Computers in the Art Classroom:

A Survey of Current Practice in Ohio

By

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Although I believe that there is a place for computers in art classrooms and I support the idea of them as artistic and pedagogical tools, current literature suggests that computers have not yet been successfully integrated into art teaching practice. I am interested in finding out how other art teachers responded to the idea of computer-mediated art instruction. This became the subject of my dissertation, "Teaching Art in an Age of Technological Change" (2000).   As a framework for my research, I posed the following questions: Who are some Ohio K-12 teachers who use computers in their art classrooms? What are their teaching goals? How do they use computer technology? and, What factors influence their uses of computer technology, including their personal goals and beliefs, as well as cultural/environmental factors? I also wanted to consider issues of constructivist and collaborative learning in art classrooms, as well as the impact of gender issues and unequal access on art teachers' abilities to develop strategies for using computers in their teaching

This article provides a brief overview of my research. Drawing from my cross-case analysis chapter, I describe how twelve teachers use computers in their art classrooms, and I compare what has been described in the art education literature with what I observed.

Research Purpose

The body of literature focusing on educational technology contains ample claims that using computers in the classroom can be beneficial. A multitude of exciting visions are presented, yet little in-depth material has been published based upon art teachers' practices.

Stokrocki (1997) notes that not much is known about those teachers who are currently using electronic technology in their classrooms.

Bromley (1998) believes we need to look at sites where technological artifacts (the computer, for instance) are put to use. "We need to consider who is using it and why, what goals those people have, and how they're likely to utilize the technology in pursuit of their goals" (p. 5). Otherwise, Bromley argues, we risk assuming that the computer will have the same impact everywhere, under all circumstances.

Instead of viewing art teachers who do not use computers in their teaching as being reluctant to change, research is needed to uncover the contextual factors that discourage or prevent them from so doing. To justify claims about the positive impact computers can have on art teaching, researchers need to provide more convincing examples of successful uses of computer technology and to explain in detail how computers can be used for specific goals in specific situations. Unfortunately, at the present time, published research like this is hard to find. Influenced by Bromley, I set out to document how twelve Ohio art teachers use computer technology in their teaching. I iterate the goals of these art teachers, and then proceed to address how they use computer technology in pursuit of their goals.

Methodology

The purpose of this research is to understand the phenomenon under examination, rather than to predict, control or emancipate. As a researcher, I situate myself in the interpretivist/constructivist paradigm. Some assumptions about the nature of knowledge and reality that underlie my research are that all realities are multiple and that they are socially constructed. Knowledge is created in interaction among the researcher and the research participants. Therefore, my role as a researcher must be more of an orchestrator

and facilitator of the inquiry process (Guba & Lincoln, 1994), rather than as an outside expert evaluating successful computer use against some nominally "objective" standard.

Methodologically speaking, the formation of this more informed or sophisticated understanding takes place through a dialectical inquiry process between researcher and informants. As a researcher, I had discussions over time with the art teachers who participated in my study. I also gathered information as a hopefully unobtrusive observer in art classrooms.

My primary data gathering took place through interviews with twelve art teachers in Ohio. In order to provide some breadth in my findings, I employed a multiple site or collective case study method (Stake, 1994). The cases were similar and different in various ways, but each one of them was also unique, influenced by the particular teacher, his or her vision, and the operand circumstances in which they taught.

Population

The population of art teachers from whom I drew my sample was Ohio K-12 art teachers recommended to me through a snowball sampling strategy. In January 1999, I started a chain sampling process seeking recommendations from a wide variety of people who might have knowledge of art teachers who have been successful in using computers in their teaching. The original contact group included Ohio art teachers, school district technology directors, Ohio school district superintendents, and Ohio State University faculty. The method of snowball sampling is effective in identifying cases of interest "from people who know people who know people who know what cases are information-rich, that is, good examples for study, good interview subjects" (Patton, 1990, p. 182).

The initial sampling process worked well. Fourteen art teachers, mostly in the Columbus, Ohio, area, were identified. Eight of them were recommended by others at least twice. In addition, twenty-three letters were sent to superintendents and district technology coordinators for some of Ohio's larger school districts. In all, thirty art teachers were identified as potential informants. Among them, twenty-five were located in Ohio. From this group, twelve art teachers were selected for more in-depth interactions. The criteria used in the selection included: Each art teacher was recommended to me at least twice; each art teacher indicated an interest in participating in my study; each teacher had some experience using computer technology in his or her teaching; each teacher's school system provided sufficient technology support so he or she felt that his or her general needs were being met, and the school environment was not so limiting that it created impediments to teaching.   Diverse uses of computer technology in teaching art were, to the greatest extent possible, represented among the chosen cases.

Data Collection

Data was collected using a variety of strategies: classroom observation; open-ended, in-depth interviews with participants; informal conversations with students; artifacts such as written information about particular schools; curriculum materials; course syllabi; students' work; email correspondence with participants; and my research journal.

Data Analysis

<u>Assertions</u>

The process of data analysis helped to generate and test my final research assertions (Erickson, 1992). Initially my assertions reflected my assumptions prior to my data collection. They included:

1. There are different uses of computer technology in teaching art. Some of these more appropriate than others in particular contexts.

2. There is no universal recipe for using computer technology in teaching art. Whether the computer use is appropriate or not depends on particular contexts.

3. A teacher's teaching style, personality, teaching philosophy, and years of experience influence the way computer technology is used in any particular instance.

4. A teacher's philosophy and his or her beliefs about art, technology, and art education are the most significant factors in how each individual uses computer technology.

5. Most art teachers are not aware of any gender differences exhibited among students using computer technology.

These assertions arose from my personal beliefs, my review of literature, and preliminary data collected in the field. They were tested and examined through the lenses of different data collection and analysis methods and then refined.

<u>Coding System Development</u>

In addition to the coding developed from the assertions made above, additional codes were developed after reviewing my collected data. The following is the final coding system that I developed as a strategy for organizing my findings.
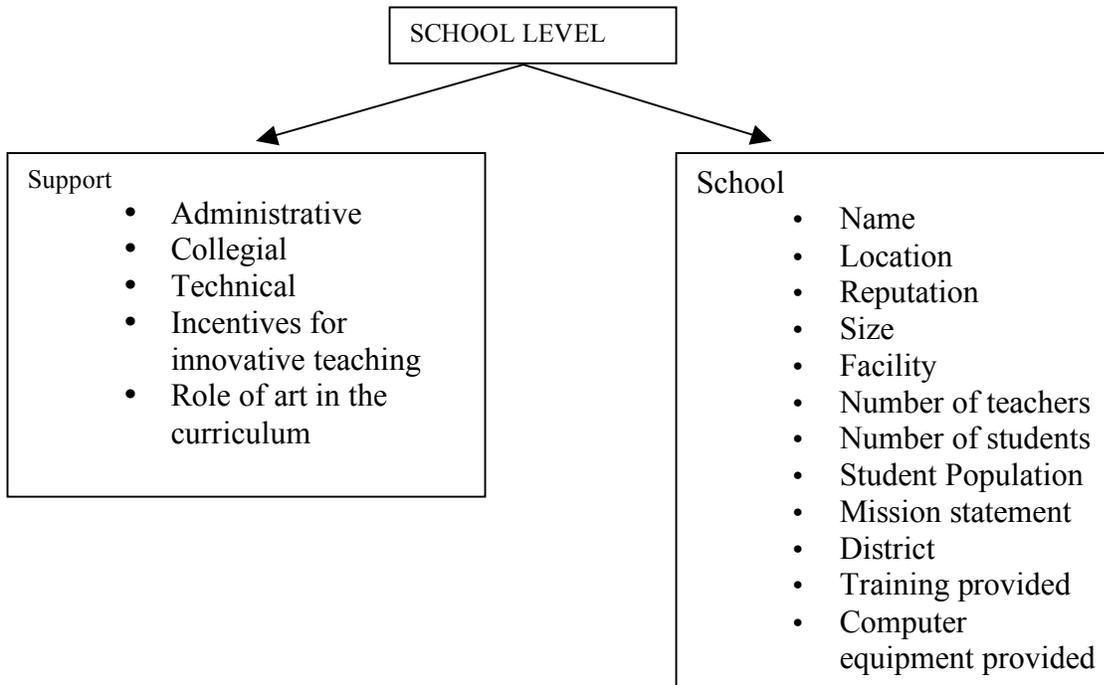
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                              ┌─────────────────┐
                              │  SCHOOL LEVEL   │
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Support
- Administrative
- Collegial
- Technical
- Incentives for innovative teaching
- Role of art in the curriculum

School
- Name
- Location
- Reputation
- Size
- Facility
- Number of teachers
- Number of students
- Student Population
- Mission statement
- District
- Training provided
- Computer equipment provided

Fig 1: Coding Developed from Data – at the school level

Teacher's background
- Gender
- Age
- Ethnicity
- Years of teaching experience
- Years of teaching at current school
- Degree(s) held
- Family background
- Personality

Teacher's beliefs
- pedagogical beliefs
- beliefs about art
- beliefs related to technology
  - the effect/role of computer technology in students' learning
- beliefs on art teaching

INDIVIDUAL LEVEL

Art Teaching
- Reasons for being an art teacher
- Teaching goals
- Teaching styles
  - classroom management
  - teacher-student relationship
  - teacher's role
  - student's role
- Activities/Lesson plan

The use of computer technology in teaching art
- rationale/reasons
  - intrinsic
  - extrinsic
- Activities/Lesson plans
  - goals
  - instruction
  - evaluation
  - students' input
- Benefits
- Problems
- Concerns
- Needs
- Students' responses
- Future plans
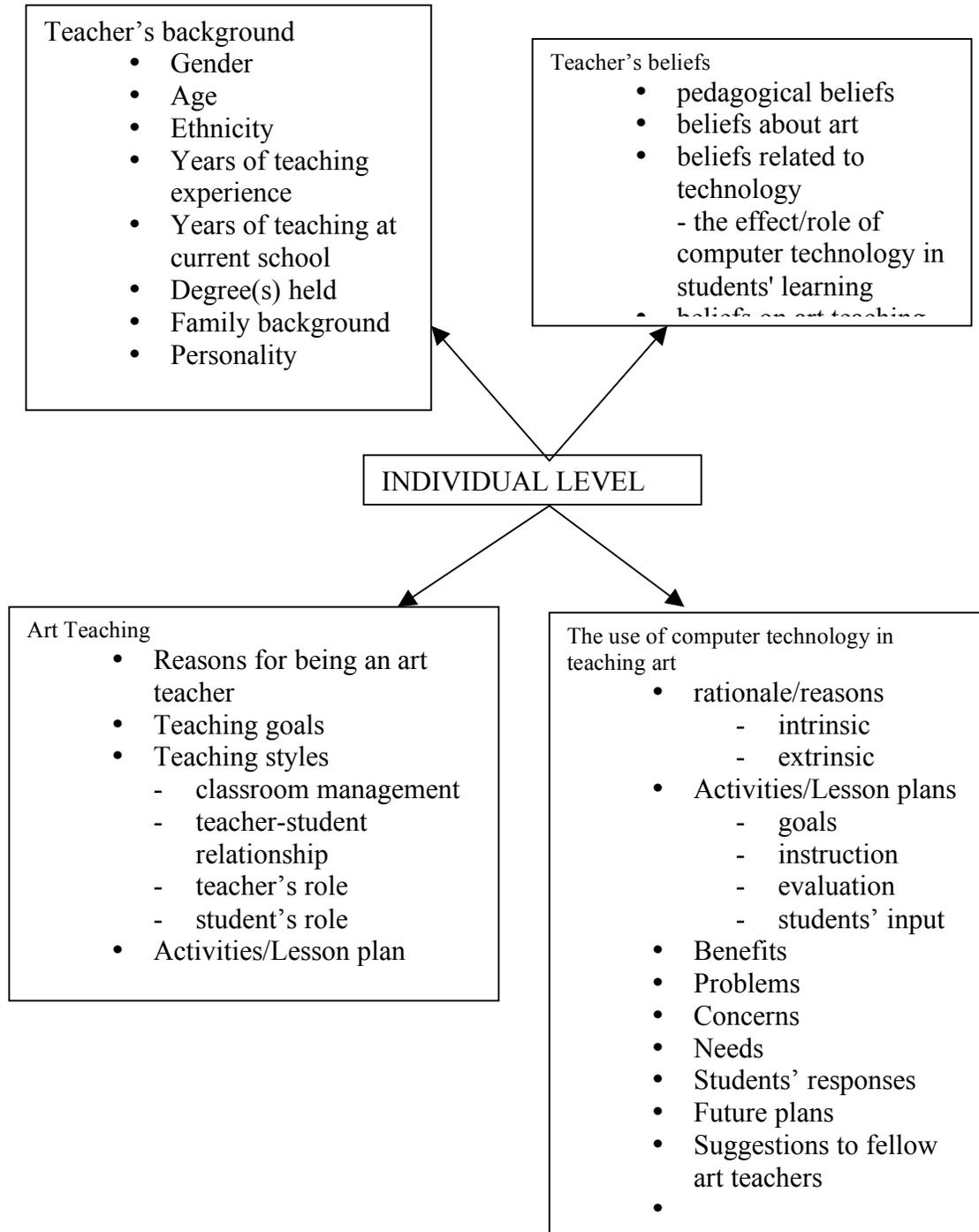- Suggestions to fellow art teachers
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Fig 2: Coding Developed from Data – at the Personal Level

According to Greene (1990), in good qualitative research working hypotheses are connected not to *a priori* theory but to context-specific, often emergent, inquiry, which may or may not be informed by existing knowledge. The categories of data analysis, therefore, emerge from reviewing collected data, and are, therefore, not speculatively imposed prior to data collection (Janesick, 1994). The coding system that I defined continued to evolve throughout my research process.

To do justice to the richness of my data, I set out to develop a strategy for presenting my research findings in a non-technical and, hopefully, interesting way. I continued to look for methods to weave the text and coding together, and I tried to bring to my readers engaging stories that demonstrate how art teachers are currently using computer technology in teaching art.

Analytical Process

Most researchers would agree that writing is not just something done at the end of a research project. Denzin (1994) argued that fieldworkers can never make sense of what they have discovered or what needs to be learned until they sit down and write the interpretive text, telling the stories first to themselves and then to others. Writing is a method of inquiry (Richardson, 1994) and sense-making (Denzin, 1994; Wolcott, 1995) which speaks to the purpose of data analysis. For me personally, data analysis and writing text are closely related.

First, in my analytical process, modeled after suggestions by Erickson (1986) and Richardson (1999), I coded and thoroughly categorized my data. Then I identified a few frequently occurring patterns or themes. Each of these patterns or emerging themes was supported by a few quotes from my fieldwork using exact transcriptions of my informants' words. Following each quote, I provided a few sentences of interpretive commentary in which I

explained what I think the person meant by what he or she said. I also added any needed

contextual information that conferred meaning upon the quote or clarified its significance.

Second, I developed each theme through narrative vignettes. I offered a few sentences to

identify the context of events, which included specific details such as observed non-verbal

behavior, direct quotes, and descriptions of physical settings. As I presented each vignette, I

attempted to make clear to my reader why it was a demonstration of at least one of the

substantive assertions that I had made.

Third, I provided alternative interpretations of my data by drawing upon insights from

research literature. To maximize the chance that I would discover things I had not noticed before

or had taken for granted in my data, I used literature from several different theoretical framings

to help me look at my data. On at least a few occasions, I experimented with different writing

styles to present interpretations and stories from different points

of view.

Fourth, I reflected upon what I learned from these experiences with a focus on how my

thinking changed in the process of analyzing the data in my journal. I tried to be open to new

information, disconfirming evidence, and new theoretical perspectives. I did not wish to be

doing fieldwork just to document my favorite hunches or the assertions with which I began the

study. At the end of the research project, I hoped to be able to show how my old hunches were

deepened and, therefore, could be seen in a new light. I also wanted to see how new ideas,

insights, and puzzles emerged as I progressed in my research. I documented in my journal how

my research questions and assumptions changed, and what experiences or readings led to these

new ways of thinking.

Discussion: How Can Computers Be Used in Art Classrooms?

Based on my observations of twelve cases, art teachers use computers in art classrooms in three ways: as an art making tool, as a research tool, and as a communication tool. I then compared my findings with existing research in order to find the commonalties and discrepancies observed by other authors. Predictive visions of possible uses for computers in the art education context provided in the literature were in part actualized by the art teachers with whom I worked. However, they arrived at these ways of teaching primarily through self-study, persistence, and risk-taking, rather than through any pre-service or in-service teacher training. On the other hand, I discovered that some of the suggestions provided in the literature have yet to be partially or fully implemented.

It is important to remember that my research is intended to provide feedback to both art educators and researchers. For art teachers, it provides one more way of knowing some of the possibilities for using computers in their classrooms. At the same time, it allows researchers to hear art teachers' concerns and to use that information pragmatically to help develop realistic goals for using computers in art instruction, rather than fueling utopian notions of computers as forces for the saving of art education and the curing of all the ills of the field.

An Art Making Tool

Some art educators believe that computer technology can be used as a creative tool (Dunn, 1997; Freedman, 1989; Greh, 1986). In fact, some students who believe themselves incapable of drawing have stated that computers make them artists (Freedman, 1990). This may be due to the fact that these students are able to experiment more easily on the computer than is common in other media (Freedman, 1989; Greh, 1986).

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Taking risks or experimenting with modifying images, an essential step for art creation, is difficult for some learners. In traditional art-making activities, it can be intimidating for students to make what they believe to be errors. In the electronic art environment, students of all ages are reported to have a greater willingness to "make mistakes" or enlarge upon the "happy accident" than when they are using non-computer based media (Freedman & Relan, 1992). This sense of confidence-building and spirit of experimentation that comes with the use of computer technology as an artistic tool may help students' understanding and appreciation of the process of artistic creation.

The art teachers who participated in my study have explored some of the possibilities of computers as tools for artistic creation and production. Among the various possibilities, the most common use was for creating computer graphics. In high schools the most widely used graphics program was Photoshop. Micah and Hilary, two teachers who participated in my study, teach computer graphics classes that are specifically designed to use the computer as an artistic medium. Two other art teachers, Gary and Cheryl, include computer graphics in their regular art curricula. Their students are asked to create graphics and portraits, as well as critique and redesign advertisements. In addition to graphics, Gary's and Micah's students also create animation. Bessie has her fifth grade students use a multimedia program to retell their families' histories. Overall, these teachers regard computer-mediated images as a valid art form, whether they teach a separate computer graphics class or include the medium in broader classes.

Hilary, a high school art teacher, for example, developed the Hozho Balance Circle project to explore concepts of harmony and balance. Her students choose a specific artwork from a particular cultural group. After exploring the characteristics and meanings of the work and researching the cultural group from within which the image originates, the students present

their findings to the class. Students are also asked to reflect upon the major factors in their own

lives they feel should be kept in balance, as well as on the major factors to consider and keep in

balance as members of the world community. Students then create graphic designs that

incorporate cultural symbolism that reflects their ideas of personal and community balance.

It is a source of frustration for Micah, Hilary and Ingrid that other people do not regard

computer-mediated artworks, especially computer graphics, as valid forms of artistic expression.

Hilary talked about the low level of acceptance of computer graphics in local and national

student art competitions. The skeptical attitude of one of Ingrid's colleagues, who believes that

photography and computer graphics are not art, also makes Ingrid uncomfortable. Another

example of her frustrations mentioned by Ingrid focuses on one of her Advanced Placement

students. This student, who is very interested in digital media, created a series of artworks on the

computer. While Ingrid is supportive of the student's interest, she is also concerned that the

student's work will not be considered valid or strong by competition judges. Both Micah and

Hilary feel that students are more receptive to thinking of computer graphics as legitimate art

than adults. Despite this challenge, the art teachers in my study continue to integrate computers

in their teaching, encouraging students to explore the potential of making art using computer

technology.

I did not find, however, spontaneous discussion on the impact of computer technology on

art among my research participants. Freedman (1997) argued that the formation of, and debate

about, aesthetic question is a necessary aspect of teaching about technology-based images. Such

questions constitute an important part of helping students become critical thinkers about their

work and the domain of art in general. Given the relatively brief history of using computers as

art tools, answers to these questions are still evolving, not just in schools, but in the larger

community. Such questions as: What is a work of art? What makes a work of art valuable?

How does computer technology challenge our assumptions about art? Who is the artist(s)?;

What part do software designers play in creating digital art?; How should computer graphics be

displayed?; What are the unique qualities of computer-mediated images?; and How should these

images be judged? invite creative thinking and rich discussion in the classroom.

A Research Tool

In addition to assisting in the art creation process, computer technology can be used as a

research tool (Dunn, 1996). The technology-mediated learning environment provides for a level

of visualization not possible with traditional media. In the multimedia environment, a vast

number of art works can be studied in interdisciplinary contexts enhanced by the simultaneous

use of audio, text, animation, video, and graphics. Students can explore resources that are

relevant to their own interests, and they can access information which is presented in engaging

ways. Thus, it is possible for students to assume the role of active and independent inquirers

rather than only that of passive knowledge receivers. By using computer technology as a

research tool, students can pursue their own interests, looking for information from other sources

than their teachers, and being responsible for their own learning (Gregory, 1995).

The Internet and CD-ROMs give students access to art exhibitions, and information

about artists, artworks, and museums that would otherwise be difficult to locate or be unavailable

to them in print, slide, or poster format (Koos & Smith-Shank, 1997). Online discussion groups

provide means to confer with others in the process of analyzing meanings and exploring

methods. "In what seems like the blink of an eye," Dunn (1996) observes that the role of

teachers has "evolved into functioning as facilitators who can point students toward information

that will lead them to new knowledge" (p. 9). Dede (1998) similarly suggests that students

should use computers to search out and sort vast amounts of information, generate and analyze

new data, articulate meanings, and transform their own thinking and understanding.

The art teachers in my study do have students use computer technology as a research tool.

Angela's elementary school students, for example, use *With Open Eyes, Van Gogh*, and

Leonardo Da Vinci to learn about the artists and their work. They explore CD-ROMs at their

own pace and engage in interactive activities provided on them.

Another common use of computer technology for research is as a method for locating

information about particular topics. For example, Cheryl's students are asked to conduct online

research on an artist of their choice. Browsing through web sites, her students must download at

least three digital images of the artist's work, and find information about the artist and his or her

specific style. The students then write reports that include these images, their critique of them,

and interesting facts about the artist and artwork. The research project serves as a foundation for

a studio activity in which the students each design a set of placemat, cup, and bowl that reflects

his or her understanding of the artist's style. People within and outside of the school community

are invited to attend a special gathering in which the students present their work and during

which they raise funds to be used to help homeless people or others in need in their community.

Cheryl, Francis and Hilary have students conduct research and write art reports using

computers as a way to access information. Overall, they felt that their students enjoy using CD-

ROMs and the World Wide Web. Although the students are given freedom to choose an artist or

artwork to investigate, they are not usually asked to generate their own research questions.

During my observations, it became apparent that this research process is primarily teacher-

directed. Cheryl and Hilary, for example, provide handouts and questions to their students.

These guided questions serve as a starting point. Oftentimes the students just fill in the blanks

and report back what they have read, without offering further analysis or interpretation. It is true that when the students write their reports, the process involves a certain amount of locating, analyzing, and transforming available information, as described by Dede (1998). However, when the students' only roles are to answer teachers' questions and to report back what they have read on the Internet, they are still not necessarily in control of their learning.

A Communication Tool

        The use of computer technology supports discussions, debates, and collaborative efforts without the necessity for people being in the same physical place, thus enabling the interconnection of communities of learners.   Students as well as teachers are now able to converse and collaborate with others all over the world. Technology, in other words, becomes a medium which facilitates the formation of global learning communities. Students can participate in on-line conversations as they articulate their points of view and reflect on perspectives provided by their conferees. The use of on-line discussion, email, chat rooms, and computer conferences cannot replace face-to-face interactions. However, these experiences can support learners in unique ways as they engage in reasoned dialogue, collaborate with remote and diverse audiences, and learn to express themselves (Jonassen, Peck, & Wilson, 1999).   Dede (1998) similarly suggests that digital technologies can be used to interweave schools, homes, workplaces, libraries, museums, and social services to reintegrate education into the fabric of community.

        Two teachers, Elbert and Irene, make good use of the communicative potential of the World Wide Web. They are instructors for online courses, and they use technology to engage their students in collaborative learning, even though they are physically remote from each other. Their students come from a variety of locations and are of diverse

backgrounds. Through the Internet, these students are able to communicate with and learn from one another. Irene commented that the distance learning course has helped her move from a traditional, lecture-type of teaching to a more collaborative and communicative one.

However, most of the other art teachers with whom I worked have not explored the potential of online discussion, emails, chats, and computer conferences in their work with their students.   Some of the teachers do, however, use email for personal communication, but no collaborative projects that involved students and teachers at another location were discovered during my research.

I asked Ingrid and Micah what they thought about starting a collaborative project with teachers and students at another geographic location. Both of them said they feel that it is a good idea, but it is not what they are particularly interested in doing at this moment. Ingrid's concern is that she does not know with whom to work. It would be important for her to know the other person and to build a trusting relationship with him or her before starting such a project. Micah agreed, saying that to have an online dialogue with living artists is fine, but he feels that high school students may not be able to carry on a sensible dialogue for long. Micah observed that students are often silent when guest artists visit the classroom; consequently he suspects that long-term collaboration with others would not work well. In thinking about Micah's point of view, it occurred to me that students who are usually silent in the classroom might feel more confident about asking questions of unfamiliar people using the Internet. Perhaps this is a question worthy of further investigation.

Limitations and Significance of the Study

The focus of this study was to begin the exploration of how K-12 art teachers are really using computers in their teaching, to provide contextual information about that use, and to offer useful insights on strategies for the productive integration of computers into art teaching. This is in contrast to the body of literature that speculates upon how computers might be useful in teaching art.

At this point in time it seems premature to offer generalizations about when and how American art teachers' are using computer technology. However, there are some teachers who are successfully integrating computers into their pedagogical strategies. It is possible to study such occurrences as one way to help the wider art teaching community to begin to take advantage of the particular characteristics of computers in their teaching. However, I am not interested in providing a recipe book, to be slavishly followed by art educators. Rather, by observing and understanding what is and is not working well, I hope to provide inspiration and support as art teachers have more opportunities to experiment with using computer technology to advance their educational purposes.

From a practical perspective, my research is written for teachers who are enthusiastic but frustrated about using technology in their art classes. Rather than having an expert tell them what to do, I hope, by providing an overview of twelve of their colleagues' experiences, to offer useful and practical information that can help them move forward in their own teaching praxis. I also hope my study will provide a starting point for generating further communication, reflection, and debate among art educators and researchers about the merits and efficacy of computer use in art classrooms.

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