worth the effort, or they may react in a very positive manner.

Whether their reactions are positive or negative, they will still be useful as they will bring me closer to effectively using technology to enhance both my art lessons and the multicultural aspect of those lessons. I can look at their written reactions and have a clearer understanding of which parts of the project worked as I had intended, and which parts did not work very well at all.
Limitations of this Project

There will be some limitations to this project. One limitation, which has already been mentioned and will be discussed in more detail in Chapter 4, is the current capabilities of the Internet. Presently, as far as the hardware of the typical home user goes, the Internet is capable of transferring still pictures of low resolution, small sound bites, and text at such a rate that most users are willing to wait for the data to download. Video, which is part of this project, downloads at such a rate that some users may not be willing to wait for the file to finish transferring to their computer. If video is used often, as it is in 'Spartan Art', users may become so disgruntled that they do not even feel like browsing through the artwork and student biographies.

Upkeep for such an endeavor may present a problem. If everything goes as planned, the students themselves will become the creators of future 'Spartan Art' presentations, and they will be in charge of maintaining the site that 'Spartan Art' is uploaded to, which will hopefully be a web server which exists at our own school site.

In a way they will be creating a virtual portfolio of their work, which is slightly different than the physical portfolio that professional artists usually create, but it may be appropriate for the technological age that they will
be living in. Students may decide to use Macromedia Director, HTML, or other software to create this portfolio. But at the present, this virtual portfolio is just an idea that will have to be explored in the future.

Definitions

faxmodem: This is the part of a computer which allows it to communicate with other computers over a standard UTP phone line. A modem is the predecessor of the faxmodem, it is incapable of sending faxes.

KBPS: This is a unit for measuring data transfer which stands for 'kilobits per second'. In terms of the Internet, the higher the number the better.

web server: A server is a main computer which is usually used to control some type of computer network, it is also used to store data in a place where everybody on a network can retrieve it. A web server is a server that is used to store web pages and data which is part of those pages. It must be left on continually so that people may access the web sites on it at any time.
CHAPTER TWO
REVIEW OF RELATED LITERATURE

Education and Instructional Technology

First and foremost it must be said that technology is not going to magically transform any curriculum or classroom into a flawless pillar of educational excellence.

Of all the things we have learned in educational technology, the most certain is that any technology is only as good as the skills and the attitudes of the people who use it and the educational methods and strategies they devise and implement. (Maddux & Johnson, 1997, p.5)

Thus, technology is but another tool which may be used in the classroom when appropriate. Just like a book, bulletin board, or other instructional tool, it will be useful in some situations and not so useful in others. The challenge to us is to use this potential for the benefit of students for the purposes these technologies can best serve (Brevik & Senn, 1994; cited in Rakes, 1996, p.55). Misuse of technology will only bring on more feelings of antipathy from those who are still unsure of its usefulness, and in the end will only be detrimental to the success of educational programs which are focused around instructional technology.
Serious examination of how technology can best be used in the classroom has been an ongoing process for many years, but as a quick glance at the reference list for this publication will show, interest in the subject has increased quite a bit in the past ten years or so, at a more than similar pace at which personal computers have become more commonplace in homes and in schools. During this time researchers and educators have both realized that the teacher is the key figure in the eventual success or lack of success of an computers-in-education initiative (Collis, 1996). People have also begun to discover that there may be disadvantages to using technology, such as computers, in the classroom without giving much thought to the purpose for which they are being used, or what goal they are supposed to help students attain.

Different teachers will have differing opinions about the purpose and goals technology should be used to achieve. As Gregory (1996) wrote after visiting a classroom in which all the students were totally focused on their computer monitors and completely oblivious to their surroundings, let us replace it [silent classroom] with a more creative, spiritual and cooperative learning environment that uses new technologies as a catalyst for experiencing and learning about our world, not as a vortex for escaping our world. (p.51)
Were the students just on task in this classroom? Isn’t it every teacher’s dream to have a quiet class which is completely involved in their work? Some people might think that the silent classroom was a monumental achievement. Others, like Gregory, worry about how students are being affected as they isolate themselves in their computer world. In a sense, the computers are being used as a tool to fit the students into an older educational model in which interaction between students was of little value.

Educators may be asking themselves, “do we explore new models of expression or do we repeat the same ones again and again, paying too little attention to whether or not they are effective” (Uline, 1996, p.32)? It takes a lot of work to integrate technology into the classroom, and at the same time examine past models of teaching and make the necessary changes to make the curriculum match the time and society in which we live, not one that existed decades, or even centuries, ago. New methods of instruction which are appropriate for our day and age need to be developed and technology has the potential to play a significant part in these newer methods.

It has long been realized that learning should if possible be fun (Romiszowski, 1994, p.8) and technology, in the form of computers and the Internet, might aid instructors in developing methods that make learning more enjoyable. It
[the Internet] appeals to a person's curiosity, and it is easy to use (Reid, 1995, p.21). Also, Dyrli & Kinnaman (1996) note that computer-based telecommunications energize and individualize the school curriculum (as cited in Quinlan, 1997, p.20). Students who are familiar with computers and using the Internet may find that what they learn about these technologies not only improves their education, but may also increase their chance of success in finding employment as an adult.

In addition to giving students an advantage in the future job market, the use of the Internet may serve other more immediate purposes. The Internet offers students the chance to post their work on a gigantic 'bulletin board' of sorts which is accessible by millions of people. According to Ward & Tiessen (1997) as students manipulate and construct representations of their own knowledge, they will value this knowledge. Therefore, as they design and prepare their work for a web site, students will become more involved with and attached to their work.

That educational material should motivate the student to wish to study is often mentioned in theory, but [this idea] is frequently ignored in practice (Romiszowski, 1994, p.6). The Internet gives instructors one way to put this theory into practice more often. It may be just the tool that inspires students to want to learn more about a sub-
ject. Its ease of use and nonlinear structure allows exploration on a scale and speed that is unequalled by any other educational tool. Some people might argue that a videodisc player is just as powerful, but how can an instructor program a videodisc player—unless they have a computer hooked up to it? With a computer and related technologies:

Teachers can teach students how to learn—how to search for, collect, analyze, and communicate information. This ability to discover, use, and present information effectively will certainly be one of the keys to success in current and future job markets. (Sturm, 1995; cited in Rakes, 1996, p.56)

The fact that there are many people and establishments using the Internet who may provide resources for students should not be ignored. Even though various organizations using different methods at different times have done studies on the number of people using the Internet, they have all come up with numbers which indicate that a large part of the international population is using the Internet. The following are just a few quotes from a variety of sources: “The Internet is not one network, but a network of networks that links more than fifteen million people in more than 50 countries” (Miller, 1993; as cited in December, 1994, p. 32), “In fact, there are now at least 200 nations with Internet
access (The British Council, 1996) and connectivity is increasing rapidly in most of these" (Maddux & Johnson, 1997, p.5), "There are now more than twenty-five million [Internet] users" (Griswold, 1994) and, "The reported number of people in the USA and Canada with access to the Internet ranges from 9.5 million in a Find/SVP survey to 37 million people in a Nielson Media Research survey" (Starr & Milheim, 1996, p.19).

In terms of educational institutions researchers have found that "at least 80 percent of private universities and 50 percent of public universities are connected to the Internet, providing access to one million students and faculty" (Morgridge, 1994; as cited in Starr & Milheim, 1996, p.19) and, "More and more schools are acquiring connectivity, and more and more school, class, and student pages are appearing on the Web" (Maddux & Johnson, 1997, p.6). By the time of this publication, the numbers are probably larger, and it is safe to say that the numbers of users has not decreased.

Though statistics show that there may be debate about the exact number of students and people in general using the Internet, the actual number is quite large and the user population is not restricted to any one geographical location. It is also quite evident that more than a few schools are becoming involved in using the Internet. Looking at
this data, it would seem that the Internet may be a perfect vehicle for the aims of this project, because it is the quickest way for people from far away places to exchange information.

Technology and Art Education

So what are the implications of new technology [such as the Internet] for art instruction (Zimmerman, 1994)? Will art education survive? Is technology the right vehicle for our own salvation? And if so, will technology be enough to save art education (Gregory, 1996, p.50)? According to Dunn (1996), "If art education ever expects to assume a place at the core of the educational system it must utilize interactive technology to assume a leadership role in this transition" (p.11). This means that art teachers will have to work hard not only to catch up with current technological advances in education, but they will have to reeducate themselves as future technological advances come to fruition.

Art Educators already have some strong backing in the educational arena, although it may not always extend to the school site. The National Art Education Association is committed to an ongoing research effort aimed at improving instruction in visual arts education (Zimmerman, 1994, p.7). The claim can be made that art experiences may help students engage more deeply in content learning (Belynne-Buvia, 1996)
and therefore it may be advantageous for art to be integrated more often into other content areas. Computers and the Internet could be useful for non-art instructors who wish to augment their program with visual arts.

In the art classroom, the advent of the Internet has made it possible to make improvements and changes that would not be possible otherwise. Students can create art and transfer images electronically to other classrooms around the world, thus allowing the mutual sharing of ideas and inspiration (Heise & Grandgenett, 1996, p.13). The Internet helps students to simulate art-based roles including artist, art historian, and art critic (Heise & Grandgenett, 1996, p.13).

Access to resources and increased communication are just some of the advantages of Internet integration (Heise & Grandgenett, 1996). The resources offered by the Internet offer an alternative to having and maintaining a slide library. A slide library is restricted to an extent, because most slides are sold as part of a package. If a teacher wants several slides he or she will probably end up buying several dozen slides that he or she does not need. As slides are used they are damaged, the color may fade, and eventually they must be repurchased.

If an instructor uses the Internet, it is possible to download images as necessary without having to purchase
images that are not useful for the lesson at hand. Many Internet providers presently charge $20.00 per month for unlimited use with a 28.8 connection (Microtimes, 1997). This means that an art teacher can have unlimited access to just about any kind of image that is needed for any kind of art lesson for about $240.00 a year, in addition to being able to use the Internet in other ways in the classroom.

Even if it costs $3000.00, or possibly less, for the initial computer to hook up to the internet this is much less than a good slide library will cost. In addition, storing the images inside of a computer is much cheaper than having to allocate a space in which to store physical slides. Pictures downloaded from the Internet do not fade, and it is fairly simple to use photo-editing software to enlarge details for closer examination.

Of course these advantages need to be weighed against the fact that data will need to be converted into different formats as different technologies come into being. For example, a teacher ten years ago may have begun with data on a 5 1/4" disc, then stored it on a 3 1/2" disc, and finally transferred the data to a CD. If data cannot be effectively and correctly transferred to new formats problems will arise. This is the drawback of using computers to store any kind of information. There is the danger of being unable to
recover and use data which is stored in an outdated and unusable format.

Art teachers may find the idea of eliminating the need for a physical slide library to be beneficial enough that even this one small aspect of using the Internet makes it worth the cost of maintaining a connection. In addition, there are some things that will be found on the Internet that will never be found in a slide library. The most important of these is current student work from other art classrooms.

Electronic student art galleries provide an opportunity for students to display their own works and view the works of fellow students from around the world (Dunn, 1996, p.9). It may be more meaningful for some students to try to interpret the work of somebody their own age who is still alive instead of attempting to understand an image that may have been created by somebody who has been dead for many years. This is not to say that art from the past has no value, but for some students it may be more exciting to look at a work and know that it was created by somebody who is living in the same complex world and time that they are.

With positive teacher attitudes, the Internet may well break down the walls of the art classroom, bringing technology-based resources to all students, and providing the potential for continuous
communication between students of art in all nations. (Heise & Grandgenett, 1996, p.18)

After viewing the work of a contemporary, students may find that their curiosity has been piqued to such an extent that they desire to communicate with the artist. Depending on how far away the artist lives, a phone call might be quite expensive and out of the question. But [Internet] discussion groups provide a means to ponder, confer, and analyze everything from the most obscure artist to major developments in art criticism, art history, and aesthetics (Dunn, 1996).

Despite these positive aspects of using the Internet in an art classroom, some teachers are not able to take advantage of all it has to offer. 87% of 294 art teachers polled stated that there was no Internet connection in the art classroom, and art classes didn’t have priority in reserving the computer lab (Heise & Grandgenett, 1996). Heise & Grandgenett (1996) also found that “64% of the 294 respondents [art teachers] reported that they had heard of the Internet but don’t use it often” (p.17). What the statistics presented by Heise & Grandgenett (1996) do not tell us is what is going on at specific school sites, and how people's perception of Art Education may affect the importance they attach to it in the educational hierarchy.
The view of Art Education as a not so important part of a person's education presents several problems for educators who wish to integrate technology into the art curriculum. When computers are purchased for a school, the art specialist is often the last teacher to receive a machine rather than the first (Dunn, 1996, p.8). Therefore, art teachers are going to have to start putting more effort into acquiring technology, and more specifically, technology that allows access to the Internet and other resources that can enhance Art Education.

The estimates of acquiring this technology, in terms of computer and monthly connection costs, assume that the teacher in question already has wiring in his or her classroom - whether it be a direct line to the outside or a connection to a network which is in turn connected to the Internet. If wiring is required it may cost more than a single classroom or even department budget can handle. Wiring a school is something that may require a grant, a sum of money set aside by the district, or funding from outside sources. Deciding what type of wiring to install and where to install it is a problem which is beyond the scope of this paper. Educators facing this problem may end up putting in a lot of extra work, but they will also probably learn a lot about wiring which may help them with similar situations in the future.
Financial barriers aside, if use of the Internet does become commonplace in art classrooms there may be benefits that carry over into other areas of the students' lives other than art. Students may not only reach their artistic potential, but might also develop new art-related skills and competencies necessary to responsible citizens who are productive in the global environment (Heise & Grandgenett, 1996). The visual and technical problem solving that takes place when art students use technology to produce visual images, download images from the real world of art, access information about these art works, engage in critical analyses and discussion of art works via e-mail or teleconferencing, and compare and contrast the aesthetic beliefs of a wide variety of cultures can "prepare them to meet the challenges of the 21st century like no other subject in our schools" (Dunn, 1996, p.9).

Careful consideration and possibly some experimentation will be needed, and has already begun in some places, in order for the maximum benefit to be reaped from the use of the Internet in the classroom. The discussion so far has only been an application of simple ideas to the complex situations which exist in today's classrooms, art and other subjects. Technology is not the only answer to the multifaceted problems which teachers and students encounter within the classroom, but, "[T]echnology can help us, once
we have figured out what we are trying to save and what is worth saving [in the art curriculum]" (Gregory, 1996, p.54).

Further research is needed to determine what types of art experiences can facilitate content learning across the curriculum (Belynne-Buvia, 1996). But the Internet does provide a real opportunity to blend multicultural, multi-age, gender-inclusive, educational reform into the art curriculum by incorporating visual resources and contextual information from many different cultures (Heise & Grandgenett, 1996).

Gregory (1996) asks the question, "Can we make it [Art Education] more relevant to our students" (p.50)? It would appear that technology can help in bringing the answer to this question closer to a "yes". The information (text, high quality images, sound, voice and video) now available to art teachers makes it feasible for us to strengthen the content of art courses (Dunn, 1996, p.9). The art classroom may yet become a community of learners in which each cooperative learner, including the teacher, shares equally in the inquiry and discovery processes (Dunn, 1996).

Advantages and Disadvantages of Combining Technology and Multicultural Education

There are numerous points of view as to what does and what does not constitute 'multicultural education.' Accord-
ing to Hinton (1994), "Multicultural education is interdis-
ciplinary, cross-curricular education which prepares stu-
dents to live, learn, and work together in a culturally
diverse world" (p.4). Banks (1991) writes that multicul-
tural literacy should prepare students to "know, care, and
act in ways that will develop a democratic and just society
where all groups experience cultural democracy and empower-
ment" (p.136) (as cited in Roblyer, Dozier-Henry, &
Burnette, 1996, p.6). In short, being culturally sensitive
means being able to view the world from the standpoint of a
culture other than one's own (Powell, 1997, p.6).

These ideas are deceivingly simple, but the ideals and
values they embrace can be difficult to achieve in the
classroom. In light of the difficult challenge that multi-
cultural education presents to teachers, students, and
schools, it is more important than ever to address the sub-
ject and deal with it in a positive manner. We live in a
world where it is a simple feat for families to move from
one place to another, as the need or desire arises. This
mobility is increasing the diversity of students in class-
rooms everywhere. Some teachers may find themselves facing
a room of students from cultures they have never encountered
and places they have never traveled to. It is imperative
that teachers develop instructional strategies that cater to
the learner characteristics of diverse groups and create a
classroom climate that celebrates diversity (Sheffield, 1997). Technology may aid teachers in accomplishing this goal. But although technology can be useful in creating a classroom in which multicultural education plays a perpetual and positive role, it is not a singular answer to a multifaceted problem.

There is a danger that overly zealous teachers may incorrectly perceive that the inclusion of technology in the classroom will automatically insure that the challenge of handling multicultural issues has been successfully addressed.

To say that technology alone can address satisfactorily the challenge of intercultural understanding seems a gross oversimplification....There is the danger that multicultural education will be reduced to an appreciation of various foods, heroes, and holidays. It releases us from the weight of individual responsibility and commitment to learning how our cultures interrelate; there is the real potential to compromise authenticity.

(Dozier-Henry, Roblyer, & Cao, 1995; as cited in Roblyer, Dozier-Henry, & Burnette, 1996,p.5)

People may be looking to technology to offer them a quick and easy shortcut, as it might in other situations, to
establishing a classroom atmosphere in which cultural diversity is celebrated. And, some teachers may not even realize that there is a need for such an atmosphere to exist.

Many teachers and designers, as members of the mainstream middle class (by birth of upward mobility), have had few opportunities to experience and understand the cultures of various minority groups and thus achieve a multicultural perspective. (Watts, 1975; as cited in Powell, 1997, p.8)

Teachers may not even be aware that they have beliefs and biases they have learned and developed during their own lifetime that ultimately affect how they communicate and teach. The teacher, often unaware of these [cultural] differences because they are culturally insulated, find themselves without a vision of educating beyond their own personalistic and ethnocentric views (Powell, 1997). Teacher preparation programs may be part of the problem. Applebaum & Enomoto (1995) found that breaking cultural myths of teaching and the ideology of professionalism embraced by preservice teachers is a difficult thing to do. According to Powell (1997) the entire educational system, together with the rules and procedures for effective classroom (instructional) interaction, reflects a cultural dictate rather than a universal mandate (p.8).
The picture may look bleak for multicultural education, and using technology to enhance it, but the very fact that people are becoming aware of some of the problems means that they will be able to choose a new path that may lead to the solution to some of the problems. To begin with, understanding our own culture will provide a glimpse into why we may tend to view the world exclusively from our own perspective, and will allow us to move beyond the stance (Powell, 1997).

Once we realize that the choice of technology resources as the only means of acknowledging and celebrating cultural diversity can be, in itself, a harmful and counterproductive practice (Roblyer, Dozier-Henry, & Burnette, 1996), we can look at technology and see what part it can play in improving multicultural education. Technology does have a place in creating a classroom which is conducive to the aims of multicultural education, we as educators just have to figure out where that place is. Failure to respond to the need for greater understanding between and among ethnicities will have serious consequences (Griswold, 1994, p.24). It is up to us as teachers to change our attitudes and those of our students and to develop a multicultural philosophy (Hinton, 1994). There is some evidence and support behind the idea that technology can play a role and be an integral part of this new philosophy. It is necessary that we determine how
to select and implement technology in ways that achieve the most important goals of multicultural education (Roblyer, Dozier-Henry, & Burnette, 1996).

Some people are looking in the direction of the Internet in particular, and they see a new tool that can have a great impact on multicultural education. There are creative sets of materials being made available via the WWW by teachers and students that can flow into the international community in a way that was never possible before (Collis, 1996). More importantly, “online communications can change the way students look at people from cultures other than their own” (Roblyer, Dozier-Henry, & Burnette, 1996, p.9). It gives teachers and students both the chance to escape the stereotypes which are presented to us in books, posters, and other ‘multicultural’ paraphernalia.

The Internet allows us to meet people from far away places, instead of meeting somebody’s perception of people from far away places in a book, video, or similar source. Telecommunications, of which the Internet is just one aspect, has opened up the eyes of many of us to a world of differences we never knew and similarities we never suspected (Roblyer, Dozier-Henry, & Burnette, 1996). Information highways are rapidly developing into significant resources for teachers and students studying multiculturalism (Griswold, 1994). What better way to study and learn about
a culture than to maintain ongoing communication with people from that culture.

Learning about other cultures may just be a small beginning to something that may become enormous in scope. There is great potential inherent in global communications technology to increase peace and understanding between people from all corners of the planet. One teacher who manages a web class site has observed that through making personal connections, the children have become more understanding and accepting of people in the world (Quesada, 1996).

Web-based technologies offer tremendous potential for students to share their work with each other through web pages stored on a central server (Ward & Tiessen, 1997, p.24). They can 'chat' with each other about their work, they can send e-mail back and forth, and in a few select cases they can even see the person they are speaking to on a computer monitor, even though the person may be very far away. Hopefully, in the future more students will be able to interact via teleconference as Internet technology and data lines are improved.

But even at this moment in time students can already work collaboratively on research projects with experts and peers from all corners of the globe (Quinlan, 1997). Students are no longer limited to the expertise and resources
that exist at their school site. Students can interact with individuals outside the range of their own classroom (Rakes, 1996).

At times it can be frustrating and even difficult to schedule a guest speaker, such as a community leader, for a school assembly or presentation. The Internet may provide for easier collaboration between students, teachers, and professionals from our global and local communities (Gregory, 1996). Teleconferencing may save a person time, no traveling is necessary, and it may also make it possible for them to be several places at once. In short, the World Wide Web has the potential to extend the class beyond a literal room to include other places where students interact with other students and teachers (Quinlan, 1997).

The Internet has been responsible for increasing communications access between schools in various parts of the world (Roblyer, Dozier-Henry, & Burnette, 1996). Several projects are already under way. One example of a partner program is the Sister Cities project reported by Winfrey (1995), which links schools in Florida with those in various parts of the Newly Independent States (NIS, formerly the Soviet Union) (as cited in Roblyer, Dozier-Henry, & Burnette, 1996). The Global Schoolhouse Project by NSF utilizes CU-SeeME live video to link 5th through 8th graders in the United States and England in cooperative environmental re-

Reactions to these projects are positive. George Cassutto, a participant in Prejudice Reduction Through Global Telecommunications, observes that through the exchange of cultural data, his students "have become enlightened and aware of the global village in which they live...reducing ignorance and prejudice regarding their fellow human beings" (Quesada, 1996). His statement gives a human voice to the findings of Roblyer, Dozier-Henry, & Burnette (1996), who point out that although comprehensive studies are not available, there is some evidence, in addition to a widespread popular belief, that technology has made a difference in some ways, in achieving goals of multicultural education.

According to Griswold (1994), "The impact of worldwide electronic dialogue will not only accelerate advances in arts and sciences, but will, no doubt, play a role in solving global problems" (p.46). It is ironic that the very computers that seem to have a great potential for dehumanizing people and reducing them to numbers may also have great a potential, in the form of the Internet, for increasing and improving international relations on a scale and to an extent that would be impossible without them. Using electronic resources and telecommunications projects, young
people are exchanging ideas about global issues, bringing us one giant step closer to world peace and understanding (Quesada, 1996, p.24).

**Internet as an Art Tool**

Although it may be possible to use the Internet as a tool to enhance any content area, many education and policy leaders have not seriously examined the basic implications for curriculum brought about by the Internet and the Information Age itself (Rakes, 1996). Particular aspects of the Internet may be especially useful in specific content areas, and uses of the Internet should be explored in order to discover how it may best be used for purposes of education.

One powerful ability of the Internet, which can be applied directly to Art Education and a few other areas as well, is the fact that it allows anybody to publish work. It is unnecessary for a person to go through the steps associated with publishing a book, setting up a show with an art gallery, or going through other complicated processes which may hinder a person who does not have many resources at their disposal. Instead, the Internet allows anybody to publish or display anything they so desire, which is both its strength and its weakness. It is a weakness because people can abuse this freedom and publish things that are illegal. There are also ethical and moral issues which
become extremely complicated, because when speaking in an international sense, not all countries may agree on what is 'proper' to display or publish on the Internet. On the other hand, the simple accessibility and use of the Internet is a strength because it gives students, or anybody for that matter, a way to display and share work, and therefore adds a whole new dimension to the concept of freedom of speech.

People can use Internet tools and forums to publish information and gain a wide audience (December, 1994). Students can publish online projects, art or otherwise, and journals (Quinlan, 1997). Although art students may not have the same influence and resources as a professional artist when it comes to displaying work in a physical gallery, students can display their artwork on the Internet just as easily as anybody. Students may even have an edge, as some people from younger generations may be more adept at creating web sites than adults who may not have used computers much during their lifetime or while they were in school.

Access is another key feature of the Internet which applies directly to Art Education. The computer has become an invaluable tool as it provides the means for both quick retrieval and sharing of information (Rakes, 1996, p.54). The ease with which the WWW allows us to access ideas, examples, images, and materials through a single user interface is something which has never happened before (Collis,
1996). It has the potential to make slide libraries obsolete, as explained previously, but there are other implications which go beyond slide libraries.

Art educators everywhere do their best to maintain a collection of posters and student work, even if they do not have the funds to support a slide library. The storage of these materials is just as problematic as storing slides. Flat files, which are a necessity when storing two-dimensional artwork and art posters and reproductions, are very expensive and take up a great deal of space. No matter what sort of precautions are taken, colors eventually fade, materials are damaged, and eventually work must be discarded. Three-dimensional work is even more difficult to store, and eventually works are accidentally damaged or broken. If art teachers store these art images on a computer there will be no degradation over time, although the disadvantage will be that the images can only be viewed as large as the monitor or the television screen that the computer is connected to.

Flatscreen television, another technology which is beginning to develop and gain attention, may help to alleviate the problem of screen size in the future. The idea behind flatscreen television is to create large screens which are only a few inches thick. At the present it would be difficult for many teachers to have a 48" television in their room because of its size, but if the television were
only several inches thick it could be mounted on a wall and
used as needed. The price of flatscreen televisions is such
that they are not yet available to the typical consumer.
Companies that produce these televisions are also still
improving their product and making it in such a way that it
can take advantage of other technologies which may be re-
leased in the near future. If the price comes down and it
is usable with present and future television standards,
flatscreen television may end up playing an important part
in classrooms which are connected to the Internet.

Sharing of images and work using a large screen can be
very useful in an art classroom, where students may want the
opportunity to examine the detail in a work. It is possible
to zoom in to an image on a small computer monitor, but a
larger screen may allow students to get a better idea of how
it feels to view a work in its original size. Of course
some works are so large that they cannot be displayed full
size in a classroom with an eight foot ceiling, but these
are the exception and not the norm. Exchanging and sharing
images on a large screen, or even a normal computer monitor,
will become much easier between both teachers and students
if all art classrooms have Internet access.

Various instructional sites demonstrate the versa-
tility of WWW [World Wide Web] for providing un-
limited access to class materials that would nor-
mally be restricted to classroom-only viewing or limited viewing as a part of library reserve materials. (Shotsberger, 1996, p.47)

For example, using the Internet, instead of trying to ship a work which is 36" X 30" X 2" and hoping it will not be damaged in the mail, one teacher can email an image to another or simply display the image on a school web site for anybody to use or to look at. Students can look at each other’s art, as web-based technologies offer the potential for students to work together and to share their works (Ward & Tiessen, 1997).

No matter what the subject area is, “when thoughtfully developed, the Web-based instructional interface does not constitute one-way delivery of information, but rather the opportunity for access to class material, a gateway lending the learner to numerous resources, and a method to facilitate communications between the learner, the instructor, and other students.” Barnard (1997) (cited in Quinlan, 1997, p.17)

The Internet allows not only for written communication, but visual communication, which is very important in the area of Art Education. It has the capability to increase the resources that students and teachers have access to. There is definitely the possibility that some positive out-
comes can be achieved in art classrooms and others through the integration of technology.

There is also the possibility that there will be some instances where technology is not the best solution to a problem or dilemma. But as educators, we should continually be searching for ways to improve the entire educational system, whether with technology or some other tool. It would be foolish, and detrimental, for us to think that there is no room for improvement in the area of public education, and to ignore a useful tool just because it is new.

**Multimedia and Web Site Design**

Educators and others who desire to make use of the Internet need to make sure that their design is effective for whatever they want to accomplish. Although multimedia programs and web sites are fairly recent innovations, many books have been published about how to best go about creating presentations for these formats. Reiber’s *Computers, Graphics, & Learning* (1994) is one such book that goes into extreme detail on the subject of designing graphical interfaces such as are used in multimedia and web site construction. In addition to delving into an actual book of guidelines, there are a few simple rules that can be applied in most cases.
Concerning web site design, a few are now considered multimedia. Shotsberger (1996) writes, "The first notion is that less [in design] oftentimes is more" (p.48). It may be tempting to add a multitude of sounds, videos, and other fancy tricks to a multimedia program or web site. But if too many things are happening at once the user may feel the same way as if he or she was standing in a room with a dozen or so people all yelling at him or her at the same time trying to attract his or her attention. Reiber (1994) points out both directly and indirectly throughout his book that too much of a good thing may make for a very poor design. WWW [World Wide Web] users have quickly become sophisticated consumers of multimedia and will tend to eschew a site rich in "features" but devoid of real content (Shotsberger, 1996, p.49).

One positive aspect about creating an effective and user-friendly presentation is that this technology, multimedia presentations, can be used as a magnificent tool in allowing individual creativity and pacing during the teaching/learning process (Yarbrough, 1992). Another advantage is that rather than the learner being bound by some sequence designed by the teacher, interactive integrated media allows the user freedom of choice within the confines of the program in use (Gregory, 1995, Thornburg, 1995; as cited in Dunn, 1996). It is crucial to remember that limited choice
is significantly more motivating than no choice at all (Dunn, 1996, p.7).

With these rules of design in mind, 'Spartan Art' was put together in such a way that there are a variety of links so that students can explore whichever part of the program interests them the most. They should be able guide themselves through it at their own pace without any assistance. In the event that 'Spartan Art' is uploaded to a server in the future, so that it may be accessed by anybody with an Internet connection, the project was also planned so as to avoid excessive scrolling and to maintain a sense of continuity by using similar designs on each screen and page (Shotsberger, 1996).

The most important factor both in the design and the layout of 'Spartan Art' has been the idea that instructional Web sites should reflect the fact that one of the most interesting aspects of visiting class sites is the opportunity to inspect student class work (Shotsberger, 1996).

Why the Internet May Play an Even Larger Part in Education in the Future

Although use of the Internet for educational purposes may seem to have great potential, there are some problems which are hindering its use. Some of these problems have to do with the speed at which data is transferred.
Currently, when creating web sites, most designers stray away from video and sound, and still pictures are kept to a minimum, because they know that the typical user will not sit and wait several minutes for a web page to finish loading. In terms of file size, text files are the smallest, still pictures are somewhat larger, sound files are larger still, and video files are largest of all by far. Therefore, designers reduce the quality of elements such as pictures and sound, which in turn reduces their size, and generally avoid animation and video. Some designers use simple animated GIFs of one image, but full-blown animation is something that is rare on the Internet.

Designers and programmers construct web sites with the computer of a typical consumer in mind. Most new computer systems, at the date of this publication, come with a faxmodem which transfers data to and from the computer at 28.8 or 56 kilobits per second (KBPS) (Microtimes, 1997). The typical consumer in the United States of America pays about $20.00 a month for unlimited use of the Internet using such faxmodems (Microtimes, 1997). Therefore, most designers plan with the 28.8K faxmodem in mind, but even planning for users who have a faster 56K faxmodem does not allow them much freedom when attempting to create a multimedia site.

'Spartan Art' was designed with several technological innovations in mind that are currently being tested and used
in a few select places. These innovations will hopefully become commonplace in the very near future. They will completely change, and in some cases eliminate, the limitations of web site design. The key to these new technologies is that they improve speeds at which data is transferred through the Internet in a drastic way. Crockett, McWilliams, Jackson, & Elstrom (1998) have examined several of these new means of data transfer. They presented the following information which can be very useful to teachers, and others, who are interested in creating web sites that include components of multimedia, and which are still usable by the general public.

DSL Lite and DSL both use basic copper phone wires that are already in place in most homes. U S West, the maker of DSL, promises that the service will be available to as many as 10 million users in 46 cities by June of 1998. At the present there are 50,000 people using DSL. DSL Lite is the less expensive of the two versions, and also a little slower.

Cable Modems connect to existing TV cable networks. Currently there are 100,000 people using cable modems.

Satellite Dishes are marketed by Hughes Electronics Corp. in the form of DirecPC, which supposedly can be used by anybody in the United States. Currently there are 60,000 users of this service.
T-1, or fiber-optic cable, is extremely fast, but the price is currently much too high for the typical consumer. It serves as a backbone for some Internet Service Providers (ISP) but is not commonly a type of cable that is connected to a residential building. Its one advantage is that its download and upload rate are both the same. Of the technologies listed, T-1 seems the least likely to gain wide-spread use among the general consumer population because of its cost (see Figure 1).

As the numbers show, at this time, the capacity for data transfer via the Internet is increasing at a drastic rate, although the number of people the new technology is available to is still small.

Conclusion

The reason all of this information applies directly to 'Spartan Art' is because the full-blown multimedia art presentation will only become useful as a web site if school Internet connections are fast enough to handle the multimedia aspects of the project. If the school Internet connections are able to handle the data load of 'Spartan Art', then it will be able to handle multimedia projects designed by other people. This means that not only will the Internet and related technologies offer all of benefits previously
Figure 1. Internet Transfer Rates. Crockett, McWilliams, Jackson, & Elstrom (1998). 28.8 fax modem information has been added for purposes of comparison.

<table>
<thead>
<tr>
<th>Service</th>
<th>Cost per month</th>
<th>Speed to user’s computer (KBPS)</th>
<th>Speed from user’s computer (KBPS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSL Lite</td>
<td>$40 - $100</td>
<td>384 to 1,500</td>
<td>384 to 512</td>
</tr>
<tr>
<td>DSL</td>
<td>$40 - $200</td>
<td>144 to 1,500</td>
<td>128 to 1,100</td>
</tr>
<tr>
<td>Cable Modem</td>
<td>$30 - $60</td>
<td>800 to 3,000</td>
<td>33.6</td>
</tr>
<tr>
<td>Satellite Dish</td>
<td>$20 - $130</td>
<td>200 to 400</td>
<td>33.6</td>
</tr>
<tr>
<td>T-1</td>
<td>$1,200</td>
<td>1,544</td>
<td>1,544</td>
</tr>
<tr>
<td>*Current 28.8 Faxmodem</td>
<td>*$20</td>
<td>*28.8</td>
<td>*28.8</td>
</tr>
</tbody>
</table>

discussed, but educators will be able to explore new territory, beginning with multimedia web sites.
Art Education is an important facet of our educational system. It is vital that students are acquainted with both the creative process involved in producing art and also have the ability to understand and appreciate the artwork of others. Any tool that has the potential to enhance Art Education in an effective manner should be examined, and if it lives up to expectations it should be used in the classroom.

The goal of this project is to use technology to 1) showcase student artwork in a manner which is not possible without technology, and therefore raise their interest level in their own creations, and 2) to give the students who will be viewing the presentation a chance to see and appreciate artwork of people their own age from another place. It is hopeful that one side affect of the project may be that students learn about people from other cultures and places as they look at and interpret their artwork.

It should be noted that this project is not meant to take the place of the present art curriculum, but rather to strengthen and enhance what is already going on in art classrooms. It is already possible for teachers and students to exchange artwork via the normal mail system. One question that this project will attempt to answer is: Is it really
worth the time and effort that it takes to create a multimedia presentation about student artwork for display on the Internet, or is displaying student work at their local school good enough?

For this project, the multimedia web site will actually be created on a CD and sent to another school so that it can be loaded on their computers in order to be evaluated. The finished project will be too large in terms of data to be usable with current 28.8K or 56K data transfer rates.

In the very near future, the methods with which Internet data is transferred, cable, fiber-optic, or other, will develop to a point where such a presentation can actually be put on a web site and downloaded in an acceptable amount of time by a typical user. When this finally occurs on a large scale, it may be even more important for instructors of all subjects to consider the benefits and costs of such an endeavor as is explored in this project.
CHAPTER FOUR

PROJECT DESIGN AND DEVELOPMENT

Statement of Purpose

The aim of 'Spartan Art' is to enhance the art curriculum with technology. At the same time it is hoped that the way in which the project has been designed will also encourage students to learn about people from other places and cultures, as a result of seeing student artwork from a geographically remote location.

As a teacher with six years of professional experience, I am conducting this project assuming the following: 1) students like to see their artwork displayed on bulletin boards, hallways, and other places on campus, 2) students derive a sense of pride when they see their work hanging up and therefore become more interested in art, 3) technology in the form of the multimedia presentation created in this project is another way of displaying student work and therefore, 4) being part of the multimedia presentation will increase the pride and interest of the students who are part of the project.

I also propose that the students at the remote site in Texas, a public high school, will learn something about students from California, both by looking at their work and reading their biographies. If this holds true, then there is
a possibility that a similar project(s) could be done on an even larger scale in order to enhance the ways in which students learn about art and cultures of places even farther away.

The literature review indicates the findings of related projects and studies. The formative evaluation will reveal how students on both ends of this project perceived its success.

**Design Structure**

The 'Spartan Art' multimedia presentation was designed with the previously discussed rules of both multimedia and web page design in mind (see Chapter 2), as it is possible that it may be a document that is destined to be uploaded to a web site in the near future. It is imperative that the design, which is the execution of the idea, for such a project be carried out with extreme care and diligence. A great idea which is brought forth in a sloppy and careless manner tends to alienate people and lower their interest.

It should be kept in mind that, although I have done my best, it is difficult in some cases to describe a sequence of animation or other aspects of the final presentation. If at all possible, using 'Spartan Art' for ten or fifteen minutes will help to clarify many of the concepts which are contained henceforth.
Ease of navigation, pleasant sounds, and stimulating visuals and videos have all been at the heart of the layout and workings of the project. Too many aspects of multimedia being directed at the user at one time transforms the information presented into senseless noise and color. Therefore, the project has been developed in such a way as to be simple to use and yet interesting to interact with.

The project was designed in 640 X 480 format, which is the standard for many web sites, so that it will be viewable on most SVGA monitors. Currently this is the type of monitor typically sold with personal computers which cost around or under $4,000.00, which is probably what most schools will be using. There will be exceptions, but considering what I have seen in a variety of schools during my career the SVGA format will be acceptable in a PC environment. Higher resolutions than 640 X 480 were not used because they may not be available to some users. 'Spartan Art' was also saved as a projector file, which means that the user does not have to have the program Macromedia Director 5.0 in order to use the project.

The details of 'Spartan Art' will be discussed in terms of levels. The topmost level, level one, refers to the very first screen that is seen by the user. Proceeding levels are reached by clicking on buttons and going deeper and deeper into the program (see Figure 2).
Figure 2. Tree diagram. This diagram shows the ways in which a user can navigate through 'Spartan Art'. Lines indicate connections, through buttons, between various areas of the program.

Level One: Initial User Screen

Level Two: Main Student Artist Screen

Level Three: Specific Artist Screen

Level 4: Artist Biography Screen

Level 4: Artist's Work Screen
For the purpose of this project it is assumed that the users will be familiar with an interface in which clicking on buttons is the mode of navigation. If users are not familiar with this mode of navigation, then it might be necessary to have a lesson in navigational techniques prior to delving into the project. The author has been assured via email from the participating school in Texas that the initial users of the project are familiar with a point and click interface.

Level One - Initial User Screen

The initial user screen, the topmost level of Spartan Art, is like a cover for a magazine. It is meant to catch the user's interest and give him or her a good idea of what is contained within. The transition 'dissolve, pixels fast' is used to slowly bring the initial screen into view random pixel by random pixel until the image is complete (see Figure 3).

The initial screen was created using a background from Fractal Design Painter 4.0. This background was imported into Adobe Photoshop 4.0 where it was altered and text was added. Then, it was saved as a JPG file at 640 X 480 resolution, and finally it was imported into Macromedia Director 5.0 to be included in the presentation.
At the initial screen the user begins the program by clicking on the 'BEGIN' button. The user can also click on the 'credits' button to see the credits for the project. The only place in the program that can be reached from this page is the Main Student Artist Screen or the Credits Screen.
The transition to Level Two is called 'strips on top, build right.' This means that beginning at the top left corner of the screen thin vertical strips move from the top to the bottom of the screen one by one. As each strip reaches the bottom of the screen the next strip to the right of it begins to move from the top to the bottom of the screen. As each strip moves it replaces the Level One Screen with the Level Two Screen, strip by strip, until the change is complete. The transition is also accompanied by a sound that is unique to the level which is being entered. Whenever a user is entering a certain level they will always hear the same sound for that level.

Transitions were used to make the change from screen to screen more appealing to the user so that interest is maintained in the time that it takes the computer to shift from one screen to another. The sounds appeal to the user's sense of hearing, while at the same time assuring him or her that the screen has begun changing after they click on a button or other navigational tool. Thus, some consistency is maintained throughout the program using sound and transitions.

**Level Two - Main Student Artist Screen**

This screen uses a faded version of the initial screen as a background, with the addition of photographs of each of the students whose work is displayed within the program (see
Figure 4). Directions at the bottom of the screen encourage the user to click on a student’s picture in order to see his or her artwork. From this screen the user can navigate back to the introduction screen, if he or she so desires, or he or she can navigate to a screen with the work of a specific student by clicking on the appropriate photograph.

The photographs of the students were taken with a 35mm camera. A digital camera was used initially, but the photographs were not of high enough quality for the project. The photographs were scanned, using a Microtek E3 Scanner, into Photoshop. Names were added at the bottom of each photograph, a black border was added, and finally the photographs were imported into Director. The animation capabilities of Director were used in order to make it appear as if the photographs fly in from outside of the screen until they come to rest.

Photographs with names were used instead of a list of names because a photo of a student might grab a user’s interest more than just a word.

As one of the goals of the project is to increase students’ pride in their artwork, it makes sense to use a photo of the student because most students, with very few exceptions, love to have their photos taken and put beside work that they are proud of. Seeing their name in a positive light is one thing, seeing a picture with their name in a
positive light is something altogether different, and much more powerful in its effect.

The author would like to point out that although it cannot be measured scientifically, the students from the art class which participated in the production part of this project were delighted to have their photos taken. It should also be noted that some claimed they were only letting me
take their photo because of peer pressure, the fact that they were going to be glorified along with their work had no affect on their choice to participate . . .

But all joking aside in such a serious publication, one benefit of the project, which may affect the art curriculum in my classroom in the future, is finding that students derive even more pleasure in having their photograph attached to their artwork than I previously supposed. It may be impossible to quantify, but this one small aspect of the project may lead to many possible uses outside of the project, which will still lead to the enhancement of the art curriculum.

Level Three - Specific Artist Screen

The transition which begins this screen is called 'push right.' This means that the new screen pushes the old screen off. The right edge of the new screen appears at the left edge of the picture and moves across, pushing right, until the new screen, which is the background, fills up the viewing area completely.

After the background has stopped moving the name of the student moves in from the right and a photograph of the student moves in from the bottom until it comes to a rest in a black frame which is designed for it. The buttons and
photographs of the student artwork fade in once the student’s photograph is in place in the frame (see Figure 5).

The screen itself uses a background which is the same as the Main Artist Screen minus the words and photographs. The photographs of each student and their artwork were taken with a 35mm camera and then each image was scanned into Photoshop. Photoshop was used to clean up the photos as necessary and black borders were added to make the pictures stand out against the background. A camcorder was used to record a short video about each student, the video was edited on a computer using Adobe Premiere 4.2 and the final version was imported into Director.

From this screen a user can navigate back to the Main Student Artist Screen, click on a button which brings up the student biography window, click on a button which plays a short video of the student, or click on a student work of art to see it enlarged and learn more about it.

The video is included, in conjunction with a photograph of each student, in order to address several aspects of the project. On top of increasing the self-esteem of the participating students, it is believed that the video part of this screen will aid in accomplishing the goal of having students learn about people from other places and cultures. It is hoped that the video, along with the artist biography,
Figure 5. Specific Artist Screen. This screen is Level Three. In this case the artist is Zerly Ochoa. From this point the user can navigate to the Main Artist Screen, read Zerly’s Bio, see a video of Zerly, or click on one of Zerly’s works to see it enlarged.

will help the users to see the students as real people as opposed to only perceiving them in terms of a static photograph.
Level 4 - Artist Biography Screen

Figure 6 shows what the Artist Biography Screen looks like. There is no transition to this screen, the biography window appears instantaneously in place of the student’s photograph when the user clicks on the ‘Bio’ button. As soon as the ‘Bio’ button is clicked the ‘Bio’ button changes to a ‘Photo’ button. If the user wants to see the photo of the student again they only need click on the ‘Photo’ button. As soon as the ‘Photo’ button is clicked the student’s photo instantaneously reappears and the ‘Photo’ button is again replaced by the ‘Bio’ button. Students were given a set of questions, (see Appendix A), which they answered, and this information is displayed in the Biography window.

Level 4 - Artist’s Work Screen

This screen, of which there are several for each student, is meant to showcase one student work at a time. A black background was chosen for this screen, (see Figure 7), in order to make the artwork stand out. The works of art on each of these screens are enlarged versions of previous pictures. The transition to this screen is called ‘reveal down-right.’ If the old screen were a piece of paper, and a person pulled the paper down and to the right to reveal the new screen, then they would be using a ‘reveal down-right’ effect.
Figure 6. Biography Screen. This screen is Level Four. In this case the artist is Zerly Ochoa. From this point the user can navigate to the Main Artist Screen, replace the Biography window with Zerly's photograph, see a video of Zerly, or click on one of Zerly's works to see it enlarged.

Zerly Ochoa

Age: 17

Art Education: One semester of Art in 11th grade

Philosophy: I love art, I love to be creative and see what I am capable of... I hope other people enjoy my art as much as I do.

Favorite Artist: Michelangelo and Van Gogh

Special effects within the program Director were used to make it appear as if each work of art slowly appears on the screen when the user first enters it. As the work of art comes into existence the title of the work moves in from the top of the screen, the medium in which the work was created and its size moves in from the right hand side of
Figure 7. Artist’s Work Screen. This screen is Level Four. This is the work “A Taste Of Red”, by Zerly Ochoa. The size of the work is 24” X 18”. The materials used to create the work were mixed media on paper. From this screen it is only possible to navigate to Zerly’s artist screen by using the ‘Back’ button at the bottom right hand corner.

"A Taste Of Red" 24" X 18" Mixed Media on Paper

by: Zerly Ochoa
"Let it touch you"

the screen, and the name of the artist and possibly a comment from the artist moves in from the bottom of the screen. Figure 7 shows what this screen looks like once all of the elements have come to a standstill.
Figure 8. Credits Screen. This screen lists the credits for this project. The 'back' button on this screen will take the user back to the Initial User Screen.

The artwork presented in this project was created at: San Gorgonio High School in California

Sounds for this project were acquired from the website: EARchives http://166.72.15.139/

From this screen it is only possible to navigate back to the Specific Artist Screen using the 'back' button.

Credits Screen

The credits screen, (see Figure 8), is not assigned a specific level as it really does not take a user any deeper into the program, and aside from being a necessity does not
have anything to do with the goals of the project. The transition to this screen is called 'vertical blinds', which means it looks as if somebody were closing the blinds on the previous screen and when they reopened the blinds the new screen appeared. A user can only navigate back to the Initial User Screen from this point.

**Video on a Specific Artist Screen**

This is not really a screen, but Figure 9 shows a snapshot of what a user sees when they click the 'Video' button on a Specific Artist Screen. Figure 9 serves to illustrate the placement of the video on the screen itself. The video marquee disappears immediately after the video has finished playing and the screen returns to normal. The user can replay the video as many times as he or she wishes.

**Formative Evaluation**

There were eleven students from San Gorgonio High School in California who participated in the creation of the project and there were 65 students from Crowley High School in Texas who had an opportunity to use the project after it was completed. Students in California and Texas both answered a simple anonymous questionnaire, (see Appendix B and C), in order to determine their reaction to the project.
Each section of each questionnaire will be examined one by one, beginning with the reactions of the students from California. As a reminder, students from California were on the production end of the project, that is to say that ‘Spartan Art’ was focused on their artwork.
Responses to the San Gorgonio Questionnaire

Figure 10 is a graphic representation of the results of the responses to the San Gorgonio Questionnaire. For question number one six students answered that their interest in art has increased. One student commented that, "It made me want to draw more."

One student answered that his or her interest has decreased and wrote, "Art is really boring to me, it is a waste of time."

Four students wrote that their interest in art has not changed at all and one commented that, "My interest has pretty much been the same plus my interest has always been high and I love art."

For question number two ten students answered 'yes' that they would be interested in seeing student art from other schools in computer format after participating in 'Spartan Art.' One student wrote, "It would be real interesting to see other artists."

One student answered that he or she was not interested in seeing student art from other schools in computer format.

For question number three ten students answered that 'no' they are not interested in exchanging email. Some comments were: "No time.", "I don’t care about their opinions.", and "Not interested."

One student answered 'yes' that he or she would be
Figure 10. San Gorgonio Responses. These pie charts show the results of the student responses to the San Gorgonio Questionnaire (see Appendix B). Eleven students participated and answered the questionnaire.

1. Interest in art

2. Interested in student art

3. Desire to email other students about art

4. Are student art websites a good idea
interested in communicating with other students using email.

For question number four nine students answered that creating web sites for student art would be a worthwhile endeavor. Some comments for this section were: "I think it can be a good program, to see what art high school students are doing.", "It is good for all art programs.", and "Yes because everyone can get a glimpse or a virtue and quality of every individual work."

Two students answered that they did not think web sites were a good idea.

Responses to the Crowley High School Questionnaire

Figure 11 is a graphic representation of the results of the student responses to the Crowley High School (in Texas) Questionnaire. For question number one 22 students answered that their interest in art has increased. Some comments were: "Because seeing other people’s art has made me want to do more.", "Good drawing.", and "It shows different pieces of art that has been done by other students, and it makes you want to draw just as good as them."

One student wrote that his or her interest in art has decreased, "Because of the art."

42 students answered that their interest in art has not changed at all. Some comments were: "I’ve always liked looking at art. Viewing Spartan Art didn’t make my interest
Figure 11. Crowley High Responses. These pie charts show the results of the student responses to the Crowley High School Questionnaire (see Appendix C). 65 students participated and answered the questionnaire.

1. Interest in art
   - 65% - not changed
   - 34% - increased
   - 1% - decreased

2. Interest in student art
   - 73% - increased
   - 26% - not changed
   - 1% - decreased

3. Desire to email other students about art
   - 51% - no
   - 49% - yes

4. Are student art web sites a good idea
   - 91% - yes
   - 9% - no
decrease.", "I still think art is cool no matter who does it.", and "I was already interested in art, perhaps the only thing that could get me more interested would be an incredible amount of $$ offered for my work."

For question number two 47 students answered that their interest in seeing student art from other schools had increased. Some comments were: "I would like to see other schools' art.", "It is interesting to see other student's art.", and "It's cool to see other student's art."

One student wrote that their interest in seeing student work had decreased and commented, "They aren't entertaining."

17 students answered that their interest in seeing the work of other students had not changed at all. Some responses were: "I have always liked seeing others work.", "Always been interested in artistic abilities of people my age.", and "I would like to see some graffiti art."

For question number three 32 students answered 'yes' that they would be interested in exchanging email. Some comments were: "I think we would have a lot in common.", "Sometimes I just like to know what kind of major projects are going on.", and "Ask them how they did a certain thing and why in their art - feelings toward art."

33 students answered that they were not interested in
exchanging email. Some comments were: "I really don’t like to talk about art.", "Don’t have time.", and "I don’t really care to talk to these people."

For question number four 59 students answered that they think creating web sites for student art is a good idea. Some comments were: "Yes, to show everyone my art.", "Yes, it’s a good way to see other kids my age to see their art interest and share mine.", and "Yes, because I think art would have an increased appreciation."

Six students answered that they did not think that web sites with student artwork is a good idea. One comment was, "Not really [a good idea], but it may make the people involved feel better about themselves."

Conclusion

Some of the information that is revealed in Figure 10 and Figure 11 fits the results that I had expected from this project, some of the information was a surprise.

For question number one on both surveys I expected student interest in art to increase, and yet the numbers reveal that 37% of San Gorgonio students and 65% of Crowley students responded that their interest in art had not changed at all after using the program 'Spartan Art.'

The responses to question number two came out the way I
had assumed they would, 91% of San Gorgonio students were interested in student art after participating in the project and 73% of the students from Crowley responded that their interest in student art had increased.

The answers to question number three were quite surprising to me. I had expected that students would want to communicate with each other, I watch them write letters to each other all of the time in class, but 91% of San Gorgonio students responded that they were not interested in communicating via email and 51% of Crowley students responded that they were not interested in emailing for the purposes of discussing art.

I had expected a positive response to question number four, but the percentages were still larger than I had expected. 82% of students at San Gorgonio responded that creating web sites for displaying student work was a good idea and 91% of the students from Crowley had the same reaction.

When I look at the student responses, and the project in its entirety, I come away with a few conclusions that I believe will be useful to me as I attempt to integrate technology into my art curriculum in the future.

First of all, it does not appear as if combining art and technology is going to increase student interest in art as much as I had assumed it would, although there are still
other avenues of combining technology and art that I have not yet explored. The combination of technology and art does seem to interest some students though.

The fact that students do not wish to email each other indicates to me that students are willing to look at quality art, but they do not have much of a desire to communicate with those 'other' people from 'other' places - even if they did create some fantastic art. To me, this means that looking at the art has not increased their interest in the culture that the art came from. It also means that if students could be led to email each other and communicate that it might help to lessen this aversion of communicating with people from 'other' places. So the art alone may have failed to increase interest in other cultures, but in the future it may open up some topics of discussion that can lead to more communication between students from various geographical areas.

The creation of more student art web sites, which most of the students who participated in this project seem to be in favor of, could definitely lead to an increased interest in student art from other places. Hopefully, this interest will lead to more communication and understanding between the students from various school sites. Technology, if used properly, can help to make all of these things happen.
APPENDIX A

Student Biography Questionnaire. This is a copy of the questions that students answered in order to collect information for the student 'Bio' area of 'Spartan Art.'

Artist Bio

Name:

Age:

Education (what kind of art training have you had):

Philosophy (why do you create art?):

Favorite Artist:

Anything else?
Survey of Students in California. This form was used to collect the information presented in Figure 10.

San Gorgonio Questionnaire

After participating in the ‘Spartan Art’ program please answer the following questions as honestly and accurately as possible. PLEASE CIRCLE ONLY ONE ANSWER FOR EACH QUESTION. (if necessary feel free to write on the back of this paper)

1. After participating in ‘Spartan Art’ has your interest in art:

   increased       decreased       has not changed at all

   Please explain your answer if possible:

2. After participating in ‘Spartan Art’ would you be interested in seeing student art from other schools in a similar type of computer format:

   yes          no

   Please explain your answer if possible:

3. Would you be interested in communicating with other student artists who have seen your work and discussing art-related topics, possibly via email?

   yes          no

   Please explain your answer if possible:

4. Do you think it would be worthwhile for all schools to create programs such as ‘Spartan Art’ with student artwork and upload these programs to websites so students at schools around the world with Internet access could see these programs? (Before answering, consider your answers to questions 1, 2, and 3.)

THANK YOU FOR PARTICIPATING IN THIS PROJECT!
Survey of Students in Texas. This form was used to collect the information presented in Figure 11.

**Crowley High School Questionnaire**

After viewing the ‘Spartan Art’ program please answer the following questions as honestly and accurately as possible. **PLEASE CIRCLE ONLY ONE ANSWER FOR EACH QUESTION.** (if necessary feel free to write on the back of this paper)

1. **After viewing ‘Spartan Art’ has your interest in art:**
   - increased
   - decreased
   - has not changed at all

   Please explain your answer if possible:

2. **After viewing ‘Spartan Art’ has your interest in seeing student art from other schools:**
   - increased
   - decreased
   - has not changed at all

   Please explain your answer if possible:

3. **After viewing ‘Spartan Art’, would you be interested in communicating with the student artists whose work you have seen and discussing art-related topics, possibly via email?**
   - yes
   - no

   Please explain your answer if possible:

4. **Do you think it would be worthwhile for all schools to create programs such as ‘Spartan Art’ with student artwork and upload these programs to websites so students at schools around the world with Internet access could see these programs?** (Before answering, consider your answers to questions 1, 2, and 3.)

   **THANK YOU FOR PARTICIPATING IN THIS PROJECT!**
Informed Consent Form. This form was used to obtain permission for student participation in the project.

San Gorgonio High School
2299 East Pacific Street
San Bernardino, California 92404

May 25, 1998

Dear Parent/Guardian,

I am completing a Master’s project for California State University at San Bernardino, under the supervision of Sylvester Robertson. Part of the project involves creating a computer presentation which includes student pictures, videos, and their artwork. Participation in the project is completely voluntary and will have no effect on their grade whatsoever.

If your student participates these are the things that will be included in the program:
- a picture of your student
- a short video of your student talking about art
- one or more pictures of your student’s artwork

The program itself will be sent to:
Crowley High School
1005 W. Main Street
Crowley, Texas 76036

Students at Crowley High School will have an opportunity to see the program, and find out what kind of things go on in our art class at San Gorgonio. After the program has been viewed by the students at Crowley it will be sent back to San Gorgonio. Students at Crowley will also send back comments about the work and the presentation. This information will become part of my Master’s project.

As a thesis, the project and writings will be sent to the library and other sources. Consequently, we are requesting that you sign a standard release form allowing the use of photos and works of art.

If you have any questions or concerns or would like to learn more call Vincent R. DeLay at 909) 862 1440 or Professor Sylvester Robertson at 909) 880 5676.

Sincerely,

Vincent R. DeLay
Art Teacher

Sign and return.

I give permission for my child ___________________________ to participate in this project.

________________________________________________________________________

parent signature

I, __________________________________________, give permission for my photograph, video, and artwork to be used in this project.

________________________________________________________________________

student signature

*This research has been approved by the Institutional Review Board of California State University, San Bernardino.
ART RELEASE FORM:

The artist, , has created works consisting of:

1.
2.
3.
4.
5.
6.

...to be published as part of the Masters Project of Vincent R. DeLay for California State University at San Bernardino. This Masters Project an art work have never been published, and the artist, , is the sole owner of the rights to the art work thereof and of all right, title, and interest therein.

Artist Name (print):

Artist Signature:

Date:
Photograph/Video Release Form. This form was used to obtain permission to use student photographs and videos in the project.

PHOTOGRAPH/VIDEO RELEASE FORM:

I, __________, hereby give, grant and assign to Vincent R. DeLay, the right, consent and permission for any purpose whatsoever to take, use, and publish my appearance, likeness, form and voice by means of photographic equipment, portraits, videos, computers, and other techniques and media, and to use my own name in conjunction therewith, and to use any printed matter in conjunction therewith in his Masters Project for California State University at San Bernardino. I disclaim any rights to the copyright in such works, and I assign any rights I may have in the works to Vincent R. DeLay.

Student Name:

Student Address:

Date:

Student Signature:
REFERENCES


