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ABSTRACT

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The Integration of Computer Art in the Art Curriculum			
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Computer art is a relatively new medium for most art teachers. There appears to be uncertainty on how to incorporate it into the art curriculum.

This study investigated the use of computer art in the elementary, middle/junior high, and high school art curriculum in West Central Wisconsin. The study was conducted in all of C.E.S.A. 10 schools during the fall of 1999-2000 school year. This study includes a survey to determine what type of computer, software programs, and equipment are used by the art teachers? The study explores how the elementary, middle/junior high, and high school art teachers receive training for technology in computer art.

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CHAPTER ONE

Introduction

This is a wonderful time to be an art teacher. A new medium to work in is always exhilarating, and computer technology is one of the greatest revolutions in art education since the invention of photography in the 19th century.

Until a few years ago, computer art was not part of the art curriculum. Computers were used for writing, data processing, spread sheets, and grading. Today, computers are slowly working their way into the art classroom as an important tool for history, design, drawing, painting, and advertising. The Wisconsin Department of Public Instruction Curriculum Guide, for the Visual Arts, recommends that students understand the role of and be able to use computers, video, and other technological tools and equipment (DPI, 1999).

An education in the computer graphics and art technology field is quickly becoming a reality and a required tool in many careers. Architecture, interior design, advertising, multi-media design, industrial design and packaging design are just a few careers which incorporate two-dimensional and three-dimensional modeling techniques. The digital arts influence adults and students each day. Camcorders, digitizers and videodiscs, CD-Roms, digital cameras, scanners, VCR's, and laser discs are just some of the technical equipment being used in schools and homes today.

The technology revolution can be easily overwhelming and stressful. As an art teacher there is no way to escape this rapid evolution. However, if you take a look at the technology we already take for granted, like the microwave, remote control devices, and cordless or cellular phones, we realize that the computer can and hopefully will become a natural part of the art curriculum as another medium.

According to the National Art Education Association, there are 65,905 art specialists in American schools, with 1,952 of those specialists employed right here in Wisconsin (Day-1997). How many art teachers have included computer art in their curriculum? For those art teachers who have not added technology to the curriculum, how do their students compete in their chosen career where computer experience is necessary? How will the student compete in further education facilities? A few universities and technical colleges are beginning to require computer training as a prerequisite to some of their classes.

Two major problems keep art teachers from adding computer art to their curriculum. One, the expense of the computer and equipment needed, and second the knowledge it takes to implement a computer art program. The first problem most beginners face is finding the proper technology. For some who have had little or no experience with computers, deciding what to choose for computer equipment, software, and other technology can be extremely frustrating. Often times there is only one art teacher in the building or in

some cases in the district. In this situation there is no other art teacher with whom to confer for information on what would work best for the art room.

Once you determine what equipment is needed, getting the principal and the school district to agree to finance the installation of computers or upgrading existing computers can be a difficult ordeal. Assuming you received the backing from the district and principal for the computer equipment, the second problem remains. Where and how does the teacher get training? Where do you get help in learning how to use the computer, the programs, printer, and other technical equipment? Where do you find help when the computer or printer breaks down? Where and when do you find the “time” to learn computer skills and programs, set up computer art curriculum, and maintain the computer equipment in a regular teaching day?

There are so many software programs to choose from, it is sometimes hard to decide what is best for your computer art curriculum. What is the best program for the elementary, middle/junior high, and high school? Is there a computer art program that serves a K-12 curriculum? There are so many questions that need to be answered before adding computer art to the curriculum. As Ravitch stated in her article, “Certainly everyone needs to learn to use a computer and to develop technological literacy. But we must not forget that computers are tools, not an end in themselves” (Ravitch, 1998). The best advice for implementing computers into the art curriculum was given by

Statement of the Problem

School districts have invested a lot of money in computers, computer equipment, and programs. The W.A.E.A. standards for the visual arts require the integration of a variety of techniques to create images with the computer. Now that schools are investing in computers, the art teacher needs to make sure that the art departments are utilizing this investment as well (1997).

The purpose of this investigation was to determine what computer art technology skills are currently being used in the elementary, middle/jr. high and high school. This study was conducted within the C.E.S.A.10 district, in West Central Wisconsin, during the fall of the 1999-2000 school year. The study includes a survey to all elementary, middle/junior high, and high school art teachers.

Research Questions

This study will help to determine if computer art is being taught within the art curriculum in C.E.S.A. 10 district in West Central Wisconsin. A twenty-five question survey was developed from the following three questions.

1. Does the elementary, middle/junior high, and high school curriculum include teaching computer art skills and techniques?
2. What type of computer, software programs, and equipment do the art teachers use?
3. Where did the elementary, middle/junior high, and high school art

teachers receive their training for technology in computer art?

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Definitions of Relevant Terms

The following definitions are commonly used words when discussing computer art. These definitions should help the reader better understand the technology language.

C.E.S.A.: Cooperative Education Service Agency

Computer art : visual images by drawing or design made by a person with the use of the computer and software.

Computer graphics : creative visual images made with the use of the computer. Programs using Kid Pix, Claris Works, Dabble, Photoshop or Illustrator, etc.

D.P.I. : Department of Public Instruction.

File Server : a digital storage device on a network with special software that enables users to access the application programs and files kept on it.

Hardware : physical computer equipment such as disk drive, monitor, keyboard, etc.

Microcomputers : small computers which are somewhat portable with a one chip central processing unit.

N.A.E.A. : National Art Education Association

Scanner : an electronic device that connects to a computer via a cable and/or some sort of interface with which a user can capture, enhance, and transfer text or images from print media\

Software : The programmed instructions.

T.R.C. : Technology Resource Center

W.A.E.A. : Wisconsin Art Education Association

Zip drive : a storage device that allows to save more information on a large capacity disk.

Assumptions

It was assumed that the art teachers involved took their time reading the survey and that they answered all the questions honestly. It was also assumed that the art teacher knew some very basic computer terminology such as the mouse, keyboard, etc.

Limitations

This study was designed to find out what technology was being used in the art curriculum at the elementary, middle/junior high, and high school levels. The survey included thirty school districts of various sizes, involving 86 art teachers from C.E.S.A. 10 district in West Central Wisconsin. A limitation was that the study was limited to those art teachers who received, filled out, and returned their surveys. A second limitation was the fact that not all grade levels have an art teacher, or require art.

CHAPTER TWO

Literature Review

Computer art is a relatively new medium for most art teachers. There appears to be uncertainty on how to incorporate it into the art curriculum. Art teachers can sometimes find it frustrating and overwhelming. Once the art teacher begins slowly and learns the basics, he/she tends to become thirsty for more knowledge. The first focus of this chapter is to determine what computer art is? The second focus is to help art teachers gain information on the advantages and disadvantages of setting up or using already existing computer labs or stations. The third focus is on the different software and hardware that can be used for computer art. The fourth and last area of focus is on the different ways the art teacher can get training and help on the use of the computer and computer programs.

What is computer art?

Computer art is a new technology that allows artists greater flexibility in conceiving, executing, and revising their creative visions. Color, design, and shapes can be altered in an instant on a computer monitor. Images can be captured electronically and incorporated into an on-going project after the artist manipulates the image to suit his or her artistic needs (Greh, 1997).

Many people associate the use of this technology with computer

graphics. Computer art and computer graphics are similar and are frequently used interchangeably. However it is done, fine works of art can be completely done on the computer. Computer art works are now being shown in museums, galleries, and art shows around the world.

Computer Hardware

In 1998, American schools invested \$5.2 billion in technology. Politicians, business leaders, and educators clamor to get the latest hardware into every school. Ten years ago there was one computer for every 37 students; now there is one for every 7 students (Ravitch, 1998). Computers are an expensive investment for school districts, not to mention the difficulty some districts have with installing the wiring in old buildings. To go along with that cost, they need to consider a person to keep up with maintenance and the computer equipment. As Grignano stated, "It's a waste of money for a school system to buy computers for every classroom unless there is a full-time technology coordinator in the school" (Grignano, 1998). More and more school districts are adding a technology coordinator. The art teacher and the technology coordinator can work together once a work area is established.

There are several ways an art teacher can find a computer work area to add computer art to the art curriculum. One way is to share a small lab with another teacher. For example, the technical education room may not be using his/her lab during your art class. This allows the art teacher to have access to computers and the technical education teacher can become a mentor.

Another option would be the technical education and the art teacher could integrate a lesson(s). Another way is to sign up for the computer lab. The advantage of using the computer lab is that the whole class can be working on computers at the same time. The art teacher is there during the class to give individual help. The art teacher may need to sign up for several hours/days to complete a piece of work. The disadvantages to using the computer lab may be that it can be difficult scheduling a time. In the researcher's school, the lab is always booked weeks, even months in advance. Or, there may not be enough days in a row to accomplish the art work. Also, most computers in a computer lab do not have enough memory for computer art software and will need to be upgraded. However, upgrading the computer memory may be an inexpensive alternative.

If the art teacher can get the backing, another option is to purchase one or two computers for the art room. If resources are limited, then one complete workstation would be a better investment than several limited units (Mones-Hattal, 1989). Before doing this, he/she may want to seek advice from someone who has experience with computer art. This may be another art teacher, technology specialist, and/or he/she could contact the university.

More and more schools are hiring part time technology specialists. The advantages of having the computers in the art room are that you are there to

give individual help and it is easier for the art teacher to spend time on the computer. The more readily available the computer is to the art teacher, the more time is spent experimenting and gaining technical knowledge. If the art classroom has a small number of computers, a rotating student schedule will need to be devised.

Of course, the ideal situation is to have a computer lab in the art room. This may be more of a likelihood for a high school program than elementary or middle school program. The size of the school will also be a factor. If the school has more than one art teacher, the art teachers could combine their technology resources to form an art computer lab.

There are many combinations of ways to set up a computer art program. The art teacher needs to start with what is available to them at the time and add to their curriculum as money becomes available. To ensure some connection with developing trends in electronic education in your school system, you may wish to serve as a member of a planning committee in your school system that would be responsible for purchasing and implementing computer programs throughout your local school. If there is no committee, get school and parent involvement and suggest a planning committee be established (McCulloch,1994).

Once the basic technology feels comfortable and computers are available for computer art, additional hardware can slowly be added.

Wonderful additions to any lab are the scanner and digital camera. The price range on these can be from \$300 to over \$3,000 each, depending on the quality of sharpness. Other options are graphic tablets and drawing boards. These allow the student or art teacher to draw with a pen-like tool instead of a mouse. It also allows the artists to trace over a picture/design and have it transfer into the computer for further work (J. Countrymen, personal communication, June 23, 1999).

Computer Software

Computer software allows a person to unrivaled creative freedom. With the computer software programs you can produce computer art with the look and feel of “real” art without giving up the flexibility, speed, fast editing, compact file size, resolution, or independence.

With a single stroke with the mouse or drawing pencil you can literally represent anything. Expression merits a place in the creative and productive work flow from every artist. You can create and draw with multiple views or variations with the appropriate software. You can apply random variability to your illustrations and drawings through different software. There is a variety of software to select from that can complement your art program. The software will depend on what objectives the art teacher wants to add to the computer art curriculum.

The following information was suggested by Jennifer Countrymen, a representative from the Technology Resource Center in Indiana

(J. Countrymen, personal communication, June 23, 1999). For the elementary art teacher or for someone just beginning, one or more of the following programs were recommended:

1. Kid Pix - a basic drawing program.
2. Super Goo - a program that transforms your photo into liquid images. It distorts and manipulate the images. Will need scanner or digital camera.
3. Art Dabbler - learn to draw and paint as you turn photos into artistic masterpieces. This program is the beginner to Painter. Will need scanner or digital camera.
4. Ray Dream Studio - 3D- transforms to 3D forms. Creates full-color color, high resolution images with all the visual impact and photo realism of 3D. Over 400 shaders-surface properties and 100 lights and camera presets. Beginner Web designer.
5. Print Shop Deluxe - design cards, signs, banners, and letterheads.
6. Page Mill - basic Web site (advanced beginner to medium)

For the secondary art teacher or the person with intermediate skills, the following programs were recommended: The following programs will need

more mega bites-128 is recommended!

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1. Adobe Photoshop 5.0 - standard photo design and production tool.

Create original artwork with a comprehensive set of brushes and pens, retouch and enhance images, correct exposure, and saturation. Special effects with more than 95 filters, simulate 3D effects by scaling, rotating, and skewing areas of an image. Multiple layers can create sophisticated compositions by overlaying images, graphics, and text.

2. Adobe Illustrator 8.0 - an enhancement to Adobe Photoshop.

Creates designs for print, multimedia, the Web, and PageMaker.

3. HyperStudio - multimedia software, support of additional technology,

wide range of graphic special effects. Includes royalty-free library of art, sounds and movies.

4. Painter Classic - a fine art drawing and painting program. An

extensive brush library.

For the advanced person or higher level art teacher the following programs were recommended:

1. Adobe After Effects - addition of Adobe Illustrator 7.0 Layer high-

resolution footage files for multi-layer compositions. Produces special effects. Professional-quality output for film, video, or multi-media.

2. Adobe Premiere 5.1- Professional digital video editing. Produce the

finest quality movies for video, multi-media or the Web.

3. Bryce 3D - lets you create and animate vivid 3D landscapes. More detailed than Ray Dream Studio 3D.

4. Painter 5.5 - natural digital tool all in one product.

5. Golive 4.0 - advance web publish site

6. Dream Weaver - advanced to university level web publish site

7. Director 7.0 - multimedia internet site-advanced to university level.

Gallery Magic can be added to any product. It is a collection of 200,000 images, including 80,000 photos and hundreds of fonts. The programs listed above work on any Mac or IBM computer with Windows 99.

in All of the different choices can be overwhelming and frustrating making a decision. If art teachers are not sure of what program is best for their class, there are several options they can take.

The art teacher may call a computer company to ask questions about a particular software. If the school district has a technology coordinator, he/she may be able to help. The district's C.E.S.A. programs would be another resource. Perhaps there is another teacher who has had experience with that particular software. Or the art teacher can attend the many workshops that are being offered at other schools and universities. The nearest university art department can give information about what might work best for you also. For

an art teacher seeking answers to software questions, there are people

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available to help. The art teacher should not feel alone. Whether the art teacher is a beginner or an expert, there are always questions that need to be answered.

Where to find training

The Office of Technology Assessment report in 1995, showed that a substantial number of teachers reported little or no use of computer instruction (Bracey, 1998). The situation is improving, but many still have not had adequate technology training. The biggest obstacle is not the computer but personal. Attitudes of fear are the greatest drawback. Many art teachers have hoped that they could get through this lifetime with skills they already have and avoid the stress of learning new computer skills (Clements, 1985). To teachers involved in the struggle to become technologically literate, it may come as a shock to learn that schools spend 55 percent of their technology budgets on hardware, 30 percent on software, and 15 percent on teacher training (Bracey, 1998). From the 15 percent spent on teacher training, what percentage is spent on the art teacher learning how to use computer art programs?

There are several different ways the art teacher can receive training. Mostly, teachers learn like their students-hands on! Computer art is no

exception. The best way to learn is to have someone show you how the software works.

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Staff development or in-service is great for learning data processing, spreadsheets, or grading software. The in-service usually include general computer software programs, unless the district has several art teachers and it is set up just for computer art. Art technology workshops are also a wonderful way to learn about software. The only problem with that is they are usually held during the school day, which means the school district needs to find a substitute teacher to cover the art classes. With the cost and shortage of substitute teachers, the art teacher may not get the time or the support. Sending more than one art teacher from the district tends to be an even greater problem.

Another source of training is peer training, teacher helping teacher. The advantage to this type of training is that the teacher is within the school, district, or nearby town. Also, the art teacher may be able to integrate a lesson with the teacher from the same building. The disadvantage is if the teacher is not an art teacher, they probably will not have knowledge of the software.

C.E.S.A. technology specialists may be of some help. They have in the past had grants offering support for technology in-services. Again the problem is the cost of a substitute. University classes in computer graphics would be

another option. Now more than ever, universities are offering evening and summer classes in computer technology. The researcher finds a great deal of technology learning is gained from his/her students and from just spending

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time on the computer.

School districts are finding it worth their time and money to hire a part/full time technology specialist. This is a great resource person. However, the technology specialist tends to be a very popular person and sometimes it may be days or weeks before contact is made.

If the art teacher does manage to get funds for technology training, here are a few tips Noon (1998) suggested:

1. Select patient trainers who are excited about technology but who are not so advanced that they move too quickly when teaching others.
2. Offer mentors to those who are just beginning to use the technology as a way of adding vision about where this is all headed.
3. Start with the most basic items, instead of assuming that people know what a mouse is or where the power switch is.
4. Provide a vocabulary list that includes all the technology jargon:

This is often the most daunting hurdle.

Summary

In this review, computer art was defined as being a creative piece of art work on computer using computer graphics. This review also

looked at the advantages and disadvantages of different ways to gain access to computer technology, and it recommended to get advice from someone with experience before purchasing computer software. It also gave several

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ways to receive information and training for the art teacher.

An important hurdle requires art teachers to move from a traditional view of student achievement, which emphasizes mastery of subject matter, to a constructive view of student achievement emphasizing a higher order of cognitive processing. Art teachers will need a great deal of support in funding, computer access, and teacher training from the parents and school administrators. There is much to gain if the teacher ventures from the secure traditional approach to the advanced technology being offered today.

CHAPTER THREE

Methodology

Introduction

The following topics will be discussed in this chapter: a description of the subjects, instrumentation, the method of data collection, an explanation of the data analysis, and a discussion of the limitations of procedures.

Selection of Subjects

The subjects for this study were 86 elementary, middle/junior high, and high school art teachers. This includes all art teachers in 30 school districts within C.E.S.A. 10. The schools are located in rural communities in West Central Wisconsin.

Instrumentation

This study used pen/pencil to fill out a paper survey developed by the researcher. This survey was developed for a descriptive research study. The survey consisted of 25 questions on what type of computer hardware, software, and learning methods are most often used by the art teacher. The survey (see Appendix B) consisted of five sections on four pages. The survey

was to gather information from the art teacher about his/her computer equipment, software, and training.

Data Collection

The survey was put into a large manila envelope and given to C.E.S.A. 10 to be delivered to the schools in that district. C.E.S.A. 10 is located in West Central Wisconsin. The packet contained a cover letter (see Appendix A), the researcher's survey (see Appendix B), a self-addressed stamped envelope, and a pencil. The pencil was sent to encourage the art teacher to fill out the survey. The self-addressed stamped envelope was sent to encourage the art teacher to return the survey to the researcher. Two weeks were given to return the survey. After the passage of one week, a note card (see Appendix C) was sent to all the art teachers as a reminder to return the survey .

Data Analysis

The data was computed by the Computer User Support Service at the University of Wisconsin Stout..

The chapters that follow will provide a statistical and narrative presentation of the findings of this study. Any conclusions about the findings will be formulated in the final summary.

Limitations

A limitation for this research is that the survey was given only to rural Wisconsin schools and should only be compared to other rural Wisconsin schools.

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CHAPTER FOUR

Results

Introduction

This chapter presents the results of the survey taken of art teachers in the C.E.S.A. 10 district in West Central Wisconsin. The survey was used to investigate if the elementary, middle/junior high, and high school curriculum included teaching computer art skills and techniques, what type of computer, software programs, and equipment do the art teachers use, and where did the art teacher receive training.

The demographic information and descriptive statistics will be given first and the data collected will be given second.

Demographic Information

The population of this study consisted of 86 K-12 art teachers in C.E.S.A. 10 district in Wisconsin. Out of the 86 surveyed 70 surveys were returned. This constitutes a return rate of 81.4%.

Survey items one through five were related to the teacher and school. Items six through fourteen were related to computers, software

programs, and equipment. Items fifteen through twenty-five were related to art teacher training and the amount of time students and art teachers spend on the computer.

Item Analysis

Research Question One The survey found that 75.7% (n-53) were female and 22.9% (n-16) were male. One did not respond.

Research Question Two The art teacher was asked the number of years they have taught art education. The results showed the largest percentage 41.2% (n-28) have taught between 11-20 years. 20.6% (n-14) 11-15 years and 20.% (n-14) 16-20 years. The second largest group of art teachers were 17.6% (n-12) teaching 1-5 years. The third group was 13.2% (n-9) with 6-10 years of experience, and the fourth group was 11.8% (n-8) with 26-30 years of experience. 1.5% (n-1) has taught for 36 and more years. There was no response in the 26-30 years of teaching. There were two that did not respond.

Research Question Three The art teachers were asked at what grade levels they taught. There were several different combinations of grades and different school buildings one art teacher might be assigned to teach. The response to each grade was 2.9% (n-2) taught preschool, 40% (n-28) taught kindergarten, 47.1% (n-33) first grade, 50% (n-35)

second grade, 48.6% (n-34) at each of the third and fourth grades, 50% (n-35) fifth grade 45.7% (n-32) at each of the sixth and seventh grades, 47.1% (n-33) at the eighth grade. 44.3% (n-31) taught at ninth through twelfth grade. Two did not respond.

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Research Question Four The art teacher teaches an average of 337.49 students. 50% of the art teachers surveyed teach 300 or more students. 9.9% (n-7) indicated they taught 600 or more students. The results showed that there was significant difference in the number of students a teacher taught. 4.3% (n-3) teachers taught the least which was 100 students, while 1.4% (n-1) taught 1075 students.

Research Question Five There is an average of 2.07 art teachers at each level. 60% (n-40) of the levels have only 1 art teacher.

Research Question Six There was 1.18 technology specialists available at the art teachers level, with 50% or more with one technology specialist available.

Research Question Seven 31.9% (n-22) art teachers classified their ability on the computer as beginner/intermediate. 26.1% (n-18) felt they were intermediate, 11.6% (n-8) were beginners, 5.8% (n-4) ranked themselves as advanced, 1.4% (n-1) was termed a technology specialist, and 1.4% (n-1) did not use the computer. One did not respond.

Research Question Eight 68.6% (n-48) responded that they had

a computer in their home. 31.4% (n-22) did not.

Research Question Nine From the 68.6% (n-48) that responded that they had a computer in their home, 63.8% (n-30) were connected to the internet.

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Research Question Ten 58.6% (n-41) stated that the MacIntosh was the most often computer available for computer art, while 18.6% (n-13) used IBM's. 11.4% (n-8) used a combination of MacIntosh's and IBM's. 11.4% (n-8) listed others (PC's, Power Mac, PowerBook, I Mac).

Research Question Eleven The location for art teachers to teach computer art was 26.5% (18) in the art room, 22.1% (n-15) in a computer lab, and 29.4% (n-20) share a computer lab with another class (business, technical education, office, and library). Two did not answer.

Research Question Twelve 59.4% (n-41) have one computer in the art room. 8.4% (n-6) have 5 or more computers in the art room. While 13% (n-9) have no computers located in the art room. One did not respond.

Research Question Thirteen The accessories for computer art were as follows, 59.4% (n-41) have a digital camera, 59.4% (n-41) a scanner, 11.6% (n-8) a Wacom, 15.9% (n-11) drawing tablet, 39.1% (n-27) clip art, 43.5% (n-30) use museum/art history CD's, 37.7% (n-26) have server connection, 30.4% (n-21) have zip drives, 8.7% (n-6) listed others

(connection for audio/video, color printers, video camera, CD programs, internet, jaz drive). One did not respond.

Research Question Fourteen The results showed the following programs were used for computer art: 29% (n-20) used Kid Pix,

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1.4% (n-1) Super Goo, 17.4% (n- 12) Art Doabble, 18.8% (n-13) Pagemaker, 5.8% (n-4) Bryce 3D, 34.8% (n-24) Adobe Photoshop, 23.2% (n-16) Adobe Illustrator, 24.6% (n-17) Printshop, 5.8% (n-4) Pagemill, 15.9% (n-11) Painter, 7.2% (n-5) Painter Classic, 23.2% (n-16) Hyperstudio, 1.4% (n-1) Adobe Premiere, 1.4% (n-1) Director, 33.3% (n-23) listed others (Appleworks Drawing & Painting, (n-3) Clarisworks Drawing & Painting (n-3), Louvre For Kids With Open Eyes (n-2), Quark Xpress (n-2), Print Artist (n-2), Macromedia Extreme 3D (n-2), Xres (n-2), Fun with Architecture (n-2), Look What I See (n-2), Superpaint (n-3), Typestyler, Print Artist Platinum, Microsoft Fine Artist, Egyptian CD, Leonardo the Inventor CD, Power Point, Avid Cinnema, Freehand, Ray Dream). One did not respond.

Research Questions Fifteen Through Twenty The art teachers listed the following type of training they have received:

Training	Never	Sometimes	Often	Did Not Respond
Workshops	35.8%(n-24)	59.7%(n-40)	4.5%(n-3)	(n-3)
University Class	52.3%(n-34)	40.0%(n-26)	7.7%(n-5)	(n-5)
In-Servie	34.3%(n-23)	62.7%(n-42)	3.0%(n-2)	(n-3)

Teach To Teach	29.9%(n-20)	58.2%(n-39)	11.9%(n-8)	(n-3)
Student To Teach	61.2%(n-41)	35.8%(n-24)	3.0%(n-2)	(n-3)
Technology Spec	44.8%(n-30)	49.3%(n-33)	6.0%(n-4)	(n-3)

Research Question Twenty One The results showed that 33.8% (n-22) of schools compensated the art teacher for computer training. Five did not respond.

Research Question Twenty Two The results show that the amount of time schools have given the art teacher for computer training on the average was 6 hours and 51 minutes per year. 50% of the art teachers have had 2 or less hours of computer training. Where 8.5% (n-5) have been given 20 or more hours of computer training.

Research Question Twenty Three The survey asked the art teachers how much more computer training they felt they needed. 69.1% (n-47) of the art teachers felt they needed a great deal more training on the computer. 27.9% (n-19) felt they needed some more training. 2.9% (n-2) felt they did not need any more training. Two did not respond.

Research Question Twenty Four The survey results showed that students spent an average of 41.48 minutes on the computer per day. 54.1% (n-33) art teachers stated their students did not spend any time on the computer. Nine did not respond.

Research Question Twenty Five On an average day a teacher

spends an average of 1 hour and 2.23 minutes. While 50% of the teachers spend at least 1 hour or more. 10.1% (n-7) said they did not spend any time on the computer. One did not respond.

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Correlation Between Research Question Two and Seven

The chart shows the correlation of the number of years teaching art education and how art teachers felt about their abilities on the computer.

# Years Taught Art Education	Doesn't use a Computer	Beginner/ Beginner	Inter- mediate	Inter- mediate	Inter- mediate/ Advance	Advanced	Tech. Specialist	Total # of Teachers
1-5			4.5% (n-3)	7.5% (n-5)	4.5% (n-3)	1.5% (n-1)		17.9% (n-12)
6-10		3.0% (n-2)	1.5% (n-1)	6.0% (n-4)	3.0% (n-2)			13.4% (n-9)
11-15		1.5% (n-1)	7.5% (n-5)	4.5% (n-3)	4.5% (n-3)	1.5% (n-1)	1.5% (n-1)	20.9% (n-14)
16-20	1.5% (n-1)		13.4% (n-9)	1.5% (n-1)	3.0% (n-2)			19.4% (n-13)
21-25		3.0% (n-2)	3.0% (n-2)	3.0% (n-2)	6.0% (n-4)			14.9% (n-10)
26-30		4.5% (n-3)		4.5% (n-3)	1.5% (n-1)	1.5% (n-1)		11.9% (n-8)
31-35								

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1.5%
(n-1)

Total #	1.5%	11.9%	31.3%	26.9%	22.4%	4.5%	1.5%	
teacher	(n-1)	(n-8)	(n-21)	(n-18)	(n-15)	(n-3)	(n-1)	n-67
abilities							Did not respond	3

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Correlation Between Research Questions Two, Eight, and Nine

This chart shows the correlation of the number of years teacher have been teaching art education, to those owning a computer in their home, and how many of those owning a computer are connected to internet.

# of Years Education	Teachers	Have a in Home	Internet Connection
1-5	12	14.7% (n-10)	8.7% (n-4)
6-10	9	10.3% (n-7)	10.9% (n-5)
11-15	14	10.3% (n-7)	8.7% (n-4)
16-20	14	16.2% (n-11)	15.2% (n-7)
21-25	10	7.4% (n-5)	8.7% (n-4)
26-30	8	8.8% (n-6)	8.7% (n-4)

31-35	0		
36 & more	1	1.5% (n-1)	2.2% (n-1)
Total	68	69.1% (n-47)	63.0% (n-29)
Did not respond	2		

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CHAPTER FIVE

Summary

Introduction

The purpose of this chapter is to give conclusions to the findings and to suggest recommendations for further study.

Conclusions

The study showed that computer art is being taught within the art curriculum in the C.E.S.A. 10 school district. The amount of computer art taught depended on the knowledge and ability of the art teacher and students' access to a computer.

The first conclusion was that the majority of elementary, middle/jr.high, and high school curriculums included computer art skills and techniques.

The second conclusion is that the MacIntosh computer was the most often used computer by the art teachers in the schools, and that the computer was generally shared with another class(s) in a lab setting.

The results showed the majority of art rooms have at least one computer located in the art room, and over half of the teachers have a computer at home.

There was a variety of accessories for the computer and computer art. The study showed over half of the art teachers used the digital

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camera and scanner. The study also showed the server was used more often than the zip drive.

The software programs selected by art teachers showed a wide variety of programs were used for computer art. The most used program was the Adobe Photoshop followed by Hyperstudio and Printshop.

The third conclusion was that art teachers received their computer training in a variety of ways. Teachers learning from other teachers was the most common method of learning computer skills, while school in-services and workshops were the second and third choices. The majority of teachers learned computer skills after school hours and at their own expense.

In conclusion, teachers are striving to add computers, software programs, technology skills, and a computer art program to their curriculum.

Recommendations to the Districts

From the results of this study and review of related literature, two recommendations to the school districts are given.

1. Provide appropriate computer facilities, computers, and software programs to the art departments.

2. Provide release time for professional development to enhance the art teachers computer and computer software knowledge.

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From the results of this study there are two recommendations to the art teachers.

1. Compile a list of computers and computer software programs needed to set up a basic workable area for your computer art curriculum. Present it to the administration, technology specialist, school board, and parents.

2. Allow time for professional development in computer skills and technology to enhance the art curriculum.

Recommendations for Further Study

From the results of this study, four recommendations are given for further research.

1. Survey different locations within Wisconsin and/or including larger school districts to compare the results of this study.

2. Survey how the art teachers use computer software programs to create computer art for their curriculum at the elementary level, middle/jr. high level, and high school level.

3. Survey the attitude of the art teachers toward using computers

in the art curriculum.

4. Study if gender plays a role in the use of computers in the art curriculum.

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Appendix A

September 10, 1999

Hello art teachers,

My name is Carol Buchholtz, and I teach at Bloomer Middle School. I am currently trying to finish my Masters Degree program at U. W.-Stout. I am writing my thesis on the integration of computer art in the art curriculum.

I would appreciate your help! PLEASE fill out the enclosed survey and return by September 30, 1999.

Thank you,

Carol Buchholtz

Appendix B

Dear art teacher:

Your help would be appreciated!

I am conducting a study on computer technology in the C.E.S.A.10 district. Because of all the new technology being introduced, I would like to

know what hardware and software you have available to use for computer art. I would also like to know what kind of training you have received.

I am contacting only a small number of art teachers. I would appreciate if you would fill out and return this survey. A pre-addressed, postage-paid envelope is enclosed for that purpose. A pencil is provided for your convenience.

Thank you for your help and cooperation.

Cordially,

Carol Buchholtz

Please check best choice:

1. Your gender: ☐ Female ☐ Male

2. Number of years you have taught art education:

☐ 1-5 yrs. ☐ 11-15 ☐ 21-25 ☐ 31-35
☐ 6-10 ☐ 16-20 ☐ 26-30 ☐ 36 and over

3. You teach art at what level.

Circle grade levels.

Preschool K 1 2 3 4 5 6 7 8 9 10 11 12

4. How many students in the grade level(s) you teach? _____ students
5. How many art teachers at your level?..... _____ art teachers
6. How many technology specialist at your level? _____ specialist(s)
- PLEASE TURN PAPER OVER

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-
7. Your ability using the computer would be:

<input type="checkbox"/> Don't use a computer	<input type="checkbox"/> Intermediate
<input type="checkbox"/> Beginner	<input type="checkbox"/> Intermediate/ Advance
<input type="checkbox"/> Beginner/Intermediate <u> </u>	<input type="checkbox"/> Advance
	<input type="checkbox"/> Technology Specials <u> </u>

-
8. Do you have a computer in your home?

☐ yes ☐ no

9. If YES, do you have it connected to internet?

☐ yes ☐ no

Check best choice:

10. What type of computers do you use for computer art?

☐ Macintosh

☐ IBM or IBM compatible

☐ other-please specify _____

11. Where are the computers used for computer art located?

☐ in the art room

☐ in a computer lab

☐ a shared lab with another class

☐ other-please specify _____

12. How many computers do you have in the art room?

<input type="checkbox"/> none	<input type="checkbox"/> 3	<input type="checkbox"/> 6	<input type="checkbox"/> 9
<input type="checkbox"/> 1	<input type="checkbox"/> 4	<input type="checkbox"/> 7	<input type="checkbox"/> 10
<input type="checkbox"/> 2	<input type="checkbox"/> 5	<input type="checkbox"/> 8	<input type="checkbox"/> If more than 10, specify # _____

PLEASE CONTINUE NEXT PAGE

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13. What accessories do you have?

Check all that apply:

<input type="checkbox"/> digital camera	<input type="checkbox"/> scanner	<input type="checkbox"/> drawing tablet
<input type="checkbox"/> Wacom	<input type="checkbox"/> server	<input type="checkbox"/> zip drive
<input type="checkbox"/> clip art	<input type="checkbox"/> museums/art history on CD's	
<input type="checkbox"/> other-please specify _____		

14. What software programs do you use for computer art?

Check all that apply:

<input type="checkbox"/> Kid Pix	<input type="checkbox"/> Adobe Photoshop	<input type="checkbox"/> Painter
<input type="checkbox"/> Super Goo	<input type="checkbox"/> Adobe Illustrator	<input type="checkbox"/> Painter Classic
<input type="checkbox"/> Art Dabbler	<input type="checkbox"/> Printshop	<input type="checkbox"/> HyperStudio
<input type="checkbox"/> PageMaker	<input type="checkbox"/> Adobe After Effects	<input type="checkbox"/> Adobe Premiere
<input type="checkbox"/> Dream Weaver	<input type="checkbox"/> Golive	<input type="checkbox"/> Director
<input type="checkbox"/> Bryce 3D	<input type="checkbox"/> PageMill	<input type="checkbox"/> Fontographer

*Please list others used:

Please check best answer :

You received computer art training by: Never Sometimes Often

15. Workshops

16. University classes

17. School in-service.....

18. Teacher to teacher

19. Student to teacher

20. Technology Specialist.....

PLEASE TURN PAPER OVER

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21. Does/has your school compensated you for the
cost of your training? ____ yes or ____ no

22. How much time in the last year has your school
given you for computer training? ____ hours

23. How much more training do you feel you need?

_____ none

_____ some

_____ a great deal more

24. How many hours per day do your students
spend on computer art?..... ____ hours

25. How much time on an AVERAGE day do you
spend on the computer? ____ hours

If you would like a copy of the results of the survey, please write your
name and address below . Your name and school will be kept confidential.

NAME _____

ADDRESS _____

CITY/STATE/ZIP _____

THANK YOU FOR YOUR COOPERATION

PLEASE MAIL THE COMPLETED SURVEY IN THE ENCLOSED ENVELOPE TO:
Carol Buchholtz 6455 220th Avenue Bloomer, Wisconsin 54724

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Appendix C

Dear Art Teacher,

This is just a note to remind you that if you haven't returned the computer art survey, please do so as soon as possible. If you have already returned the survey, thank you for your help.

Carol Buchholtz

