A DESCRIPTIVE CASE STUDY OF STUDENT PERCEPTIONS
IN AN INTRODUCTORY COMPUTER ART COURSE

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of the Ohio State University

By

Marsha J. McDevitt-Stredney, B.A.E., M.A.

* * * * *

The Ohio State University
1993

Dissertation Committee:

Professor Charles Csuri
Dr. Arthur Elland
Dr. Patricia Stuhr

Approved by

Dr. Robert Arnold
Department of Art Education
To my husband,
Don Stredney, and
our children.
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VITA

July 17, 1959 .................................................. Born - Lebanon, Missouri

1983 ............................................................. B.A.E., The Ohio State
University, Columbus, Ohio

1986 ............................................................. M.A., The Ohio State
University, Columbus, Ohio

1984-1987 ..................................................... Producer and Computer
Animator, Cranston/Csuri
Productions, Columbus, Ohio

1987-1988 ..................................................... Independent Producer,
Columbus, Ohio

1988-1990 ..................................................... Graduate Research Assistant,
The Advanced Computing Center
for the Arts and Design, The
Ohio State University,
Columbus, Ohio

1990-present ............................................... Lecturer and Supervisor, The
Department of Art Education -
Hopkins Hall Amiga Lab, The
Ohio State University, Columbus,
Ohio

PUBLICATIONS

Training Computer Artists/Animators In A Corporate/Commercial Environment,
Master's Thesis, The Ohio State University, Spring, 1986.

Training Computer Artists/Animators in a Corporate/Commercial Environment, National

FIELDS OF STUDY

Major Field: Art Education
Area of Specialization: Computer Graphics and Curriculum in Higher Education
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CHAPTER I  
INTRODUCTION

Introduction

In this chapter, the problem of understanding the process and perceptions of undergraduate students learning computer graphics within a General Education Curriculum Visual Arts Requirement course will be introduced. The background and nature of the problem will be discussed. The problem statement will be defined. The theoretical framework and methodology will be briefly discussed. The purpose and significance of the study will also be addressed. An overview of the dissertation will conclude the introduction.

1.1 Background

In the fall of 1990, I accepted a lecturer position in the Department of Art Education, within the College of the Arts at The Ohio State University. My assignment includes both teaching and the supervision and coordination of instruction for most courses offered within the Academic Computer Services' Hopkins Hall Amiga Laboratory. In this role, I supervise five Art Education Graduate Teaching Associates (GTAs) assigned to teach courses within the Amiga Lab. The backgrounds of these GTAs range from little to no experience in the classroom to a number of year's teaching experience in a variety of settings. Their backgrounds also vary in the degree to which they have incorporated computer technology into their own art work and curriculum.
The department currently offers two introductory courses that examine the role of computers in the visual arts. The first course, *Art Education 252: Introduction to the Role of Computers in the Visual Arts*, serves as a General Education Curriculum (GEC) for the Arts & Humanities. This course was developed and received its GEC status under the direction of my predecessor, Kevin Reagh. The course incorporates a unique combination of studio activities utilizing Commodore Amiga computers, readings and discussions concerning issues associated with technology in the visual arts, and writing assignments. Most GTAs assigned to the Amiga Lab teach at least one section of this course per quarter.

The second course, *Art Education 352*, is an introductory course to the fundamentals of three-dimensional computer graphics. This course is more specialized and does not serve as a GEC course. One GTA is usually assigned to teach this course throughout the year. Since *Art Education 252* is a prerequisite for the three-dimensional study course, most of the students are already familiar with the Amiga computer and the relationship between hardware and software in graphics programs.

When I assumed my position, I was informed by my supervisor that the funding for *Art Education 252* was provided in part because of its standing as a GEC course. Future funding was dependent on the success of the course. My challenge was to improve the attendance and address an attrition problem in this course. It seemed that many students were dropping the course by midterm. I needed to find out why and try to keep them enrolled.

That first year, I spent a great deal of time revising the actual activities in the course while maintaining its original goals and rationale. I worked with the
GTAs to further develop their teaching skills and explored a variety of options for engaging students throughout the quarter. The revised course provided numerous opportunities for earning points while attempting to cover a wide variety of learning styles and performances. The dropout problem vanished, and students talked openly about how much they enjoyed the course. Popularity spread through word of mouth and enrollment grew.

1.2 The Nature of the Problem

Before I began my position in the fall of 1990, I observed several computer art workshops for teachers taught by GTAs in the summer of 1990 in the Hopkins Hall Amiga Lab. I sat in the back of the room and tried to follow the instructor's directions while observing how the students were reacting. Although I had worked in the field of computer graphics for nine years, I was often unable to understand the instructions and could not make sense out of what the instructor was doing. Many of the students were frustrated and talking negatively about the instructor. There was very little documentation and the examples that were given were presented too quickly and with little repetition.

I wondered at this time how the instructor could not be aware or concerned about the level of frustration and dissension of the students. He often seemed to blame them for their lack of understanding and had little patience when asked to review an earlier demonstration. However, on a one-to-one basis he was very soft-spoken, helpful, and polite.

The students in this workshop were often overwhelmed by the new experience of working on computers and transferring their visual arts skills from one media to another. Most of these students were art teachers who were
already comfortable and confident about their own artistic skills. Groups in the course banded together to try to help each other. They seemed to have a survivalist attitude and were thrilled when someone made a major discovery or accomplishment. They were also very concerned about the vague description of the grading policy and complained to the chairman of the department.

From my observations I could see that learning to incorporate a new technology into the artistic process can be difficult, overwhelming, frustrating, and yet very rewarding. Students were amazed at the technology and, once they became more comfortable, they were having a great deal of fun and were producing some very nice work.

My concern centered on how to get the students in Art Education 252 to feel comfortable with the computer while covering the large amount of information necessary for them to complete the course requirements. I hypothesized that part of the dropout problem might be associated with some of the simple communication problems that I observed between the instructor and students in the summer workshops. The students in Art Education 252 have a wide variety of backgrounds and experiences. Many are taking the course only for GEC credit and have very limited knowledge of the arts. The course includes not only working on the computer but also reading and writing assignments. Class time is divided into time for both theory and practice. Therefore, students need to spend some time outside of class working on their own on the computers and need to become more self sufficient. Clear communication of the goals and objectives of the course, in addition to the required technical material is crucial.

What would the students be thinking, feeling, and experiencing in this course? How could I as a teacher gain a better understanding of their perception
of the course to properly address their needs? How do my perceptions of what is happening in the classroom differ from those of the students? What would be their understanding of the course's goals and objectives and the relationship to their general education curriculum and overall undergraduate education? And, if some had a very limited background in the arts, how would it affect their experiences and understanding of the course content? Finally, how would the varied individual backgrounds and academic goals of the students influence their interaction with each other and their perceptions of the instruction?

In my first year of teaching and supervising the instruction of this course, I observed instruction and sought feedback from the instructors and students. I wanted to know how they thought the course could be improved and what their perceptions were of what they were teaching and learning. I was also interested in the correlation between what I was reading in educational research literature and the dynamics of what I was experiencing and observing in the classroom. My graduate course work has focused on both the theoretical and practical issues of computer graphics, curriculum in higher education, and art education. The majority of course work in these areas has been isolated and specialized. I have assumed responsibility for bringing together the concepts and ideas into my own area of interest: teaching and learning computer graphics in higher education and its relationship to undergraduate education.

Since the field of computer technology in the arts and education is still relatively new, there is a need for research to gain a better understanding of its impact on teaching and learning. Educators seeking resources to aid in the development of undergraduate curriculum focusing on computer technology in the arts and education are finding very little information specific to the dynamics
of teaching and learning within the classroom. A fair amount of theoretical
discourse is available in research journals focusing on the issues and concerns
of incorporating technology into the arts. Much of the art education information
that is available concerns practical classroom strategies and is disseminated at a
grass roots level. Individuals are networking and exchanging ideas and
experiences through newsletters and contacts made at exhibits and conferences.
Art educators often express frustration over the lack of information available to
them for incorporating technology into their curriculum.

To bridge the gap between theoretical and practical grass roots level
information concerning computer graphics, curriculum in higher education, and
art education, this research study was developed to explore the dynamics of the
classroom and perceived learning. This dissertation serves as a contribution for
art educators seeking data and analysis on undergraduate students' perceptions
of learning computer graphics. It also provides a descriptive overview of one
introductory course in computer technology and the arts, which may serve as a
model for further development and implementation.

1.3 Problem Statement

In this study, I am concerned with how students perceive objectives and
activities in an introductory computer arts course and the relationship between
these perceptions and the aims of undergraduate education. The focus is to gain
a better understanding of the relationships between the underlying structure of a
course, what the students perceive they are learning and why, and the
instructor's perceptions of the course content and instruction. In addition, the
study seeks to gain an understanding of how students perceive the relationship between one course and their overall undergraduate education experience.

1.4 Theoretical Framework

To establish the relationship between the course Art Education 252 and the GEC at The Ohio State University, a review of writings concerning reform in American undergraduate education will be presented. The review begins with reports from the Carnegie Foundation for the Advancement of Teaching (1987): "generally the current interest in curricula reform stems from three sources: from intellectual commitment, as for example, at Harvard; from the need to survive by institutions in relatively humble circumstances; and from efforts to respond to the changing markets among and within campuses" (p. 11). The Carnegie Foundation (1986) identifies a mismatch between faculty and student expectations and suggest creativity in the classroom as a solution.

Calls for national reform in higher education have focused on the content of the undergraduate curriculum in terms of breadth and scope of courses required within the framework of a liberal arts education. However, information concerning the practicalities of its research, implementation, and assessment are scarce (Vandament, 1988). For reform to begin, that is, to create a more effective education system, we must first determine our definition of excellence and effectiveness (Ramsden, 1987). He expresses a call for

An approach to improving undergraduate teaching and learning that strengthens and builds on the professional role of higher education teachers as transmitters of excellence.... As university and college teachers, we should study how our students learn in order to discover the elusive but very apparent academic quality described by Pirsig. On this journey we should follow two paths. We ought to study learning because
we want to describe what students do; we should apply what we find to making learning better (p. 275).

In the past, the ways in which the visual arts have been included in the general education curriculum were often isolated pockets of studio experiences, aesthetic theories, and historical perspectives (Ziegfeld, 1953). According to Ziegfeld, "In a great many cases there has been no distinction between the specialist and the non-specialist in art offerings and students who are interested in the arts as a part of a general or liberal education have had no choice but to take introductory or beginning work which has been designed to launch the specialist on a protracted course of study" (p. 138). Even today, many of these courses are often designed for visual arts students and often do not meet the needs or interests of general education students. For the purposes of this study, general education students will be defined as any students attending visual arts courses outside of their major area of study.

A review of related literature and research specific to curriculum utilizing computing in the visual arts will be presented within the theoretical framework of this dissertation. Currently, the majority of courses of study in computer arts are discipline specific and are designed for visual artists wishing to incorporate the computer into the creative process (McKee, 1985; Ettinger, 1988; Sontag, 1987; Mones-Hattal, O'Connel, & Sokolove, 1990).

A review of contemporary studies and viewpoints concerning the value of students' perceptions in research, curriculum development, self-assessment, and instructional evaluation will conclude the theoretical framework for this study. There will be brief references to historical development when necessary for concept clarification. Contemporary views will include philosophical, empirical,
and descriptive case studies. Assessment studies in higher education curricula will be included in some areas to highlight values represented in goals and definitions or inferences of successful curriculum development.

1.5 Methodology

To gain insight into students' perceptions regarding the objectives, activities, and learning in an introductory computer arts course, a naturalistic case study approach serves as the foundation for inquiry. According to Stake (1988), "the principal difference between case studies and other research studies is that the focus of attention is the case, not the whole population of cases.... The case study focuses on a bounded system..." (p. 256). The boundaries of this case study encompass one course section enrollment of Art Education 252. The boundary system includes general education curriculum requirements and objectives, the course objectives and activities, and students' perceptions of objectives, activities, and learning within this course.

The qualitative orientation for this case study borrows ethnographic fieldwork techniques for gathering data and analysis (Spradley, 1980; Wolcott, 1988). Participant observation, ethnographic interviews, survey/questionnaires, recorded class sessions, samples of student work, and reflective writings from participants constitute the boundaries of data acquisition.

The study follows Spradley's (1979, 1980) developmental research sequence as a guide in participant observation, ethnographic interviewing, and data analysis. Minor adjustments are incorporated to facilitate a triangulated data acquisition.
The sequence followed includes:

a. Locating the social situation
b. Doing participant observation and interviewing an informant
c. Making an ethnographic record
d. Making descriptive observations
e. Making domain analysis
f. Making focused observations
g. Making a taxonomic analysis
h. Making selected observations
i. Making a componential analysis
j. Discovering cultural themes
k. Taking a cultural inventory
l. Writing an ethnography
(Spradley, 1980)

Each of these steps will be explained in further detail within the methodology chapter. The written account for this study includes a significant body of descriptive material concerning the course goals, objectives, and content; activities; observed student behaviors; environment; and students and instructor perceptions through journal and interview records.

1.6 Purpose

The purpose of this study is nonevaluative and independent of the duties and responsibilities associated with my employment as curriculum supervisor for the Art Education 252 course. The goal of this research is to observe, experience, and describe one undergraduate computer art course from the students' perspectives to reveal patterns that may influence the understanding of how students in other introductory computer art courses perceive learning. Another purpose for this study is to observe peer teaching and learning between students from outside the visual arts and those majoring in the visual arts. An underlying purpose is to gain a better understanding of students and learning to
improve the quality of instruction in higher education. Although this research is not part of my employment, the experience and results of this study do influence the structure, teaching, and content of Art Education 252.

1.7 Significance

The significance of this study resides in the analysis of a computer graphics introductory course's goals and objectives and students' perceptions and exhibited understandings of what they are learning. Insight into which of the course activities the instructor and students perceive as effective may contribute to curriculum design, pedagogical development, and greater understanding of student learning within other visual arts courses. These findings may influence the scope, sequence, and structure of visual arts electives and requirements in higher education.

From a slightly different perspective, this study may contribute to the "efforts aimed at integrating liberal arts subject matter into the studio classroom" (Salmon & Gritzer, 1990, p. 59). Their research indicates interest and support for the integration of liberal arts into studio environments by art faculty at 26 art schools and universities. Furthermore, results may influence the content and structure of computer mediated visual arts courses for visual artists.

The study will contribute data for further inquiry into undergraduate curriculum reform toward a more liberal arts education. The study will provide further insight into how students integrate their general education curriculum into their chosen field of study. And it will improve understanding of how visual arts students select and perceive visual arts courses from outside their specialized domain.
This study will also provide insight into how students select courses for their general education curriculum and electives within their major fields of study. A greater understanding of how students perceive the relationships between the goals and objectives of a undergraduate education with the major field of study may influence academic advisors’ approaches to helping students plan their education.

1.8 Overview

Within this introductory chapter, the problem statement for the dissertation study has been presented. The purpose and significance of the study have been established and the theoretical framework introduced. The research methodology has also been introduced. In the following chapter, Chapter Two—Theoretical Framework, three areas are presented to establish a foundation for inquiry. These include reform in undergraduate education, issues concerning technology in the visual arts and art education, and the value of students' perceptions in research and curricular reform in higher education.

In Chapter Three—The Research Methodology, the theoretical foundation for the research methodology is presented. The design of the study is described and the procedures for conducting the research are explained. Chapter Four—The Social Structure: An Introductory Course in The Role of Computers in the Visual Arts presents detailed information concerning the environment in which the research study took place. This chapter describes the computer art course, its goals, purpose, objectives, and rationale. It also presents descriptive information concerning the activities, schedule, grading policies and procedures, and instructional style and strategies for this course. In addition, general
descriptive information concerning the people and an overview of the physical environment of this social setting are provided.

In Chapter Five—The Participants, general demographic data and detailed descriptive information concerning the participants in this study is given. The students' major areas of study, career goals, backgrounds, and methods for selecting their courses are presented. An overview of the instructor's education, background, and experience in computer art concludes this chapter.

Chapter Six—A Participatory Perspective Account of the Course integrates descriptive data with comparative analysis of perceptions of the students, instructor, and participant observer. Perceptions of learning and activities in the course, student interaction, and attitudes toward the course and instruction are described to reveal significant patterns of experiences.

Chapter Seven—Summary, Conclusions, and Implications provides a summary of the investigation. Conclusions are drawn, and implications for education are suggested. Limitations of this study are cited, and recommendations for future research conclude this chapter and the dissertation study.

The appendices section includes samples of materials utilized in data acquisition and analysis. These include examples of the course's introductory survey, scripts for the formal interviews, questions from the reflective diaries, photographs of the environment, course handouts, and analysis worksheets. Also included in the appendices are excerpts from the fieldnotes and transcribed recordings.
CHAPTER II
THEORETICAL FRAMEWORK

Introduction

The theoretical basis of this study is rooted in the philosophy of higher education that focuses on reform in American undergraduate education. One goal of undergraduate education reform has been the integration of a liberal arts education with a selected major area of study. A core curriculum that embraces both the arts and the sciences has been recommended and adopted by many universities as a means toward preparing all students for lifelong learning and active citizenship within our society (Gaff, 1988). The role the visual arts contribute toward this integration is the focus of this study. More specifically, the study is concerned with how an isolated experience in one visual arts course in computer mediated art is perceived by students as part of their general education curriculum.

Within this chapter three areas are presented for establishing a foundation of inquiry. These include reform in undergraduate education, issues concerning technology in the visual arts and art education, and the value of students' perceptions in research and curricular reform in higher education.

The chapter begins with an overview of curriculum reform in undergraduate education. It is presented as a means for establishing the rationale behind the general education curriculum structure described within this study. Recommendations by the Carnegie Foundation for the Advancement of
Teaching (1977, 1986) will be reviewed in conjunction with a model curriculum for liberal arts developed in the Colleges of Arts and Sciences at The Ohio State University (1988).

Literature concerning issues associated with technology and the arts and curricula in computer mediated art is reviewed for clarification of the case study content area. A brief historical overview of the emergence of technology in the visual arts is presented as a means toward understanding the fundamental issues associated with computers in the artist's studio and art educator's classroom. Artists', designers', art educators', and aestheticians' viewpoints are included to establish the background, depth and scope of content, and learning experiences within the course Art Education 252 - Introduction to the Computer in the Visual Arts.

A review of research literature and philosophical inquiry concerning the value of students' perceptions in curricular reform, research and curriculum development, and self-assessment of their own learning is presented as a basis for supporting the focus and methodology of this study.

2.1. Reform In Higher Education

Since its beginning, higher education has been in a state of reform. It is constantly changing and growing to keep pace with our society. The focus has shifted over the years from an education for the sake of knowledge and social refinement to one of practical skills for the advancement of technology and job skills. Over the past decade the focus has been shifting toward a blend of practical preparation for a career and lifelong learning and appreciation of the arts and sciences.
The present reform movement began in 1977 with a report by the Carnegie Foundation for the Advancement of Teaching entitled *Missions of the College Curriculum*. During this same year other reports by U.S. Commissioner of Education Ernest Boyer and the Harvard Task Force were published with calls toward a core curriculum. Since then there have been many national reports and publications calling for various reforms in undergraduate education. Hundreds of colleges and universities have participated in this reform through the re-evaluation and restructuring of their undergraduate general education curricula (Gaff, 1988).

The majority of reform has focused on the general education portion of the curriculum rather than the specialized major areas of study. The core curriculum is one in which all students are required to participate. While there has been much agreement on the need for reform, the methods for achieving the aims have differed. An integrated core for a liberal arts education has been recommended by the Carnegie Foundation for the Advancement of Teaching (1986).

By the integrated core we mean a program of study that introduces a student to essential knowledge, to connections across the disciplines, and in the end, to the application of knowledge to life beyond the campus.... The following academic framework for general education is suggested:

- Language
- Art: The Aesthetic Experience
- Heritage: The Living Planet
- The Social Web
- Nature: Ecology of the Planet
- Work: The Value of Vocation
- Identity: The Search for Meaning

It seems clear to us that an exploration of these universal experiences—through courses, seminars, all-college convocation, and the like—is indispensable if students are better to understand themselves, their society, and the world of which they are a part (p. 19).
The Carnegie Foundation (1986) also recommended that the integrated core should continue throughout the four or five year undergraduate curriculum. A unification of the general education requirements with the major field of study was suggested. The previous approach of an isolated major area of study, with very little integration with other fields of study, has not fostered an understanding of the nature of the profession within society. The Carnegie Foundation envisions "a college of quality when a major is so enriched it leads the student from depth to breadth and focuses, not on mere training, but on liberal education at its best" (p. 20).

The first step for many colleges and universities was to define their concept of the educated person. National higher education reform reports have stressed the development of analytical skills in the undergraduate curriculum. In its description, the Special Committee for Undergraduate Curriculum Review at The Ohio State University (1987) states

...primary among these capacities is the ability to write and speak with clarity and precision; to read and listen critically and with comprehension. Of the same order is the ability to engage in careful logical thinking and critical analysis, including the abilities that permit intelligent responses to problems and arguments which involve quantitative data (p. 1).

The Colleges of the Arts and Sciences at The Ohio State University developed a model curriculum based on the recommendations of the university's Special Committee for Undergraduate Curriculum Review. This model was approved by their faculty in June of 1988. In their rational, the Colleges of the Arts and Sciences (1988) stated
The tradition and practice of general education embodied in the Colleges of the Arts and Sciences envision the development of knowledge, perceptions, attitudes, and skills that allow a student to move into society with an understanding of its traditions and past, of its accomplishments and aspirations, of its relation to and responsibility for the natural world, of its diversity and plurality, of its problems and needs. It is hoped that the individual will attain a sense of self within that society that invites a continuing ability and desire to learn and to work with others for further development of human potential (p.2).

Their curriculum, which serves as a university-wide model, requires five courses within the Arts and Humanities. Students are required to take a two-quarter sequence within the arts and humanities of a selected culture through a broad historical survey context. Three courses are then required in a concentrated area of the arts and humanities. At least one of these courses must be in the visual arts. It is within this area that Art Education 252 serves as a General Education Curriculum (GEC) course. The Ohio State University Colleges of the Arts and Sciences Curriculum (1988) addresses the aims of general education with the Arts and Humanities requirement in the following goal:

The overall goal of this component is to develop knowledge of the humanities and the arts and a humanistic perspective that fosters capacities for: (1) aesthetic and historical response and judgment; (2) interpretation and evaluation; (3) critical listening, reading, seeing, thinking, and writing; and (4) experiencing the arts and reflecting on that experience. As a result of meeting this requirement, each student should have studied significant writings and works of art that can be shown to be of lasting and fundamental importance for humanistic inquiry (p.16).

When establishing guidelines for a general education curriculum, each course's structure and objectives are reviewed before it is included as a required or elective. It is generally acknowledged that all of the elements desired in general education cannot be met in specific courses (The Ohio State University
Colleges of the Arts and Sciences, 1988). Some flexibility exists for individualized selection of courses with the GEC. Students following the Colleges of the Arts and Sciences curriculum model may choose from a number of concentrated visual arts courses. This selection may be the only in-depth visual arts experience an individual student encounters in his or her higher education studies. Students enrolling in these concentrated visual arts courses may have vastly different educational experiences and professional goals.

It is with these varied backgrounds, experiences, skills, and goals that students enter the course Art Education 252. Although the students are required to have taken at least one survey or foundation course in the arts and humanities, students from outside visual arts majors often lack a general understanding of the visual arts. Therefore, their creative expression in studio activities and comprehension of in-depth philosophical discourse concerning the impact of technology in the visual arts may be limited.

While the problem of adequate preparation for a concentrated area of focus in the visual arts is not unique to this course, the integration of studio production and theoretical readings, writing, and discussions while learning to use a computer differs from other visual arts courses. Most of the other GEC visual arts course offerings concentrate on a single aspect such as studio production, aesthetics, or history of art. To provide a clearer insight into the content and pedagogical structure of this course, an overview of the issues associated with technology and the visual arts and art education follows.

The purpose of this study is not to evaluate whether or not the varied approach in Art Education 252, with its breadth and scope of knowledge and experiences, addresses the aim for an integrated curriculum. However, an
understanding of the theoretical and practical concerns of this subject area will provide insight into the problem of isolation many of these GEC courses have in the visual arts. To engage in a higher level of concentrated study in the visual arts, the students focus their experiences on one or two areas for inquiry. In this case, students are concentrating on a relatively new and specialized area of technology and the visual arts. This specialized area offers unique learning experiences and opportunities for philosophical inquiry for both visual arts majors and general education students.

2.2. Technology in the Visual Arts and Art Education

To establish a framework for understanding the issues associated with the course content of Art Education 252, an overview of the history and philosophical discourse of technology and the arts is presented. Selected writings of artists, arts educators, aestheticians, and art historians are incorporated as a means of identifying unique attributes of computer mediated art processes. Implications for art education are discussed within the context of higher education.

Historical Overview

The history of computers in the art making process is relatively short. While most art historians rely on decades, and sometimes centuries, of artists', critics', and theorist,' writings, the role of computers in the arts can be traced back only to the mid-1960s. To our advantage, however, many of the early pioneers were not only actively pushing the frontiers of technology, but they were also prolific in their literary discourse on the implications of this technology for the arts.
Although the majority of the early experiments with computers and visual imagery were initiated by scientists, they stimulated a response from the art world and changed it forever (Goodman, 1987).

Some of these scientists had an appreciation for the arts and delighted in collaborative efforts with artists. Although many of these early creations using computer technology were linear representations of mathematical principles lacking color and aesthetic appeal, some scientists such as A. Michael Noll had a great interest in learning more about the arts. While his early work was highly technical, as his work developed he explored more aesthetic and perceptual issues in modern art (Goodman 1990).

Artist Robert Rauschenberg and physicist Billy Kluver believed collaborative efforts of artists and scientists were effective to both the collaborators and the world of art. This conviction led to the forming of an organization called Experiments in Art and Technology (EAT). EAT promoted collaborative projects between artists and engineers as an interdisciplinary approach that would "benefit not only the participants but society as a whole" (Goodman, 1987, p. 29).

The development of computers and their role in the visual arts was greatly dependent on advances in the scientific community. Freeman (1989) identifies three eras in the development of the computer as a tool in the art-making process. In the first era there were very few artists and many limitations. "Only a few lucky and determined artists had access to these early graphics computers. These early pioneers often had to develop the tools and programs for themselves" (p. 1). Major support and access to computing centered around military and industrial research. Freeman describes the second era as one that had more
artists and fewer limitations. "Applications for television, advertising, publishing and other industries spurred development, and justified the still considerable expense of capable graphics systems" (p.1). We are in the midst of the third era; according to Freeman (1989) there are many artists using computer technology with few limitations. "Relative to the recent past, current equipment and programs are refined, powerful, and inexpensive. There is a great range of options available at every level of application" (p. 2).

Although early groups such as EAT no longer concentrate on establishing collaborative efforts between artists and scientists, organizations like the National Computer Graphics Association (NCGA) and the Special Interest Group for Graphics (SIGGRAPH) of the Association for Computing Machinery (ACM) continue to grow in their multidisciplinary philosophies and memberships.

Goodman (1987, 1990), an art historian and curator, has focused her career on computers in art. She has compiled an in-depth historical record of artists' and scientists' works and writings concerning the developments of technology in the arts. Goodman (1987) believes that computers are making new and unique aesthetic experiences possible and changing the ways in which art is conceived, created, and perceived. While the history of computers in the visual arts is a relatively brief 25 years, its rapidly changing potential has influenced almost every aspect of the art making process.

The changes in the role of digital technology and its acceptance has often been compared to the influence of photography in the arts. "Photography was first used to make pastiches of then-popular academic paintings. It evolved its own unique identity only when it became inexpensive enough for amateurs to get involved" (Brown, 1990, p. 197). It has only been within the past decade that
photography has been accepted as a fine art. It has also been within this last
decade that major changes in the technology of photography have developed.
Today, with cameras that have automatic focus and light meters almost anyone
can record an image to film.

Goodman (1987) reminds us of recent changes that have brought about
the widely available, highly interactive, and user friendly electronic paint systems
that offer palettes of over 16 million colors. Entire compositions can be created
quickly and stored separately at each stage of creation. Now almost anyone who
has a home computer can purchase and learn to use a program to create visual
imagery. Will this greater accessibility contribute to a greater acceptance in the
art community as it did with photography?

Fundamental issues

Many do not agree on the role of technology in the arts and visual arts
education. Computers are the source of many debates among artists and art
educators. Artists have always used technology in their processes; however,
some believe that the computer is more than just another advancement in the
toolbox. Gips (1990) reminds us that tools and technologies have always been a
part of making art and are not usually contemplated beyond their functional
expedience. He notes that when a tool can be easily adopted into the process
and addresses a widely acknowledged problem in production, then it is readily
accepted. However, technologies such as the computer, which abruptly disturb
the process and product, tend to cloud the issues while at the same time
shedding new light on the concept of art.
Questions concerning whether or not the role of the computer is as a tool, a medium, or the art itself, and whether it should be included in the art studio, are fundamental issues concerning the role of technology in the arts. For example, as mentioned earlier when computers were first used in the art process, artists needed to learn to write programs to get the computer to execute their desired tasks. Now, software and hardware have advanced to the state where artists no longer have to learn programming. They can easily learn to use commercially available software to create imagery. However, a debate remains as to whether or not artists should continue to write their own programs in order to have greater control over the style and content of the visual imagery output from the computer. According to Kitagowa-DeLeon (1991),

If you want a computer to help you create a work of art in a very specific way (your unique way), you will have to tell the computer to do so in a computer language. (Software written by some one else does things in "someone else's" way.) If the way in which you want a computer to do your job requires some kind of math, you (but not the computer) will have to have some amount of math knowledge (p. 15).

Most often, it is for individual artists whether or not computer programming is important for expressing ideas. It can be a matter of how you want to spend your creative time. Many artists are content to push the limits of commercially available software written by computer programmers and have no desire to spend their time learning and writing computer programs. Still others like to work in conjunction with software programmers in the development of tools. In this scenario, artists tell the programmer what they want the programs to do and the programmer writes the software. Then the artists spend most of their time creating imagery with the customized software. While it is true that many
software and hardware attributes are contained within art products created with them, individual artists' attributes are also evident and unique.

Artist Lillian Schwartz (1992) expresses it this way:

Sometimes, I delved into programming; sometimes, I learned those complex words that would convey my thoughts to a scientist with whom I was collaborating. Anything more, and the artist can become locked into the computer. Knowing a programming language and then writing a program using that language can lead to a creative isolation for an artist, because the birth of a program (often followed by the need to tinker with it over the years) displaces the artistic act. The program becomes the artwork, and the fontanelle through which creativity has previously surged unimpeached becomes impenetrably blocked (p. 16).

The increased availability of computing for artists has also meant an influx of self-proclaimed artists using easily mastered commercially available graphics software. There exists an attraction to computer graphics by individuals who are not skilled in traditional media or knowledgeable about basic art concepts or history. Many feel the computer offers them an opportunity, perhaps for the first time in their lives, to experience the art making process in a risk-free, user-friendly environment. This phenomenon raises more issues concerning the role of artists and art educators. Although images are being produced by these newcomers to the art making process, some question whether or not what they create is art. According to Ettinger (1988),

Contrary to popular commercial advertising, which claims to cut down on the need for developing expertise, the current fascination with computer graphics is creating a larger, not smaller, need for formal study in art and design. Using commercially available computer graphics systems will not turn the average person into an artist or designer overnight, in the same way that using a word processing system will not automatically make one a writer (p. 60).
Livine (1989) concurs and emphasizes the notion of transference of craft and art processes. He draws a correlation between just sitting down to the computer to create visual imagery with any other media. One may at first create something interesting, but without a strong foundation in art and a sense of your craft it is very difficult to express yourself. Levine believes that the integration of craft and life to point where it becomes a transparent medium has rarely happened with computers.

The notion of the master craftsman and the novice is also of interest to Wright (1989). His concern lies with what he describes as the risk-free computer environment. He believes that when users know they can restart whenever they make a mistake or don't like anything about the work, then it reduces the tension and provides a safe cushion. The artist no longer needs to be responsible for inflicting an irreversible act upon a physical object.

As the computer reduces the 'risk' in making art, so it reduces the need for conviction in the creative process. But here the artist is in danger of floundering helplessly. An artist might revert back to an earlier stage in the work at the first sign of a problem rather than try to 'rescue' the picture, to struggle on and perhaps reach something that provides a new insight (p. 53).

Wright's concept of floundering may be explored from another perspective. Ettinger (1988) highlights another view when she discusses the shift in focus from art product to art process. She identifies the computer as a record keeper in the stages of the creative process. These recorded stages are then available for study and analysis in understanding the decisions artists make in the design of an artwork (p. 55).
The impact of computers in the creative process affects not only aesthetic and problem solving decisions but as Binkley (1990) notes, "it takes a good bit of time to produce a painting, but you can spew out hundreds of images in an hour at the computer" (p. 236). Freedman (1989, 1991, 1992) has called this process *seriation*. She views this opportunity for elaboration and refinement as unique to computing and of particular benefit for students, who tend to experiment more and take more chances when they know they have saved earlier versions of their work and can easily retrieve them when necessary. Students are able to learn many technical skills through this exploration and when accidents happen they see them as opportunities for further discovery (Freedman, 1991).

This unique flexibility of the computer, and in particular commercially available paint systems, has changed some artists’ approaches to art making. Artists such as Barbara Nessim (1988) begin with traditional sketches on paper and then translate ideas to a paint program. She then either outputs a final image to a printer or a partial image to a plotter and applies oil pastels. Other artists prefer to work exclusively within the computer environment, from initial concept to final product.

The electronic paint system environment provides artists with layers and layers of menus and simulated graphic tools. An almost limitless potential exists for applying and manipulating a variety of paints, washes, pens, crayons, inks, and cut-out shapes. Wright (1989) believes that this abundance of options contributes to the impression that the image being created is an infinitely malleable entity (p. 50). Yet, however infinite these capabilities may seem, what is it that is so malleable?
Binkley (1990) cites the nontactile experience inherit in most paint systems as unique to computing. He contemplates the scene of the artist sitting at the computer. Although she may perceive her activity as painting or drawing she appears to be engaged in a very different activity. "Her hand holds a stylus that looks like a pen, and she moves it over a flat surface that looks like a drawing table. But no marks appear. Furthermore, her glance is cast straight ahead, not downward at the drawing surface.... Is this person merely pretending to draw?" (p. 233)

The artist can conceive and execute a work within the computer environment, or virtual world, and perhaps send the digital information to some output device such as a printer or film recorder, without ever actually leaving the computer workstation. For these artists, who also sometimes create three-dimensional computer imagery, or virtual sculptures, their hands may be soft and their physical condition remarkably different from that of an artist working in a foundry sculpting metals. The concept of a physical involvement in art differs dramatically. While the painter's materials may be splattered on his hands and clothes at the close of the working session, the computer artist has only to remove a few files and turn off the computer when cleaning up. Imagine the difference between having a seemingly unlimited set of tools and paints for working out a problem compared to only having a few brushes, two or three tubes of paint, and a stretched canvas. Both scenarios construct their own unique problems and avenues for discovery and solution.

The computer artist interacts with the art process on a conceptual level. Binkley (1990) highlights the difference between physical tools and conceptual
procedures by contrasting the role of mathematics in creating the illusion of perspective.

Renaissance artists such as Brunelleschi and Alberti projected a picture by means of constructive algorithm (a set of step-by-step instructions) using the time-honored methods of Euclidean geometry. Computational algorithms, on the other hand, are based on the more recent analytic geometry of Descartes. The former occurs in real physical space, using tangible tools to construct an image; the latter occurs in a virtual coordinate system and uses mathematical formulas to compute an image (p. 236).

Software that enable artists to simulate three-dimensional environments often include methods for creating traditional and distorted perspectives, building and arranging objects in virtual environments, and manipulating color, texture, and lighting parameters. It remains unclear as to whether the automation of perspective, surface qualities, and lighting improves or limits an artist's abilities in traditional media. Wright (1989) believes that, "Computer practices will likely not improve art practices nor 'aid' them, but will create completely different practices and lend more shape to our growing notions of what 'computer art' might be" (p. 53).

Loveless (1990) considers the past as a point of departure for artists. He is not concerned with artists' ability to re-create the illusion of perspective through traditional methods. He believes that today's visionary should focus on aesthetic pleasures and not symbols of the past. When describing the influence of technology on his own work, Van Der Bogart (1990) concurs with Loveless and regards traditional techniques such as the Renaissance vanishing point as just one small dot in a universe of dots.

However, others believe that it is essential for artists to understand traditional fundamentals of art before incorporating the computer into their work.
These fundamental skills help the artist to understand the process by which the computer creates the illusion of perspective and aids in their ability to manipulate the imagery (Stredney, 1991).

Ettinger (1988) believes that artists and educators are only beginning to explore the potential of the computer as an art medium. "Although many artists currently use the computer to simulate traditional forms of art such as drawing, painting, and photography, few build upon the unique communicative characteristics of this technology" (p. 55). Ettinger and Van Der Bogart do not view the computer as a passive medium. They perceive the potential for many conceptions of art and art making processes through computer technology.

Van Der Bogart (1990) considers another unique characteristic of computing in the arts: its interaction with the development of ideas. He notes that by applying traditional approaches to image analysis to computing in the arts, much of the meaning of the work is lost. Unless one considers the unique ways in which computing influences our perceptions of reality while creating and viewing art, then we will not fully understand its role within our society.

Another issue of interest in this field concerns whether the program itself can be the work of art. Analogous to the view of conceptual artists, early artists/programmers such as Michael Noll, "insisted that the true work of art was the generating program rather than the computer generated object" (Goodman, 1987, p. 24). Questions arise concerning the art product and craft. When addressing the concept of craft, aesthetician and visual communications designer Mihai Nadin (1989) explores the issue of where the art exists.

It is not that thinking replaces the craft, but it diminishes the importance of craft in the actual making. I feel comfortable with the notion that, in the age of digital technology, the program is the work of art, although I am not
quite sure how much a work realizes its meaning. It is probably, because I do not want to discard the thought, through the infinite use of the program, in which case all of us using programs are actually interacting with the art object called "the program" and thus with the artist as the author of the program (p. 46-47).

Linehan (1985), art educator and aesthetician, is not comfortable with the concept of the computer as a simulated tool; he believes it can be a boundary when it attempts to mimic other art processes. His concern is that, "the artist is now limited to the use of manual surrogates which are often more restrictive than their referents" (p. 2). Working with these simulated tools requires a higher level of thinking or abstraction. Tools do not react in the ways artists are accustomed to in traditional media and they often become frustrated and annoyed (Freedman, 1992).

Nadin (1989) expresses a similar view concerning the influence or presence of the computer in the majority of computer arts processes. He points to graphics programs as computational models that represent knowledge about how images are created. He also sees a boundary with computer graphics programs because they often provide prefabricated general solutions to problems. However, he does recognize the unique nature of these programs and identifies them as the "how" of art because of their ability to replicate art making processes.

Artists and art educators such as Jones (1989) and Sheridan (1990) concur with Linehan (1985) and Nadin (1989) in a call for a more reflective approach to incorporating computer technology into the art process. According to Jones, "Contemporary theory in philosophy, aesthetics and cognitive/social sciences stresses the embedment of culture and historical conventions in art and
technology" (1989, p. 31). Computer technology has had such an extreme impact on our society. These artists, art educators, and aestheticians have focused on the interaction of artists with technology as a primary issue in the 20th century. Sheridan (1990) believes that, "No tools are too outmoded for creative use. No tools are too new for creative use. An artist can create with any tools, but certain tools are linked to the dynamics of social and technological development and open vistas in a special way" (p. 179). When artists and art educators incorporate technology into their art making and instructional processes, the implications go far beyond a simple addition to their collection of tools.

The fundamental issues presented within this section have identified many of the reading, writing, and discussion topics for the course Art Education 252. The information presented represents the views of experts within the field of computer graphics and will serve as a foundation for reflection on the experiences and perceptions reported by the students learning computer graphics within this study.

**Approaches to Curricula in Technology in the Visual Arts for Art Education**

Universities and colleges throughout the world have begun to recognize the role of computing in the art process. Artists and art educators have formed groups within NCGA, SIGGRAPH, and the Special Interest Group on Computer Uses in Education (SIGCUE) to consider the potential roles of computer technology in visual arts education. In 1990 SIGGRAPH distributed the results of a Dream Curricula Survey with Guidelines for Curricula in Computer Graphics (Mones-Hattel & O'Connel, 1990). In that same year LEONARDO published a supplemental issue, *New Foundations: Classroom Lessons in*
Art/Science/Technology for the 1990s. Additionally, in the fall of 1990 the College Art Association's Art Journal was dedicated to Computers and Art: Issues of Content.

In 1991 Art Education featured reports by various art educators implementing and researching the role of technology in art education. Hubbard and Greh (1991) presented the results of a meeting of SIGCUE to consider what preservice teachers needed to know about technology in art education. In addition, Freedman (1991) reported on research in the computer graphics production process and unique social interactions associated with technology in the visual arts classroom. Bridwell & McCoy (1991) also contributed to this publication with an overview of the problem of dissemination of information on new technologies for in-service art educators.

Dedicated issues by publications within the fields of visual arts education and computer graphics such as these have demonstrated an increase in dialogue among educators concerning the content and philosophies of incorporating technology into visual arts curricula. However, there are only limited examples of research by art educators addressing the impact of computer technology on the instruction and learning of visual arts in higher education. Freedman and Relan's (1992) case study of the social dynamics and production processes of university students learning to use a paint program within an art education studio course is an important step toward understanding technology in the visual arts classroom from the students' perspective.

To establish the variety of approaches and curricular philosophies in technology and visual arts education, several models will be presented as a means toward understanding how the aims for education differ among art
educators and how these differences might influence how and what students learn. Since the data concerning the actual social dynamics and learning of computer technology in the art classroom is limited, much of the information presented represents philosophies and perceptions from an instructional viewpoint. Some information concerning computers in the visual arts classroom from the students' point of view will be included in the next section concerning the value of students' perceptions in curricular research and development in higher education.

The act or decision to include computer technology in the visual arts curricula requires careful reflection and consideration. If an institution makes the basic decision to incorporate computers into their visual arts programs, then a host of practical and philosophical decisions follow. These decisions include resource factors such as personnel and computers and conceptual concerns such as artistic and pedagogical issues.

First, how will the computer be incorporated into the curricula? This decision will be greatly influenced by whether the goal is to integrate the computer into existing curricula as another tool for learning basic art concepts or to develop new curricula that focuses on the unique role of technology in the visual arts. This latter approach might lead to the establishment of specialized programs or centers with directives in the research and development of both technical and aesthetic concerns associated with computers in the visual arts (Brown, 1990; King, 1984; Mones-Hattal & O'Connel, 1990).

The SIGGRAPH 90' Guidelines for Curricula in Computer Graphics in the Visual Arts recommend that all students beginning to explore computers in the art process should have completed a foundation level introduction to computers
course. Their foundation course would serve to integrate an interdisciplinary mode of thinking and creating visual arts with computers. At the same time, these guidelines stress the importance of learning and mastering basic technical skills so students can apply these skills to other content areas. Next they recommend two introductory foundation level courses in computers in the arts. (Mones-Hattal & O'Connel, 1990). This approach stresses a specialization in computing in the arts and does not address a relationship between the visual arts and a general education curriculum.

Educational objectives for foundation level courses that are unique to computing in the arts have been incorporated into many curricula in higher education. In these courses, students gain a basic understanding of computing terminology, types of hardware and software, programming, and networking. Often students acquire basic skills in the use of software with interactive computer graphics processes and develop abilities for solving simple visual problems using the computer within foundation level courses. Curriculum such as this usually includes an orientation to the uses of computers in various art processes, such as two-dimensional and three-dimensional still and animated imagery, sound, and interactive environments. In addition, much of the specialized curricula includes courses that integrate computer technology with the following three separate areas: a) photography, animation, film, and video; b) graphic design; and c) sculpture, three-dimensional modeling and design, and interactive and interdisciplinary works (Brown, 1990; King, 1984; Mones-Hattal & O’Connel, 1990).

The SIGGRAPH Guidelines for Curricula in Computer Graphics in the Visual Arts provides a clear overview for educators planning or revising a
computer arts component in their curricula. Their recommended curricula with its focus on specialization differs from other programs that seek to incorporate computer technology as just another tool in the visual arts process.

Edward West, School of Art, University of Michigan (1990) believes that "specialization has made an educational virtue of knowing more about less" (p. 183). He promotes a core curriculum of interdisciplinary study for artists that combines studies in art media with other disciplines to strengthen concepts of scholarly inquiry for artists.

What West encourages, and has been implemented at the University of Michigan, is a shift away from media-focused curriculum to one focused on perception. His philosophy encompasses an integration of ideas and concepts of light, space, and time rather than acquisition of skills. Curriculum such as this stresses explorations of process rather than products. As such, computer technology could be incorporated as another opportunity for exploration.

Although West does not address computer graphics, if his philosophy were applied computer graphics would not be taught as a separate foundations course. Therefore, the guidelines presented by SIGGRAPH differ dramatically. While the SIGGRAPH guidelines stress process, the purposes for selecting computer processes are not interdisciplinary, content oriented toward visual perception, or openly experimental.

Another approach to the inclusion of technology in art education utilizes computing as an instructional resource for the integration of information and experiences. Richard L. Loveless (1990) does not see the computer as a new tradition but as a new tool for visual thinking and learning. He views the role of
the computer as a unique opportunity to integrate major but separate traditions in art production, art history, art criticism, and aesthetics.

Loveless (1990) describes two courses that he has developed for the art program at the Center for Research in Arts and Technology at the University of South Florida. "In my two courses Using Computers for Visual Learning and Using Computers for Visual Inquiry, I attempt to unify art production, art criticism, art history and aesthetics by means of the computer" (p. 206). His approach differs from the two previous examples in that the computer's role is not isolated as a specialized area of study for art processes or merely included as just another tool, but is incorporated into all facets of art education. He does not stress the fundamentals of computer graphics software and hardware, but instead concentrates on art content. This emphasis on art content instead of art tools with separate media experiences links Loveless' philosophy to West (1990).

However, Loveless stresses a more reflective approach to curriculum, one that considers the social and cultural influences of computing in the arts. Using technology to teach art production, history, aesthetics, social and cultural influences, and criticism stresses what is unique about computing for education (Ettinger, 1988; Hubbard & Greh, 1991; Loveless, 1990; Welter, 1989).

This later approach with its potential for teaching studio and theoretical art education content may involve a wider array of multimedia hardware and software technology than the art production studio. Art educators preparing curricula that incorporate technology may be involved in establishing classrooms with computers, monitors, laser disk players and recorders, CD-ROM, optical storage disks, film recorders, digital scanners, voice recognition devices, and touch screen technologies. When incorporating the rapidly changing technology
into the classroom, educators and students in higher education need to learn the unique potential and practicalities of computing (Bridwell & McCoy, 1991; Hubbard & Greh, 1991).

Within this section a brief historical overview of the role of technology in visual arts has been presented in conjunction with an exploration of the fundamental issues. Three approaches to curricula in higher education—computer technology or media focused, creative artistic process focused, and art education content focused—followed. Much of what has been written concerning technology in the arts and visual arts education has either been of a philosophical nature or recipes for computer graphics curricula. Artists, art historians, aestheticians, and art educators have shared their views, experiences, and projections for the future with very little insight into how any of this is perceived by students. As previously indicated, the purpose of including theoretical and practical viewpoints such as these has been to provide a foundation for reflection when considering the students' views, experiences, and perceptions within this case study of students' learning in Art Education 252.

2.3. The Value of Students' Perceptions in Research and Curriculum Development

To establish a framework for understanding the issues associated with research and curriculum development based on students' perceptions, a brief overview of recent history and philosophical discourse of the value and role of students' input into changes in higher education is presented. In addition, approaches to understanding students' perceptions and the limitations in the transference value of students' perceptions and attitudes into classroom theory
and practice will be identified. The information concerning students' roles and perceptions in research and curriculum development in higher education is included. This provides a foundation for comparison between the perceptions of professionals in higher education and those of the students within this dissertation study regarding their general education curriculum.

Should students be regarded as participatory consumers of goods and services provided by universities? Or should universities' administration, faculty, and staff limit the consumer market approach by determining what is best for the students? What does it mean conceptually when we ask, what is the value of students' perceptions and attitudes? Within this final section of the theoretical framework chapter, questions such as these will be explored as a means toward understanding institutional philosophies and the impact on students' attitudes, perceptions, and learning.

**The Value and Role of Students in Curricular Decisions**

The trend has changed back and forth over the past 30 years from a higher education curriculum designed "for" the students, to one designed "by" the students. This evolution began with the revolts of the 1960s, was furthered by the reform movement in the late 1970s, and continues today with student governments and representatives involved in curriculum development at some universities. For example, at Harvard University students are involved in the review of course proposals for inclusion in the university’s core curriculum. According to Abbie Ziffren, students are just as involved in selecting additions to the core curriculum as they were in its initial development. Two students, who have been elected by their peers, work in conjunction with six faculty members
on each content area subcommittee to determine which courses will be approved for the Harvard University core curriculum (Feldman, R., 1988).

In contrast, a slightly more elitist philosophy would question the relevance of students' views in curricular decisions. Brubacher (1982) argues that "relevance 'now' tends to center on what students desire rather than on what is desirable" (p. 97). This approach views universities as having broad experience and knowledge of the past, present, and ideals of the future, while students are concerned with desirable particulars. His view acknowledges the short course of involvement most students have in a four-year program and encourages structure and guidance by university administrators in curricular selection and content for students.

Brubacher (1982) discusses student participation in curricula within the context of academic autonomy. He cites Hoffman (1974) as viewing the university as "an egalitarian but hierarchical society.... Unless some know more than others, the pursuit of learning may be seriously jeopardized" (p. 39). Brubacher warns that if students are included in decisions about the planning and execution of curricula on an equal basis with university administrators, then they may debase their own degrees.

When further considering the relationship between the student and the university, Brubacher (1982) first provides insight into the early universities' stance on the notion of students as clients. "Historically... institutions of higher education have tended to regard the students' parents, rather than the student himself, as the client. As a result, these institutions have placed themselves in loco parentis ("in place of a parent")" (p. 38). He attributes the change to universities' viewing students as the clients as a result of more permissive
parents and more mature students. Students are now admitted to universities as part of a community with a citizenry role.

Brubacher (1982) raises the issue, "To what degree does the acceptance of the student into the learned community entitle him to a meaningful role in its government; that is, to something more than student government as an extracurricular activity?" (p. 38). He cites Wolff (1969) in reference to student activist's calls for a participatory democracy. "On the Jeffersonian thesis that all governments derive their powers from the consent of the governed, they claim students should be consulted on all decisions that vitally concern them" (p. 38-9). Brubacher points to the significant input from students contributing to the inclusion of 'black studies' in curricula and the admission of more women to professional schools.

At one level, the student as consumer, universities have responded as commercially competitive institutions. Universities have tried to create curricula that are relevant to students and society, while still addressing their fundamental aims of education (Carnegie Foundation for the Advancement of Teaching, 1987). However, most of these changes are the products of executive committees comprised of university faculty and administrators (i.e., The Ohio State University Special Committee for Undergraduate Curriculum Review, 1987; The Ohio State University Colleges of the Arts and Sciences' Model Curriculum, 1988) and organizations such as the Carnegie Foundation for the Advancement of Teaching (1986, 1987).

While this approach is in one sense a responsive curriculum to changes in our society, often the extent of student input is limited to marketing analyses concerning courses attended and not attended. Popular courses often receive
continued funding to meet their increasing enrollment demands. Since many of these popular courses are taken because they fulfill a general education curriculum requirement, students do contribute demographic data to administrators who are re-evaluating courses for inclusion into a revised curriculum.

There are differing approaches to the ways and means in which students can contribute to the popularity of some general education curriculum courses at American universities. One approach limits students to a strict list of required courses with only minimal flexibility. Another approach allows students to select from a larger pool of courses. At The Ohio State University, within the Colleges of the Arts and Sciences, students are provided with a list of required content areas that they must fulfill. However, there is a large variety of courses within each of these content areas from which the students can choose. While this strategy is not an open curriculum in its structure, it does place a great deal of the responsibility for creating an integrated and balanced curriculum on the students. Charles Duke, vice president for academic affairs and dean of the faculty at Grinnell College, believes that Grinnell's open curriculum gets students excited about a larger percentage of the courses and as a result they become more active learners (Feldman, 1988).

It is this last approach which is of importance for this study—that the students' role in determining their own experiences and learning is vital. When curricula for general education are established at universities, often the aims of education for individual institutions are reflected. However, it is also the case that differing approaches to curricular reform can be based on very similar theoretical frameworks of what constitutes the educated person. It is also possible and
probable that differences in implementation exist from program to program within an institution under the umbrella of one larger set of goals.

In developing and guiding the educated person it is not only the curriculum as a whole that needs to be considered, but also what happens in individual classrooms. Maslow (1970) promoted a Taoist humanistic philosophy toward education where students would be encouraged to take more responsibility for their learning. "The teacher, then, would be one who helps a person discover what is already in him, not a shaper of persons into prearranged forms...." (p. 153). This approach values students as individuals and active participants in the seeking, gaining, and assessment of knowledge and learning experiences. Students are valued for the choices they make when selecting individual courses and for helping shape the courses themselves. In contrast, the Brubacher (1982) approach views the role of the teacher (and university) as authorities and experts on learning, and students as subordinates and novices. It is hard to imagine someone who has been in the role of a student for most of his or her life as being a novice about learning. However, if they are not guided and encouraged to be reflective about their own learning, then students may not recognize what they have learned or understand the process.

When supporting the inclusion of the Taoist humanistic philosophy of teaching, Maslow (1970) indicates that taken to its purest form it may not work with all types of learners. However, he also highlights its reflexive nature.

The Taoistic attitude is a modest one, recognizing, even as one helps others, that ultimately they are autonomous agents and must help themselves and that the best way to help them is to be available to them, letting them discover what they do, what are their talents, and tastes, and judgments, and capacities (p. 154).
To establish a harmonious balance between the roles of universities and students in curriculum reform and development, both entities must recognize and value the potential. The climate is improving for the inclusion of students in decisions that affect their instruction. There is a general consensus among faculty and students that undergraduates should be consulted when determining their degree requirements. Although the percentage of students endorsing actual participation in curricular decisions has decreased slightly, there has been an increase in the desire to participate in evaluating faculty for promotion (The Carnegie Foundation for the Advancement of Teaching, 1987).

If students believe they should be consulted, then what would they tell us about their insights and experiences in selecting and fulfilling their degree requirements? Could we gain a better understanding of their increased interest in evaluating faculty for promotion? Or, perhaps more importantly, would we discover the rationale behind the shift in emphasis from contributing perspectives to determining curricular policies? And finally, do students reflect on their general education curriculum and its relationship to their major area of study?

Within this section concerning the value and role of students in curricular decisions a variety of viewpoints have been presented. The focus of this dissertation study places a high value on the perceptions of students for an increased understanding of learning and decisions made in selecting courses to fulfill degree requirements in higher education. While this study will not attempt to address all of the questions raised, it does consider them to be part of a larger body of concerns from which this study embarks.
Approaches to Understanding Students' Perceptions

With an ever improving climate valuing students' perceptions and contributions in curricular decisions in higher education, a growing body of research exists that attempts to gain a better understanding of these perceptions, their implications, and their limitations. Within this section several approaches to accessing information on students' perceptions will be presented through a brief summary of research in higher education. Reviewing how others have approached this research area and the results they have reported will provide a foundation for understanding both the methodologies and descriptive data within this particular study. Considering the applications and limitations for incorporating study results such as those presented will also provide a basis for determining the implications for this study.

Boud and Falchikov (1989) created a research synthesis on the subject of self-assessment in higher education. Their analytical approach to understanding the large body of literature on self-assessment generated three broadly classified headings for research. For the purposes of categorizing approaches to research in students' perceptions, the classifications put forth by Boud and Falchikov (1989) will be applied within this larger context. These classifications include, a) conceptual, b) practical qualitative, and c) quantitative.

Conceptual

Conceptual research regarding the value and role of students' perceptions in higher education has been presented in the previous section. This approach to research is of a philosophical nature defining issues and developing arguments based on literature opposing and supporting the researcher's views or
hypothesis. Research such as Boud and Falchikov (1989) and Feldman (1976) may be categorized within this section. Their systematic synthesis of research literature, and supporting arguments for the establishment of standard requirements for research studies, is philosophical in design.

While not as recent as Boud and Falchikov, Feldman's (1976) research was similar in design and scope; however his interest was in gaining a clearer understanding of students' views on teaching. Both of these examples point to the significance of an extensive search and comparison of research literature when formulating theories and conclusions. Their comparative studies highlighted differences in research methodologies, standards, margins of error, and the danger of drawing conclusions from limited contextual information presented within individual research reports.

Feldman (1976) concluded that students had been both overly praised and ignored as a source of opinion on teachers and teaching. While Boud and Falchikov (1989) highlight contradictions in reports concerning whether students overrate or underrate their own performances. Boud and Falchikov (1989) raise another concern regarding students' perceptions of instruction:

...teachers and students may have different perspectives and differing ideas about what is important. This is, perhaps, most evident where students are rating effort, and teachers the product of this effort. Even when individuals, their supervisors and their peers are rating performances on the same dimensions, differences of perspective can give rise to differing interpretations (p. 536).

Feldman (1976) raises several issues when discussing "the significance, accuracy, and validity of college students' general views on teaching (in the abstract) as well as their more concrete assessments of actual teachers" (p.
209). One area he questions is "whether students are in a position to make accurate judgments about certain matters, including instructor's degree of knowledge of the subject matter of the course, the instructor's preparation and organization of the course, and the instructor's ability to explain clearly" (p. 210).

Although these two examples in their conceptual exploration are not as theoretical in nature as the writings presented in the previous section, they do represent a powerful analysis of research methodologies, conclusions, and limitations. Conceptual analyses, such as these, highlight the importance of reflecting on research from a historical perspective to gain a clearer understanding of the development of ideas and trends in thinking.

*Practical Qualitative*

The practical qualitative category, for the purposes of this overview, is a broad classification of research that explores practical applications of theoretical research in different situations. This approach, while drawing on conceptual models and perhaps generating some quantitative data, is primarily focused on the implications of putting theory into practice. Often these studies are descriptive in nature and take place within classrooms with little to no intervention by the researcher.

Grant and Riesman (1978) extensively explored the college curricula of the late 1960s and early 1970s, conducting an in-depth series of case studies of experiments in college curricula. These historical experiments were a result of both student and faculty calls for curricular changes in higher education. Most stressed an emphasis on the individual and his or her own self-discovery of knowledge. These researchers spent a considerable amount of time on college
campuses attending courses, group encounters, and meetings with students and faculty in the process of determining academic policies. They also spent time interviewing students, faculty, and administrators in their dorms, offices, and off-campus housing. Throughout Grant and Riesman's descriptions, contrasting views on issues associated with the curricula are presented, and in summary Grant and Riesman (1978) formed their own views on these issues.

Many faculty are as tired as students of "doing their own thing." There is a search for new sources of marrow in a splintered curriculum, new sources of cohesion and community to counter the sense of solipsism. The escape from the competitive pressures has led to grade inflation and an erosion of public confidence; now some faculties are seeking ways to restore a sense of "honors" without compromising open access (p. 367).

Their research represents an enormous effort to gain further insight into the implications of putting educational theories into practice. They did not rely on one case study but instead conducted a large group of case studies to formulate their research findings.

Freedman and Relan (1992) provide another example of a practical qualitative research methodology in their exploration of the social practices and artistic production associated with computer graphics in the art education classroom in higher education. While their study is not as in depth or encompassing at the Grant and Riesman example, it does provide a more typical perspective on qualitative research in classrooms. This particular study is presented in greater detail than others because its content focus has the highest relevance to this dissertation study.

In their descriptive case study, Freedman and Relan investigated the processes of computer graphics production and influences on educational experiences. They were interested in the practical applications of theoretical
issues associated with social interaction, learning, and instruction utilizing computers in the art education classroom.

Freedman and Relan conducted their study in an art education course with 11 undergraduates learning to use paint system software over a ten week time period. Their study sought to clarify the following three fundamental issues: a) Do students focus more on the production process or the formulation of ideas when using the computer? Does this focus shift during the learning process? b) How will the students report their interactive experiences with the computer in the production and ideation processes? Will the extent of the interaction change throughout the ten-week course? and c) Will social interaction affect image development, and if so, to what extent?

Both qualitative and quantitative methods were incorporated into their methodology. According to Freedman and Relan (1992), "the procedures included structured interviews, journal/sketchbooks, survey/questionnaires, unstructured observations, and photographic and tape-recorded records" (p. 100). In addition to the role of researcher, Freedman participated in the classroom as the instructor teaching computer graphics. Although it was not indicated, it is assumed that she also evaluated the students' performance in the course.

From their observations, triangulated data acquisition, and analysis, Freedman and Relan draw comparisons to previous theoretical discourse on the three research questions. They formulate their conclusions with calls for further research and practical applications for the art education classroom.

The results of the study indicate that descriptions of computers as either controlling student imagery or as just another art medium are inadequate. Three group trends resulted that correspond to the initial research
questions: (a) there was a general shift during the learning process from a focus on production to ideation in the students' responses about their image development and learning processes; (b) the students' images developed interactively in both production and ideation, indicating that the students both controlled the computer and the computer influenced changes in their images and ideas and that these interactions were important to learning not only about the computer but about aesthetic possibilities; and (c) the social interactions among students were important to computer graphic development and to learning processes (Freedman & Relan, 1992, p. 108).

Qualitative practical research studies such as Grant & Riesman (1978) and Freedman & Relan (1992) provide detailed descriptions of educational theories applied to real world classroom environments. This approach enables educators to gain a clearer understanding of the dynamics of the classroom, the perceptions of students, and above all, a clearer picture into the similarities and differences between the case study presented and the students they encounter each day.

Quantitative

The broadly classified heading of quantitative research in understanding students' perceptions includes studies that collect and utilize measurable data in a multitude of statistical analyses. Generally these studies incorporate techniques that allow researchers to compare and contrast students' perceptions before, during, and after a given experience.

In a study reported by Lynch et. al (1989), they compared students' evaluations of four items from an initial course evaluation to those of three consecutive courses following the implementation of students' suggested changes. This study utilized an 11-item questionnaire in which responses were rated on a 6-point Likert scale ranging from strongly agree to strongly disagree.
The questionnaire was given at the conclusion of a 4-week course on interviewing skills for medical students. Changes were implemented into the course based on the evaluative responses of the students. Then, the same questionnaire was utilized for the following three consecutive classes attending the course and compared to the original responses. According to Lynch et. al. (1989),

Following the revisions, areas targeted for revision were rated more favorably by students. The fact that ratings remained consistent during this period of time for aspects of the course that had not been changed (i.e., role playing, audio taping of interviews, etc.) suggest that an overall improved attitude by students toward the course did account for higher ratings in targeted areas (p. 990).

The researchers suggest that studies such as this one are necessary if we are to attribute improvements in course evaluations to changes based on students’ attitudes and evaluations.

In another study, Terry and McIntosh (1989) investigated the relationships between students’ anticipated experiences and their midterm and final course evaluations in an introductory psychology course. In their study, evaluation forms were administered on three separate occasions during the course. Students were asked to rate how much they already knew about the course and where they acquired any information they had coming into the course. Terry and McIntosh (1989) in their discussion report,

The correlational results suggest a pattern of the students' expectancies to be related to midterm and final evaluations of work demands (value of required assignments, workload, and amount of time and effort put into the course) and teacher warmth and inspiration (teacher's concern, methods of correcting, and teacher motivation). That is, how the students' experienced their work demands and their teacher's warmth and
inspiration at midterm and end of the term was similar to how they
expected these aspects at the onset of the course (p. 792-3).

Terry and McIntosh (1989) note that students' ratings of courses and
instructors may be influenced by extraneous variables. Students preconceptions
of good courses and instructors, as well as their anticipation of the level of
difficulty of a course, and their interest in the subject matter may influence their
course ratings. As Terry and McIntosh detail their findings they conclude that,
"students can and do receive information about their courses from each other.
Such information may be valid or deliberately or unintentionally inaccurate, but
other students may use this information on which to base their preconceptions"
(p. 794).

Boud and Falchikov's (1989) study identified methodological and
conceptual limitations of quantitative studies measuring students' self-
assessment through an analysis of quantitative studies. Some of the
methodological limitations cited include: a) different methods for deriving teaching
and student ratings; b) a lack of replication; c) differences in rating of student
effort ("Effort exerted by students is a very subjective notion about which it would
be unrealistic to expect agreement between staff and students, or indeed
between students and students" (p. 535)); and d) unclear definitions of self-
limit of most quantitative studies in self-assessment concerns an insufficient
description of the context being reported.

Summary

Within this section three broad classifications of research approaches into
students perceptions have been presented. Within each of these approaches—
the conceptual, qualitative practical, and quantitative—limitations exists in their
generalizability and applicability to real life curricula and classroom situations.
However, as several of this studies indicated, a combination of approaches often
enhances the validity of the results and provides more information for the
consumer of research to draw conclusions. If we value the attitudes and
perceptions of students in their own learning and in the continued development of
undergraduate curricula, then we must pursue research practices that provide
valid and applicable information.
CHAPTER III
THE RESEARCH METHODOLOGY

Introduction

A naturalistic case study approach was utilized to gain insight into students' perceptions of an introductory computer art course. Within this chapter an overview of the study design is presented in conjunction with theoretical and procedural literature concerning the chosen methodology.

The step-by-step procedures including the site selection and data collection are described. Organization, transcription, and analysis of data methodologies are presented with issues and concerns regarding the procedural model.

The purpose of this research was to observe, experience, and describe one undergraduate computer art course from the students' perspective to reveal patterns that may influence the understanding of how students in other introductory computer art courses perceive learning. While the content, supervision, and instruction of the course *Art Education 252—Introduction to the Computer in the Visual Arts* have benefited as a result of this study, the implications are much broader. The methods and results of this study will contribute both practical and theoretical models for research concerning technology in the visual arts classroom in the field of art education.
3.1 Theoretical Foundation for the Research Methodology

T. Aoki (1978) presents three orientations to curriculum inquiry, "Man experiences three root activities: WORK, COMMUNICATION, and REFLECTION. These activities yield three forms of knowledge: NOMOLOGICAL, SITUATIONAL INTERPRETATIVE, and CRITICAL" (p. 56). The situational interpretative orientation is of special interest for this study. Aoki (1978) describes the orientation as follows:

Within situational interpretive orientation there are different approaches, each allowing a description of meaning structure in a situation. There is a growing interest among educators in theoretical studies that falls within the phenomenological attitude. The phenomenology of social understanding requiring investigation of meaning-giving activities in the everyday world is the main research interest of some social and cultural ethnographers, particularly ethnomethodologists who follow the tradition established by Garfinkel and Goffman (p. 61).

Pearse (1983) clarifies and expands Aoki's presentation:

The knowledge form sought is situational knowledge, or the knowing of the structure of interpretative meanings. This kind of structure is referred to as the essence, ground structure, or deep structure of a phenomenon. It is the mode of knowing called phenomenological understanding.... The aim of this understanding is to get under perceived phenomena in order to directly confront the phenomena in question (p. 160).

The situational knowledge orientation is presented because its methods of inquiry are based on hermeneutics and phenomenology. While the methodology for this study is not phenomenological in its structure, there is a close association between hermeneutics and phenomenology, and enthethodology and ethnography. According to Pearse (1983),
As methods of inquiry, hermeneutics and phenomenology are closely linked to enthomethodology and ethnography. What these all have in common is a wish to treat ordinary social interaction as a feature of the life-world and to make aspects of the subjectivity of that world available and visible. The stance and philosophical underpinnings of these approaches are essentially phenomenological, although the research methodology, the data collection technique of participant observation, borrows heavily from anthropology (p. 161).

According to Sevigny (1977),

Enthomethodologists seek to describe the documentary method by participating in the daily life and focusing their attention on what is normally taken for granted by the participants.... Enthomethodologists seek to describe social situations to gain understanding of how the members of a setting go about constructing and maintaining social reality (p. 49).

Although the boundaries of this study are limited to the social situation of a college classroom, participating in the course to gain a further understanding of students, from the insider's point of view, is based on enthomethodology and ethnography techniques from the social sciences.

When describing the fieldwork techniques of ethnography, Woicott (1988) clarifies differences between doing ethnography and borrowing its techniques. He warns that there is no guarantee of doing ethnography just because you employ a variety of techniques associated with it. "Ethnographic significance is derived socially, not statistically, from discerning how ordinary people in particular settings make sense of the experience of their everyday lives" (p. 191). Since this study is limited in its time frame (the 11-week quarter structure of a university) and boundary system of activities within the classroom social situation, an overall understanding and analysis of students within a society and subculture will not
take place—a true ethnography will not be written. However, ethnographic techniques do establish patterns essential for this study.

The primary focus of the data gathering processes and analysis follows Spradley's *The Ethnographic Interview* (1979) and *Participant Observation* (1980) developmental research sequences. According to Spradley (1980), "the participant observer comes to a social situation with two purposes: (1) to engage in activities appropriate to the situation, and (2) to observe the activities, people, and physical aspects of the situation" (p. 54). The participant observer must be aware of the dual purpose and exercise explicit awareness to the situation. In other words, a conscious effort has to be made to observe others, while at the same time participating in the activities.

Spradley discusses the observer's role as both insider and outsider in the social situation. "Our experience of participating in a social situation takes on meaning and coherence from the fact that we are inside the situation, part of it. The participant observer, on the other hand, will experience being both insider and outsider simultaneously" (1980, p. 56-7).

When reviewing types of participation, ranging from passive to complete, Spradley (1980) warns that although a higher level of involvement can lead to more insight, turning ordinary or familiar situations into study can present problems. "I would offer one word of caution: the more you know about a situation as an ordinary participant, the more difficult it is to study it as an ethnography" (p. 61). Wolcott (1988) recommends a triangulated perspective when addressing researcher and insider bias:

None of the field research techniques that I am about to describe, including ethnography's mainstay, "participant observation," is all that powerful or special. The anthropologist's trade secret, freely disclosed, is
that he or she would never for a minute rely solely on a single observation, a single instrument, a single approach. The strength of fieldwork lies in its triangulation, obtaining information in many ways rather than relying solely on one (Wolcott, 1988, p. 192).

This study employs triangulation as a means for data gathering and validation. The triangulation of data acquisition enables cross referencing of information, within this social situation, to clarify validity. According to Sevigny (1977),

The basic assumption behind triangulated investigations is based upon the belief that singular methods or singular observation perspective is likely to be a biased account. A triangulated approach is one that provides multiple data and multiple interpretations of phenomena as a built-in cross-validity check against research bias (p. 64).

While the social setting for this study is not unique to this researcher, viewing the social situation from a student’s perspective has not been experienced prior to this study. The computer related language and skills were previously known to this ‘insider’ but the native language, perceptions, and attitudes of undergraduates experiencing this social situation were not as familiar. This is, in part, because the researcher is primarily self-taught in the field of computer graphics. Although I attended two introductory courses in computer graphics 11 years ago, the content and procedure for these courses were completely different. There were no software packages available for artists and very little discussion concerning the issues associated with technology in the art existed within the classroom. The courses were limited to highly motivated visual arts majors and stressed technical computer programming strategies for generating computer graphics.
However, this classroom social situation has been experienced from a teacher's point of view prior to this study. Experiencing computers within an arts context for the first time from a student's point of view provided a different insight, while familiarity with the knowledge base enabled more opportunities for observation and interaction with students. In other words, I was not overwhelmed with trying to learn general computer information and observing others at the same time.

Many of the concerns for the insider's perspective for this study are similar to educational case studies in public schools. Most of us have experienced these social settings before and there are limited options for roles to assume within the social setting (i.e., observer, teacher, student). In public schools, it has been difficult for researchers to assume the role of students. According to Wolcott (1988),

A few anthropologists have attempted to take the role of student in the classroom (e.g., Burnett, 1969; Spindler & Spindler, 1982). It always amuses me to think of that huge George Spindler, a major contributor to anthropology and education, sitting at his third-grade desk in German Village. But it is worth noting that of the relatively few accounts obtained from the perspective of either the teacher or the student as participant-observer, the researchers who have conducted them represent several disciplinary interests—social psychology (e.g., Smith & Geoffrey, 1968), education (e.g., Cusick, 1973)—rather than only anthropology.... (I might note here that I think the role of active participant has been underutilized in educational research. I encourage those pursuing ethnographic approaches to give careful consideration to opportunities for being active participants rather than passive observers. In traditional fieldwork, one really had no choice) (p. 194).

This study offered an opportunity to assume the role of active participant without drawing too much attention to one's size or role. Unfortunately, there were a limited number of computers available for student use and I was often
unable to work at the computers at the same time as the students. In the role of participant, I actually became more of a helper for students than a student. More information concerning this transition will be discussed in the procedures section. However, it is important to note now that special care went into insuring that I did not influence students' behaviors, language, perceptions, or activities through my previously acquired knowledge base. I only helped students as another student would. That is, I only helped students with problems that had been previously presented in class. I also restricted my vocabulary to that I heard from other students and limited my interaction with the instructor during class except to ask a question concerning what had already been covered.

3.2 Design of Study

A naturalistic case study approach usually does not attempt to encompass a large representative sample of a population. Instead, its focus is an individual group or case. The group or case in this study encompasses one course section enrollment in an introductory computer art course. The boundaries established for this study limit the inquiry to general education curriculum requirements and objectives; the course objectives and activities; and students' perceptions of objectives, activities, and their own learning within this one course section.

As previously presented, the qualitative orientation for this case study borrows fieldwork ethnographic techniques for data collection and analysis (Spradley, 180: Wolcott, 1988). Participant observation, ethnographic interviews, survey/questionnaires, and reflective writings from participants are utilized for triangulated data acquisition. Basic goals of ethnoscientific, "to discover native categories of thought, " (Spradley, 1979, p. 232) have been incorporated for
enacting techniques of ethnography. According to Spradley (1979), "Ethnoscience has its roots in linguistics," (p. 231) and distinguishes between emic and etic patterns of language.

Emic descriptions of sound depended on discovering the native's categories and perceptions. In the same way, emic descriptions of behavior depended on discovering native categories of action. Etic descriptions, on the other hand, of sound or anything else are based on categories created by the investigator, and are usually employed to compare things cross-culturally (Spradley, 1979, p. 231).

A further description of the emic orientation to research is described by Sevigny (1977):

...an "emic" approach is concerned with the study of behavior from the perspective of the participants—from inside a single, culturally significant unit. Criteria are used in an emic description that are drawn from contrasts made from within the system itself and are relevant in terms of the internal functions, interpretations and meanings from the participants themselves.... Participant observers make use of the "emic" approach in that they focus upon the purposes, goals, motivation, attitudes and interpretation of the participants of social situations (p. 84-5).

The focus of this study emphasizes the emic orientation. Students' perceptions are described and categorized utilizing their language through the use of quotation and emic-focused observations and analysis.

The study design followed Spradley's (1979, 1980) developmental research sequence as a guide in participant observation and ethnographic interviewing. Minor adjustments were incorporated to facilitate a triangulated data acquisition approach. The following information outlines Spradley's (1980) recommended sequence with brief explanations of each stage of his
developmental research sequence. Detailed description of the research methodology specific to this study is presented in the Procedure section.

An Overview of Spradley's (1980) Developmental Research Sequence

A. Locating the social situation — the process of identifying a social situation for a descriptive case study. Social situations include a physical setting, the actors or people present, and the activities that take place. Selection criteria should consider the complexity of the environment, its accessibility, and the degree to which the researcher can participate in an unobtrusive manner. The permission of those to be studied and the frequency of recurring activities also influence the selection of the social situation.

B. Doing participant observation — the dual process of participating in and observing a social situation. The participant observer is explicitly aware of details while at the same time consciously considering the larger scope or culture in an environment. The observations and experiences in participant observation take place from both the insider and outsider perspectives and require an increased introspective analysis of experiences. There are varying levels of participation associated with this approach ranging from nonparticipation to complete participation. Typically, a higher level of involvement in participation is associated with situations in which the researcher is already an insider, or ordinary participant.
C. Making an ethnographic record—the process of documenting thoughts, experiences, observations, interviews, artifacts, and any other materials associated with researching a social situation. This record includes a wide variety of collected and recorded materials. The fieldwork notebook usually contains condensed and expanded observations which are recorded at regular intervals throughout the research study. The notebook also includes analytical and interpretative writings as they occur during the research sequence.

D. Making descriptive observations—the process of observing and recording social situations. The observations normally begin with general, or grand tour observations, without specific questions in mind regarding the social situation. General information is gathered regarding the space, actors, activities, objects, single actions, events, times, goals, and feelings. Based on the grand tour questions the researcher goes back to look at specific details with mini-tour questions. Mini-tour questions break general information into extremely detailed descriptions. Ethnographic descriptive observations often include information about the researcher. This information may include descriptions of his or her actions, thoughts, and feelings as he or she experience a social situation as a participant observer. The process of making descriptive observations continues throughout the research sequence.

E. Making domain analysis—a process of searching for cultural patterns within a social situation. The ethnographer seeks to identify patterns within
recorded behaviors, artifacts, and knowledge by examining the descriptive data for cover terms, included terms, and semantic relationships.

According to Spradley (1980) the process involves,

1. Selecting a single semantic relationship
2. Preparing a domain analysis worksheet
3. Selecting a sample of fieldnote entries
4. Searching for possible cover terms and included terms that appropriately fit the semantic relationship
5. Repeating the search with other semantic relationships
6. Making a list of all identified domains

One type of semantic relationship would be that X is a kind of Y. An example would be that an Oak is a kind of tree. In this case, Oak is an included term and tree is a cover term.

F. Making focused observations—the process of selecting an ethnographic focus to conduct an in-depth inquiry into a specific problem for study. Focused observations are based on structural questions. Structural questions are generated as a result of domain analysis identifying semantic relationships and cover terms. For example, if the domain is stages in completing a studio project for Art Education 252, then the structural question would be, *what are all of the stages in completing a studio project?* Domains are clustered to create larger structures. Focused observations aid in the identification of larger structures of social behavior, and in the understanding of the categories that these structures encompass.

G. Making taxonomic analysis—the process of identifying relationships within a domain to discover how it is organized. A taxonomic analysis is intended
to reveal the relationships between the categories and overall structure of a selected focus within a social situation. The process first involves selecting a domain for analysis and searching for similarities in its semantic relationships. The next step is to hunt for additional included terms and then to consider whether or not the domain under study could be subcategorized under a larger domain. A taxonomic diagram is then constructed and verified with focused observations.

H. Making selected observations—the process of searching for differences among categories within a larger domain within a social situation. These observations are very specific and are based on a continuing process of narrowing the scope of investigation while maintaining a holistic approach to the inquiry. Interviewing strategies are also included within the process of making selected observations. These strategies include informal and formal ethnographic interviewing techniques for acquiring insider information about a social situation.

I. Making a componential analysis—the process of searching and sorting contrasts, or attributes, to establish clusters of meaning within a culture or social situation. A paradigm is generated and revised as the ethnographer validates information during participant observations, interviews, and any other data collection process utilized in the study. Spradley (1980) recommends the following model for componential analysis:
1) Select a domain for analysis
2) Inventory all contrasts previously discovered
3) Prepare a paradigm worksheet
4) Identify dimensions of contrast that have binary values
5) Combine closely related dimensions of contrast into ones that have multiple values
6) Prepare contrast questions for missing attributes
7) Conduct selective observations to discover missing information
8) Prepare a completed paradigm

J. Discovering cultural themes—the process of understanding how participants within a social situation learn and utilize cultural themes. "Themes are assertions that have a high degree of generality. They apply to numerous situations and recur in two or more domains." (Spradley, 1980, p. 141). The process for discovering cultural themes may vary, but immersion into a social situation, searching for similarities and contrasts among domains, and writing a description of the social situation are often utilized.

K. Taking a cultural inventory—the process of organizing all of the collected material associated with the social situation, in preparation for writing an ethnography. The process begins with a review and listing of all of the data and analysis collected and developed during the study. An inventory overview of examples to be utilized in the written account of the study follows the data review. And, further research possibilities within the social situation are identified.

L. Writing an ethnography—the process of translating and communicating cultural meanings discovered within a social situation while conducting
ethnographic research. Spradley (1980) discusses six levels of ethnographic writing: 1) universal statements, 2) cross-cultural descriptive statements, 3) general statements about a society or group, 4) general statements about a specific cultural scene, 5) specific statements about a cultural domain, and 6) specific incident statements.

3.3 Procedure

3.3.1 Locating the Social Situation

The social situation selected was an introductory course in computer art, in the Department of Art Education at The Ohio State University. The location of the course was the Hopkins Hall Microcomputer Laboratory (HOML), also known as the Amiga Lab. The Amiga Lab is located on the third floor of Hopkins Hall, which also houses the Departments of Art, Art Education, and Industrial Design. The computer classroom contains 16 Commodore AMIGA 2000 microcomputers arranged in small groups or clusters. The room is dedicated to instruction and activities associated with computer art. Since the completion of the fieldwork for this study, the computer lab has expanded and moved next door into a larger space.

The course, Art Education 252, and the focus of this study, offers five sections each with an enrollment average of 14 students. The course features a unique combination of reading, writing, discussion, and studio activities focusing on the role of computers in the visual arts. Each section meets for two hours twice a week for ten weeks, and once for two hours during finals week. The Amiga Lab is open for approximately 65 hours a week with 28 hours a week
reserved for classroom instruction. The remainder of the open time is available for students to work on studio activities.

Registration rosters for all five sections of this course were reviewed two weeks prior to the onset of autumn quarter, 1991. Each section had a full enrollment. Most sections showed a wide variety of student backgrounds as indicated by their colleges. I selected a section that had mixture of visual arts majors and students from outside of the College of the Arts. This section would meet on Mondays and Wednesdays from 3:00 to 5:00 p.m. As with all of the sections, it would be taught by a Graduate Teaching Associate (GTA) whom I supervised. His name, for reporting this study, was Bob.

Bob was not going to be there for the first class session because of a trip overseas. He requested that another GTA meet with his class the first day to distribute the syllabus and announce that class would begin the following week. They were instructed to purchase computer disks as described in the syllabus. I did not talk with the class that first day. I was a bit anxious because I had not received the final OK from The Ohio State University Behavioral and Social Sciences Human Subject Committee and therefore could not officially begin any inquiry with the students. I listened to the GTA, looked over the syllabus, watched the other students, and wrote fieldnotes (see Appendix P).

3.3.2 Doing Participant Observation

Request for Participation

Although classes began September 25, 1991, I did not receive final approval from The Ohio State University Behavioral and Social Sciences Human Subjects Review Committee until October 14, 1991. As a result I attended the
class for several weeks before requesting permission from the students to participate in my research study. During the course of this time, I tried to blend in to the group and go unnoticed. However, since there were a limited number of computers and I was unable to sit at one I was somewhat conspicuous. Also, I seemed to be the only person writing anything down. My constant notetaking began to attract attention. One student even asked me what I was doing in the class one day. I said that I couldn't say that day but would talk with the class during the next class meeting. At last the day arrived when I could request participation in the study (see Appendix P for fieldnotes recorded this day).

In the process of requesting permission to participate in this study, I explained to the class that I was a PhD candidate in the Department of Art Education interested in what it is like, from the students' perspective, to take this introductory computer art course. The purpose, methodology for data collection, my role in the classroom, and their role in my study was explained. The students were told that they would not be evaluating the course or the instructor. They would be asked to participate in two formal interviews and fill out five reflective diaries concerning the studio projects. They were told that some of the classes would be recorded to audio or video tape, and that photographs would be taken. They were also assured that their real names would not be used in the study, and that the original data, which includes information that may identify them, would be destroyed after the dissertation had been completed. If they agreed to participate, they would receive five extra credit points, one for each diary. They were asked to sign the Consent for Participation in Social and Behavioral Research form (see Appendix O).
Thirteen students agreed to participate. There were six males and seven females. Eight had prior computer experience and twelve had some previous experiences in the visual arts, ranging widely from the hobby level, to one college course, to several visual arts majors. There was one sophomore, five juniors, six seniors, and one student with a BFA seeking teacher certification in Art Education. Two of the students were majoring in Art, four in Art Education, two in Business, two in Communications, two in Photography and Cinema, and one in Electrical Engineering. More information concerning the participants is presented in Chapter Four—The Social Structure: An Introductory Course in Computers in the Visual Arts.

The Participant Observer

As a participant observer in this study, I attended all but one class meeting throughout the quarter. Before each class I talked with students informally either out in the hall or within the classroom. During class time, I was active in either helping students, taking fieldnotes, or working at a computer. Since the formal interviews took place during class time, there were times when I would not be participating in the classroom for the full two hours. There were also times when the emphasis would shift back and forth from a concentration on observing, to helping students or recording the classroom activities on video or audio tape.

Although I was unable to use a computer during many of the class meetings because of the size of the class, I did work on most of the studio assignments outside of class time. I read the assigned articles, but did not write up the written synopsis or participate in the discussions that followed. During studio critiques I would usually observe and record fieldnotes.
After class I would continue talking with students informally and helping them with their work at the computers. If students from this class were in the computer lab during open lab time while I was there, I would talk with them informally.

3.3.3 The Ethnographic Record

Data Collection

The varied approaches to data collection to add validity to the study are reviewed within this section. Detailed specific information concerning the content of these data will also be provided within Chapter Four.

Introductory Surveys

Although I was not officially requesting materials for my study at the onset of the quarter, the instructor asked the students to fill out an introductory survey to gain insight into their academic backgrounds and goals in the course. This survey is a standard request in all of the sections of this course and it simply asks information concerning their class rank, major, college, schedule, previous visual arts experience, previous computer experience, what they hope to learn in the course, and how they feel the course will be incorporated into their personal and educational goals (see Appendix A).

Once I had received students' signed consent-to-participate forms, the instructor provided me with copies of the participants' surveys.
Informal Interviews

Informal interviews took place throughout the quarter. Often, I would get to know the students by talking before and after class. For instance, I found out other courses they were taking, how they felt they were doing in this class, and basic information about their personal lives. Some students were more openly informative than others. For example, Patti was going through a divorce and seemed to find it necessary to discuss it with anyone within hearing distance. She volunteered information about psychological evaluations she was undergoing for the custody of her kids, the transition of her role from free-lance artist to wife and mother, and now to single parent and student, and the views she held about instruction in general at the university level.

Other students were less inclined to share such personal situations. However, they frequently offered information about things they were having trouble learning on the computer, what they thought about the readings for the course, and how much they enjoyed the class.

Informal interviews were just as they imply. There were no pre-arranged or recorded discussions. They were casual conversations as one might have with any nosy classmate. I tried not to ask too many questions during this time because I found that they volunteered a lot more information if I did not. I also found it helpful to reveal some information about myself. As one would in any developing friendship. I could not expect them to open up to me unless I was willing to be nonjudgmental and occasionally relate a similar experience of my own.

As with the field observations, the informal interviews progressed from grand tour exchanges to more focused lines of inquiry. Much of this was simply a
natural transition. As the students knowledge base grew they were more inclined to discuss specific areas within the course and classroom. However, I also tried to gently guide conversations into more specific areas in which I was beginning to focus my study.

**Formal Interviews**

There were two formal interviews scheduled with each participant during the quarter. The interviews were recorded on audio tape and took place either in another room or in the back room of the classroom. When interviews were conducted in the back room, the doors were closed to insure confidentiality. The students were all asked the same basic questions (see Appendix B).

The first interviews took place in the fifth through eighth week of the quarter. The questions began with general information and moved toward more and more specific questions. The style and focus of the questions followed Spradley's (1979, 1980) recommendations. They began with grand tour questions, such as "If you were going to describe this course to a friend, what would you tell them?" These questions were followed up with mini-tour questions, such as "What do you think the reason is for discussing the reading assignments?" Students were also asked what they thought they were learning in the course, and procedural questions such as how they go about summarizing the articles and their sequence for completing studio assignments. Next were example questions, such as "Can you give me an example of something you've learned in another course that's helping you in this class?" These individual sessions took place during class time. Twelve participants were interviewed during this time.
The second interviews took place during finals week and were scheduled with each student individually. Most took place a day or two before the final class critique. Eleven students participated in the final interviews. One of these students also requested that I include the first set of interview questions since he had missed our first scheduled session earlier in the quarter. The second formal interview questions (see Appendix C) were more specific than the first. They began with questions such as "How has your attitude toward computers and computer art changed throughout this quarter?" These interviews, while following a set list of questions, also included some informal questioning that came up as a result of participant responses and are somewhat unique to each interview. Students were asked about their impressions of the course and their instructor.

Experience questions such as "Can you tell me about an experience where you had a hard time understanding a new tool or activity?" were intermingled with reflective questions about their own roles and what they would do differently if they could. Students were not asked directly to provide native language information. In other words, they were not asked to name objects, experiences, or feelings in their own words. However, native language emerged during informal and formal discussions. There were several instances where students consistently called the paint software program by another name, and used words such as "stuff" and "you know" to cover specific technical information.

An interview took place with the instructor at the conclusion of the quarter. The questions were somewhat informal but focused on several issues. He discussed his general philosophy of teaching, his interpretation of the course syllabus, and his perceptions of individual students. This interview took place about two hours after the final class critique during finals week.
All of the formal interviews were transcribed from tape for several months following the study. Students' native language was transcribed directly and included many "you knows" and "ums." It was interesting to re-read the interviews word for word to discover how much we assume during conversation. Many sentences are left unfinished and at times someone would say something that made very little sense. But in the course of conversation these statements did not stand out as convoluted as they did when transcribed.

*Students' Reflective Diaries*

Students were asked to complete short reflective diaries at the close of each studio assignment. There were five studio activities that were handed in for course credit. The first three projects were a still life, a self portrait, and an image representing internal and external space. The first three sets of diaries all asked the same questions (see Appendix D). They asked the students to reflect on what the most important thing was that they learned doing the project, and how the project related to the readings. The diaries also asked the students what they would do differently if they were going to do the project over again, how it related to their professional and education goals, and how it related to their general education curriculum. The diaries also asked for any additional comments.

For the final two projects, a representation of internal/external space and a short animation, a few adjustments were made in the questions (see Appendix E). This change was based on an increased focus on specific areas of inquiry and a complaint from one of the students that he was getting tired of answering the same questions for each project.
The following list outlines the number of diaries returned for each studio project.

<table>
<thead>
<tr>
<th>Project</th>
<th># of returned diaries</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Still life</td>
<td>13</td>
</tr>
<tr>
<td>2) Self portrait</td>
<td>13</td>
</tr>
<tr>
<td>3) Portrait</td>
<td>10</td>
</tr>
<tr>
<td>4) Internal/external</td>
<td>9</td>
</tr>
<tr>
<td>5) Animation</td>
<td>11</td>
</tr>
</tbody>
</table>

Although the diary questionnaires were distributed on critique day for all but the first project, a few were not returned until the end of the quarter. Two or three appeared to have been written quickly at the last minute, but most were thoughtfully considered and returned during the subsequent class sessions.

*Fieldnotes*

On the days that I was busy participating and unable to take notes during class, I would quickly jot down my thoughts after class. The notes were taken on a small spiral notebook and then transferred to computer at the conclusion of the study. The pace of the course was very fast, and at times it was difficult to participate, observe, record notes, and interact within the action packed two hour period twice a week. As a result, some of the notes are more detailed in observation one day and participation the next. On other days the fieldnotes stressed information obtained through informal interviews or experiences.

The notes were primarily descriptive, recording what was observed and experienced. Occasionally, I would include a few notes in conclusion, attempting to conjecture why something happened as it did, or as was the case quite often,
in amazement trying to figure out how the students were learning the computer techniques with what I perceived to be disorganized and scant instruction.

**Audio and Video Recording**

One class session was audio recorded and one video taped. The class that was audio taped included a group discussion on an assigned reading and a demonstration by the instructor of a new tool on the computer. A critique of the internal/external space project was recorded on video. Less detailed notes were taken during the video taped critique. Operating the video camera required more attention than simply leaving the audio tape to record. During the audio recorded class session, notes were taken as usual. Both tapes were transcribed in their entirety.

It was interesting to compare what I sensed and wrote in my fieldnotes concerning the atmosphere during the class discussion and demonstration, and the impression I had listening to the tape and transcribing its contents. Although there were not major differences between the two, the process of listening and transcribing the recorded event provided more time to reflect on each statement than during the discussion itself.

For example, fieldnotes recorded on November 18, 1991 (see Appendix P), represent the observations and perceptions of the first formal discussion the instructor had with the students about an assigned reading from the article packet. The fieldnotes describe an awkward discussion in which the instructor is unable to get the students to participate and threatens to turn off all the computers unless they do so.
The transcription (see Appendix P) provides a much richer scenario of the discussion. It reveals much more talking on the part of the instructor and a few students. The fieldnotes stressed the overall atmosphere of an instructor trying to lead a discussion with very little response. They describe an apathetic group and large lapses of time in which no one spoke. The transcribed tape enables further insight into the actual content of comments made, especially those of students who expressed a lack of understanding of the article.

The transcribed recordings provided additional insight into the interaction of the participants and supported many of the observations recorded in the field notes.

Examples of Course Handouts and Written Materials

Three categories of written materials were collected as part of the course materials: a) the syllabus, b) assigned readings in the article packet, and c) descriptions of the studio assignments.

These were collected throughout the quarter just as the students received them. There was a problem getting the assigned reading packet until the later part of the quarter as a result of the changes in law regarding course materials and copyright laws. However, the instructor did distribute copies of these readings. Once the packet was available at Kinko's, a photocopying shop that sells course materials for the instructors at the university, some of the students still did not purchase the packet. Instead they relied on one or two people in the course to make copies of the articles from their packets for them.

The syllabus contained the course description, rationale and purpose, objectives, course content and procedure, computer lab policies, and the
schedule for the quarter (see Appendix G). The syllabus also included the instructor's office hours and phone number, prerequisites for the course, required materials, a breakdown of all the points that could be earned in the course, and a grading scale. Students often referred to the syllabus as a guide for what to expect next in the course, when assignments were due, and how they would be evaluated.

The assigned reading article packet contained six assigned articles which were required reading and six articles that were recommended reading (see Appendix H for a list of these readings). There were also supplemental sections that could be used as an aid in finding resource materials for the term paper. In addition, there was a sample midterm exam from an earlier quarter, that students could use as a study guide. Since many students did not get the packet until late, if at all, many of the early recommended readings were not read. A few students did report informally that they had gone back to read some of those early readings and found them to be very helpful.

The assignment descriptions were distributed to the students as the studio assignments were given. There were seven studio projects included in the course. Five were described in assignment sheets and handed in for course credit. The other two were in-class exercises and were not supplemented with a written description. The written descriptions included assignments for the still life, the self-portrait, the portrait, internal/external space, and the animation projects (see Appendix I).

Most of these written materials were utilized throughout the participant observation phase of this study, just as a student would refer to them for important information concerning the course. However, it often seemed by the
questions that some students asked that the written materials were not utilized by all. One day I was intrigued when Rose asked, as if in shock, was it true that there was a term paper required in the course. At other times students would ask when assignments were due or how many points a specific assignment was worth. However, since the instructor was prone to changing due dates, it did seem to be a good idea to double check when assignments were due, even if one had read the syllabus thoroughly.

Examples of Students’ Work

In the preliminary design for this study, collecting examples of students’ work was not planned. However, as the course progressed it became increasingly apparent that some helpful information could be gained by seeing the written assignments that the students were handing in for this course. So students were asked to provide copies of assignments in this course for inclusion in the study. Because the examples were not vital to the study, an informal approach was taken when requesting the materials. Students understood that the information would be considered supplemental to the focus of the study. They would not receive additional course credit for providing the examples, and they did not have to provide them if they were not comfortable with the arrangement. If they provided examples, they were also asked to leave their addresses so the materials could be mailed back to them after being copied.

Many were quite willing to provide copies of their studio work for the study. A fair sample of term papers, midterm exams, and article synopses were collected. Since the majority did not provide copies of these written examples, their use within this study has been limited to occasional verification of native
language and to gain further insight into the comprehension of the reading assignments. This later part was of interest because many of the students who did not participate in the discussions would, when interviewed, display a keen understanding of the readings. I wanted to find out if these insights happened before or after the classroom discussions. Since 9 out of 13 students provided examples of their term papers, a more in-depth descriptive analysis of the evaluation and feedback students received from their instructor is included.

The visual examples were only utilized as reminders of the imagery students produced. They were referred to when reading the reflective diaries. However, analysis of their aesthetic value or technical merit is not included in this dissertation study.

Map of Site

A map of the classroom was developed that includes the arrangement of the room and computer equipment (see Appendix J). The front and back rooms are diagrammed as a guide to understanding the cramped environment.

Photographs of Site and Subjects

I brought my camera on two separate occasions and shot 35 mm print film of the class. The class was hard to photograph because the computers blocked most of the view of students. However, they reveal what it is like to sit at a computer in the space. There were some group discussions going on during one day and various shots were taken of students talking together away from the computers (see Appendix F). The purpose of the photographs is to further illustrate the relationship between the environment and the quality and quantity of
student and teacher interaction. The arrangement of the room had a profound impact on the students' experiences during demonstrations, discussions, and individual help sessions.

The photographs portrayed a dismal, drab environment, one that I noticed the first day, but once activities began I seemed to notice less. Usually when in the space, we tended to focus our attention on the computer screens with their brightly colored displays. It was only when confronted with the stark representations in the photographs did I recall how I originally felt about the industrial coldness of the room.

Transcription Process

Transcribing the interviews and recorded class sessions took place after the observation stage of the study. This process was a painstaking task of playing a few lines or words back on the recorder, typing them into the computer, then backtracking the tape to make sure that the words were recorded accurately. Each recorded interview, 23 in total, and the two recorded class sessions were transcribed in this method. Although hiring someone else, with polished transcription skills, to carry out this arduous task might have been more efficient, it was very helpful to listen to the tapes over and over again to refresh my memory of the participants and their interviews.

On a side note, the large degree of slang, incomplete sentences, and words that are not included in most computer dictionaries created an enjoyable distraction as I ran the scripts through the word processor's spelling and grammar checker. It would scramble to come up with words that made no sense
at all in the context of the writing. While correcting the spelling, I did not alter any
of the nonwords or unusual sentence structures within my transcriptions.

Organization of Data

In a case study such as this, it is easy to become overwhelmed by the
sheer mass of data. Only through some form of organization could one even
begin to make sense of what had been collected. The data was initially organized
by a trial and error process of placing samples in notebooks within subsections of
students, course handouts, the instructor, transcriptions of recorded classes, data
analysis, general counts, fieldnotes, and then comments and notes. This
cataloging system was occasionally restructured as attempts were made to
locate specific items. If it took more than five minutes then it was determined that
it was not in a place that made sense and it was reorganized.

As a result, everything pertaining to an individual student was placed
within a separate section dedicated to that student. This included all permission
forms, transcribed interviews, reflective diaries, and examples of written work.
The sections for course handouts, transcriptions, field notes, general counts, and
comments remained consistent.

As organization continued and more data were collected and analyzed,
more notebooks were assembled. The data analysis section grew into two
separate notebooks with one dedicated to a section for each step in the process
of domain analysis and another that contained sections for the remaining
analysis process.
Detailed information concerning contents of these data sections will be provided within the next chapter describing the structure and participants in the setting.

3.3.4 Descriptive Observations

Throughout the course of the study the observations progressed according to Spradley's (1980) sequence from descriptive to focused, and then to selective. The descriptive observations included grand tour observations, such as the layout and contents of the room and a general description of the people in it. The initial observations encompassed Spradley's (1980) nine dimensions to every social situation,

1) Space: the physical place or places
2) Actor: the people involved
3) Activity: a set of related acts people do
4) Object: the physical things that are present
5) Act: single actions that people do
6) Event: a set of related activities
7) Time: the sequencing that takes place over time
8) Goal: the things people are trying to accomplish
9) Feeling: the emotions felt and expressed (p. 78).

Focused and specific observations also follow this guide but describe each selected dimension in more detail. As planned, the field observations began with grand tour information describing the room, its contents, the participants, and the activities taking place. As data were collected and reviewed, new insights were
discovered and observations began either to focus on verifying an idea or concept, or to develop a new direction for inquiry.

The majority of the descriptive observations were recorded within the fieldnotes. Most were the result of participant observation. However, others were the results of formal and informal interviews, or artifacts collected.

3.3.5 Domain Analysis

According to Spradley (1980), "Analysis of any kind involves a way of thinking. It refers to the systematic examination of something to determine its parts, the relationship among parts, and their relationship to the whole. Analysis is a search for patterns" (p. 85). In this study data was analyzed for patterns of meaning. Questions were raised and organized according to how the course structure imposed patterns of meaning, and how the students and instructor perceived and generated their own patterns of meaning.

Spradley's (1980) guide served as a structure for identifying single semantic relationships. His guide is based on universal semantic relationships and includes the following relationships and forms:

<table>
<thead>
<tr>
<th>Relationship</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Strict inclusion</td>
<td>X is a kind of Y</td>
</tr>
<tr>
<td>2. Spatial</td>
<td>X is a place in Y</td>
</tr>
<tr>
<td></td>
<td>X is a part of Y</td>
</tr>
<tr>
<td>3. Cause-effect</td>
<td>X is a result of Y</td>
</tr>
<tr>
<td>4. Rationale</td>
<td>X is a reason for doing Y</td>
</tr>
<tr>
<td>5. Location for action</td>
<td>X is a place for doing Y</td>
</tr>
<tr>
<td>6. Function</td>
<td>X is used for Y</td>
</tr>
</tbody>
</table>
7. Means-ends  
   X is a way to do Y

8. Sequence  
   X is a step (stage) in Y

9. Attribution  
   X is an attribution (characteristic) of Y

A domain analysis worksheet was re-created from Spradley's (1980) guide (see Appendix K). While reading through the fieldnotes, interviews, reflective diaries, and written sample of participants' work, I identified 20 strict inclusions, 3 spatial, 11 cause-effect, 21 rationale, 6 location-for-action, 6 function, 11 means-ends, 3 sequence, and 4 attribution relationships. Further analysis would have no doubt revealed more, but this initial analysis stage lead the way for a multitude of insightful focused and selected observations.

Examples of the domain analysis strict inclusion include kinds of expectations for the course, kinds of problems in the computer lab, kinds of activities during class time, kinds of attitudes in the classroom, and kinds of groups of people in the computer lab.

Examples of spatial relationships include places in the computer lab and parts of the Amiga computer. Cause-effect relationships revealed include results of arriving to class late, improper disk care, loosing work, and the lack of understanding of fundamental concepts.

Rationale relationships encompass reasons for having critiques, not understanding articles or discussions, taking the course, getting mad, and not working very hard on assignments. Location for action relationships include places for instructor demonstrations, digitizing, checking out software manuals, and sitting and socializing. Uses for disks, computers, lights, software, open lab time, class time, and written synopsis were identified as function relationships.
Means-end relationships in this study revealed ways to learn the software, miss information presented by the instructor, ask questions, and help other students. Sequence relationships highlighted included steps in doing a studio activity, writing a synopsis of the reading assignments, and stages of a critique. And finally, the attribution relationships in domain analysis that were identified include attributes of the instructor, learning the software, and attitudes toward computers and computer art.

3.3.6 Focused Observations

Several areas of focus had been previously determined at the onset of the study, including students' perceptions of the goals, objectives, activities, and learning in this one computer art course. Subsequently the research began with a narrowed approach to grand tour observations.

Spradley (1980) recommends the following criteria for selecting an ethnographic focus: 1) personal interest, 2) suggestions by informants, 3) theoretical interest, 4) strategic ethnography, and 5) organizing domains (p. 107). The research sequence in this study followed his recommended criteria in a slightly informal approach. The approach relied on the preconceived research focus at first and progressed to focus on areas that just seemed interesting at the time. There were times during the observations when I was completely baffled by the students' abilities to learn in an environment that seemed so confusing. This lead to observations and interviews that sought information concerning how they managed to learn the necessary information and how they felt about that process.
3.3.7 Taxonomic Analysis

"Like a cultural domain, a taxonomy is a set of categories organized on the basis of a single semantic relationship. The major difference between the two is that a taxonomy shows more of the relationships among the things inside the cultural domain" (Spradley, 1980, p. 112). He recommends the following steps for taxonomic analysis: 1) select a domain for taxonomic analysis, 2) look for similarities based on the same semantic relationship, 3) look for additional included terms, 4) search for larger, more inclusive domains that might include as a subset the domain you are analyzing, 5) construct a tentative taxonomy, 6) make focused observations to check out your analysis, and 7) construct a completed taxonomy (Spradley, 1980).

The taxonomic analysis for this study began by my going through each domain and cross referencing included or cover terms among other domains that could be grouped by their semantic relationships or contents. Then continuing the process, I attempted to include more and more domains within a larger and larger structure. The analysis narrowed 75 domains to 14 larger domains or taxonomies of particular interest. These included 1) steps in activities within the class, 2) places in the computer lab, 3) parts of a computer workstation, 4) kinds of people in the computer lab, 5) problems in the computer lab, 6) kinds of assignments, 7) parts of the paint software used in the course, 8) kinds of information about the course, 9) kinds of feedback students get, 10) kinds of time in the lab, 11) effects of instructor’s attitudes, 12) kinds of previous computer experience, 13) what is learned during a critique, and 14) feelings about the class.
3.3.8 Selected Observations

The process of selected observations took place as a continuum of interest piqued during the study by actions and perceptions within the classroom and interviews. As the interviews revealed more about the students I found myself become increasingly intrigued about them and their thoughts.

It is useful to think of these kinds of observation as a funnel. The broad rim of the funnel consists of descriptive observations in which you want to catch everything that goes on. These are the foundation of all ethnographic research and will continue throughout your entire project. Moving down the mouth or rim, the funnel narrows sharply.... Selective observations represent the smallest focus through which you will make observations. They involve going to your social situation and looking for differences among specific cultural categories (Spradley, 1980, p. 128).

There were several times when I was so excited by a new insight into how the students felt about their learning process or the course that a new line of inquiry would take place. However, all interviews included each of the scripted questions. Many of these particularly informative interviews led to selected directions for final interview questions and observations.

For example, during my first formal interview with Patti I was struck by her open criticism of the instructor and the structure of the course. As we talked I was intrigued by her perspective as a slightly older returning student. I wondered how the other students viewed this same instructor. Would they be as critical or as demanding? This led to informal discussions concerning the structure of the course with the students, observations of their attitudes toward the instructor, and specific questions during the final interviews concerning his style of instruction.

Additional selected observations included the interaction of students trying to help each other learn information that was only briefly covered by the
instructor, and other methods employed for finding out information necessary to complete assignments.

3.3.9 Componential Analysis

"A componential analysis includes the entire process of searching for contrasts, sorting them out, grouping some together as dimensions of contrast, and entering all this information into a paradigm. It also involves verifying this information through participant observation or interviews" (Spradley, 1980, p. 133).

Spradley's model, as outlined in the design of the study section, was followed, and within the organization of domains two major areas were developed. The first domain encompassed the structure of the course, with subcategories such as its schedule, content, instructor, and space (see Appendix L). The second domain focused on the students, with subcategories for kinds, backgrounds, expectations, experiences, attitudes and feelings, strategies, and relationships (see Appendix M). This step was somewhat difficult to actualize at first, but once it began to formalize into categories and detailed branching subcategories, it brought all of the data together under a larger umbrella.

The completed paradigm (see Appendix N) revealed some unexpected similarities and a variety of contrasts. Domains were listed and, utilizing the binary values (yes or no), dimensions of contrast were charted. Domains that were charted include studio activities, written work, lecture/discussion, learning computer techniques, reading, and open lab time. Each of their subdomains were considered for such dimensions of contrast as merit grading, automatic credit on due date, watched passively, typed, tried new technique, used animation tools,
read article, expressed opinions, analyzed formal elements, broke into groups, and talked with instructor.

3.3.10 Discovering Cultural Themes

"Themes not only recur again and again throughout different parts of a culture, but they also connect different subsystems of a culture. They serve as a general semantic relationship among domains" (Spradley, 1980, p. 144). Spradley (1980) did not provide a step-by-step guide for discovering cultural theme in his text, Participant Observation, instead he presented a series of strategies that he shared from his own experiences. These include the following: a) immersion into the culture, b) make a componential analysis of cover terms for domains, c) search for a large domain that includes the cultural scene, d) search for similarities among dimensions of contrast, e) identify organizing domains, f) make a schematic diagram of the cultural scene, g) search for universal themes, and h) write a summary overview of the cultural scene (pp. 144-154).

As has been previously indicated this study was not a true ethnographic experience. The research borrows techniques from the social sciences. Since an entire culture was not studied, themes presented in this study were restricted to one particular social situation. Themes included things that students learned through reading and discussion, and things that they learned working on their own or from other students at the computers. Other themes within this classroom included perceptions students had of their instructor and the course, and perceptions of their experiences with technology in the arts.
3.3.11 Taking a Cultural Inventory

Spradley (1980) recommends taking a cultural inventory in preparation for writing an ethnography.

Before you begin the serious business of writing the ethnography, consider the value of taking a cultural inventory. By taking several hours to review all of your notes—condensed accounts, expanded accounts, journal, analysis and interpretation—and recording what you have collected, you will actually save time. It will help you see the cultural scene as a whole. It will identify gaps in your research that can be easily filled. And most of all, by taking a systematic inventory you will discover ways to organize your final paper (p. 155).

This advice from Spradley proved invaluable. After collecting, transcribing, reorganizing, and analyzing, I had become very familiar with the data. However, there were bits and pieces that had not been reviewed for several months. The overall review, while it took more than several hours, provided an opportunity to fit the puzzle together. I did discover some holes, some samples of assignments that required replacement, and some that were cleared up by some simple restructuring. However, the process overall was extremely motivational. The cultural inventory was a recurring process throughout the written account of this study.

3.3.12 Written Account of the Study

This dissertation represents the written account of this study. While an actual ethnography will not be written, Spradley's (1980) guide of recommendations for participant observation were incorporated. While these may seem obvious they have proved invaluable as a guide. Although the actual
writing process is undeniably more complicated, Spradley (1980) recommends the following steps for writing an ethnography:

a) Select an audience  
b) Select a thesis  
c) Make a list of topics and create an outline  
d) Write a rough draft of each section  
e) Revise the outline and create subheads  
f) Edit the rough draft  
g) Write the introduction and conclusion  
h) Reread your manuscript for examples  
i) Write the final draft

The actual written account of this study represents a blending of requirements like formatting and structure for a doctoral dissertation, and the personal insights, observations, and experiences of a participant observer.

3.4 Issues and Concerns

This study, while providing a clearer insight into students’ perceptions of their learning in an introductory computer art course, is limited in its generalizability for education. Much has been discovered about students, learning, and instruction. However, with each collection of students and instructors, the social situation of the classroom changes. From my own teaching experiences, many factors influence the dynamics of the classroom and the learning that takes place.

While this study could not be replicated with the exact same variables and results, it does reveal valuable insight into students, instructors, and computer graphics. It also contributes to the growing interest into case study descriptive research within the classroom as participant observers. The use of ethnographic research techniques proved to be an invaluable resource for data collection,
analysis, and the preparation of the written account. The study report includes sufficient descriptive information for comparative analysis with future studies.

The limited amount of actual participation as a student within the study was disappointing, but not surprising. The fast paced environment of the classroom and the availability of students for interviews limited the amount of hands-on experiences for the researcher. However, it was determined that getting the insight of others was more valuable and meaningful for understanding students’ perceptions of their learning, and thus participation as a student was not regarded as a high priority for this study. Participating as a teacher’s helper provided sufficient opportunities for gaining insight into students’ perceptions.
CHAPTER IV

THE SOCIAL STRUCTURE:
AN INTRODUCTORY COURSE IN
THE ROLE OF COMPUTERS IN THE VISUAL ARTS

Introduction

The course, *Art Education 252—Introduction to the Computer in the Visual Arts* served as the basis for structure within the social setting of the classroom for this study. Within this chapter the content of the course, its goals, purpose, objectives, and rationale are described. The activities, schedule, grading policies and procedures, and the style and strategies of instruction are reviewed. General descriptive information about the people within the social setting is provided. An overview of the room configuration, hardware, and software utilized within the setting concludes this chapter.

Descriptive information concerning the participants is provided in *Chapter Five—The Participants*. Perceptions and attitudes of the participants and instructor are presented in *Chapter Six—A Participatory Perspective Account of the Course*.

4.1 Content

The content of the course encompasses its goals and activities. These details remain constant from one class section to the next for this introductory course. The original goals and objectives of this course have remained consistent since its approval as a GEC visual arts requirement in 1989.
4.1.1 Goals

The goal for *Art Education 252* is to provide an introductory study of the role of computers in the visual arts. Students are given opportunities to explore the impact of technology on the artistic process and aesthetic discourse.

The purpose of the course is to introduce students to computing in the visual arts and the issues associated with technology in the arts and society. The class focuses on the changing relationships between art, artists, audience, and technology. Students are encouraged to develop their own philosophy and artistic expression through aesthetic discussions and criticism, readings, writings, and studio production. (*Art Education 252 Syllabus, Autumn, 1991*)

**Rationale**

As society becomes more computer intensive, visual artists and art educators need to be familiar with the implications of computer generated and assisted images, and interactive installations for the arts. Computers can enhance some of our traditional forms of artistic communication and provoke new forms of expression. In both respects technology causes us to question a number of concepts and beliefs we have about the arts. (*Art Education 252 Syllabus, Autumn, 1991*)

**Objectives**

According to the *Art Education 252, Autumn 1991* course syllabus, upon successful completion of the course, students will:

- understand how the computer influences the character of images made electronically. The influence of algorithmic forms, digital representation
and generic system features will be analyzed and related to aesthetic features of computer artwork.

-understand how the computer might influence and change our perception of traditional art forms. For instance students will digitize photographs and manipulate their elements and then discuss the sense of credibility usually accorded to photographs.

-understand some of the ways in which the computer is promoting the emergence of new art forms.

-investigate the possible need for new aesthetic and criteria resulting from the computer's influences on the visual arts. (p. 2)

4.1.2 Activities

The course features a unique combination of studio activities, readings, writings, and discussions focusing on issues of technology in the visual arts. Imagery is created using the interactive graphic software program, Electronic Arts Deluxe Paint III, on Commodore Amiga 2000 computers. Discussions center on the text, articles, student experiences learning computer graphics, and issues associated with computers in the arts.

Demonstrations

Demonstrations took place throughout the duration of the quarter. The instructor would show step-by-step techniques and procedures utilizing the interactive graphics software and the computer. He would generally ask the students to turn their attention to the larger television monitor, which displayed the contents of the screen from his computer. Normally he would explain what the feature was that he was going to demonstrate and then show a few steps of the technique at a time. He would often ask if there were questions and
periodically get up to answer a question or to check to see that everyone was able to try the technique at their computers.

His demonstrations were often disorganized and did not follow a logical order. Handouts were not utilized and the manual was rarely recommended as a reference. The instructor would often get flustered and the students often became frustrated. It was generally accepted by the students that they would have to figure out most of the techniques on their own. Often the students were not even watching or listening to the demonstrations. However, some picked up the concepts very quickly and were comfortable with the structure and pace of the demonstrations.

The demonstrations usually presented new information that would be either required or helpful for the current studio assignment. It was rare that students would ask the instructor to repeat a demonstration, or even a specific technique. However, there were two separate occasions when some of the students seemed to gang up on the instructor, complaining about what he had and had not previously shown them.

Demonstrations concerning hardware included the steps in turning on the computers and the lights, video camera, and an extra display monitor for digitizing. Digitizing is a process that enables a video camera to scan a subject and convert the imagery into a digital format for further manipulation on the computer. These demonstrations were not accompanied by handouts either and the room in which the video digitizing equipment was used was so small that only a handful of students could see the demonstrations at one time. As a result, the demonstrations took place in groups of four or five with each one receiving a different presentation on the methods for utilizing the equipment. Most students
were unable to come back in on their own and use the digitizing equipment after
the brief and disorganized demonstrations.

The instructor did review the demonstration, and helped students if they
requested it during the following class sessions or during his consulting hours in
open lab time. A few advanced students also helped the others in the following
class time or made arrangements to meet with students who needed help during
open lab time. One student, Rose, made arrangements with Mike, one of the
lab's student monitors, for tutoring sessions.

The predominate interactive graphics software package for the class was
the Deluxe Paint III program. However, during a review demonstration of the
video digitizing process the instructor also presented the software DigiView,
which controlled the scanning and digital conversion with the video camera, and
Pixmate, which is a complex image processing program.

The following example from the fieldnotes, recorded on the days of the
video digitizing process demonstrations, typifies the style and organization of the
demonstrations in this class.

Fieldnotes—October 14, 1991

Bob says that he wants to demonstrate the camera digitizer today.
He breaks the class up into three groups and takes one group at a time
into the back room to show how to turn on the camera, lights, and use a
new software program called DigiView to digitize the students' faces for
the next project, which is a self-portrait. While the group is in the back
room with Bob the other students work and talk quietly in the main room.
I go back to see what is happening with the camera digitizer
demonstrations. Bob is sitting at a computer in the back corner of the
room. There are partitions up which close off the rest of the room. There
are more computers and two desks behind the partition. One of the desks
is mine and the other is the lab system manager's. The area where Bob is
demonstrating is cramped with chairs and tables. One of the tables has a
copy stand holding a video camera, and another has a small color display
monitor. The partitions are old and colored in ugly shades of yellow and
green.
The students take turns sitting in front of the camera while Bob shows them the steps to follow to record, or digitize, their faces. His demonstration is unorganized and confusing. It seems as if he did not try to use the program before his demonstration. He did not know that there was an updated copy of the software. He fumbles around and finally figures out how to save the images onto the students' disks.

Then he sends the first group to the main room and asks the second group to come back for the demonstration. Most of the first group tries to load their images into the Deluxe Paint III program but a few stay in the back room to watch the demonstration again. After the second group watches their demonstration, all but one student and the last group (five students) leave. Sophia is a student from the second group and she has stayed to look at her image. She asks me for help.

After the last group views the demonstration and then digitizes each other, they all come out of the back room. The instructor seems surprised that all of the rest of the students have left. The last group stays for awhile to load their images and then leave shortly before the bell rings.

NOTE: I wonder how much the students were able to understand of the demonstration. I found it to be confusing. I had not used the digitizer for several months and did not remember many of the steps. I did not see anyone taking notes, nor was there a handout on the steps to follow. I am convinced that there are probably only a handful of students out of the last group that could come in on their own and use the camera digitizer after this demonstration. I think the instructor improved after the first two demonstrations, but his approach was still difficult to follow. The students appeared confused and apprehensive. Some joked, while others were relieved when he said he would go over it again during the next class.

Fieldnotes—October 17, 1991 (the next class session)

...There were many stages of image making going on at once in the classroom. Throughout the class time the instructor would show another software package or add a new comment of important information concerning the process. This tended to be confusing and caused some students some mild panic, but once they tried it they were usually OK. They seemed happy with the results and did not appear anxious about the quality of their work or their ability to remember how to do the digitizing process on their own later.

Some still seemed awkward using the computer. Simple concepts and commands from the previous project were either forgotten or confused with new information. A few students, such as Ed, with previous computer experience were very comfortable and were busy trying new things. In fact, Ed was busy incorporating new techniques that the instructor had not even demonstrated yet in class. Ed was referring to the manual for help.

I have only seen two or three students look at the manual. Patti says she can't understand it. She seems to enjoy the activities in the class
but is still uncertain or uncomfortable with her knowledge of the computer. This seems to be the theme for other classes she is taking as well...

NOTE: The instructor once again jumped from one part of his demonstration to another. He jumped in and out of three different software packages within a very brief time period without making it clear why you would need to use them. I was once again amazed that the students managed to figure things out after only a short period of mass confusion. I get the sense that they think that the information is just confusing in itself and do not hold the instructor as the cause.

Discussions

There were three types of instructor-led discussions within this course. The first involved general discourse about art, the art world, artists, and computer graphics. The second focused on the content and issues within the reading assignments, and the third type took place during class critiques of the students' studio work.

Initially the instructor was not leading discussions on the assigned readings. When I asked students about discussions during the first formal interviews, most said that there weren't any. Others confused the demonstrations and general lecturing that the instructor did with discussions. As an administrator, I was concerned about the lack of discussions taking place within the class but wanted to respond in such a way that would not jeopardize the integrity of the study. I was also intrigued by the unusual teaching style of the instructor. However, his students were not falling behind the other course sections and were learning the technical skills necessary for successful completion of the course. Therefore, it was determined that the only feedback that would take place regarding the teaching of this class session would be a request to include more discussions on the assigned articles.
I spoke with one of the faculty on my dissertation committee concerning the best approach to discussing this topic with the instructor. She suggested that I ask him to include more discussions, as a favor to me, so that I could ask them about discussions in my interviews.

The following example from the fieldnotes features the first attempt the instructor made in having an organized discussion in this course. This discussion took place during the eighth week of the quarter. There had already been four reading assignments due and discussion dates for them indicated on the course syllabus.

Fieldnotes—November 13, 1991

The instructor passes out the article and asks if there are questions about the assignment. Next he passes out the graded midterms, and the last synopses graded. He says that he was lenient on the test but that it has led him to believe that there is some confusion. Bob says that he is going to have an activity today.... For his planned activity Bob breaks the class up into three groups and gives them each a topic. 1) Why does art have lasting value? 2) What are the functions of Art?, and 3) What is the difference between fine art and other art?

He asks them to discuss it and for one person to write down and present it to the rest of the class. Once again the instructor mentions that he thinks the class needs help learning to talk about it before writing their term papers. The groups get together and begin talking, but Bob interrupts them to ask them when the next assignment is due.

I go up to two groups. In one group Sally talks and Sophia takes notes. Ming and Alex are quiet. Then Alex speaks briefly. The groups seem very comfortable together although somewhat apprehensive about what they record for their presentation to the class. Alex begins to talk more and Sophia continues to take notes.

In another group, Michelle, Patti, and Rose are all talking at the same time. Michelle attempts to write down and repeat what others in the group are saying, while Patti continues talking. It's a very animated group...

Bob brings together the individual groups and begins a discussion with the whole class. Most return to their computers.... NOTE: I did talk with Bob the other day and asked him to try to include a few discussions in the quarter as a favor to me for my study. I told him that I was interested in what students felt they were learning during discussions and would appreciate it if he could include some. He seemed surprised but agreed.
The preceding fieldnotes depict one of the few discussions on general art concepts during the ten week quarter. The students all talked within the small groups and many seemed very interested in participating and listening during the whole class discussion. Most students seemed to feel that what was considered fine arts was culturally based, open to interpretation, and based on past tradition. When discussing the functions of art, many felt that art represents values and ideas important to society and serves as visual communication. They listed several other functions including therapeutic, educational, and analysis of art through criticism. When discussing the value of art many agreed that it records history and trends in society, provides a different way of looking at things, and gives us new ideas for forms of expression.

The discussions about the articles were much more controlled by the instructor. The discussion about art was the only time he broke the class up into groups and had such a large participation from the class. In the beginning of the quarter he would attempt discussions by saying that he thought the article was lousy or that he disagreed with what the author was saying. This style of leading a discussion usually resulted in little or no comment from the class. However, as the quarter progressed he did attempt more structure in his discussions and requested more comments from the students. As previously presented from the November 18, 1991 fieldnotes in Chapter Three — The Research Methodology, the first attempt the instructor made at a structured discussion about an article was met with apathy, confusion, and resistance.

There was only one more article assigned and discussed after his first structured article discussion. Up until this point, the readings were all very
theoretical. The final article was more of a how-to approach to character animation. Patti and Ed tried not to dominate the discussion since they were asked to hold back during the previous one. Many students seemed to really like this article and seemed eager to discuss it and view some examples of computer animation that the instructor had brought to class on video tape. Since the responses were in general simply citing examples of what was in the article, most students seemed comfortable that they could just pluck the answer right from the article. This seemed to encourage them to talk more during the discussion. The article was also supplemented by viewing an animation created by the author. This approach seemed to also stimulate interest in the discussion.

The final type of class discussion involved critiques of the students’ studio assignments. The students would either bring their chairs up and sit toward the front of the room or remain at their computers in the darkened room to view each other’s images. The instructor would call one student at time up to the front computer to load his or her work and then he would ask the rest of the class to first describe and then interpret the images. Most students participated during the critiques, talking about what they saw in the images and sometimes what they felt they were about. The instructor liked to get into a variety of meanings for each work as if the images might be telling more than one story. The students liked revealing their insights and the time usually passed quickly. The student whose work was the subject of the discussions was usually not encouraged to talk until after the rest of the class had commented on the work.

When transcribing the critiques or referring back to the fieldnotes I became aware that the instructor had done a great deal of the talking during these discussions. His comments had tended to influence the classes’ perceptions of
the images. However, this had not seemed so evident or unusual during the
critiques themselves.

The following example from a recorded class critique typifies the
interaction between the instructor and students when discussing the students'
studio work.

Transcribed from video taped class critique—November 20, 1991

Bob: OK, Ed.
(It takes several minutes for Ed, who is off screen, to collect his disk and
arrive at the instructor's machine to show his image for the critique)

Bob: You know, if you save it on the sun all you have to do is just come up
and load it.

(Ed loads his image, turns off the menu and sits back in his seat with a
smile. His hands are folded on his lap and he looks up to the larger TV
screen to see his image.)

Bob: I'm sorry I was laughing because I was thinking about the last
assignment, the portrait. All right, so internal external and the
relationship between them. Anybody see some internal external?

Linda: Well first just the boxes look like they're, um, breaking through the
checkered space. How the background is blocked and coming at you.
And also the, um, the checkered board fabric or background, whatever,
itsle suggests, uh, depth because of the way the boxes get smaller
and bigger.

Bob: All right. Yeah. OK. So what kinds of relationships do we see going
on between the spaces? Anyone?

Bob: ... also there's a relationship, there's an element, well I'll try to see if I
can explain it. You see there's this shape going through an apparent
space behind the checkered board stuff and the relationship between
those colors and all the other colors was very strong. The colors,
there's a uniformity about texture, tone, and other things. And then,
there's that orange and green just crashing through visually. Just in
color saturation itself. And also, the vibration of the orange and green
so it's really upsetting the space and the foreground.... Then there's
that mysterious road kill on the right which generates its own space. A
space of a kind, almost a different way of looking at the world. A
different reality.

(Bob goes on to talk for several more minutes...it's as if he is so intrigued
by the image that he doesn't give time for anyone else to comment,
and then he questions the group.)

Bob: Does anybody have a sense of what's going on there, or what he's
trying to accomplish? .... (waits only a brief moment and then asks) Ed,
can you give us a clue?

Ed: Well I tried to get, um, kind of, um, a big difference between, um, what
you usually see as being external and what you usually see as being
internal.

(Ming shows her work next)

Bob: The first thing you need to do is, well does anybody see an internal
external relationship here?

Linda: Well it looks like you are looking through something, um...

Bob: That's good enough for me. Now we have internal-external what kind
of relationship do we see going on? Even if it's just formally. Even if no
sense of content.

Ed: It almost looks like magnification, also like the stuff that is internal is
being magnified and is actually like really small compared to the
external stuff. It's a lot more detailed in the internal, the intricacies of
the individual pieces.

(several other students comment and then Ming says that her image is
about the cold war.)

Ming: Actually it's the cold war, but it's hot, the cold war it's not dead yet.

The same group of students participated in discussing the images in all of
the critiques. If the images were unique, or if the students could not figure out
how they were created, then more time would be devoted to them for discussion.
There were a few occasions when the student that created a complicated image
would spend several minutes describing the process to the class.
Studio Projects

There were seven studio activities assigned throughout the quarter. Five were critiqued and handed in for course credit. The first assignment was a short in-class activity in which the students were given a descriptive reading and asked to work collaboratively in four different groups to create an image on each computer. The groups were defined according to the clusters of computers, with three to four students in each group. Each student would begin to draw at their computer to depict the reading. Then the instructor would tell them to move to the next computer in their group and they would get up and continue painting, but this time it would be based on the last student’s depiction of the reading. At the end, all of the students in a group had painted an image about the writing on each other’s computers. The atmosphere was light and talkative. The project seemed to be a way to get the students interacting with each other while learning the tools in the paint program.

The remaining projects were more structured. The students were to paint a still life, create a self-portrait, create a portrait of someone else, represent an internal and external space, and create a short animation. Each of these assignments are briefly described below and in more detail in the course handouts. (see Appendix I)

The still life project utilized the first tools the students were learning. There were two different still life collections set up in the room from which to choose. One depicted a woman’s night stand with a piece of lace, a lamp, some jewelry, and a book. The other contained several nursery toys, a teddy bear planter, and a balloon lamp. All but two students chose the nursery theme for their still life
compositions. The assignment encouraged students to experiment with the tools and incorporate their own style into the painting. They were not required to realistically depict the subject or include all of the objects within a given still life collection.

The next studio project was the self-portrait. Students learned the video digitizing process to capture an image of themselves and then incorporated the image into a self-portrait. The image was first created using the video camera, Amiga computer, and DigiView software. Then the students manipulated their captured image in the Deluxe Paint III software to visually communicate something about themselves. Students were encouraged to experiment with the scanning capability of the digitizer through movement of the lights, subject, and adjustments in camera settings.

The portrait assignment was similar in many ways to the self-portrait. However, the students were asked to portray another person without using their face as a visual icon. This project did not introduce any new technical information and allowed students to continue experimenting with digital scanning in the art making process. The subject had to be someone the student knew personally and they were encouraged to focus on one or two predominate themes that represented that person. They were discouraged from using Ohio State icons and other superficial representations of the subject's personality. The camera digitizer was usually positioned in its light table configuration for this project as students scanned various items and photographs that communicated the essence of their portrait subjects. However, the digitizing process was not required for this project.
A representation of internal and external space was the next studio activity in this course. The students were introduced to the perspective tools within the Deluxe Paint III program but were not required to utilize them within their compositions. Their goal was to investigate the concepts of space by depicting both an internal and external environment within one screen space. Students were encouraged to go beyond the traditional physical representations of indoors and out through an open window or door. As with all the assignments, the imagery did not have to be a realistic rendering of space.

The animation project was described in the syllabus as two activities. The first was an in-class project, studio activity six, which was not handed in for course credit. The second activity, studio activity seven, was to create a short animated sequence utilizing the animation tools in Deluxe Paint III and the traditional principles of animation. The students were encouraged to select a storyline or theme to communicate in a brief time segment. Since the playback rate of animation in video is 30 frames a second this project was much more labor intensive than earlier assignments. The students were given the option of either hand painting each frame of the animation and/or utilizing some of the automated animation features of the Deluxe Paint III program. There were no specific guidelines on the content, timing, or length of the animations. However, in general students were expected to complete at least two seconds (60 frames) of animation. Animations that were highly complex and with each fame hand painted were not expected to be as long as others created using the automated animation features with simplified forms and motion.

In this course section the instructor did not even mention the first part of the activity. Students were never assigned an in-class activity. In other sections
of this course, the students were assigned a bouncing ball or moving lines project. Instead, Bob had the students experiment and explore on their own in class and walked around to help them individually before starting the larger animated project.

Reading Assignments

There were three types of reading activities associated with this course, including articles assigned from the reading packet for the written synopses and discussions, the Deluxe Paint III software manual, and any additional outside readings necessary to write the term paper. There were also recommended readings in the article packet that provided either step-by-step hints for using the Deluxe Paint III software or additional resources for locating references for the term paper.

There were six articles assigned in this course for the students to read. They were to write a brief synopsis on each summarizing the content and their viewpoint on the issues identified in the articles. The readings (see Appendix H for the reading list) were primarily theoretical, with similar issues raised by various artists, aestheticians, and critics. However, each provided a different viewpoint on the issues and some were in direct conflict with the other assigned readings in the article packet. The students were encouraged to develop their own views on these issues and respond to the ones communicated in the assigned readings.

Sections of the Deluxe Paint III software manual were listed within the course syllabus as recommended reading. There were copies of the manual available in the lab for each student to read during class time or during open lab
time. With each demonstration of a new technique, a step-by-step tutorial in the manual was recommended. The manual provided additional helpful information and rationales for sequences of events in using the tools in the paint program. The instructor in this course section announced the first week of class that he hated the manual and never mentioned it again. There were only brief discussions of it among students who either said they had never read it or couldn’t understand it. Only one or two students with previous computer experience ever consulted the manual on a regular basis.

Outside readings for the term paper research were not required. Students could use the paper as an opportunity to consolidate all the information acquired in the article packet. Most students, however, revealed in the final formal interviews that they had done some outside reading for the research paper. Many students were very enthusiastic about the readings they discovered on their own. Several wanted to talk about what they had learned researching their term papers during our final interviews or informal discussions.

Written Assignments

There were three types of writing activities in this course. These included the brief synopses of the assigned articles, the midterm exam, and the term paper. A synopsis was written for each assigned article. As previously described, the students were to write a brief summary of the issues raised in the article and provide their own viewpoint on these issues. Typed responses were not required. Although all of synopses were not collected as part of this study, several students did provide them at the close of the quarter. The students’ individual methods for writing the synopses were the focus of several questions during the formal
interviews. These methodologies are described in further detail within Chapter Six—A Participatory Perspective Account of the Course. From the synopses that were provided and reviewed, many students wrote only very brief statements, one or two paragraphs, concerning these lengthy and complex articles.

The midterm exam was given on November 4, 1991. It entailed four essay questions and one brief bonus question and was based on the content of reading assignments, discussions, and studio experiences. The questions were, as follows:

1) Describe three issues associated with the computer as an art form and art movement as presented by Nancy Freedman in her article The Computer as an Art Tool and Art From: Issues and Considerations.

2) Cynthia Goodman, in her article The Digital Revolution: Art in the Computer Age, provides one view concerning the role of art galleries and museums in dampening the art communities' enthusiasm for digital media. Explain her views on the rationale behind many art galleries' resistance.

3) According to Arielle Emmet's article Computers and Fine Arts, Jeremy Gardiner believes that, "you can't create a movement around a medium, that's absurd, it doesn't work like that." State your opinion on this statement and provide support for your stance.

4) Explain the relationship between the lights, movement of the subject or camera, and the digitizing process and their impact on the images generated.

Bonus: How can you maintain the black and white palette in your digitized image and still paint over the image in color? (Art Education 252—Midterm Exam, Autumn, 1991).

The students were also required to write a five- to seven-page typed term paper analyzing an issue associated with technology in the arts. The students were given a choice of either selecting one the following three issues or one they identified on their own. The choice of paper topics included
1) The influence of computer graphics technology in society's perception of art forms
2) The need for new critical distinctions resulting from the use of computers in the visual arts
3) The computer's role in the emergence of new art forms
(Art Education 252, Course Syllabus, Autumn, 1991)

The students were expected to discuss examples and to draw on material from class discussions and readings. References were to be cited within the writing and a reference list was required.

4.2 Schedule

The class met twice a week for two hours in the ten and one half week quarter from September 25 through December 4, 1991. Then they met once more for two hours during finals week on December 12, 1991. Each Monday and Wednesday from 1:00 to 3:00 the students met with their instructor in the Amiga Lab. During this time they would either work and help each other at the computers, learn new techniques, discuss readings, critique each other's work, or hand in their assignments.

Most of the studio assignments were given a two week interval of time for completion. The reading assignments were compressed within the mid portion of the quarter with a synopsis due almost every week. The midterm examination was given on the first day of the seventh week of the quarter, November 4, 1991. The term paper was due on the second day of the tenth week, November 27, 1991.

Students were also expected to spend time outside of the scheduled class times to work on studio assignments. A detailed listing of the course schedule is contained within the course syllabus. (see Appendix G).
4.3 Grading

The studio activities for this course were not graded on a subjective scale. Students received full credit if they completed the assignments on time and presented them during the scheduled critiques. Images representing activities numbered two, three, four, and five were given six points when presented for the critiques. Studio activity number seven was given eight points when presented for the critique. Students were then given the opportunity to further enhance their images before handing them in for an additional two points each. Assignments numbered two, three, and four were handed in at midterm time and assignments numbered five and seven during finals week. The studio projects accounted for 42 points out of a total of 100 possible points for the course.

Each synopsis could receive up to three points each. With six synopses required for the course there was a possible 18 points that could be earned in these synopses assignments. The midterm exam and term paper were both worth 15 points each. According to the course syllabus, the written assignments were graded on a subjective level for their content, conciseness, and clarity.

The students did have the option of requesting extra credit in this course. Five extra credit points could be earned by creating an additional studio project. However, since most of the participants in this study were receiving extra credit points for their reflective diaries, one point for each for a total of five extra credit points, most did not request any extra credit studio points.

According to the syllabus, one point was demoted for each day beyond the due dates for assignments. However, this issue or any concerning the students' grades were never discussed with the instructor. Some grading information was
available from the written examples that the students provided at the conclusion of the quarter. Most were graded very leniently with only an occasional comment written on them by the instructor. Additional information concerning the evaluation and feedback of students' written work is presented in Chapter Six—A Participatory Perspective Account of the Course.

4.4 Instruction

The majority of students interviewed described the style of instruction in this course section as laid back and easy going. Although there was a great deal of information to convey and a schedule full of activities, the instructor was primarily seen as relaxed, approachable, and fair.

The instructor had five roles within the classroom: discussion leader, individual tutor, lecturer, demonstrator, and mentor. As a discussion leader the instructor would attempt to get the students to express their views on the arts, artists, and articles assigned. However, he often either failed to have discussions or spent most of the time talking himself. He was successful getting two or three students talking when he did lead a discussion, and had his most success the one time he divided the class up into small discussion groups. This instructor did not seem to be comfortable with silent pauses and often filled the gaps with his own verbiage.

As an individual tutor the instructor would walk around the room asking if there were any questions. Or the students would ask him for help when he was sitting at his computer in the front of the room. He often presented new material to students individually as they displayed an interest or need for the technique in their work. It was usually apparent when he felt that others might benefit by the
information he was giving individually. He would often raise his voice slightly and look at other students within the area to see if they were interested. During these individual tutorial help sessions the instructor provided both technical and aesthetic feedback to the students.

As described in the demonstration section of the course activities, the instructor would often demonstrate new information and tools at the computer located in the front of the room. His computer display could also be seen on the larger television monitor so students sitting further away could view it. The demonstrations for this course section were disorganized but slow in pace. The instructor did ask for questions and would repeat techniques if requested. The students were usually only half attentive, rarely taking notes, and often trying something different at their computers instead of what the instructor was demonstrating.

As lecturer, the instructor seemed more comfortable. He often turned his discussions and demonstrations into brief rambling lectures. Since they were not preplanned they were often jumbled, with the instructor stumbling around to remember names and dates. However, when the instructor did lecture, the students were more attentive and interested in his insights.

As a mentor, the instructor showed his own work as an artist incorporating technology into his image making processes. He showed slides of his own work, discussed his techniques, and spoke about his experiences learning and creating computer graphics. The students displayed a keen interest in his work and the recognition he had received as an artist. They referred to his work and awards favorably when asked about his knowledge about the course's subject matter.
As previously indicated, more detailed information concerning the students' perception of the instructor and instruction will be discussed in Chapter Six—A Participatory Perspective Account of the Course.

4.5 Space/Site

The class met in the Hopkins Hall Amiga Lab located at 352 Hopkins Hall. Hopkins Hall is located on the edge of The Ohio State University arts complex. The building is shared between the Departments of Art, Art Education, Art History, and Industrial Design. It is next door to the school of music and across the street from the highly acclaimed Wexner Center for the Arts. Hopkins Hall is somewhat drab and dirty. While each department has its own unique personality characterized within its occupied area, the building is generally a dusty place with the sounds of saws intermingled with lectures and lively discussions. The building is often filled with strong aromas from the woodshops, printing processes, ceramic firings, and oil painting vapors.

Perhaps the building is best known on campus for its ever evolving elevator. Over the years the students have informally competed to paint the inside of the elevator with a variety of political, social, and sexual depictions. On a somewhat regular basis, the building management paints over the students' work. This quickly prompts the students to respond with a newly painted display. As a result the walls are incomprehensibly thick with paint. The majority of auditory and olfactory artifacts of the building are contributed by the fine arts students who seem to delight in their roles as rebellious bohemians.

Located in the midst of this is the Amiga Lab. The room is located within a nest of Art Education classrooms. Just outside of the lab, art education students
regularly gather to socialize and smoke in a small sitting area in the hall. The area is usually littered with cigarette butts, food and drink debris, and campus newspapers. In addition to this, there is the occasional sleeping student slumped over in a chair that looks so uncomfortable that it seems incredible one could rest in such a spot.

*Kinds of People in the Amiga Lab*

Within the Amiga Lab there are five different types of people: the students, instructors, student monitors, systems manager, and curriculum supervisor. The majority of the students are usually enrolled in courses within the lab. Occasionally a student will come in that is seeking information about the courses or has attended classes in the past and would like to work on the computers again.

The students who are found in the lab are from a wide variety of campus colleges, departments, backgrounds, and experiences. Details about the students within this one course section, and the focus of this study, will be detailed in *Chapter Five — The Participants.* Generally the students are undergraduates and are working at the computers while they are in the space. They often talk to one another about the course, what they are working on, and helpful techniques that they have discovered. The atmosphere is generally supportive and noncompetitive.

The instructors in the lab are Graduate Teaching Associates (GTAs) from the Department of Art Education and are assigned to teach in the Amiga Lab. Each is required to be there for four hours a week during class meeting times as well as an additional four hours a week as instructor/consultants. During this
consulting time the instructor sits at the instructor computer in the front of the room and is available to assist any student attending courses in the lab. However, only one instructor teaches the 3-dimensional course and is knowledgeable about its software. As a result the students taking that course can only seek help from that instructor.

The four instructors are all seeking either a PhD or a Master's degree in Art Education and are specializing in technology in the arts. All of these instructors have taken or are currently taking courses and conducting research at the Advanced Computing Center for the Arts and Design. There they focus their attention on higher level three-dimensional computer graphics systems than what is found in the Amiga Lab. The instructors have a variety of teaching backgrounds, including teaching in the public schools and college level courses. They are provided with the syllabus and schedule for the courses but are solely responsible for the teaching within their assigned course sections.

The systems manager for the Amiga Lab is an individual who checks the computers daily, installs new software, reports problems to Academic Computing Services (ACS), and backs up the file server on magnetic tape. Since the lab is technically operated by ACS and rented by the Department of Art Education, the systems manager is required to seek approval for all changes and updates in the computer systems within the lab. The systems manager position is a Graduate Teaching Associate funded by both the Department of Art Education and the College of the Arts.

This individual was in the lab off and on during the scheduled class time for this study. He was an international student with a physics and computer science background. When he tried to help students he would often overwhelm
them with massive amounts of information concerning the hardware and software specifications involved in the tasks they were trying to accomplish. Since he did not have an art education background, this individual's responsibilities did not include any instructional responsibilities.

The curriculum supervisor for the Amiga Lab is a part time faculty position funded by the Department of Art Education. The position is a 75% appointment and includes the supervision of the systems manager and the GTAs. This person serves as a liaison between the Department of Art Education and the ACS. The curriculum supervisor schedules the class meeting times with the department and the hours the lab will be rented and open with ACS. The billing for the hours rented are forwarded to the Department of Art Education's Administrative Assistant. The curriculum supervisor also prepares the course syllabus for Art Education 252 and supervises the writing of other syllabi by Amiga Lab GTAs for the three-dimensional and animation classes.

During the course of this study, as the curriculum supervisor, I did not fulfill one of my duties for Art Education 252. I did not provide feedback to the instructor in this one course section concerning his teaching or students' feedback. However, I did continue to supervise the remaining GTAs.

The student monitors are undergraduate students funded by ACS. They are always present when the lab is open and are responsible for opening the lab, doing periodic inventory checks, counting the number of people in the lab every 30 minutes, signing out software manuals to students, turning on the computers, reporting any problems to the systems manager and ACS, cleaning, and closing the lab. There are usually five or six student monitors that work consistently in the Amiga Lab. However, since they are part of a larger pool of student monitors for
all of the ACS sites, there were times when someone different would be in the Amiga Lab, or the students usually assigned to work in the Amiga Lab would be at another site.

These student monitors are not required to know the software utilized in the courses or help students beyond getting the computers turned on and systems started. However, many of these student monitors listened attentively to the instructors during the classes while they were working. They seem to enjoy watching the demonstrations and the students working at the computers. Several have been either previously enrolled in *Art Education 252* or plan to sign up later. As a result, these student monitors are often actively involved in helping students in the lab. When other student monitors come in to work they often appear intimidated and awkward because they are not knowledgeable about Amiga computers or the software used in the lab.

*The Amiga Lab Space*

The Amiga Lab encompasses one large main classroom and a smaller back room. Within the main room there are 16 Commodore Amiga 2000 computers. Fifteen of these computers are arranged in small clusters or pods with three to four computers in each circular configuration. (see Appendix J—Map of Site). In what is considered to be the rear of the room, there is an entry doorway from the hall. There is also a desk for the student monitor to sit at, and a file cabinet containing software manuals, small spare parts for the computer workstations, and cleaning supplies. The student monitor’s desk also has a phone, a microcomputer connected to a modem for accessing other
computer systems on campus, and sign-up sheets for signing out manuals and
reserving time for using the digitizing camera.

The long and narrow room is somewhat dingy and institutional looking but
cleaner than many rooms within the building. The walls and floors appear old and
stained, but the environment stands in stark contrast to the dusty dirty conditions
of the hallway leading to its door. Students are not permitted to bring food or
drinks into the lab, so the usual stains and litter from fast food found in the hall
are not here.

In the front of the main room there is a computer workstation sitting on a
table and next to it is a tall cart with a television monitor on top. This is the
instructor’s spot for giving demonstrations. It has a device called a genlock, which
enables the instructor to display what is on his computer screen up on the
television monitor. The television monitor is a 20-in. Sony and below it is a 3/4-in.
video player and recorder deck. The instructor can play video tapes to display on
the Sony monitor or record the images from the computer monitor to 3/4-in. video
tape.

There is an empty table behind the instructor’s workstation. The instructors
usually spread out their notebooks, tapes, disks, and any other supplies on this
table. On the front wall is a large projector screen for displaying slides, a tall
rectangular window, and a chalk board. The window has a black shade, which is
often drawn to block out the glare of the light on the computers. The projector
screen remains pulled down at all times. There are very few things hanging on
the walls within the room. There are a few signs put up by ACS with rules for their
public computing sites. These rules usually address copyright laws, food and
drink restrictions, and notifications of machines that are out for repair.
As previously described, the tables are arranged in small pods with four tables creating a small circular configuration. The tables are approximately two and half by three feet with simulated wood grain tops. Each table has an institutional blue molded plastic chair and most have one computer workstation arranged on top.

At each of these 16 Amiga computer workstations is a central processing unit (CPU), which is the large case containing the computer boards and processors. Thirteen-inch RGB color monitors are connected to and sit on top of the CPUs. A keyboard and mouse is connected to each CPU. The keyboards are positioned in front of the units with the mice and their pads placed on either the left or right side of the keyboards. There is an occasional printer in the lab on the tables without computers. These printers are very rarely used because they are old black and white dot matrix printers. When the computers are all turned on and students are working on their projects, the color monitors are filled with vivid colors and simulated textures. The drabness of the room is less noticeable because the attention is almost always focused on the bright computer monitor displays.

When facing the front of the room there is a double door located three-quarters of the way up the wall on the right side. One side of this double door usually remains open because it leads into the back room where the camera digitizer is located. As one steps into this back room you are immediately confronted with a wall of old green and yellow room dividers that look like they are ready to fall over any minute. They divide the small long but narrow room lengthwise. The room is not quite the length of the main lab but is at least half of its width. Behind the room dividers are several desks, chairs, filing and storage
cabinets, and computers. The lab's main file server, a larger computer that all of the Amigas are connected to, is located behind the dividers. Students are not permitted to go behind the dividers because of the file server. This area is also considered to be private office space for the systems manager and curriculum supervisor.

The area for the digitizing camera, computer, lights, and monitor is about four by ten feet. There are three tables, two light stands, a filing cabinet, a coat stand, a studio stool, and three or four chairs jammed into this space. The Amiga computer workstation is located in the far rear of this area with a second monitor located on the table adjacent to it. Next to the extra monitor is a table with a copy stand and video camera mounted on it. There is a studio stool positioned a few feet in front of the camera. The configuration is such that a student sitting on the stool could either have a classmate sit at the computer and control the digitizing process, or the student could turn the camera to the side and control the scanning process himself or herself. As amazing as this may seem, there are sometimes six or seven people in this cramped space while the instructor is demonstrating the digitizing process.

At each of the computer workstations students can access a variety of software packages from the lab's file server. The file server is a Sun microcomputer that has a large hard disk for storing system software, graphics software programs, and images. There are four programs that are most commonly used within the lab: Deluxe Paint III, DigiView, Pixmate, and Sculpt-Animate III. There are also a wide variety of specialty purpose programs that are rarely used and are not included as part of the instruction in the lab.
Deluxe Paint III is a highly interactive user-friendly paint and animation program. It is the vehicle for expression within the Art Education 252 course. The program provides a limited but useful set of menus, paint brushes, tools, a color palette, animation, and special effects options. The program is diverse in its complexity because a beginner can sit down and quickly create an image. Or a more experienced or advanced computer artist can developed a highly sophisticated composition utilizing numerous layers, techniques, tools, and sources of input.

The Deluxe Paint III program is utilized in this course because the students can quickly learn the basics and then as the quarter progresses acquire more and more sophisticated skills. It also enables the class to proceed from still to animated imagery within the same program. Although a newer release of this program, Deluxe Paint IV was available, it was not incorporated into this course at the time of this study.

The DigiView program serves as an interface to the video camera and the computer. It provides an environment for controlling the digital scanning process. The program also allows the user to make some minor adjustments to the image once it has been scanned, such as the contrast, sharpness, and brightness parameters. The program stores the captured image in digital format and allows the students to save it on their disks. Then the students load these saved images into the Deluxe Paint III program for further painting and manipulation.

The Pixmate program is a highly complex image processing program. It has a much steeper learning curve than either Deluxe Paint III or DigiView. The program allows the user to input an image and manipulate it in a wide variety of ways. The user can adjust the color palette, the structure and shape of the pixels
displayed, and the file format, and composite it with other images. This program is not part of the Art Education course. However, some instructors do demonstrate it as an option for their students. The instructor in this course did give an extremely brief introduction to it that caused some mild panic in the class. However, once students realized that they did not have to use it, or tried it and realized that with some experimentation you could use it without understanding all of its functions, then they were no longer concerned.

4.6 Summary

The social structure for this study has been presented within this chapter as a means for understanding the perceptions of students experiencing the Art Education 252 course. The content of the course, schedule, grading, instruction, and environment have been reviewed to establish a foundation for inquiry. The overview depicts a course with a variety of activities and learning experiences. It also reveals an environment that is unique in its character and location. This is the background for understanding how students perceive these activities and conditions in their learning process.

This chapter provided an compilation overview of the course and environment from the participant observer and students' perspectives. Chapter Five will present the participants in this study in greater detail. Chapter Six will present a participatory perspective account of the course, environment, instruction, and learning.
CHAPTER V

THE PARTICIPANTS

Introduction

There were 13 undergraduate students participating in this study. Within this chapter general demographic data and detailed information concerning each of the students will be presented. A brief overview of the instructor is also provided to help clarify his interactions with the students.

5.1 Students

For review, there were six male and seven female students participating in this study. Eight of these students had previous computer experience. Twelve had some previous experiences in the visual arts. Two were art majors, four were art education majors, and two were seeking degrees in Photography and Cinema. The remaining five students were from the Departments of Business, Communications, and Electrical Engineering. There were six seniors, five juniors, one sophomore, and one student seeking Art Education certification beyond the Bachelor of Fine Arts (BFA). Five of these students began their undergraduate education at other universities and had transferred to OSU, and one had completed the BFA at another university.

At first the students all seemed basically the same. Most were in their early to mid 20s and their dress was typical for their age group and the college campus environment. Many were still struggling with the transition from young
students to adults. They were keenly aware of each other, often using flirtation as a means of socializing.

However, getting to know more about them revealed their unique backgrounds and perspectives that they brought to the classroom. In this next section, each student will be described. General information concerning their methods for selecting courses and their expectations for this course will be included.

The following information about the students was derived from the initial course survey forms, informal interviews, and formal interviews. When quotations are used, the student is being cited from a transcribed formal interview. A considerable amount of quoted material is included to insure accuracy in representing the perceptions of these students. When students say BERs, then they are referring to Basic Education Requirements. Before the undergraduate reform at OSU the GEC was called the BER. Many students still call them by the previous name.

Ray B.

Ray was a full-time business student who had had several college and high school level computer courses. He was very quiet and looked much younger than his junior status in his short blonde hair, big blue eyes, and thin frame. He usually wore blue jeans, a t-shirt or sweat shirt, and sometimes a ball cap on his head. He often sat in a back corner where no one else could see what was displayed on his computer. Although his listed major is business he planned to specialize in Computer Information Systems (CIS). He had taken a great deal of art in high school and one nonstudio art appreciation course at OSU.
Ray was very brief in his responses when asked a question. However, he was very cooperative and friendly. When talking informally he mentioned his friends several times and how much he liked computer graphics. However, he rarely spoke to any of his classmates and only participated a few times during the class critiques and discussions.

Although it was never discussed, he gave the impression that he was not employed and lived near campus. Ray took this course because he wanted to get more "hands-on" experience with computers and it fulfilled his GEC requirement for a visual arts course. He also thought that computer art was "really neat" and wanted to know how to "construct it".

When asked how he generally goes about selecting courses to fulfill his GEC requirements, Ray said it was whatever interested him the most.

"Just that, whatever I like. Cause I hate taking a class I'm not interested in ....just I can't get motivated to study for it and stuff. But, if it's a class I really like then I can study for it and think about it in the future and stuff like that."

To find out what courses were available to fulfill his requirements, Ray looks in the OSU course offerings book. He did not usually discuss it with his advisor. He found out about this course in much the same way.

"Well I was looking at the list of BERs and I wanted to take something in art and uh....I saw that, I just read it out of the book. It said computers and, uh....you know computer art. You know, so I decided to take it."

Ray completed four reflective diaries with very brief responses. He provided copies of studio work but no samples of his other writing assignments.
Brent E.

Brent was a transfer student. He started his freshman year at Urbana University and attended for one year. Then he took a year off and was currently living at home with his parents. A senior commuting to OSU, he was a communications major and had taken a wide variety of visual arts and engineering graphics courses. According to Brent,

"I have like some industrial design courses, photography, history of art... so I have some courses and background in art and stuff like that. So... to me this is just a class to tie the rest of my classes and so....this is what I like doing with commuters and art and stuff and so..."

He had had only one previous computer related course. His courses and college reflected a liberal arts approach to higher education. Brent said his schedule was packed with classes and he worked part time.

He often seemed a bit nervous and talked very fast. He usually wore jeans, a t-shirt with an unbuttoned shirt over it, and a bandanna on his head. He had short dark hair with and receding hair line, wide open dark eyes, and a medium build. When talking he had a tendency to use a great deal of slang and "you knows", and started sentences without finishing them. During one of our interviews he revealed that he had a learning disability that often made it difficult for him to comprehend lectures and reading materials. He said that he did best in classes where there was a great deal of hands-on demonstrations and experiences.

Brent rarely came into the lab during open hours. Most of his work was done during class time. His reflective diaries were brief and simplistic, often only one or two words in his responses. He rarely asked for help from the instructor and could have blended into the woodwork had the instructor not sought him out
from time to time. He only spoke one or two times during the quarter during the critiques or discussions.

Brent took this course because he wanted to learn more about computer graphics and art. During the quarter of this study, he was also taking courses in communications and biology. Brent said that when selecting his GEC courses he picked whatever was available. However, he referred to his LARs.

"OK. Liberal Arts Requirements. Which is different from the Basic Education Requirements. Cause I was planning on going into, uh, medical communications, which just requires you know, a social sciences, physical sciences, and humanities and plus, you know, your classes for your major. The liberal arts require you to have, you know, English, foreign language, math, the social, the physical, the humanities, and depending on whether you are bachelor of arts or bachelor of science you have more of one or the other. So, now since this is my fourth year, I'm taking my major classes and the classes that I missed to fill the extra requirements."

When asked to describe how he selected courses to fulfill his visual arts requirements Brent said,

"as they relate to like the courses that I have taken in the past. Like, the past few years I've taken a course in engineering graphics, you know, technical drawing, history of art class, something like that would correlate, like you know, what I had already done. So like, that there isn't a big gap between my courses. You know, just to take this one to fulfill requirements but relates to what I want to do when I get out of school."

Brent completed all five reflective diaries and provided copies of all six of his written synopses on the assigned readings.

*Sally G.*

Sally was another transfer student. She had been a fine arts student at Kent State University, but was currently an art education major at OSU. She had very little previous computer experience other than the system she used at the
library for her job. She was married and had taken several years off from college to do clerical work. She commuted to campus and, like Ray and Brent, was taking a full-time schedule of classes during this study.

Sally had a warm friendly appearance, a soft voice, and smiled frequently. With her short blond hair, medium sized frame, small round blue eyes, and large wide mouth, she was congenial and open. She was often brief but direct in her responses to questions about the course. She also wrote a very short term paper, saying that she "blew it off." She seemed a very practical person with her casual dress and straightforward comments. She usually wore denim pants, a cotton shirt or sweater, and sometimes eye glasses. Sally did not like to discuss art on a conceptual or theoretical level. She referred to much of the reading and discussion about computer art as an art form as "just a bunch of bull." She did participate in some of the class discussions and most critiques.

She took this course as an elective. She heard it was a lot of fun and thought she might need it as an art teacher.

"I'm in art education, so a bunch of people told me about this class and that I should really have this for my field experiences and stuff. That our schools might have computers. Not systems like this, but I thought it would be very helpful to have this background and knowledge at least a little bit. Cause what I think, what I've heard from my fellow student teachers and stuff, is that kids know more about them than you do."

Sally knew it would be time consuming but said that she "planned to learn a lot." At the time of this study she was taking a ceramics course and another art education course.

When asked how she selected courses to fulfill her GEC requirements, she said,
"Well I take all the ones that are on my little sheet, going down the list and then, um....Like this one and I'm taking like a ceramics now and everything. Those aren't required but, kinda like I said before, I thought they would be very useful in the classroom being an art teacher. And they were also recommended by my fellow students too."

She did not discuss her course selections with her advisor.

Sally provided five reflective diaries, her midterm exam and term paper, and four synopses of the assigned readings. She also provided copies of her studio work. She quickly finished two of the reflective diaries just before our final interview. Therefore, her responses were brief and did not reveal much about how she felt just after finishing those assignments.

Patti G.

Patti was around ten years older than the other students. She had a BFA with some advertising courses. She had also created and sold ceramic pieces on her own. Her only experience with computers had been with writing papers for school. Patti had been married but was in the process of a divorce during the time of this study. She had several children, commuted to campus, and was working part-time as a substitute teacher. She often came to class dressed as if she had been teaching that day. She had short blonde hair and small round eyes, like Sally, but she had a very different look. At times she would be laughing in a nervous or anxious manner, and at other times she had a very serious, almost sad, appearance. She was the only female student to wear dresses and skirts to class. She spoke openly and often about her divorce and the conflict it was causing in her life. Since most of the other students were younger and did not share similar experiences, she received very little encouragement from them to engage in these discussions.
Patti was seeking a K-12 certification in art education. She was often critical of higher education and the instructors she encountered. Actually, she was critical of almost everything. She rarely stopped talking and usually did not seem to care if anyone was really listening. Patti was always eager to share her perceptions and insights into the course and her experiences on the computer.

She seemed to want to share her divorce proceedings experiences with the instructor and may have considered him a peer. However, she openly challenged him on several occasions during the quarter and during our interviews she spoke quite critically of his teaching style.

Patti took this course because she wanted to "open up new doors in her life." She had been interested in computer art for ten years and this was her opportunity to learn about it. She was interested in it as an artist and for its use in art education. At the time of this study she was taking an aesthetics course and several art education classes. She found out about this class from the advertised flyers on the bulletin boards in Hopkins Hall.

Patti did not take this class to fulfill any requirements. She was not even aware that it did serve as a visual arts requirement.

"No, and I don't know if it would fulfill what I would think would be an arts requirement all the way across the board. I think more of an art appreciation course might, something that gets more into talking about different artists and has a more broader view that just this. As a basic education requirement, this wouldn't cover enough of the arts, in my sense of a curriculum idea. You know, if like, I wanted someone to have a good overall view of the arts, I wouldn't say that this was the class."

When talking about her other GEC courses, Patti said,

"Well, I'm not really an undergrad here so its kinda hard thing. I'm only here for certification. So, I had to fulfill the BERs that were on my list that I had not taken yet. Yeah, it was pretty much I took the easiest science I could take. Something that would interest me without having to get into Chemistry or
Biology. I don’t want to get into those. You know, that kinda thing.
Anthropology, somebody told me, well in the social sciences....somebody said
well take 202, it’s probably the best for art students. Because you get a wider
range of cultural things rather than getting too scientific."

She thought it was an advisor who gave her that suggestion.

Patti completed four reflective diaries. She provided her term paper and
one synopsis for inclusion in this study. Her responses in the diaries showed that
she had obviously thought seriously about the questions. During class
discussions, she and Ed often dominated the discourse. She almost always
contributed to the critiques and was rarely short on words for any occasion.

Rose H.

Rose was a fine arts major. At the time of this study, she was a junior
taking an art history course and a figure drawing class. She did not have any
computer experience before this course and enrolled to learn how they worked.
She hoped to go into commercial art and felt that computer experience would be
helpful. She delighted in her image as an art student and talked often of
“creating.” With her huge dark eyes, shoulder length black hair, and flirtatious
smile, she would often talk and seek the help of her male classmates. She
dressed with a bit more flair than some of the other students, and never referred
to having a job beyond her role as student. She usually wore dark colored slacks
with big and bright shirts. Although it was never directly indicated, it did not seem
that she lived in a campus dormitory. Nor did she give the impression that she
traveled far to campus, unlike some of her commuter classmates.

As with many of her classmates, Rose used a great deal of slang in her
speech. She tended to talk a bit slow and tried to portray an image of someone
that did not learn technical things very well. She already knew Mike, the ACS
student monitor and seemed to get to know a few of her classmates during the quarter. However, she rarely discussed anything personal except that she had brought her parents to the lab. She said they were impressed that she had learned to use the computer and might buy her one.

Rose was another transfer student. She said that she finished her GEC courses her sophomore year at Arizona State University and transferred here after two years. So, according to Rose, "everything I'm doing here really isn't BERs, it's what I want to do." When asked how she found out about this course she said,

"Well I wanted, uh, I wanted to take some type of computer class. And, I didn't want it to be the CIS 100, just the basic computer class. Because I am interested in art and computer because I'm a art major. And I just started looking through the booklet on classes. It was exactly what I wanted and I'm... I mean I'm just really happy with it."

Rose completed three reflective diaries. She provided her term paper and four synopses for inclusion in the study. She also made her studio work available on the file server. Rose's responses to the diary questions in the beginning seemed to be seriously considered, but rushed through toward the end. Rose did participate in several class discussions and actively participated in all the critiques. She seemed to really enjoy talking about the images created in the class.

Ben J.

Ben was majoring in photography and cinema (P&C) and planning to work in television production after graduation. At the time of this study he was taking two courses in P&C and one course in Swahili, in addition to the computer art class. He had a very busy schedule and hoped to graduate soon.
"I'm just taking 18, 20 (hours). I just want to get out 'cause I'm getting old. I took three years off of school and worked and decided that I wanted to go back to school. So now I'm 25. It's funny only one of my other friends stuck to school. Others just took a couple of years and went to work. I couldn't handle it. I went to school for a year and went home and thought well maybe I'll get a job and work. Forget this job, I'm going back to school."

Ben was very tall with medium brown hair and large blue eyes. He often took breaks out in the hall to smoke. He had a very gregarious personality and enjoyed saying funny things in front of the class. He often tried to say something humorous during critiques and tended to have a half-laugh or smile when he talked in interviews. He usually went into great detail when asked questions and often had a short story or anecdote included in his responses. He spoke frequently of family and friends.

Ben took this class because he wanted to "expand his hands-on creativity with a future art form." He had already taken at least one college level computer course and one studio experience class in art. When discussing how he selected courses to fulfill his general education curriculum he seemed to take a great deal of advice from his friends.

"My language was just to get it over that. Other than that, it was just stuff that interested me. Stuff that I was interested in. General interest in already something that I thought would be an interesting class to learn more about. But my language, it was just to get it over with. I took a course, I had four years in high school, then I took a Spanish class and almost failed out it. Because there is so much busy work. You know you have to go to the audio lab and listen to the tapes over and over again. You gotta sign in, the teacher got to see it to be sure and stuff. I got a couple um...I work, I'm the president of my fraternity, taking 18 credit hours, so I'm pretty busy. It's like I don't always have time to go to the audio lab and, um, do the things they want me to do. So, I'm taking a different language. I'm taking Swahili. I'll never use it in my entire life. (He laughs out loud) But, you know I took, uh, Geology because I like minerals and stuff like that. I'm sorta interested in gem stones and collect them. One of my Mom's friends is an importer. She imports diamonds and rubies and stuff like that. I can get them cheap so I'm going to start a
collection. I've already got a few. I want to try to collect gem stones. Mostly everything I took, I'm interested in...."

Ben found out about the computer art course from his advisor. He also said that one of the guys in his fraternity took it and said that he liked it a lot. Ben missed quite a few classes during the quarter and did not present his work for several critiques. He filled out all five reflective diaries and provided his term paper for inclusion in the study. His responses to the diaries were open but lacked thoughtful insight. His participation in discussions and critiques was often an effort to get a laugh, but he did make an effort to contribute if he was there.

Sophia K.

Sophia was an art education major with a junior status at the time of this study. She was taking a ceramics course and aesthetics course during this quarter. She was in the same aesthetics class as Patti and Ed. Sophia had changed her major a few times. At one time she was planning to go into medical illustration and then art therapy. Once, she said that she was going to be an art teacher. She had extensive course work in painting and drawing. She had also taken classes in engineering graphics and one computer course.

Sophia was a quiet but not necessarily shy person. She often expressed her insecurities and tended to cling to anyone that seemed in a position to offer help. She had shoulder length curly hair, a shiny face, and round eyes. Sophia usually wore pressed jeans or colored denim slacks and a simple blouse or sweater. She frequently cast her gaze downward and spoke at a very quick pace. She was often nervous and ill at ease. Sophia was a true perfectionist and often compared herself to others in the class. Family seemed to be very important to
her because she spoke several times about her sisters, father, and one time about all the great things her mom cooked for Thanksgiving.

She took this course because she thought it would help her become more familiar and at ease with computers. When asked about how this course related to her general education curriculum, Sophia discussed her indecision over her career plans.

"um...I'm planning to major in some kind of art field. What, I do not know yet. So, what I did is take this course...because at first I was majoring in medical illustration and then I decided to teach in art education or maybe art therapy. And, I thought, um, I heard a lot about this class from other, uh, and instructors, and uh. That it was a really good class to take and, uh, I heard that, uh, there was a lot of work, but it was worth it. Because, it did give, um, an excellent experience for the art world and it's just another type of art for me. Because, like I've been jumping from drawing to painting, to ceramics, and now I'm like into computer art. So, I'm just trying to broaden my experience."

When asked more directly how she selected her requirements for her general education curriculum, Sophia again did not mention any other courses other than her art interest. During interviews she often sought reassurance about her status in the course.

Sophia completed all five diaries. She also provided all six article synopses, her term paper, and samples of her studio work for inclusion in the study. Her responses in the diaries were clear and thoughtful. She usually tried to participate in the discussions, but there were times when she would be content working at her computer. Sophia always contributed to the class critiques in a positive and constructive manner.

It was interesting that in my early conversations with her, I asked her if she preferred to be called Sophia or Sophie. She said Sophia. However, after the quarter was over and I was talking to the instructor, I noticed that he referred to
her as Sophie. He said that she hated to be called Sophia, and that only her mother called her that.

*Michelle P.*

Michelle was a photography and cinema major with very little computer experience. At the time of this study she was a junior, taking a full-time load of courses, and working part-time on campus. She took this class because she wanted to be able to work with computers more creatively. She thought it was important for anyone in the visual arts field to be knowledgeable about as many aspects of art as possible.

Michelle's appearance was somewhat different than the other students in this class. She had medium length wavy hair that hung straight down in her face and a slightly larger build. Michelle usually wore jeans with a big flannel shirt. She had a ring pierced in her nose, and several rings in each ear. She spoke with a great deal of slang and kept to herself most of the time. When approached she was very friendly and open. During interviews she was somewhat shy and squirmy, but smiled often and made good eye contact when she spoke. She was open in bringing up personal matters, such as her boyfriend and her job in the College of the Arts communications area.

Michelle was also a transfer student. She had completed most of her requirements before attending OSU and stressed her visual arts courses when asked about her course selection process.

"Well this one I didn't really need. I took it because I, um, it looked really interesting to me. Which is a big thing. Because when I read the synopsis or when I talk to other people and they tell me about a course, then usually that helps me to choose it. I try to find a course that's more interesting you know. That's about it. Reading things, the synopsis on them and stuff...."
When asked specifically how she found out about this course she said,

"One of the girls who lived in my dorm a while ago, or like last year, she had taken it. And, she told me it was good so...."

When asked more directly about her previous computer experience she referred to the IBM her parents had at home.

"Like if I've had experience on computers it was very limited, you know it was typing a paper out and that helped a little bit. And I have a computer at home that I'll play with, but I really didn't know how to do much on it as far as, especially our paint program, or whatever."

Michelle did not participate a great deal in discussions or critiques. However she was almost always attentive and was often seen referring back and forth to her synopsis or the articles during the discussions. She completed all five reflective diaries. She also provided four synopses, her midterm exam, and the term paper, and she wanted to give samples of her studio assignments but had trouble with her disks on the last day of class. Her responses in her diaries were typical of the other students. They were brief and superficial at times, as if she had a hard time expressing her ideas in words. However, overall she openly communicated her thoughts and experiences associated with the studio projects.

*Alex P.*

Alex was a business major specializing in operations and production management. At the time of this study he was a senior taking two other courses in business. He was extremely quiet with a clean and crisp appearance. He was very articulate and, with his slow manner of speaking, seemed to give a great deal of thought to his carefully chosen words. He was tall and lean with dark
brown hair. He did not volunteer any personal information concerning his housing arrangements or job status.

Alex took this course as a visual arts requirement for the GEC. He hoped that the course would broaden his knowledge of the artistic uses of computers. He also expected to learn some of the operations associated with using the Amiga computer. He had a keen desire to learn as much as possible about different areas of computer usage. He had an interest in the arts and had taken one history of art course in college.

When discussing how he selected this class as a GEC requirement he said,

"Well, it is a BER for me. Um, so it is just a general class. But, I really didn't know what I was getting into when I got into the class, until I was actually in it. The details for selecting the class were kinda vague."

Alex had found this class listed on a curriculum sheet from the College of Business. But normally, he relied on recommendations.

"Well from friends that have had a class and enjoyed a specific teacher. But when, then I was trying to add the class I did talk to someone in the office which did suggest this class over another."

Apparently someone in the Department of Art Education office recommended this course section to Alex because of the instructor.

When asked more directly about how he went about selecting courses to fulfill his GEC, Alex stressed choosing classes that would interest him.

"If it's not interesting to me then I'm usually not happy in the class. And, in which case I try to avoid those types of classes. Uh. With this class, I saw that it involved computers, and I saw that I had fulfilled the prerequisite to get into the class. That was all the basis I really needed. Plus, it fulfilled one of my BERs."
Alex completed three diaries for this study. He also provided his term paper. However, due to a scheduling conflict, he did not participate in the final exit interview. His diaries were written in a very clear and thoughtful manner. He tended to consider the questions at a much deeper level than many of the visual arts students when discussing his creative process.

He rarely spoke during discussions or critiques. He did spend a fair amount of time helping an attractive female student who would ask him for assistance. He was very patient and helped her quickly and then returned to his own work. Alex was always attentive to the demonstrations and picked up the concepts quickly. The help he provided to his female classmate was usually requested because she had not been listening to the instructor. However, he never seemed to be annoyed by her interruptions.

*Ming S.*

Ming was an international transfer student majoring in prejournalism. Information concerning her is somewhat sketchy at times because she often had a great deal of trouble understanding questions in the reflective diaries and kept to herself during the class time. During the interviews she was extremely apprehensive about her ability to understand the questions. However, when she realized that the questions would be repeated and rephrased, and with a great deal of supportive patience, she was warm, friendly, and open in her responses.

Ming had studied commercial design in Taiwan for three years previous to transferring to OSU. She took the course because she wanted to learn more about computer graphics and felt it could "expand her concept of graphic art." She also thought it would be helpful for use in "advertising design."
Ming was petite with black hair and dark almond shaped eyes. She often cast her gaze downward and almost never spoke during class. Her images were often very different from those of other students and the class would spend a great deal of time discussing them during critiques. When she would tell the class what the image was actually about, it usually was completely different than what they had speculated.

When asked about how she selected the requirements for her GEC Ming said,

"I have a lot of transfer credits, so I don't have any of selection. Because, I ... some requirements I must take like history, American history, and political science. Yeah, I don't have many choice to take. But, this one is my choice."

She was taking this course as an elective.

Ming very rarely spoke to the instructor or anyone else. She asked for my help a few times but had such a hard time articulating the question she became very frustrated. She completed four diaries for this study. Her responses were brief but insightful because it gave a very clear view of her misunderstandings at times. For example, when asked in the diary about the relationship between the still life project and her goals, she said, "Still life, like other course, because life goes on." However, she understood much more than she did not, and her responses were thoughtful and clear.

Although shy, once engaged Ming was fun and open. She laughed easily and talked about her boyfriend and sister. However, this side was only seen during the one-on-one interviews away from everyone else. She did express some regret in coming to America to study. She felt that the language barrier was too much for her and made her life here very difficult. We scheduled her final exit interview early because she was going home to Korea for the holidays. Ming
provided a copy of her term paper and all of her synopses for inclusion in the study. She was not in class for the final critique.

**Ed S.**

Ed was an electrical engineering student and had a junior status at the time of this study. He was struggling with whether or not to stay in engineering or change over to a more creative art oriented major. Ed was very bright and friendly. He had short light brown hair and slender build, and he smiled most of the time. His dress was casual, usually jeans and a pull over shirt.

He seemed to delight in solving problems. With an extensive background in computers, but no formal art training, Ed hoped that this course would be a stepping stone to help him apply his computer skills in a more creative way. He thought the class might move him away from a strict engineering and computer science curriculum to possibly one in industrial design. Most of his previous art experiences were at the hobby level.

As previously mentioned, Ed was taking the aesthetics class with Patti and Sophia. It was Patti who told him about the computer art class she was taking and encouraged him to sign up. They talked a great deal in class and were often the only two students participating in discussions. Ed picked up the technical aspects of the course very quickly and often read ahead in the manual to learn new things. As a result, he was popular in the class, and students often gathered around his computer to ask him how he did his work. He was always eager to help others and seemed to delight in his status in the class.

During the quarter of this study, Ed was taking two courses in electrical engineering in addition to the aesthetics and computer art courses. He lived on
campus and did not work during the quarter. He said that he would not be on campus next quarter because he would be working full-time. Ed gave the impression that perhaps he paid his way by taking time off and working full-time and then returning to school. He was very focused on school when he attended.

When asked how this course related to his general education curriculum, Ed said that he did not have a visual arts requirement in the College of Engineering. "All I have is physics and chemistry, and that kind of stuff." He seemed frustrated by the limitations of the curriculum.

"Well, basically one thing I hope to get from this course is some of my confusion out of the way. Like right now, debating whether or not, how much creativity I want in my major, in my major and also in my job. Right now, I'm pursuing kinds of technical orientation degree, engineering. And, I've come to a point where I'm a little dissatisfied with the limit as I see it as the amount of creativity that's involved there. I want to know how to get more creativity into what I'm doing. And, since this course is a cross between art and computers, um.... The art which I'm like a little bit familiar with, just experimenting with, but I'm not like comfortable with doing, like getting an assignment and do this, and then developing it. But I'm very comfortable with computers. So for me, to just ease into the idea and start thinking actually in concrete terms about what I want to do....So, I'm basically using this as a free elective, unless of course I change my major."

Ed was a major informant in this study. He was always there for class, liked to discuss his work and process, and often stayed after class to work and talk. Although his computer skills were advanced for this course, he never attempted to show off his knowledge or challenge the instructor. He was often fascinated by the images other students were creating and enjoyed discussing them during the critiques.

When asked how he normally went about selecting and fulfilling courses for his GEC Ed said,
"Most of the ones that I am required are pretty much set in stone. Like, I have a list that says you have to take this course, and this course, and this course. Which I might be steering a little bit away from as I try to figure out what I really want to do. Um, in terms of my electives and stuff I try basically to pick something that deals with my interest, because I have a great variety of interest. So, I like pick a course that, uh, that deals with some aspect of my interest that I don't know a whole lot about. But I really don't know how much energy I want to put into that particular interest. For this particular class I just, um, had been using the computer for programming, programming the computer for the visual output and then a little bit of actual tools. But, most of the stuff I made the tools that I was using. It was different in that way from what we are doing now. And I heard from a friend of mine that she was taking this really cool class. And, uh she encouraged me to take it. And, it seemed to me that it would be beneficial for me to take to get involved in and see how I reacted."

Although Ed was open, warm, and friendly he did not reveal personal matters in his informal or formal interviews. He completed five reflective diaries in great detail. His responses were obviously seriously considered and he even made recommendations for different questions on the diaries. He contributed his term paper and six synopses for the study. He also made his studio work available on the lab's file server. Ed participated in both the first and second formal interviews. However, his second interview was not recorded on tape and therefore some of the detail was lost.

_Linda W._

Linda was an art education student seeking a K-12 teaching certificate. At the time of this study she was a senior taking a full load of courses in art education. She had only taken an introductory computer course in high school and hoped to learn the basics of computer graphics in this class. Linda took this class because she believed that computers would be part of the art curriculum in schools and she would need it for teaching. Her background course work was primarily in the fine arts and art education areas.
Linda was friendly and attractive. She smiled a great deal and talked often with her friends in the class. She knew several other art education students in this class section and another that was taking another section that this instructor was also teaching. Linda dressed in a neat and stylish manner. She often wore dark slacks, a blouse, and blazer. She had shoulder length blonde wavy hair, and big blue eyes, and she presented herself with an air of self-confidence. It was revealed during one of the critiques that she had an identical twin sister who also attends OSU and is a student in industrial design. When she talked she made direct eye contact and her face was filled with expression.

When asked how this course related to her GEC requirements, Linda said,

"I think it's with anything learning something new. It's hard, I'd compare it, like somebody said, to a foreign language. I mean you need to sit down and learn the basics or you can't even go anywhere. You have to learn, you know, like a communication or something, how you are going to get form here to there. So in that sense, I think it would be more like learning a language. When I walk in there I feel, 'Like God, I don't know what I'm going to do,' but you know.... Yeah, it's just something completely unfamiliar, so in a sense its different than a BER."

Linda selected her general education requirements in a very similar way to her fellow students.

"A lot of times just listening to what other people have taken and seeing if it sounds interesting. A lot of things that we have to have that I normally would not take. Like I'd take for one of my electives, I took a picture book class which I think I would use. So, just stuff that I know that I think is interesting, that I think that I could use. You know, I rarely take something just because I don't know anything about it and I just want to see what it is. Pretty much, talk to other people, see what it's about, and see if I'm interested in it."

Although she was generally friendly, Linda was not easy to get to know. She did not usually initiate conversation and did not share any personal information during informal or formal interviews. Although I saw her and often
spoke with her weekly for three months, when I said hello to her the following quarter and called her by name, she remarked that she couldn't believe that I remembered her. Linda completed four reflective diaries for this study. She often gave brief responses to questions regarding what she had learned. However, when discussing her own art work or process she went into greater detail when considering her responses.

Linda missed several classes toward the end of the quarter. During one class she spent the entire time out in the hall putting up a bulletin board for another course assignment. She missed the final interview because of a schedule conflict with a dental appointment. She left a note with the instructor saying that she needed to cancel with "that lady," She also indicated in the note that she understood that there would only be one interview for the study. Linda was the only student with that misunderstanding. She did not attend the final class critique.

James W.

James was a fine arts student with an emphasis in painting, drawing, and engineering graphics. At the time of this study, he was a junior taking two courses and working full time. Actually, he worked a 50-hour-a-week schedule starting at 5:00 am on weekdays and 8:00 am on Saturdays. He was often late to class and several times did not attend. He often looked a bit tired and did not socialize very much with the other students. James usually wore a baseball cap, a t-shirt with a flannel shirt or sweat shirt over it, jeans, and his eye glasses. He had short but somewhat messy brown hair and a goatee. His age was difficult to determine. He did not appear much older than the other students, but he did
seem to have more work experience than others in the class. And he was a little more serious in his attitude than others in this group.

James had taken several computer science courses and had previously created graphics on another computer system as part of a job he had several years ago. He had worked with a graphics company in Cleveland and had also done some free-lance graphics work. He was taking this class to learn different forms of computer animation. He had very few expectations concerning what he would get out of it when he first signed up.

It was interesting that when James agreed to be part of the study, he asked for reassurance that his data would be confidential. He said that many of the faculty in art were against his interest in engineering graphics, and he did not want anyone else to know. Since he was often late or not there at all, it was difficult to get to know James. He was a little defensive at times about his art work and the interactions he had experienced with the Department of Art faculty. He always participated in the critiques but did not have much to say during other class discussions. His comments during the critiques were often more critical than other students.

During interviews his responses were brief and direct. When asked about how this course related to his general education curriculum he said,

"It counts as a humanities credit. But, how it relates to me is that I'm in the fine arts program. And if Ohio State had a graphics program I would prefer to be in that instead. So, I have a concentration in engineering graphics which counts as one of the three areas that I have to have for a general fine arts degree."

He never indicated why he did not pursue a degree in graphic design through the Department of Industrial Design.
When asked how he selected courses to fulfill his general education curriculum requirements James said,

"Talking to other students that I know. Finding out which courses are good to take, which teachers are good."

When asked if he talked with his advisor, he responded,

"Yes. But a lot of times there's not as much input as you would like from your advisors. The advisors in the Art Department only want to deal with art classes. They don't want to talk about anything outside of the department. So the humanities, and basic education requirements you are on your own really."

To find out about courses outside of the humanities James took a similar approach.

"Through students usually. Of course, I started out in engineering, so I went through quite a bit of physics before I switched over to the art department. So, I have those already. Those were required at the time."

He found out about the computer art course from a friend who had taken it.

"The description that he gave sounded like a great class. And I would be able to learn a lot of stuff, a lot stuff I didn't know yet."

James completed four reflective diaries for this study. He responses were similar in their directness to his responses in conversation. However, he did provide insightful responses and seemed to consider each one carefully. He also provided one synopsis and examples of his studio work.

5.2 The instructor

The original plan for this study included only brief data on the instructor. However, as the weeks passed in the classroom, his role and influence became one focus of the study. This was due, in part, because of his teaching style and
reactions of the students. In this section a brief biographical description of him will be presented. In the next chapter, more specific information concerning his teaching philosophy, perceptions, and attitudes in the classroom will be included.

Bob was a PhD candidate in the Department of Art Education. As such, he had completed all of his course work and dissertation proposal and had passed his general examination. Information regarding his undergraduate degree and experiences were not acquired. However, he did have a background in photography prior to pursuing his Master's Degree. He received his Master of Arts in the Department of Art Education at OSU specializing in computer graphics. He began his PhD program, completed his course work, and then left to take a job at the Getty Institute in California for a year. Afterward, he taught computer graphics courses at the University of California for an additional year.

He returned to OSU in the fall of 1989 to complete his degree. He worked for a year as a Graduate Research Associate (GRA) at the Advanced Computing Center for the Arts and Design. Then, in the fall of 1990, he began teaching in the Amiga Lab as a GTA. As such, he maintained a full-time student status and taught four sections of Art Education 252 a year. Since the courses are not offered in the summer, he taught two sections during one of the quarters. At the time of this study he was teaching the Monday and Wednesday 3:00 - 5:00 and the Tuesday and Thursday 6:00 - 8:00 sections.

Bob was in his early 40s with wavy gray hair and a beard. He dressed very casually in jeans, sandals, and sweat shirts or sweaters. As previously indicated, he was usually described by his students as easy-going, laid-back, and fair. However, he was slightly more stressed than the students usually noticed, with sweat pouring down his forehead and his persistent pacing back and forth. He
often seemed disorganized and befuddled in his presentations. However, he loved talking about art and computer art and seemed to really enjoy critiques.

At the time of this study, Bob had just returned from a trip to Austria where he received a prestigious computer art grand prize award for one of his images. He had also recently received a grand prize award in Japan for his imagery. He was greatly moved by his trip to Austria and was busy writing grant proposals to return there for a research project. At the same time, he was preparing his own dissertation research study. He planned to do a descriptive case study of a Department of Art faculty and friend, learning to incorporate computers into his artistic process at The Ohio State University's Advanced Computing Center for the Arts and Design.

5.3 Summary

In this chapter the students and instructor have been described. In the case of the students, quotes from interviews have been included to gain a clearer understanding of their experiences, views, and style of speech. The students and instructor will be referred to in greater detail in the following chapter. When considering personal perspectives and attitudes it may be helpful to refer back to this chapter for an overview of that individual person.

Students' information concerning their full-time or part-time status, class rank, housing, majors, physical and personality attributes, computer and art experiences, expectations, and methods for selecting courses has been provided to gain a clearer understanding of the participants in this study. Seeking a better understanding of how students perceived course structure, activities, and their own learning for this study begins with an emphasis on individuals. The students
were real and fascinating people and their responses are reflections of their diverse backgrounds, experiences, and goals.

For the most part, the students did not want to discuss their general education curriculum. Often questions pertaining to this topic were rephrased and asked repeatedly. Most seemed to have a patchwork approach to selecting their GEC with very little thought of integration or applicability to their overall undergraduate education. Only 1 out of the 13 really seemed to see and seek a cohesive structure to his degree. The rest reported taking classes that were recommended by friends and that seemed interesting. Although it was not directly indicated, it was implied that the level of difficulty also had an influence on courses taken outside their major area of study.

Most of the students in the visual arts had difficulty discussing anything outside of their major. They tended to dwell on their creative aspirations in an idealistic fashion, as if all those other courses were just a distraction.

One thing that was particularly clear is that students who carry a full course load, work, and have a multitude of social commitments are much less focused on their individual courses than others. Some of these students appeared to be struggling to keep pace with the high demands of their full schedules. As a result, there seemed to be little time for reflecting on the whole undergraduate experience.
CHAPTER VI

A PARTICIPATORY PERSPECTIVE ACCOUNT

Introduction

In Chapter Four—The Social Structure, the underlying environmental framework for the experiences in this course were presented. Now these experiences will be explored in more detail from the participant's perspective. The information presented is a compilation of informal and formal interviews, experiences as a participant observer, writings of students in the reflective diaries, and the transcriptions from recorded class sessions. As with the previous chapter, a significant amount of quoted material is included to insure accuracy and aid in the validity of data analyses for this study. The information concerning the views of the instructor is the result of informal and formal interviews, as well as fieldnotes of comments he made during class sessions.

Data concerning the students' perspectives will be provided in three sections. The first will explore the perceptions of experiences in the development of strategies for activities and getting information in the course. The second section will examine individual and student interaction experiences in the course. It will also include a description of time spent in the lab during class and open lab, and the different kinds of relationships established in the class. The final section will reveal students' attitudes toward the course, including individual learning and work, the instructor, and other students in the course.
The teaching philosophy of the instructor will conclude this chapter. Within this section the instructor's views on his role, grading policies, structure of the course, students, and the environment are presented.

6.1 Students' Perspectives

Several of the students in this study reported that they first learned of this course from a friend or advisor. Most said that it was this type of preliminary information about the course that influenced their decision to sign up for it. However, it seemed very little specific information concerning the course was included in their friend's or advisor's descriptions of Art Education 252. From the fifth week through eight week of the quarter, the participants in this study were asked how they would describe this course to a friend. In their responses, the students tended to stress their feelings about the course or the technical skills they had acquired.

Students were inclined to list basic computer skills or strategies only after they were encouraged to give more specific information about the course. None of them described the discussions or the reading and writing assignments. When discussing the studio aspects of the course, most students did not say anything descriptive about the assignments.

When Linda was asked to describe this course, she said,

"It's about just learning to use the computer, just basic steps but that's frustrating I think. I would recommend it though, just to get familiar with it....I think it depends on the teacher though. If they explained it a lot it would be different."
Ming also stressed the computer in her reply. She said,

"First I would tell them that it is very interesting class. Because, you will learn to use computer, using the computer to graph. And, uh, it's very easy and, uh, no final. And the whole work is pretty easy."

Alex and Ray, two business students, were among only a few of the students to stress the art or image making aspect of the course. Alex said,

"It's just an art class on computers. I would probably tell them that we use a paint program on the computer. Just put pictures on the computer basically.... I don't know it's a pretty interesting course. I don't know its kinda hard to describe because I haven't had a course quite like it."

The visual arts students described the tools. Sally said,

"I probably would say it's this really neat class with computers and you get to play around. I guess I would call it a graphics class with computers. It's a really neat system with tons of colors to use. Um, you can do absolutely anything with it. It has all kinds of brushes you can program in like spray painting, thin line, thick line, just all sorts of things."

Sally's comment also typifies the way in which students created their own names for the tools in the Deluxe Paint III program and other processes learned in the course. Since the instructor did not provide handouts and rarely referred to tools in a consistent naming pattern, the students were often on their own to invent names to describe their activities.

Patti was one of the few students to consider the unique character of the course. She said,

"It's like experiencing a new frontier in media... A new way of approaching drawing or painting or the idea of image making."

Patti was also one of the only students to summarize the general atmosphere of the classroom when asked to describe the course.

"Well I think it's a good group of people. Everybody seems to share and help each other out, if you ask. Everyone seems to be willing to give
information back and forth. It's not like very competitive the way other art classes tend to get very competitive. Like, don't copy the way I do this, I don't get that sense. It's like oh I know how to do this and I'll help you. That kinda thing. Bob, he's all right. The teacher seems to....he understands the essences of what's going on, I think. Like he says a lot of the software is relatively new. So, he kinda plays along, plays with it too. And that's good to see how it doesn't make you feel too intimidated."

Almost all of the students said that they really enjoyed the class and either have already or were planning to recommend it to a friend. When James was asked to describe this course at the end of the quarter, he said,

"It was an introductory course in computer graphics that went through several stages leading up to animation as the final project. And that it was a lot of fun and that I would do it again, if I could."

Students tended to vacillate about the difficulty of the course. Many said it was frustrating and hard much of the time, and then said that it was an easy course. Their perceptions and attitudes changed throughout the quarter. How they felt about the course often depended on what they were working on and whether they had just started it, or were enjoying the recent completion of an assignment.

6.1.1 Perceptions of Experiences and Developing Strategies

Students developed a variety of methods for achieving the required activities for this course. Many of the experiences were new and as a result the strategies for completing the assignments or participating in the course were changing as the students became more familiar and confident. Within this section, the students’ perceptions of their processes for participating in the activities of the course will be presented. These activities will include creating the studio projects, writing the synopses, participating in critiques and discussions, preparing for and taking the midterm, and writing the term paper.
Reasons behind the amount of effort put forth in doing assignments and the amount of talking during critiques and discussions will also be explored. The methods by which students get vital information for completing assignments and participating the course will also be presented. Reasons for missing information presented in the course will also be addressed.

Activities in the Course—Strategies and Perceptions

As previously described there were five studio projects and critiques, six article synopses, a midterm exam, and a term paper assigned in this course. Students also received course credit for class participation. During informal and formal interviews students were asked to describe their sequences for many of these activities. The following information represents their responses and observations.

Studio Projects

As described in Chapter Four—The Social Structure, there were five studio projects handed in for course credit. For review, these projects included a still life composition, a self-portrait, a portrait of someone else, a representation of internal and external space, and a short animation. The studio projects accounted for 42% of the points that could be earned in the course. Students were observed and assisted in completing the studio assignments throughout the quarter. During the first formal interviews, which took place during the fifth through eight weeks of the quarter, they were asked to describe their sequence, or step-by-step process, for completing the studio projects. Many spoke of the
difficulty of coming up with ideas and incorporating their ideas into the computer program.

As previously indicated, some students tended to stress the technical or basic computer skills associated with this course when they described it. These students were usually the ones that had the hardest time formulating ideas for the projects. For the most part, they were the students who reported the purpose of the assignments in terms of computer skills acquired.

Students that focused on the overall theme or concept to be communicated in the imagery tended to generate ideas sooner and had less difficulty creating their imagery. However, in the beginning all students needed to focus on the technical aspects to gain an understanding of what they could do to communicate their ideas. When Patti discussed her process for creating the self-portrait she said,

"Well I thought i didn't know enough about the software and computer in terms of what it could do. And, so I did kinda walk around the classroom to see what other people were doing until, so I could get some ideas. And I noticed that one person was flipping the image around. So, I asked, you know, show me how to do that. And from there I would go home and think on it, sleep on it type of thing....I do that a lot with my regular art work too. I get it all in my mind. It's all in my mind, I don't do a lot of actual hands-on stuff. It all goes on mentally, and then when I have a complete finished picture in my mind then I can do it, it's done. So with the computer, cause I don't know all the little different things you can use, I don't have the tools yet. But with the tools that I did have I said, OK, I can do this and then add this. And I kinda got an idea in my head and just came back and produced it."

However, most students spent their time generating ideas by experimenting at the computer and discovering how they could incorporate their discoveries into the projects. Ed liked to incorporate as many different techniques into one image as possible. He describes his process for creating the portrait of someone else:
"Well, I think I do mine, perhaps a little differently than most people do theirs. What I'm looking at is I might get an idea about that but most of the time I'm in general using as many capabilities of the computer as I can. I want to like, like OK, the one I'm working on now. I have a mask, and I didn't want to actually digitize the mask, because she digitized the mask and it before, and it wouldn't work. So I knew there were difficulties that way. So I was doing, I was trying to use...uh whatever aspect of the program I could to, um, make the form of the mask...I was approaching the general form I wanted from all kinds of directions. When I got a certain idea from that I started developing that. But I guess what I emphasize when doing my things is just experimenting with what the computer can do, not limited myself in any way."

Ed's methodology was not that different from other students. However, since his computer skills were somewhat more advanced and he took such delight in solving problems, he tended to explore the capabilities of the computer at a more complex level.

Ed also had an initial vision of what his images will look like before starting. However, like all of the students in the beginning of the quarter, these ideas were either radically changed or abandoned once they tried to accomplish them on the computer. This method would be similar in any situation where an individual previsualizes a project before understanding the external limitations and skills required to actually produce the final product. The students in this course followed a relatively consistent set of individual patterns for each studio project. As their skills developed and they had a better understanding of what could realistically be accomplished, their imagery and methodology became more complex. The students also described their experiences producing the images as becoming less stressful as the quarter progressed.

It was interesting to hear students like Sophia describe changes in their attitudes. She said,
"I was more relaxed after using the computer a few times, 'cause I went back and used different things and I remembered other, um, some other tools that I was using....I spent more time on my first one and the last one. Especially, I spent more time on the computer and coming in and working on it. But, my other projects in the middle, like the self-portrait and portrait, that wasn't as hard. I don't know if it's the way I approached the project or whatever, but those I was really relaxed."

Her response is similar to many students in the course. The first and final projects were the most time consuming and perceived as the most difficult. However, her description is also a good example of a radical conflict between how she reported her experiences and how they were perceived through participant observation and by the instructor. Sophia never appeared relaxed in the class or comfortable using the computer.

Conflicts in perceptions between students, the instructor, and participant observer were numerous. These conflicts will be described throughout this chapter and ideas generated regarding their origin. In this particular case, Sophia reported that she was more relaxed because she knew she could get help when she needed it. In contrast, her constant asking for help and reassurance was interpreted by others as indicators of being highly anxious and insecure.

When discussing the amount of effort exerted for the studio projects, most students did not acknowledge the grading policy. However, several did refer to the expectations of the instructor, responses from students in the critiques, and the amount of work they had in other courses as contributing to the time and effort they spent working on their projects for this course. Ming reported that the amount of work she puts in has nothing to do with the grade. "I work hard for myself," she said.

When Ben talked about the influence of the instructor's expectations on his studio projects, he said,
"Well in the beginning he was, you know like, when basically we were trying to learn how the computer works. Now, he expects more out of you. He doesn't expect some lousy, you know, thing. Granted in the beginning I did some lousy pieces. But he like expects more out of you. And you expect more out of yourself because you know how to work the computers and what it will do for you."

Ben felt that the instructor pushed students to do better but was not hard on them if they didn't work harder.

Sophia would have preferred a more subjective grading structure and more feedback from the instructor.

"I guess when my instructor grades he says all we have to do is basically get the work in on time. And it seems like whatever you produce is OK with him. Where it seems, I don't know if I really like this or not. Maybe if he would have said or gave us some kind of critique on our work that would be able to produce better work. If we would have gotten lower grades on our work, then at least we would have known that we earned those grades because he was a hard grader. And then we would have thought, well since he's grading us so hard he must be trying to push us to do better. Or, whereas because he's like I said, he's laid back, I just kinda like did the projects and some of them it was like well if I get this project done then I'll get the grade because I did it. I didn't feel like I was pushed to do better."

Sally and Patti both talked about the priority they gave this class compared to others. Sally said,

"This is kinda bad, but I think I got worse as the quarter went along. At first I was really concerned about putting a lot into it and everything. But to be honest, I don't think that Bob, he didn't seem to portray to the class that he was expecting a lot. And I had a lot of other courses so I think I got a little lazier as time went on. Which is too bad because I think I would have enjoyed it putting more time in my projects. But I started out really thinking out my projects and experimenting and playing with the program and everything. And as time went on, I just got done what I could and handed it in."

In their final interviews, all of the students said that their general strategy for doing studio assignments had not changed. Most seemed to forget the difficulty they reported in the first interviews. Many did not recognize their
increasing interaction with other students in the development of ideas and the acquisition of skills as a change in strategy. Students took many things for granted and did not reflect on their influence in their learning or studio production.

The students' strategies for completing the studio assignments are interdependent on a combination of skills acquired, access to information, technical and aesthetic feedback, hardware and software reliability, and examples of other students' work. Therefore, changes in strategies will be included throughout the chapter as they relate to individual experiences, attitudes, and relationships.

**Synopses**

As previously described, the students were required to write brief summaries of the assigned articles and include their opinion on the issues raised by the authors. These synopses could be handwritten and each one was worth three points in the course. Examples of these synopses were not part of the original data acquisition strategy for this study. However, several were provided by students at the conclusion of the quarter.

When preparing to write the article synopses, all students reported that they first read through the articles and either highlighted key points or wrote brief notes in the margins. Then they would either begin their summary or reread the article. When writing the summaries, most would refer back to the items that they had highlighted as the most important. They would write a summary for each of the most important points and then include their reactions.

Most students reported a change in their approach to writing these synopses as the quarter progressed. Many attributed these changes to discovery of a faster method, or to feedback that they received from the instructor.
However, none of the students acknowledged any change in their responses as a result of their increasing knowledge base about the issues and experiences associated with computers in the visual arts.

Ray reported that he started out by reading through the article and highlighting important points. However, he said that he found out that it was better to "go through it and write down my comments as I read it." Like all of the other students, Ray did not read the articles more than twice when preparing a synopsis. Most students did not rewrite a synopsis beyond the first draft either. According to Ray,

"I usually write it once. If he, I mean he doesn't really grade them that hard and stuff. I mean, so...if he really graded it hard I would probably like type it out, or you know make some drafts. But I just, you know, jot down some ideas of what I think."

Ben also adjusted his approach as a result of the instructor's expectations. He said,

"The first one I wrote a page and a half, and he wrote 'too long.' You know he thought it was good but that I didn't have to write that much. 'Cause I went all the way through the article and every paragraph I wrote something about."

Most students reported that they felt the reading was not difficult. Yet when the instructor tried to have a discussion about one article, the majority reported that they could not understand it. In addition, many viewed any article over two years old as irrelevant. And a few of the visual arts students felt that it was a waste of time writing and talking about whether or not the computer was a tool for creating art, or whether work created with computers was art. The students taking the course from outside the College of the Arts approached the articles in a more analytical style and reported that they really enjoyed learning about the different viewpoints presented.
The students stressed the level of difficulty in the articles, the expectations of the instructor, and the development of time-saving strategies as predominant reasons for adjusting their approaches to writing the synopses. However, the lack of feedback by the instructor may have been another contributing factor. Out of 35 synopses provided by the students, only a handful had any comments from the instructor concerning what the students had written. None of them had any grammatical corrections, and almost all of them had either "good" or "OK" written at the bottom. And finally, all of them received the full three points in the grading.

Since all of the synopses were not collected, there may be examples that include more responses from the instructor. However, the students tended to view the instructor as lenient in grading and this seemed to affect the approach students took when writing synopses. In the examples collected, almost all of them become shorter as the quarter progressed.

*Discussions*

Although most students reported in the fifth through eight weeks that there were no discussions for the first two or three articles, when reviewing the fieldnotes for this study, it was found that the instructor did attempt to have several discussions. However, he quickly gave up when only a few students participated. Patti commented that it was as if the instructor did not really want to have the discussions and if he brought the article up at all then he had fulfilled that requirement. When asked at the conclusion of the quarter, many students reported that they participated in many of the discussions. However, when reviewing the fieldnotes and transcribed tapes, it was usually only three to four students that consistently participated in the discussions. Some never said
anything during class discussions. There were a few students that seemed to confuse the class discussions with the critiques or instructor's demonstrations. This confusion existed even during the formal interviews when they were specifically requested to respond to the relationship between the readings and discussions on the assigned articles.

The students all considered reading and writing the article synopses as preparation for the discussions. Most did not read the articles again before the discussions. Although some were seen referring to their synopses during the discussions, they did not refer to this action when talking about them. Almost all of the students felt that the reason the class discussed the articles was to get other viewpoints. All of them stressed how important it was to hear what other people thought about the readings. However, they did not stress any importance of expressing their own views.

When students were asked what influenced the amount of talking that they did during discussions many responded that it depended on how they felt that day. Michelle said that she was often well-prepared, but if she did not feel like talking that day then she would not participate. Brent said that it depended on whether or not he understood the article. This was an interesting response, because he also reported that the class was easy, but the only discussion he participated in was one in which he told the instructor that he did not understand the article. Patti and Ed did most of the talking. Patti said that she felt it was unfair that she participated while everyone else took the time to work on their studio projects. And Ming expressed a fear of speaking in front of the class because she was a foreign student, and she did not want to raise her voice loud enough for the whole class to hear.
Most students did not see any relationship between the studio projects and the discussions. The few students that did report a strong relationship usually confused the instructor’s demonstrations as discussions. The majority of the students did see some relevance to the discussions and learning about the role of computers in the arts. Most felt that they should spend most of their time working on the computer to do their studio projects. However, a few did express an interest in hearing more about the instructor’s views on computer art and would have liked to have seen more examples of art work created with computers.

When asked about what happens in a typical class, the students responded by describing the instructor taking attendance, showing them new techniques on the computer, and having critiques when projects were due. When discussions were described, the students would simply say that they talked about the articles. A few said that the instructor asked questions about the articles and they gave different views about the readings. The students did not seem to be aware of any discussion techniques employed in the course, and they had the misconception that most students participated.

Understanding how their misconceptions happened might also explain why they were not aware of the discussion format. In the fieldnotes it was repeatedly recorded that the majority of the students were working at their computers during discussions. It was often the case that the instructor would be talking directly to two or three students and the rest of the class would not even seem to be aware that a discussion was taking place. As previously reported, there was one incident in which the instructor became agitated about this
situation and threatened that he would turn off all of the computers. This was one of the few discussions in which the majority of students did attempt to participate.

**Critiques**

There were five critiques during the quarter. Students could not receive full credit for their studio projects unless they had participated in the critiques. Participating in the critiques meant showing their own work to the class and discussing other students’ work when presented. As described in *Chapter Four—The Social Structure*, each student would display his or her work on the computer in the front of the room and the rest of the class would describe and interpret the meaning of the image. Except for one student, the class rarely provided any negative feedback. It was often the case that students would say that they liked an image and would talk about why.

Students participated in describing and interpreting the works in the critiques more than they did in discussing the assigned readings. In the last two entries in their reflective diaries, students were asked how they felt about the responses they received during the critiques. Sally described the critiques with reference to the art education courses she had taken. She wrote,

"Bob always seems to find something 'deep' which makes it interesting. After taking some classes with Dr. Lankford and Dr. Barret on criticism, I thought he knew how to handle and run critiques. It wasn't just a criticism session, where everybody just said bad things about everybody's. We talked, interpreted, and described everybody's."

In general, most of the images were critiqued with the same approach. Except for one incident, the instructor and the class responded to all of the work with a positive respect. There were times when an image was more complex and perhaps it did take slightly longer to describe. Or there were a few times when an
image provoked a wider range of interpretations. Most critiques were observed as being the same. However, they were often different from the students' perspectives. Students tended to interpret the responses according to their own unique personalities. For example, the upbeat positive students tended to think everyone really liked their work. The students who tended to lack confidence or could be described as slightly defensive thought that most people did not like their work. Ben was usually critical of his own work and was often disappointed that others did not interpret his work in the way he intended.

James said after one critique that he did not receive any responses to his work. He wrote, "I don't get any, so that's fine with me." He did not even show his work that day, but did not mention this in his diary. In the transcription of that critique, James was unusually critical of Patti's work. When talking informally with James, he often referred to receiving negative feedback about his work from the faculty in the Department of Art. During our final interview, when James was asked about what he had learned about his own work during the critiques he said,

"Sometimes a lot of people don't like the stuff that I do. And, they try to cut it up. Even though when you listen to what they say they don't make any sense."

When asked for an example, he said that Patti tried to "cut up" his work several times, but that he stopped her. When students, such as James, become defensive about their artwork, they interpret comments they receive as negative and tend to give critical feedback to others.

Patti, who seemed uncomfortable during any brief moment of silence, would jump in and tell the class all about her work before they had a chance to comment. Patti did not realize that frequently she did not give others a chance to
respond. According to her, "I usually don't receive much comment on my work." She was not defensive about James' comments. It seemed as if she didn't even remember getting any comments. This was not unique for Patti. She seemed to have a hard time listening to others and would miss a great deal of information because she was either talking herself or was unable to tune in to what someone else was saying.

Ray only received a few comments about his work. However, he wrote, "I like the responses. Everyone understood the image that I was trying to create." He was happy and proud of his work and believed that everyone else felt the same way. Ed's work was usually more complex than others and students did often spend more time describing the images. Although he was confident and happy with his work, he was sometimes disappointed that others did not perceive the intricate details he included in his work. He wrote,

"Some aspects of my image, like the fact that the cubes were moving from the internal part to the external part of my image, were noticed by my classmates during the critique. Some important characteristics, however, like the fact that I used brightly-colored usually external objects for my internal objects and dull, drab usually-internal object as my external objects, were not understood by my classmates. I was generally pleased by the responses of my classmates, though it would have been nice to have my artwork be more completely understood."

Students that wanted constructive feedback about improving their work interpreted the critiques differently. Sophia wrote,

"I find them very valuable in order to improve my next projects. It helps me to improve compositions and communication. It makes me motivated to work harder and become better in my work."
Ming saw the critiques as an opportunity to get more feedback about her work. She said,

"I always feel very good when people criticize my work. It make me think maybe I should improve or which point is good for me to think about. And, yep the teacher sometime give me good ideas. If I have time to improve and he give me idea and it improve my work."

It was usually the visual arts students that wanted more constructive feedback and expressed some frustration that the critiques did not include more formal analysis.

It was also the visual arts students that talked the most in the critiques. Several of them were art education majors and felt that it was good preparation for teaching and leading critiques in their own classrooms someday. When all of the students were asked at the conclusion of the quarter what they would change about how they participated in the course, many said that they wished they had talked more during critiques. When asked what influenced the amount of talking that they did during critiques a few acknowledged the participation grade in the course. However, most said it how much they participated depended on the image that was being presented and how strong their opinions were.

Others seemed to delight in hearing the views of others and getting responses to their opinions. Rose said that she was often influenced by the instructor’s comments.

"Just because, a lot of times Bob would say something like, I'd... whenever I disagree I liked to talk so. Even if I slightly disagree I like to say how I feel cause I'm curious as what the professor will think of my answer."

Only one student expressed a feeling of responsibility to the class to contribute feedback in order to help others improve their work.
As the quarter progressed the students became more talkative during the critiques. Many openly discussed and assisted each other in the development of the images that were being critiqued. This seemed to establish a very supportive environment. It seemed that if one student helped another during the image making process, that helper assumed a personal stake in the comments during the critiques. More information concerning the interaction between students and their sources for feedback and help during this class will be explored later within this chapter.

Term Paper

Students were required to write a five- to seven-page term paper analyzing an issue associated with the role of computers in the visual arts. The paper was not assigned as a research project; therefore, students were not required to look beyond the course readings for resources. However, most students did report spending time in the library searching for new material for their papers. Several were very excited about the resources that they had discovered on their own. A few felt that they learned more about computers in art in these outside readings than the readings assigned in the course. Although the term papers were not included as part of the original data collection process plan, nine students did provide graded copies of their papers for this study.

The students were required to report their paper topic to the instructor by the seventh week of the quarter for approval. The paper was due four weeks later, on the Monday following Thanksgiving. The assignment was detailed on the syllabus and described by the instructor early in the quarter. As previously described, this assignment was graded in a more traditional approach. Instead of
the automatic credit awarded for studio projects if they were completed, this
assignment was to be evaluated for content, clarity, spelling, and grammar. The
term paper counted for 15% of the grade in this course.

Many students approached the paper assignment in much the same way
they did all of the other activities in the course. Students who had more
experience writing papers in their other courses or fields of study seemed to take
the paper assignment more seriously and began working on it early. In addition,
students who tended to worry about the quality of their work or the expectations
of the instructor became slightly more anxious over this assignment.

Brief descriptions of the students papers will be presented with information
concerning the feedback provided by the instructor. Although the content, quality,
and length of the papers varied, many received very similar evaluations and very
few comments from the instructor.

Sophia reported during her interview in the fifth week of the quarter that
she was concerned about the term paper.

"My biggest worry right now is my paper that's going to be coming up. But,
um, it does give me another view, because you are reading about these
artists that are doing the same work you are, and so...you can see where it
can lead you if you really are good. If you really are interested in doing
computer art then, it's, uh.... it relates because then you can see well maybe if
I'm good then maybe I could make it maybe I could make a career out of it...."

Sophia wrote the longest and most detailed paper of those provided by the
students for this study. She received the full 15 points for her eight page paper,
The Acceptance of the Computer as an Art Tool and Medium. Her paper cited
five references. Two of these were from outside the assigned reading list. The
instructor corrected a few grammatical errors, but included only one or two
comments on her writing throughout the paper. He simply wrote "very good" next to the grade at the bottom of the paper.

Ed's paper, *The Effects of Computer Use in the Visual Arts*, was seven pages long. It included an abstract, table of contents, and three references outside of the assigned readings for this course. The instructor included a few comments, such as "good point" and wrote "why" or brief questions within Ed's paper. His paper received 14 1/2 points and had the comment "very good" written next to the grade.

Ed and Sophia earnestly viewed the paper assignment as an opportunity to learn more about computers in the arts. They viewed the assignment as an chance to consolidate their knowledge and develop views within this course. On the other hand, Sally reported that she "blew it off." She wrote only two pages for her paper, entitled *Computers and Art*. She included only two references from the assigned articles in the class. Her paper received 12 points and had more comments written on it than Sophia's. The comments were more thought provoking, as if the instructor were trying to show areas in which she could have further developed her ideas. The instructor did comment at the close of the paper that it was very brief, and could easily have been expanded.

Rose's paper, *What is Art?*, was only two and one-half pages long and received 13 points. The instructor made a few comments on her paper and noted that it was a good start. She included two references; one was from outside the assigned article packet. Ming's paper was also brief, only three and one-half pages long, and she also received 13 points. Her paper, *The Influencing of Computer Graphics Technology on Society's Perception of Art World*, had many
grammatical corrections and a couple of sections were marked "good" by the instructor. He wrote "OK" at the bottom of the paper with the grade.

Of the remaining papers provided for this study, only Patti and Alex wrote the minimum of five pages. Ben and Michelle both wrote four-page papers. Patti's paper, *Contemplating Computer Art Aesthetically*, received several grammatical corrections but only one comment at the conclusion of the paper. The instructor wrote, "*Some awkward sentence structures, but you're thinking about things.*" Patti included 14 references from outside of the assigned reading packet. She also included three other resources that were not cited in her paper. Patti received 13 points for her paper.

Ben received 14 points for his paper, *Computer Graphics Arts*. He cited seven references outside the assigned readings and included a few photocopied examples. Ben did not receive any comments on his paper other than, "*OK, page 5 was a bit of a stretch.*" And Michelle's four-page paper received 13 1/2 points. Her paper, *Computer Graphics as an Art Form with an Emphasis on Photography*, included two references but did not list them as part of a reference page. She had a few grammatical corrections and received no comments except for the "*good*" at the end of the paper.

The details about these papers have been presented as an example of how different students approached the paper and how each one was treated by the instructor. Students that spent a great of time researching and writing their papers received very similar grades to those that wrote very brief and scantily referenced papers. The quality of the writing in terms of content and clarity varied only slightly. Most lacked a clear thesis and made outrageous claims that were not supported within the writing. However, Sophia's and Ed's papers were clear
and balanced. They included their own views and supported them with references.

Since the papers were not provided until after the final interview, the students were not asked to report their perceptions of the comments they received. Patti was overheard to say to the instructor that she told him she did not have a proofreader. She also exclaimed in disbelief that he did not make any comments on the content of the paper.

Although the students did report that they learned a great deal about computer graphics through writing the papers, it is doubtful, from the feedback on samples collected, that they learned anything about how to write a better paper. Were the students influenced by the impression that the instructor was an easy grader? Or would these same students put forth the same quality and effort with another instructor, or in any other course? More information concerning the students' perceptions of the attitudes and teaching style of the instructor will be presented within this chapter. Understanding their impressions of the instructor and his expectations provides one rationale for the amount of effort students put forth in this course.

Additional factors that should be considered when seeking to understand the strategies students chose in writing their papers include the nature of class discussions on issues associated with the paper topics and how these discussions prepared the students for presenting and defending ideas. The feedback they received in writing the article synopses throughout the quarter should also be considered as a tool for students to monitor their own performance. Students were given the impression, by the instructor's comments and grading on the synopses, that they were doing well in the writing portion of
the class. There was no reason to suspect that they would not also do well, utilizing the same strategies, on the term paper.

Midterm Exam

The midterm exam took place on November 4th, during the seventh week of the quarter, and counted for 15% of the grade. Students were informed in the syllabus that the exam would be based on the content of assigned readings, discussions, and studio experiences. Specific questions from the exam were presented in Chapter Four—The Social Structure.

Since the majority of the articles were only briefly discussed, some of the students expressed bewilderment over what could be asked on the exam. Brent expressed a concern because he did not see a relationship between the reading assignments and what went on during class. When the instructor had the review for the midterm, he began by asking the students if there were any questions. No one responded, so he began asking them to describe the camera digitizer set-up and some of the key points that were raised in the articles. In the fieldnotes recorded that day, students were observed to be more verbal than usual and were actively taking notes. Most seemed to have a keen interest in what would be asked on the exam. However, there were still a few students who continued to work at their computers and rarely looked up to see what was going on in the class.

After the review was over, I was helping some students in the back room by the digitizer. Brent asked me what would be asked on the exam. He and a few other students were trying to get me to say whether or not I had seen it. I
responded by saying that I had seen previous midterms, and that they were based on the articles and experiences in the lab.

One of the articles, to be covered on the midterm, was to be discussed that day. The students handed in their synopses for it, but the instructor never mentioned that reading either as a separate discussion or as a review for the midterm. During formal interviews, when the students were asked about their process of writing their article synopses, several did say that the only time they did read the articles again was before the midterm exam. They did not indicate if they found their synopses to be helpful in the review before the exam.

On the day of the exam, the instructor did not stay for the class and asked me to proctor the test. I hesitated but agreed. He left and I put a large envelope on top of the student monitor's desk. I asked the students to put their exams in it when they were finished. They were all finished within 40 minutes. A professor who stopped by and was going to the Advanced Computing Center for the Arts and Design took the exams and put them in the instructor's mailbox. Every effort was made to insure that the students understood that I would not see their exams during the quarter.

Since there was not an official request or need for copies of the students' exams, a smaller data set was collected regarding the midterm exam responses and results. There was very little discussion among the students regarding the midterm within the classroom environment. Some students did indicate during interviews that they were surprised at their scores on the exam. Most felt that the instructor had graded them in a generous way. However, the instructor did indicate on the day he returned the exams that, based on the students' responses, he felt that they needed more experience talking about art. Bob said
that he was lenient on the test but could see that there was some confusion. This was the day that he organized the class into small discussion groups.

During an interview after the midterm Brent said,

"The midterm was confusing to me because I didn't know exactly what to say. All we done was come in and work on the computer and learn the software and the readings and things about computer art. Which was interesting, but to me I didn't know how they was going to devise a midterm from, you know, stuff like that...it's confusing what we should be doin' in class at times."

Perhaps it was because most students felt they did well on the exam that they did not discuss them during class with the instructor or among themselves. A few were seen double-checking the syllabus to see what the total possible score had been for the exam. But, for the most part, the exam came and went with very little significance.

**Getting Information in the Course**

This section will present students' perceptions of how and where they acquired vital information for this course. The emphasis will be on information necessary for completing assignments within the course. In addition, some descriptive analysis of why students often missed important information when it was presented in the class will be explored. A brief description of the seating arrangement phenomenon is first presented as an environmental foundation for understanding the students' perceptions and to aid in the descriptive analysis. The tendency for students to select a place to sit and maintain it throughout the quarter influenced their interaction with other students and the instructor, as well as their abilities to view the instructor's demonstrations.
There were very few changes in the locations in which students sat throughout the quarter. It seemed that they found a seat the first day and did not want to change. Students in this class were often observed standing behind someone from the previous class that was still working at a computer. Rather than sit some place else, they would wait for that person to leave. There were a few occasions when computers were out for repair and the students would have to find a new place to work. This usually caused a slight unbalance, especially when the person who normally sat at the other computer would arrive and find their classmate working in that place. They were not assigned seats. However, it is a common occurrence in most classrooms for students to frequent the same general seating location.

In the case of the computer lab, students felt comfortable with particular machines and the people seated around them. There were times when something would go wrong on a particular machine and a student might lose his or her work. Then that student would not normally sit at that location again. The seating issue is presented because it influenced the level of interaction the students had with each other and the instructor. The room arrangement and seating locations (see Appendix F and J) also influenced how and what the students could see during demonstrations. The arrangement of the room also isolated some students and prevented others in the class from seeing their work. Students located in the far corners had a hard time seeing the instructor's demonstrations. Students that were seated with their backs to the instructor had to turn all the way around to view the techniques and then back around again to try them at their computers.
In the farthest right hand corner of the back of the room sat Ray. He only changed positions one time when he thought he had lost his work and wanted to check it on another computer. From his position, it was impossible for anyone else to see the work on his computer unless you walked into the corner behind him. Within this same group of computers, Ed and Patti always sat. Patti had her back to the instructor and Ed sat closest to the ACS student monitor's desk. Brent sat in this same pod with his back to the wall. It was also difficult to see his work without walking around to stand next to him.

Alex would usually sit on the left side of the room against the wall. Next to him sat an attractive female who was not part of the study. This group was located right next to the ACS student monitor's desk. Across from Alex was Saily. She was positioned against the wall, but her computer was turned so that others in the class could view her work and she could also see the demonstrations.

In the front left side of the room located right next to the instructor's tables was another pod of computers. Michelle and another student that did not participate in the study occupied the corner and wall seats in this pod. Sophia tended to sit at the computer that was closest to the instructor. She had a very clear view of the demonstrations and her work could be seen by most in the room.

The last pod was located on the right side of the room immediately adjacent the doorway into the back room. James usually sat close to the front of the room with his back toward the instructor. Linda sat in the aisle seat and Rose in the back corner. It was difficult to see Rose's work. She was next to Brent on the wall, so they could see each other's work. Ming and Ben were not as steadfast in their commitment to specific computers and would usually sit where
there was a free computer. There were times when this would throw off one of the other students and begin a chain reaction of looking for a new position. New locations were usually similar to those previously inhabited. For example, Ray would move from one far corner to another. Sophia would always sit in the front of the room as close to the instructor as possible.

Throughout this study, the instruction in this class has been described as disorganized and at times confusing. However, some of the attributes and class experiences described represent differences in teaching style and philosophy between the instructor and participant observer. Usually, the instructor did eventually cover the important information the students needed in this course or referred them to other resources for self-help procedures.

Students were asked to report in their last two reflective diaries what they considered to be the most important resource of information for completing the studio assignments. They were asked to consider both the technical and conceptual components of their creative processes. Almost all of the students said that experimentation was the most important source of information. Sally reported,

"My main source of information was experimentation. I didn't always catch the entire idea when Bob was showing us and so I would just play around with it. Conceptually, my ideas would come from just experimenting too."

Rose responded with, "Literally by trial and error. Experimentation has been my most important teacher." Only four cited the instructor as their most important resource. Several indicated that I had also helped them and a few wrote that they had some help from Mike, the ACS student monitor working in the lab. Only one student referred to imagination as a resource for brainstorming ideas.
Several acknowledged the importance of other students in the class for seeing what was possible. Brent wrote, "sometimes by looking at other people's work it might give me an idea." Sophia liked getting input from a variety of people about her ideas and she also tried to explore other options outside the classroom for her inspiration. She wrote in her diary,

"I discuss my ideas with my instructor, Marsha, and friends. I always ask for the opinions of many people. I try to research by looking at books of David Em and Cynthia Goodman. I also went to the Wexner Center to look for ideas."

In their final interviews, students were asked to cite what they considered to be the most important resource for learning the tools in the paint program and camera digitizer. Sophia's response was consistent with her diary report. She said,

"My instructor's and asking friends or whatever, that tried something and watch them do something and ask them how did they do this on the project. Or, when we had the art critiques too. I looked at, um, and ask them well how did you do this, or how did you approach this? It was basically my friends more than anything. One time I tried those tutorials, but um...I thought they were kinda hard and sometimes you can learn faster by just seeing it, than by actually reading about it. I can make a connection faster than by reading about it."

Sophia's emphasis on her own efforts and the helpfulness of her fellow students was consistent with other students. A few would acknowledge that the instructor would get them started, but that it was up to them to figure out how to actually perform the techniques and incorporate them into studio activities.

Patti said that Ed was her most important resource. When asked if the instructor's demonstrations were helpful, she said,
"No, not really. You mean the initial ones when he goes through it really fast? No, because he only does it once and you can't really see what he does on the keys, and I try to write it down or follow through. It's better if we're doing it with him, then we get a better sense. But even just doing it once doesn't do it. We need to practice it. OK, everybody clear the screen, let's practice and run through it again. A couple of times. It's like doing dance classes, you can't just go up there and do it once and say, OK you got it?"

Although she was more critical of the instructor than most, Patti’s perceptions about the demonstrations were generally consistent with other students.

Ben felt that the demonstrations were intended to get the students started. He spoke of the importance of individual help that he received from the instructor.

He said,

"Then if you have any problems he'll be able to come up and show you actually what you are doing wrong and how to correct it what you've done."

Since the instructor would not usually go around to individual students and specifically ask them if they needed help, they would only experience this type of interaction if they requested it. As a result, students who were having so many problems they couldn't even formulate a question or were too embarrassed to ask the instructor, would either flounder helplessly or ask another student.

Linda reported,

"He's always over my head. He doesn't mind helping and stuff. And he'll suggest to do that, but if I don't write it down then I don't remember it and then I just get really intimidated, because I'm afraid I'll blow everything."

She felt that many of the other students already knew what they were doing or were doing a good job figuring it out for themselves. Linda said that one of the main things she was learning in this course was that,
"you either have to look in the manual, or teach yourself, or ask him a lot of questions."

Ming was another student who could not follow or, at times, understand the demonstrations. She said,

"I couldn't take notes, he move too fast. He just teach on the keyboard I couldn't because, I couldn't take notes cause you must follow every function he make. And so, when he done, I'm done. I'm lost, I forgot."

Ming often had questions but did not ask the instructor for help.

"Sometimes I have a lot of questions in my mind because I can't understand. And, sometimes I have questions but I don't want to ask teacher cause I'm a foreign student. Sometimes I afraid he cannot understand what I'm saying, and I'm very embarrassed. Usually, I will find some solution if I'm problem at it by myself."

The process for getting requisite information for doing the studio assignments started with observing demonstrations. At times the students would try to follow the steps at their computers or take notes for later reference. They would then work on their own and ask either the instructor or other students in the class for help. The manual tended to be a last resort for most seeking answers. Students that tended to be independent problem solvers would spend a greater percentage of time trying to solve the problem or discover new techniques on their own before asking for help. Less confident students spent a great deal of time interacting with other students trying to get help and asking how they achieved certain effects. And finally, students that were really lost and lacking confidence would flounder and get very frustrated until either someone else approached them and asked them about their work, or they had no other choice but to ask someone for help.
Getting information for doing the reading and writing assignments in the course seemed less stressful and varied. Students read the assignment descriptions in the syllabus and asked the instructor for more details as needed. Since the instructor was prone to changing dates on which assignments were due, it was important that the students get the new dates during class time as they were announced. Specific evaluative information on how they were completing these assignments came from the feedback, or lack of it, they received from the instructor in the grading process.

Information concerning how to participate in critiques and class discussions was never formally presented. The instructor established an environment through his own actions, but he did not specify any criteria for fulfilling the class participation portion of the grade in this course.

*Reasons for Missing Vital Information Presented in the Class.*

As previously noted, both the participant observer in this study and the students felt that the instructor often did not present essential information for student learning and production in this course. However, when fieldnotes and transcriptions of class sessions were carefully reviewed, this information was indeed presented. Why did many of the participants not absorb the information? This question was not posed directly to the students. However, upon review of the fieldnotes and transcriptions, one of the primary reasons seemed to be a combination of disorganized presentations and lack of students' attention during the instruction.

Students were observed on numerous occasions to be working at their computers while the instructor was making announcements or showing a new
technique. Instead of working along with the instructor during these demonstrations, many students would be working on something different and would not even realize what he was presenting. There were also times when they would be talking together when the instructor was presenting and would miss vital information. On the surface it would be easy to assume that the students missed information because they were not listening. However, reasons for why they were not listening, while not asked directly, are evident in their responses to other questions in the reflective diaries and interviews.

Many students reported that the demonstrations moved too quickly. Therefore, it is possible that the students were spending their time just trying to cope with being lost. Several students indicated that they needed to try a new technique several times before they learned it. If they were not given an opportunity to do this, then perhaps they decided to take the time and shut out new information until they had mastered one of the new skills. By the time they were ready to return to the demonstration, they were so far behind they could not catch up and would be too embarrassed to ask the instructor for help.

On the other hand, some of the students had worked ahead and discovered some of the techniques on their own. In some cases, the advanced students began to teach new information to their classmates prior to the class demonstrations. During the instructor's presentations they may have thought that they already knew what the instructor was going to cover and decided that they wanted to spend the time working on their own projects. In this case, the instructor may have presented techniques that the students did not discover on their own and, therefore, they missed them.
The arrangement of the room made it more difficult for some students to see the demonstrations. The hum of the machines often made it difficult to hear across the room. However, the instructor did acknowledge this situation in the beginning of the quarter and did frequently ask the class if there were any questions during the demonstrations. He was also prone to getting up and walking around the room at various intervals during the demonstrations.

Students may have developed a strategy in the beginning for getting the information on their own and were not concerned about what the instructor was doing. Actually, it seemed by the fifth week of the quarter that many of the students expressed some concern over how they were doing, and had developed a process for self-help or getting help from other students. They may have become so frustrated during demonstrations that they no longer viewed the instructor as an important resource. However, the initial concerns that most students expressed over the course had to do more with their own comprehension of the course content than with the instruction.

As the quarter progressed and most of the students began to talk more openly among themselves, they learned that they were not alone in their inability to follow the instructor. Their attitudes began to change from accepting all of the responsibility for their difficulties, to considering other causes such as disorganized and vague instruction, hardware and software problems, and poor documentation of the software program. Throughout the quarter the level of student interaction increased and they began to place an increasingly higher value on peer teaching. At this same time, the instruction itself became more organized and clear.
An additional factor that influenced the amount of information that some students missed was that they were frequently late or absent. Another condition reported by students concerned the amount of time they had to work outside of class to complete their projects. Several felt that they needed to get most of the work done in class. This was due to their own schedules and they reported that the limited hours the lab was open prohibited them from coming in outside of class time.

And finally, an interesting phenomenon took place in which certain attitudes developed concerning the value of the instruction. These attitudes began to influence both the participant observer's and students' perceptions of later instruction. As a result, the instructor was often blamed for any concept or technique that was not fully understood. In this process, valuable information that was presented was often missed because it was generally accepted that the students would have to figure it out by themselves.

6.1.2 Individual and Group Interaction Experiences

Within the formal interviews and reflective diaries students were asked to describe specific experiences that they had in the course. These included experiences doing the assignments, getting feedback, losing work, and getting help. Students were also asked to reflect on what they thought they were learning in this course, and if any previous course work helped in this process. During the formal and informal interviews, students would often include additional information concerning their interaction and relationships with the other students and instructor. Students were also asked to describe the differences between the times they spent during open lab time and during class. Within this section a
compilation of remaining data acquired through the interviews and observed within the classroom concerning individual and group interaction experiences will be presented.

Individual Experiences

Learning and Studio Assignments

Students were asked after each studio assignment, in the reflective diaries, what they considered to be the most important thing that they learned from doing the project. For the first two projects most of the of the visual arts students stressed the use of the computer program and its tools. Saily wrote that she learned, "just the basic use of the Deluxe Paint program on the Amiga 2000 computer." Rose reported that she learned, "literally where and what things (button etc.) are on the computer." And Sophia said the most important thing she learned was, "to try the computer at every stage and create a composition using the computer."

Michelle was slightly more reflective in her response. She learned that,

"computer art isn't much easier than drawing or painting. It takes less time and is easier to correct mistakes. But, you're only taken as far as your talent will take you. Maybe a little farther but at this point not much."

And Linda reported that,

"computer images are tough to manipulate when unfamiliar with computers in general."

The students enrolled from outside the College of the Arts, considered the nature of the still life assignment itself as part of their learning process. Alex wrote that he learned,
"the possibility that one can actually be quite radical or even abstract with the computer just as in drawing or painting."

Ed said the most important thing he learned was

"the challenge involved in trying to represent something as it appears—in using shading and other techniques to effectively represent a 3-dimensional object in 2-D space."

When asked what they would do differently if they were to do the first project over again, all students mentioned the aesthetic qualities of their images. It was evident that some were very affected by the open viewing and discussion of their work, and by the work of other students in the class. Ray decided that he "would not put the major attraction of his piece in the center." Ben reported that he would have "done a more abstract piece." Several were influenced by Rose's image, which depicted a close-up of one small section of the still life. Alex wrote,

"I might look into an abstract form of my piece or possibly focus in on one specific area of the still life."

James also thought that he would,

"concentrate on only one part of the still and use the computer to abstract or distort it."

Responses to these questions were similar after the second studio project, the self-portrait. However, there was a shift in emphasis on the third project when students tried to depict another individual in a portrait without utilizing that person's face. Students became increasingly aware of how others in the class interpreted their work. The message that was communicated in the image became more important. Understanding how to improve this communication began to develop.
Michelle wrote that the most important thing she learned doing the portrait assignment was that

"it's really hard to convey someone else's inner-being without using an image of them."

Ed said,

"I learned that it is very difficult to represent a person using only objects and symbols and not the person's face. It would be easier to represent someone I have known for a long time than to represent someone I have know, however well, for a short time."

Linda was the only student that did not try to incorporate digitized images. She wrote that she learned,

"that a collage of digitized images may not be the most effective way to portray aspects of someone's personality."

The students also seemed more satisfied with their own work on this portrait project. Based upon their initial experience, students were asked what they might change if they were to do the project again. Linda said that, "nothing really would change." Patti thought that she would try to make the objects clearer by using more contrast. Brent said that he would, "put more things in the image to convey who the person is." Only Ben and Ed said that they would pick someone else to be the subject of their portraits.

Students had similar experiences and perceptions of what they were learning in the fourth project, an image representing internal and external space. The emphasis on what the students felt that they were learning shifted back to the technical domain for the animation project. Most stressed the process of creating an animation and the tools utilized in the Deluxe Paint program.
Ray said the most important thing he learned doing this project was

"How to produce animation. (saving under animation, appending, adding frames, setting speed, and ping ponging)."

Ben wrote,

"How to use the animation software. Also, how to sequence shots close enough to perceive fluid motion."

Patti said that she learned

"that there is a lot involved in making an animation even if it is done on the computer."

Only Ed reported learning about the importance of a story line in creating animation.

The critique for the animation was less interpretative and more of a celebration of completion than the other projects. Some students talked about how hard it was to create animation and stressed which projects they really liked out of the all the ones in the class. Content and story line were not emphasized. There were some brief explanations of techniques utilized by students. The difference in this critique may have influenced the students' reflection over what they would do differently on this project if they were to do it over again. Most stressed technical corrections that they would make. Very few were concerned about the communicative value of their animations.

Ray said,

"I would make my pictures more advanced—not so simple with a lot of images."
Brent responded as he did several times saying that he, "would try something different." He would often add that he didn't know what that difference would be. Several of the students were frustrated by how fast their animations were when they were played back. Ben said that he would have "added more frames and made things smoother." James said, "I would experiment more with frame speed." However, Sally, whose animation zipped by at an incredible speed, responded that she would change,

"nothing much, except make the smoke move out of the smoke stacks."

The students' perceptions of what they were learning in the studio assignments, and the shift in emphasis back and forth from technical to aesthetic, correlates with the nature of the content of the course. In the beginning of the quarter there was a flood of technical information to be covered. The demonstrations and individual help sessions were primarily focused on acquiring the technical skills necessary to complete the assignments. However, during the critiques the aesthetic qualities were emphasized. The interpretative nature of the critiques combined with a slight decrease in the number of presentations of new technical information influenced the students to explore the aesthetic capabilities of the computer. In addition, the portrait and an image representing internal/external space assignments were more content oriented than the still life or the open-ended animation projects.

When the animation project began, the instructor presented a large amount of new technical information about the Deluxe Paint III program and about the principles of animation. Most of the students tried to continue with an emphasis on aesthetic concerns and several attempted a group project depicting
the effects of pollution. However, the very nature of the monumental task of
animation combined with the entirely new set of tools created a situation in which
many students were happy to have just completed the project at all. As an
example of how the animation commands differed from the ones they had been
utilizing thus far in the course, one only has to consider the method for saving the
work. When creating animation, the students had to remember to save their work
under a different menu. If they used the one they had been using all quarter, they
would lose all of their work. This loss often meant that the students would lose
two to three hours worth of work and have nothing to show for their efforts.

_Losing Computer Work_

There were several observed instances throughout the quarter in which
students would lose their work that they produced on the computers. Patti was
the first to lose her work, the still life project, during the third week of the quarter.
There are a variety of reasons for which work is lost. One reason could be that
the file itself has been corrupted for some reason or the disk has been exposed
to something and it is no longer able to be read by the computer. Errors such as
these are sometimes caused by exposure to extreme temperatures or
microwaves. Or it may be that the disk might have been smashed or its internal
magnetic surface exposed and scratched.

Other problems can involve old and faulty disk drives that read and write
to disks. The lab was having trouble with this during the time of this study. In this
case, the students would save their work and all would appear to be fine. Then
when they came in the lab to work the next time they would not be able to
retrieve the images from their disks. The instructor did indicate that this could be
a problem and encouraged students to save their work to more than one disk. He also suggested that they check whether or not the images were indeed saved by trying to load them onto another computer before leaving.

Another cause for losing work involved the unpredictable tendency of computer hardware and software to "hang up" or "crash." The student could be working along and all of sudden the computer would stop responding and seem to just freeze in the middle of some process. When the computer crashed, the screen would go blank and a blinking message would appear to restart the computer and program. In both of these cases, the work that was currently displayed on the computer would be erased from the computer's memory and the only representation of that work that would remain would be the last saved version on the student's disk.

Finally, human error may be involved in losing work. Students who in the beginning did not fully understand the process of saving files would often lose their work. Or students who failed to save their work at regular intervals and then accidentally cleared the screen would have nothing to retrieve from their disks. Human error also accounts for the students who lost their work because they did not save often enough or did not save to more than one disk.

During the interviews the students were asked if they had any experiences where they had lost their work on the computers in the class. They were also asked how either losing their work, or seeing their classmates lose their work affected their attitude and methods of working. Although it was not asked directly, part of the intent of this inquiry was to gain an understanding of the students' perceptions of how work is lost and what can be done to prevent it, or even retrieve it.
Losing their work can be a devastating experience for students. Unfortunately, many did not heed the advice of the instructor and did lose large amounts of work. During their final interviews, students were asked several questions regarding their experiences losing work. The students who had worked on computers previously knew to expect problems in this area and tended to save their work more often and on more than one disk. The other students, who had little or no prior experience on computers, were often just as fearful of losing their work, but they did not understand why it happened and seemed to lack the foresight to prevent it.

James said that he lost his work three times during the quarter. As a result, by the end of the course he had all of his work backed up on three different disks. When asked if he saved more often as a result of his loss he said,

"I save more often, but the one time that I lost my work I lost everything, and everything that was on my disk."

He said that it did make him feel like he didn't want to work anymore, but just for that day. He realized it was a "fluke" and went back in to do his work over again. Ray reported that he thought he had lost his work a number of times, but that when he tried to retrieve it from another computer it always managed to load. He also said that he always saved his work to more than one disk.

Brent had previous computer experience and had lost his work several times in other courses or while writing papers using word processors. When asked if he had lost any of his work in this course he said no, but later he contradicted this response and said,

"for my animation I kept losing my smoke clouds, or whatever you want to say. I get to like the 40th frame and it would bomb on me. I didn't save any of
it before because I was so, you know, just interested in keeping it going. So, I learned to save, like every two frames. So, I save it more and more so that when it did bomb I wouldn’t lose so much.”

Ben also had previous computer experience and lost his work twice in the class. When asked how it affected his attitude and method of working he said,

"well I wasn't too happy but, um...l, in the beginning Bob told us to save up to a certain point. So, I didn't lose everything, but I lost a couple of images that I had spent a couple of hours. It was like I didn’t save them in time but it... It didn't really, I expected to lose a couple, maybe one or two so..."

When asked if he expected to lose work in the course from the onset Ben said,

"Oh yeah. Because I’ve worked on computers before and I’ve lost all of my stuff before. It’s not a happy time, but it’s not a death sentence either."

He said after he did lose some work in this course that he did start to save more often, but he did not indicate if he saved to more than one disk.

Rose did not have prior experience on computers and when she lost her work, she had help in retrieving it. The systems manager was able to save her work but she did not know how he did it, or why it happened in the first place.

She said,

"It was the most annoying thing. Well I guess I was lucky because I did get both of them back. But thinking that I, I came in a few days ago and I worked on my animation for a few hours and that was, you know, that was the beginning. And, I really didn’t want to lose that... And, that was probably half of my project and Mike helped me a little bit with that. So I was really upset and I really just wanted to get it over with. Thinking I would have to do it again, but luckily I didn't have to do that so I spent about six hours just finishing it."

When asked if she saved more often as a result of this experience she responded,
"Um, no. Which I probably should. And, the real reason is that I don't know how. Like Dave, (the systems manager) told me yesterday, to do the rest of my animation on another disk. First of all I didn't bring another one with me, and second just if I don't know how to do something I do what I know how. I wasn't sure and i didn't feel like asking, cause I ask a lot of questions."

Sophia, Patti, and Michelle also lost their work and had very little previous computer experience to prepare them for this possibility. Sally did not lose any work, but when she saw how Patti lost her work during the animation project, she began to save more often. Patti lost her work several times during the quarter. When asked how the loss of her animation project affected her attitude she said,

"Well I'll tell you I really had to drag myself in here today to work on this, because I was so afraid that it would happen again. Or something would happen that I have no control over. And that lack of control on the computer is really annoying..."

When asked if she was now saving more often, Patti responded,

"Well I do a little bit and then I save. I wasn't doing it by time. OK, this part is complete—save that, this section is complete—save that..."

She was also asked if she now saved to more than one disk and she seemed surprised. "No, why is that better?"

Ming lost 100 frames of her animation. However, she did not seem to know why nor did she change her approach to saving. It did, however, affect her attitude about completing the project. She said that she just gave up, but that she knew that she had to come back in and finish it, and so she did.

Although the specific reasons for work being lost differ among the students, strategies for preventing a complete loss as suggested by the instructor were often either ignored or not heard in the first place. Since many of the
inexperienced students tended to rely on each other for help, they were not getting the advice they needed on saving more often and to more than one disk. Many of these students seemed to work in fear and felt that they had little control over preventing the computer from erasing their work.

Students with computer experience, who had a more relaxed and self-confident approach to their work, tended to view these setbacks as slight annoyances that they could have prevented. Usually these students did not draw attention to their dilemmas. They would either try to solve the problem on their own, or simply start over. However, students like Sophia and Patti displayed a great deal of anxiety, frequently talked about the experience, and were often unable to get back to productive work during that same class time.

*Learning in this Course*

When the students were asked what they thought they were learning in this course, all of them stressed the computer skills they were developing. Only Alex, the business student, included learning to talk about other people's art work as a part of his response. Brent expressed confusion during the entire quarter as to what he was supposed to be learning in the course. When asked what he felt he was learning Brent said,

"Not a whole lot... No, uh, I guess to, uh.... I don't know to me it seems kinda confusing what we're supposed to learn because we just work on the computer in class when we are here. Uh, I guess, just to create images using the computer using the software. How to digitize images, you know, to manipulate, you know, images of somebody, you know, into something you want to say about them. Um, to I guess, to learn more about computer art in general would be my guess. I don't know."
Sally said that she felt she was learning, "basic skills of the Amiga and Deluxe Paint program." Ray said that he was just getting more experience on the computer and

"learning how to do different things on the computer. I learned a lot of different things about the computer, and, uh...like all the different, the DigiPaint, the video camera, I've learned all kinds of stuff."

Ray and Michelle both referred to the DigiPaint program during their interviews. This program was never used in the course. They seemed to confuse the Deluxe Paint program and the DigiView program as being called DigiPaint.

Patti said that she was learning,

"mostly about the computer. What it's capable of doing and the software situation. Um, I talked to Bob, you know we talked about the things that are goin' on in graduate school, and how he works with the computer differently, and things like that. And I really think this is a lot more limited than I thought working with the computer was going to be. Even though I don't understand it all, I can already see that it has a lot of limitations."

Rose often referred to how much she was learning in this class and how much she enjoyed it. However, she usually had a difficult time articulating in general terms what she was learning in the course. She said,

"I'm learning so much. I mean from not knowing how to even, I didn't even know what a mouse was the first day. And, I'm learning more in this class than any other class. Maybe it's because its the most interesting to me. I'm learning, um...how to make different colors in the palette and blending. And now, we are learning dimension. I mean I'm just learning everything I can about the Amiga computer and it's so fascinating."

Only Sophia said that she was learning more about how to create images and to be more creative in her art work. None of the students referred to the
readings about computers in the arts. Since the articles were only briefly discussed, they may not have felt they were as important. However, they were doing the readings and written synopses assignments. It is not clearly evident why they dismissed those activities as a part of their learning process. While many students viewed the articles as either obsolete or a waste of time, most of them utilized terminology or referred to concepts during formal and informal interviews that they could not have acquired working on the computer. It was as if the students absorbed that material and then assumed that they had known it all along. Most did not recognize these additions to their knowledge base as clearly as they did the more concrete and visible computer skills that they had acquired.

Most students did not see a very strong relationship between what they had learned in other courses and this class. The art students felt that their overall studio education had helped them to compose images and the students from outside the arts felt that their previous experiences in computer courses helped them to get started on the computer. Only Brent and Ed saw this course as an opportunity to bring together their previous course work and experiences. Most did not seem to consider their undergraduate education as an interlocking program. Instead, many viewed their courses as isolated pockets of knowledge and experience.

**Student Interaction**

The students in this particular class section interacted more than any other group observed in the courses taught in the Amiga Lab. As an instructor and curriculum supervisor, this participant observer has had numerous opportunities to observe students in other sections of this course. Usually, a few students
would talk from time to time in other course sections, but in this class the group was deeply engaged in peer teaching and the development of friendships.

The students were asked if they normally interacted with their classmates in other courses to the same extent that they did in this class. Most of the art students reported that it was very similar to their studio courses, but in lecture courses there was usually very little opportunity for interaction. Rose said that even in her studio classes that she normally kept to herself. However, she said,

"I didn't have a choice here because I needed help and you know I needed to see what other people were doing. I feel like, I don't know everyone's name perfect, I know like people in this class better than any other class."

Ray felt that he interacted with students in this course more than in others because of the critiques and the size of the class. Ray's response was interesting because he was never observed talking with anyone in the class and rarely during critiques. It was as if just being in a group where everyone was friendly, supportive, and talkative, he felt he was interacting.

James reported that he always spoke to many students in his classes, "to find out what they think about stuff." James did talk at times during critiques. However, like Ray, he was seldom observed talking to other students. His response typifies how students often have a perception of themselves that others do not experience. Perhaps he did talk more to students in other courses and just assumed that he had been doing the same in this class.

Ed was very popular in this class. He was often busy helping students and showing them new techniques that he had discovered. When asked, he said that he really enjoyed the attention he received in this class and that it was different than how he was perceived by his classmates in his engineering courses. He
said that it had not been since he was in elementary school that he had this kind of interaction with his fellow students.

*Kinds of Relationships*

Throughout the quarter four different kinds of relationships developed within the Amiga Lab. These included relationships between the students and the ACS student monitor, the instructor, and other individual students, and among the entire class of students. Most of the students became acquainted with Mike, the ACS student monitor, because he worked in the lab during the class time and often worked on weekends. Several students reported that Mike had been one of their main sources for technical information in the course. Mike was a fine arts student and therefore knew a few of the students from other courses.

Rose knew Mike and asked him to tutor her outside of class time several times during the quarter. Early in the quarter she was observed asking Mike for help instead of the instructor during a demonstration. When other students saw Mike helping Rose, or any other student, then they began to ask him for help too. Although it was not part of his job, Mike enjoyed working with the students and they felt very comfortable with him.

The type of relationships that the students had with the instructor varied among individual students. Information concerning their attitude toward him and his attitudes toward the students is presented in sections 6.1.3 *Attitudes Toward Course, Learning, and Instruction* and 6.2 *The Instructor's Perspective*. The instructor was generally viewed as the authority within the class and the relationships that developed were grounded in traditional student-teacher role models. He appeared to be more comfortable with some students than with
others. If a student did not actively seek him out in the classroom, then he would have very little interaction with them. He tended to spend more time with the art students discussing their imagery. The relationships with the majority of the students were not observed to include any personal information outside the classroom.

The relationships that students had individually were most common among the art education students who knew one another from previous courses. Ming thought that many of the students were already familiar with each other and she did not feel comfortable joining their group. A few of the students had friends that were in other sections of Art Education 252 and one of them was in the other section that Bob was teaching. These students tended to talk about other courses that they were also taking and about other friends they shared in common.

Other student-to-student relationships in the course were based on peer teaching. These relationships were seen as friendly exchanges of helpful information between two or more individuals at a time. The help provided was predominately technical but occasionally students were observed discussing the aesthetic qualities of their work prior to the critiques.

The relationship that developed in the class as a whole was generally friendly and supportive. At times it was almost like a group that had been plunged into a dangerous situation whose members were relying on each other to survive. The students seemed to want everyone to succeed and although they did not always get to know everyone, they seemed to view each other as all part of an experience that bonded them together. The change in atmosphere among this group from the beginning of the quarter until its conclusion was like observing
good friends getting to know one another. On the last day of class the students tended to linger behind, as if they hated to see the experience they shared to end.

*Times Spent in the Amiga Lab*

The different kinds of time associated with this course included both the times spent inside the Amiga Lab and outside. The overall structure of the ten week quarter and finals week established a time frame of every Monday and Wednesday from 3:00 to 5:00 that brought the class together. In addition to the actual class meeting time, the students were also expected to spend three hours a week in the Amiga Lab completing studio assignments.

Time associated with the course spent outside of the lab included the time necessary for reading articles and writing synopses, researching and writing the term paper, preparing for the discussions and midterm, and formulating ideas for the studio assignments.

During the formal interviews, students were asked to describe a typical class session. Many began by describing these times as individual study experiences where they were working at their computers and could ask the instructor for help if they needed it. Students seemed very aware that the instructor took attendance at the onset of each meeting and that, if he was going to do a demonstration, it took place in the early portion of the class time. However, beyond these basics, their responses were somewhat varied and often dependent on how much attention they typically devoted to the instruction. Ray said,

"Well we come in and I guess the teacher takes attendance, and uh.... Either he shows us something new, like he showed us animation. Like he'll go through something, teach us something, and then give us time to work on it."

And then we do projects on what he teaches us, and we work on it for the rest of the class."

Brent described the differences between the days when they had critiques and when reading assignments were due. According to Brent, if they weren't doing one of these two activities then they were working on their own on their projects.

Sophia described the demonstrations, critiques, and discussions. However, she also discussed the interaction that took place during class time.

"Other than that, we just basically do our own work. And, you, um, talk to the students and the instructor to see if you can do anything to make your project better."

Linda felt there was very little instruction she described the class time by saying,

"I think he'll give us the assignment, what we are supposed to do. And then we're pretty much on our own. You just play around and see what you can come up with. And, uh, I think the thing about it is that he wants us to be really creative with these things, but it's really hard to learn. You know, what we're supposed to be doing when we haven't been taught how to do it. Like he'll go step by step if we ask him to help us or if we see somebody else do something, uh, that's interesting. Then, he'll come back and help us. But, um, pretty much I'd say just playing around and seeing what we can come up with."

Students were also asked to compare and describe the differences between when they came in on their own during open lab time and when they met as a group during class time. Linda said there was very little difference because in both cases she was basically just working on her own.
"Well I usually ask the monitor anyway for help, or if there's somebody around. Usually when I come in on my own there's somebody in there that I know and they can help me out and stuff."

James said that he did more experimenting during open lab time and spent class time refining his work. Ed said that he had a clearer view of what he would be doing when he came in for open lab time and that he knew that if he needed help that he had to rely on the manual. Ed also said,

"I guess basically when I come in on my own I've already figured out what I'm going to do. Um...you know, I come into the lab with the intention of doing so-and-so to an image and, um...a lot of times I'm pretty set on what I'm going to do, and then I do it and go home."

He added that he usually did not interact with as many other students during open lab time, unless there was someone in there from his class asking for help. However, he did say that he experienced more exchanges of information about what the program could do during these open lab times.

Brent rarely came in during open lab time and considered class time as his only opportunity for getting his work done. Therefore, he spent most of the time in class trying to finish his assignments. This might explain why he often missed important information in the course and was often confused about what they were to be learning.

Most students did report that during open lab time they were able to get more work done than in class. This was often due to preplanning and less interaction between other students. Patti said,

"When I've gone to open lab time, I've learned more quickly because I was focused in more with just myself and the computer. Verses the class, and studying in the class and the interaction of the class. I'm just taking the things that I've learned and going a little further with them. In the lab time I've found
my creativity goes a lot faster than it does in class time. Because I feel like people are looking over my shoulder more during class. 'Oh, what are you doing? What are you doing?' But, in open lab time, I don't find that. Everybody is minding their own business and doing their own thing. It's like you are more private, it's more private time."

None of the students referred to the other instructors that were often in the lab during open lab time. The instructors were there to help any student enrolled in courses in the Amiga Lab. It is not clear whether or not they asked them for help while working outside of class time on their assignments. Bob also spent four hours a week working in the lab outside of class time to help students. However, students did not reference him as someone that they interacted with when they came in during open lab time.

6.1.3 Attitudes Toward the Course, Learning, and Instruction

Many of the students began this course with preconceived ideas and attitudes concerning the concepts of computers in the arts, learning to use computers, creating art, and the amount of time and effort that would be required. For those students that knew someone that had taken the course before, most began the quarter with the attitude that it would be a lot of work and very frustrating, but that it would also be fun and worth the effort. Those who knew very little about the course, beyond the course offerings booklet's description, tended to view the class as a great opportunity to incorporate learning more about computers and art.

This section focuses on three areas concerning students' attitudes toward learning and instruction in the course. Within the first portion students' attitudes and changes in attitudes toward contemporary art and the role of technology in the arts are presented. In the second section attitudes toward the course and its
activities are provided. Third section describes attitudes toward the instruction, and structure of the course.

Attitudes Toward the Course

Changes in Attitude Toward Computers in the Visual Arts

During the final formal interviews for this study, students were asked if their attitudes toward computers and computer art had changed throughout the quarter. All of the students interviewed said that their attitudes had changed and that they were now more comfortable with computers and more aware of computer art when they see it.

Michelle had been very apprehensive about computers before taking this course. Although she is perhaps a little more familiar with contemporary art than her other classmates, she was not aware of many of the issues associated with technology in the arts. Michelle changed her attitude about incorporating computers into photography, her field of study. She said,

"I like it a lot more now, like doing it. I never thought it was that accessible before, um...like researching for my paper and stuff I found out a lot more stuff that you can tie in photography with it and stuff like that. I just didn't know how easy it was before, like how accessible."

James was also apprehensive about incorporating computers into the arts process. However, his apprehension was based on previous experience with hardware and graphics software that was more difficult to learn. He said,

"I was a little bit leery about it when I first started working, but I hadn't worked with some of the programs and I hadn't used any, that exact program. I used one on an IBM that was similar. And I knew what a problem it was when I was using the IBM to do a lot of stuff. And I was a little bit leery, but as I worked on this, it was just great. It was a great computer to work with so, great software to work with, so..."
Sophia, Sally, and Rose all stressed how much more comfortable they were using computers. Sally said that she had always felt that computers were "foreign" and "foreboding." Sophia said that she now realizes that she does not have to be able to write computer programs to create images on the computer. She added,

"I can use my art talents and draw on the computer, so it made it a lot easier for me to approach the computer."

Patti said that she felt more confident but found the experiences on the computer to be very frustrating. However, in her research for her term paper she felt that there were other systems that might be easier to learn. She had always had an interest in computers in the arts and felt that this course helped her to discover the possibilities of what can be done.

Most felt that the course had improved their understanding of technology in the arts and as a result increased their appreciation of computer mediated art. Several said that prior to this course they were not aware of its existence, or if they had seen it had very little appreciation of how it was created. Ben said,

"I realize more when I'm watching television and stuff like that, I can tell which one has it, you know, computer digital remake, or something that they did on a computer. It makes me more aware of how actually it's used....It's time consuming to get that type of thing done. I never realized how exactly, how far along in the technology was, but still it takes a long time."

Ray felt that the course helped him to understand how art incorporating computer technology was created. He said,
"So, I like it a lot better 'cause, I know what I'm doing now. When I go to see it in art exhibits on computer art, I try to think how, you know, how they made it."

Whenever interviewing Rose she was very enthusiastic about what she was learning about computers. She went out of her way on several occasions to stress how much she loved creating with computers. Rose was very proud of herself and somewhat surprised by her own success and the enjoyment she was having learning to use computers. She talked about how her parents were going to buy her a computer and that she felt that she would pursue the utilization of computers in her field of study and career. When asked if she would feel comfortable approaching an unfamiliar computer after this course, she said,

"I would be excited about it. As a matter of fact I'm buying a computer and I want to either have a tutor or have somebody come to my house and teach me everything about it. I really want to know everything about a new computer."

From talking with Rose, it was easy to get the impression that this course had a major influence on her personal, academic, and career goals. Recently Mike, the ACS student monitor and friend of hers, mentioned that Rose was graduating soon and having her BFA show. Since it had been several quarters since she had been in this course, it seemed like a good opportunity to find out if she had carried out her plans to incorporate computers into her future. Mike was asked if he knew whether or not Rose was including any computer mediated art in her show. He said that she was not. When asked if she had pursued her interest in computers, he said that she did not buy one nor has she been back into the Amiga Lab to work on them since the conclusion of *Art Education 252*. 
Rose's situation is considered because it is not an uncommon occurrence for some students to be genuinely excited by this course's content and profess plans to change their academic and career goals. However, when the quarter ends and a new one begins, the students move on to different courses and continue to pursue a list of requirements that lead them into *Art Education 252* in the first place. The reasons for this are not clear. Perhaps it is because many of the students are already so far into their previously selected course of study that they are discouraged to change. Or perhaps it is because when they talk with friends, advisors, and parents they are discouraged from pursuing a course of study in a small and specialized field. There is also the possibility that some students are easily excited about new experiences and exaggerate their importance. These students may also have closets full of new but long forgotten musical instruments, sports accessories, and art studio supplies.

Of all the students in this study, only Brent has been seen taking another course in the Amiga Lab. The art and art education students were often seen going in and out of other classrooms in Hopkins Hall, but the remaining nonart students were not seen in this area again.

*Attitudes Toward the Activities in the Course*

Throughout this study, the students' emphasis on the studio component of this course as been presented. Most of the students viewed this as a studio course that was supplemented with some reading and writing assignments. There were some students who felt that the reading assignments were not important and a few who felt that they learned more from the readings than from experiences in the classroom. Many felt that they learned more in the readings
they found while researching their paper than in the articles assigned in this course.

Ming felt that she learned more about the art world and the role of computers in the arts in the assigned readings. Although Sally said that she thought most of the reading and discussions concerning whether or not computer art is an art form was a "bunch of bull," she did feel that the articles were beneficial. Sally said,

"even though I thought those articles were outdated, I had never read anything like that before. And I think that helped a lot. Just in what people are thinking, what's going on out there, and the whole issue of, you know, contemporary art."

At the end of her midquarter formal interview, Sally was asked if she had any additional comments that she would like to make about how she felt about this course in general. She said,

"I think the only thing I can say is that I've really enjoyed it. I've gotten frustrated with it a lot too. Mainly...I don't think its the assignments, 'cause they are pretty good. I was impressed with the assignments too, because I think you can really broaden your idea. I mean you can really do whatever you like, they're not real structured and I like that. But, at the same time, maybe its the time, cause I didn't feel like I had enough time to work on.... 'Cause I don't have a lot of time to come in during other classes on other days.... So, I think maybe that was frustrating for me."

Students were asked at the conclusion of the quarter if they would change anything about the course itself. A few said that they wouldn't include the paper assignment, but then they would go on to say how much they learned writing the term paper. Brent said that he thought there could be more readings assigned. Rose, Sally, and Patti felt that there should be more time to work on the studio projects. Ray and Sophia thought that the self-portrait and portrait assignments
should be combined because they felt they were redundant. They also felt that more time should be devoted to the animation project. Michelle and Ben both said that they wouldn't change anything about the course.

**Attitudes Toward the Instruction in the Course**

Students expressed their attitudes toward the course and its instruction throughout the quarter within the reflective diaries and during formal and informal interviews. The early comments, as previously suggested, were less critical of the instructor but indicated that there was very little actual instruction taking place. Most students emphasized the individualized self-help or peer teaching nature of the environment. Many seemed to feel that they must be the only students that were having problems and therefore tended to assume most of the responsibility for their frustrations in learning the software utilized in the course.

The level of frustration did vary among students. Some were learning the program quickly while others expressed feelings of being hopelessly lost. The students with previous computer experience did accept more responsibility for learning the program on their own and consulting the manual as a reference. The students that had little to no experience felt that the instructor presented the information too fast, in a haphazard order, and did not provide enough opportunity for the students to practice before presenting new material. This later group became increasingly critical of the instruction as the quarter progressed.

To gain an understanding as to whether the students felt that it was the teaching pedagogy or the knowledge of the instructor that affected their learning, they were asked in their final interviews to give their impression of the instructor's knowledge of the issues concerning computer art. Ming said,
"I think the teacher maybe knowledgeable of computer arts, but he just don't know how to communicate with his knowledge to the student. Maybe with more time, one more year, he had more teaching experience, he would be a very good teacher."

Sophia also felt that the instructor was knowledgeable and expressed disappointment that he did not share more information with the class. She said,

"It seemed like we just went in and we did the projects and he didn't really explain some stuff or go over a lot of the issues. And I would have liked to listen to him about some of the new art stuff and I'm sure like he had a lot to offer since he did like some of his own art pieces."

Rose felt that the instructor was very intelligent and knew a great deal, but that he often forgot that they were a beginning class. She stopped during this interview to ask again if the instructor was going to find out about her comments. When she was reassured that they were confidential she continued to say,

"He forgets we are beginners and he takes that for granted and a lot of times, he knows so much that he just assumes we know some things. And that's been the biggest problem for me. That is why I had to have Mike help me, really only two times. For about an hour each. But, I definitely think he knows a lot and like his opinion on the articles. I find those interesting."

Patti said that she thought the instructor was very opinionated and had an elitist attitude toward computers in the arts. She said,

"Like well this is only for a select few and the rest of you just have to buy your own computer and just play with this part over here. You know I asked him to take me over to the place where they do the other work and he said, 'well I'll take you if you don't ask me any questions while I'm there.' Like how many times have you seen me talk to him about what else is going on, what do you do, what are the differences?"
Sally said that she felt that the instructor was knowledgeable and enjoyed what he was doing. She was not critical of his approach to teaching but said numerous times throughout the study that she often could not keep up with the demonstrations and learned most of the programs on her own.

Ben, Ray, Brent, Ed, James, and Alex were also impressed with the instructor's knowledge concerning computer art. Ben appreciated the level of interest that the instructor had in the subject, and James felt that the instructor knew the graphics programs very well. Brent said,

"He seems to have a pretty good knowledge of it. Maybe the ways he conveys some of the things in the program is a little confusing but he seems to be a good instructor the way he teaches the class and stuff."

When students were asked to describe their instructor's teaching style, all of them said that he was either "laid back" or "easy-going." Most seemed to like this approach and said that it made them more at ease in the class. Michelle said,

"He's like really laid back so like it's not intimidating. You can ask him questions and stuff and you're not afraid. And, um... he just seems, like really open to just let us explore ourselves through the art work and stuff rather than make us look at things from one way and stuff."

According to James,

"If you have questions, he'll answer them. But if you want to work on your own, he will let you work on your own."

Ben also appreciated this instructional strategy. He said,

"I mean he's not like looking over your shoulder all the time, but if you have a problem he'll help you. And, he's interested in your work and what
thought is behind it and stuff like that. And what you're trying to convey, what message you are trying to convey. I think he's a good teacher."

However, Ming viewed this approach as passive and thought that the instructor should have been more active in his interactions with the students.

Students that were comfortable talking with the instructor and asking for help appreciated his approach. Students that were more shy or embarrassed to express their confusion wanted an instructor who would be more aggressive in discovering their level of understanding. These later students were also the ones that expressed a stronger desire for more structure in the instructor's presentations and demonstrations.

Most of the students in this course were reporting that they had received very high grades on their work and were generally pleased with the studio and written work that they had produced. All of them felt that they had learned a great deal in the course and were planning to recommend it to others. There often seemed to be a contradiction between their complaints about the instruction in the course and their praise for the instructor's teaching style and approaches to grading. To gain a clearer understanding of the relationship, I asked students asked to describe how the instructor's attitude toward grading and teaching influenced their learning and quality of work.

Ming, who expressed frustration with the instruction on several occasions said, "I think the grading is most wonderful teacher I ever met. He give me on my synopses, I don't know the paper but maybe it's not bad." Ming also said that she appreciated any criticism that she received on her studio work, but stressed that the level of work that she put forth was not dependent on how she would be graded.
Rose felt that the grading was an important factor in her learning and production.

"Well he's definitely a lenient and I think that's helped. I mean the fact that I probably have an A is really... I assume I have an A, but it kept me motivated and kept me into the class. And I haven't lost interest at all. And a lot of times when you aren't doing too well in a class, you know, oh I don't care. You just get so frustrated. So, I think that's actually worked for the students. 'Cause, I know it seems like everybody, you know if you do the assignment, if you do the synopses you're OK."

Although Rose often longed for more structure, she felt that had the instructor been more rigid that she may have actually been even more frustrated.

"Even though that's what I wanted in the beginning of the quarter, I kinda liked being able to just explore by myself because it was like a fulfillment, in a way. It was like an accomplishment. After an assignment, you feel like, even if it didn't, it didn't even matter if the final product was... just a process of going through it was just kinda exciting, especially animation."

Michelle had a similar attitude. She said,

"I like to go to class because I'm not afraid of, oh you know, 'I'm going to go and I'm going to screw up and flunk it.' So that helps a lot. The fact that he lets us do basically what we want within the assignment makes me want to do more stuff because I can be more creative with it, to do what I want to do."

When asked specifically how a more rigid or tougher instructor affected the amount that she learned or the quality of her work in other courses Michelle said,

"I think with like some teachers, teachers that are not harder, but more cold, you know, more strict, I don't like the classes as much. I don't have as much fun. So I'm not as open. I kinda get that little kid attitude like 'I don't want to do it then.' So, I mean it's a lot better to be more laid back about it."
Ray discussed the instructor's approach to grading and its influence on his written assignments.

"He didn't seem like he was grading the synopses that hard. So, I think if he graded them harder he could have gotten better feedback. Like the way he says, 'I don't want,' he told us in the beginning he didn't want more than a page. So, right there that shows, I mean if you have something to say, like if he would have said, give me three pages, you know he would have gotten a lot more input."

Ray felt that he did not learn more in courses that had more rigid instructors, but said that he preferred "easy-going" instructors.

Sophia felt that the instructor's relaxed approach helped her when writing her paper. She said,

"I guess I had a more relaxed approach to it. 'Cause, I knew that he wouldn't be a really hard grader and so it made me relaxed. Which kinda made me do good too. Because, otherwise I might have been panicking and write something that, you know, didn't make sense. 'Cause, you know, I had to write one paper for my other class and I was so worried about it that I didn't write it in the right style. Whereas in my instructor's class for computers, I wrote the paper and I was more relaxed and could concentrate on it more. So, in a way it did help me."

Most students seemed to feel that they not only learned a great deal from the instructor's approach to teaching and learning, but they also produced better work. Rose's emphasis on learning the processes versus a final product was unique among her classmates. She viewed the assignments as learning exercises and did not place as much value on the images created. In fact, she was observed going back to the camera digitizer to experiment and review the process and create another series of portraits after the conclusion of that assignment.
The students knew that they would receive full credit for completing their studio projects and participating in the critiques. Although the grading of these assignments did not seem to affect most of them, the idea that the instructor and other students would be viewing them and critiquing them influenced their desire to produce visually stimulating imagery.

None of the students recognized, or at least they did not communicate, a relationship between how they were evaluated on their written work and what they were learning to improve their writing. Although they acknowledged that the instructor was an lenient grader, they apparently valued his evaluations and believed that they had produced high quality written work.

6.2 The Instructor’s Perspective

In the study’s initial design and through the majority of the participant observation experience, there were no plans to focus on the instructor’s perspective. However, as the quarter grew to a close and the students became increasingly communicative about his role in the course, the value of his viewpoint was seen as an opportunity for comparison. His thoughts and opinions about the course, his approach to teaching and grading, and students are included as a means toward completing the circle of data acquisition. His views are important for understanding differences in perceptions between instructors and students. There were misconceptions between how the instructor saw himself in the classroom and how he was perceived. This phenomenon is similar to how some of the students tended to perceive themselves in a very different way from how they were perceived by others.
The instructor's side is also presented because it depicts an individual who felt that he was not having his best quarter teaching. His experience in this one course reminds us that although we as educators have the benefit of doing it all over again and better next quarter, the students do not. Their time with an individual instructor and course is usually limited to one quarter, and there are very few second chances to experience learning the subject, at that particular level, again.

The instructor was interviewed approximately two hours after the final class critique at the end of the quarter. It was a very casual interview without a prepared script. He was comfortable and relaxed. He said several times during the interview that this quarter he had felt rushed, disorganized, and behind schedule.

"This quarter I feel like I've been kinda a little flaky. The flakiness I think comes from that I just went through some incredible experiences over the past few months, just prior to taking over the class. Part of which was eastern Europe and all of that. And part of it was getting ready to do my own research. You know, since last week I've put out three proposals. You know, it seems like the whole quarter has been like that. There's been something driving me the whole time. And I can't even remember what it was at the moment but it's always something."

The instructor talked openly about his philosophy of teaching and how this quarter he was not able to individualize his instruction as much as he would normally. He spoke only briefly about the overall structure of the course and the classroom environment. However, we did spend a considerable amount of time discussing each student and his interactions with each.

Bob was asked to describe his style of teaching. He began by talking about how it is influenced by the relatively small class size normally associated with this course.
"I get to know all of the students somewhat, or at least as much as they will let me get to know them.... I try to kinda individualize it. And I guess if there's any major focus, the thing I try to go in and get a sense about in a class is the feeling about the technology. And the reason I do that is because I figure the biggest role I have in that class is to get 'em to feel real comfortable using the computer. And the second role I feel is to get them responsive to art."

Although he strove to individualize his instruction, Bob said that there were always some students that he did not get to know well and whose individual needs he was unable to address. Bob viewed Art Education 252 as an art course. His emphasis was creating art, learning to feel comfortable with technology, and developing the skills to talk about art. According to the instructor,

"Part of it for me is experimental, because these people are not artists, and it's trying to find ways to reach them. You know touch them somewhere else besides intellectually. Though that's good. I want to reach them there too. I want them to have the vocabulary to talk about art. And I want them to have some to talk to the computer. But, most of all, you know doing art, and being aware of art, and not being afraid of the technology. So that they can walk up to a computer and they're not afraid to punch around on it."

Bob felt that he was unable to track individual students as closely in this class as he has in the past. He also expressed a concern that he openly showed his favoritism to some students and that he had been more lenient than usual.

He was also teaching another section of this same course and began to compare the two groups of students. He said the other class, a night course, had a very different group of students.

"The class at night were such better writers. I mean just overall they were, I don't know if they were older or not, but they were better writers. And, uh, so and their ideas in their papers were much clearer. But maybe that's just a matter of night students being older or more mature. The day students seemed to be more willing to be a class. The night group, they seemed more, they weren't as coherent a group."
Bob's comparison of his two different course sections indicates the influences and effects various combinations of students have on the overall social environment of the classroom.

We talked about my presence in his classroom and the affects that it had on his teaching and the students. When asked if he felt like he was being evaluated he said,

"Well maybe, but sometimes I didn't act like it. Maybe I did sometimes when I wasn't in the classroom. When I was in the classroom, you know, when you got all that stuff to do, I just say screw it and go on and get what I had to done. I felt like I was always behind this quarter. I never felt as far behind as I did this quarter. I always felt guilty all quarter long, that bothered me a bit. Because you were there and I was not as together as I normally would be. I felt like I had better days."

The instructor indicated that there were a few times that knowing he was being observed influenced his preparation for teaching.

"There was a point where you were worried about not having discussions. So I made, well it also happened at a point where we started having time to have discussions. So I did push those."

However, most of the time knowledge of being observed did not affect his preparation process.

The instructor spoke briefly about the class discussions that he did have toward the end of the quarter, which were described earlier in the study. When discussing the long discussion in which he had a difficult time getting the students to participate he said,

"Yeah, they were funny that day. They didn't want to talk about it. And I think I really took them by surprise because they really hadn't had to talk
much before. And then, the ones that do talk are just those three or four. You know Rose might harp in once in a while. She likes to help but she doesn't have much to say. Patti never stops. Ed is pretty. Ed is pretty good and he also writes well.... I don't know what to say about that day, except that it was the first that it had been put upon them. They were a little stunned."

Bob felt that if he had prepared them more, had given them more opportunities to discuss the articles, they would have participated more in that discussion. He said that he felt it was difficult to have discussions in that room with the computers. He also referred to the one day that he did break the class up into small group discussions and felt that it had been very successful. He said that he planned to incorporate that technique when he taught the course again.

The instructor said that he didn't think about the information that the students were providing for the study. He tried to ignore that aspect of the experience. He thought that the students regarded the participant observer as an alien and referred to the inability of Linda to recall my name. The instructor also felt that some of the students felt that I had technical information that I was unwilling to share.

The instructor was asked to describe each student and how he tried to individualize instruction. This information is briefly presented to provide insight into how the instructor perceived individual students and his interaction with them. There are some cases in which the instructor had observations about the students that were consistent with the participant observer's. There are other instances in which the instructor had very little information about individual students and clearly was unable to consider an individualized instructional approach. There are some major discrepancies between how the students perceived themselves and how the instructor viewed them.
Bob described Rose as an art student that liked his feedback about her studio work.

"I wanted to encourage her in terms of that, you know. And whenever I would see her work I would talk to her about it, and also in the critiques I tried to be diplomatic."

The instructor perceived only a few of the students as art students. He did not recall most of their majors from the initial course surveys. Nor did he seem to find out this information during his interactions with the students.

The instructor felt that Brent was one of those students that he did not get to know very well.

"He seemed, I didn't know how to work with Brent.... I would make myself available to him. But he sorta stayed to himself."

Bob said that Brent occasionally asked some technical questions. He did not see him as an art student. He said that Brent did begin to open up more toward the end of the quarter and sought his help more often.

When asked to describe Patti he began to laugh.

"Patti is someone you try to escape from. Because she could just talk your head off, and she's going through a divorce. She has a real strange set of values. And it's hard, I remember one day, you weren't there I don't think. She was talking about bald men and that she really worried about bald men, especially when they were so young. And she was looking at Ed.... But she was always blurring. That day she blurted out more of these strange values. And then, she walked, we walked out together as we left and she just....we just talked back and forth all the way over to the parking lot. And I got the sense that she was pretty lonely and she's looking for a friend."
The instructor stressed that Patti did not write well and had difficulty formulating and articulating her thoughts. He felt that she was very confused. When asked about her effect on his efforts to lead discussions he said,

"Well she certainly dominates the verbal space....I think it made it hard for me to focus on the rest of the class sometime and I wasn't quite sure, you know, how to cage her."

Although the instructor spoke very openly about Patti, he was never observed to be rude or impatient with her. He did say that it was frustrating because she had a difficult time listening, which made it almost impossible to answer her questions.

The instructor felt that Linda was a bright and talented art student who enjoyed discussing art. He described her as having a good sense of humor and "typically mature" for her age. Linda was part of a small group of art education students in this course and his other one. Bob said that they seemed to enjoy telling him stories about each other. He said that he talked with them more during the open lab hours.

Michelle was another student that the instructor did not know very well. He considered her an art student but could not recall much of her studio work. Bob said that she rarely asked him for help, and he did not see her interacting with other students. He said,

"I couldn't pick up on her personality. And she was kinda...i only dealt with her....see it's hard to remember sometimes I get the two classes mixed up. Some of them it's like I have real moments with and then..."

The instructor did recall that Michelle often sat in the far corner and that this may have influenced his interactions with her.
Bob immediately acknowledged that he liked Sally right away. He said she was not an exceptional student, but she had a good sense of humor.

"And I think she also, she's one of those people, I think there's a number of students that respected what I had to say. And I think she's one of them. You know, I think some students just blow me off, like this weirdo, what did they let him out of the half-way house to come to teach this course? Whereas the other ones see that I have something to contribute and they like that. And she's one of them."

The instructor felt that Sally understood the concepts presented and picked up the tools in the paint program very quickly.

When asked to describe Ray, the instructor said,

"He's a contradiction, he's an enigma I guess. Because it seemed like his work was so superficial, his visual work. His synopses were not that, I mean they were just what I require, which is not a whole lot. I just want to have a sense that they read it. But, his term paper was pretty damn good, I mean as far as his writing went. So that really threw me. And you know when you ask him something he's sitting up there, rump ump bum. You know, its mostly grunt talk."

Bob went on to say that Ray seemed like he was the baby of the class. He thought that Ray was a design student and said that he usually did not ask the instructor for help.

Sophia was described by the instructor as a bright overachiever. He said,

"Sophia is going to die of worry. That poor thing, I don't know. She's the stressed out A student. You know, she's going to try to make As at any cost even if she kills herself doing it. She's going to worry, she's going to fret. She's a control freak, you know, she wants to control every aspect of it. She just couldn't let go. She wanted me to be right there and help her control that thing. I told her, you know, I kept saying it's OK to play and you know things can just, you don't have it so controlled."
He did not consider her to be an art student and felt that she was very technically oriented.

Ben was perceived by the instructor as a "frat boy." He said,

"He's, um, he's all boy. I don't know, isn't he? He just wags his tail and runs around. He's, uh, I don't know. He's the kind of person that I'm too easy on. I'll let them slide on a lot of stuff. But I, in a way, it's because he's already screwed himself. So I let him slide so that he won't get killed. I don't know, I don't think his work's that strong. He thinks it is."

Bob could not remember Ben's earlier work in the quarter, and therefore did not recognize the changes in its style. He did say that although Ben had missed quite a few classes, "he seemed to be unconcerned about it a lot. And he came in at the end, you know to make amends and be remorseful."

Bob referred to Ed as the resident scientist. He felt that Ed would succeed at whatever he pursued. The instructor viewed Ed as one of the more mature students. He said,

"I like his curiosity. I kinda admire his obsessiveness with things. Because you know, he seems like an engineer or something, but his aesthetic isn't that bad. It's kinda good in a way."

The instructor liked how Ed took it upon himself to figure out how to do things. Bob said that Ed was one of those ideal students that actually teaches the instructor some new things.

Alex was considered, "the silent one," by the instructor. Bob said that Alex only asked for help a few times and it was usually a technical question. According to the instructor, "He's another sorta invisible person." Although he tried to connect with Alex, it was difficult because he was so withdrawn. The instructor concluded that you had to confront him directly if you wanted to get to know him.
Ming was one of the students that the instructor continued to call by the wrong name all quarter. He said it was just a mental block. The instructor liked having her in the class and enjoyed discussing her work during the critiques.

"When people are from another culture, I'm almost as curious about them as anything just to see how, because you sorta say something and you wonder how they take it. I kinda like her work. I mean I didn't think it was great, but you could see another influence in her work that made it kinda curious and I wanted to explore it."

Bob could not recall if Ming had ever asked him for help. He felt that her writing had some problems but she was basically able to communicate her ideas.

The instructor did not consider James to be an art student and discussed his tendency to either be late or miss classes. Bob said,

"I admire a student as much for his irreverences as much as for his diligence and hard work. And, uh, he displayed both. I mean sometimes he was really irreverent, he would miss classes and didn't seem to care about things..."

The instructor did not recall if there was a time conflict that caused James to be late. Bob described him as unsettled and not serious about school.

The instructor did not know the majority of the students very well at all. He lacked basic information about their majors and previous experiences in art and technology. He could not recall the imagery the students had produced in the class or if their styles had changed throughout the quarter. This lack of information about students is not unique for educators but it did contradict his perception that he knew his students well and taught on an individual basis.
CHAPTER VII

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

Introduction

Within this final chapter a summary of the investigation will be presented. The summary will include a review of the research problem, the theoretical framework, and the research methodology utilized in this study. Conclusions will be drawn from the descriptive data and analyses presented and compared to the theoretical foundation for this study. Issues and concerns regarding the limitations and generalizability of the study results will be addressed.

Implications for the visual arts and general education curriculum will be identified within the context of an undergraduate education. The chapter will conclude with recommendations for further research and with information regarding the impact this study has had on the course *Art Education 252—Introduction to the Role of Computers in the Visual Arts*, its supervision and the mentoring of the GTAs assigned to teach it.

7.1 Summary of the Investigation

The goal of this research study has been to observe, experience, and describe one undergraduate computer art course from a participant's perspective. Research objectives included an increased understanding of how students perceive their own learning, their general education curriculum, and their experiences of creating and discussing computer art.
The Problem

As an instructor and curriculum supervisor for the course *Art Education 252*, I have observed and perceived a broad range of feelings and experiences associated with learning to create and discuss computer art. As an observer in a supervisory role, I have often been surprised at how instructors seem unaware of problems their students are experiencing. However, as an instructor I have also felt frustrated by the sense that I did not have a clearer understanding of what the students were experiencing as they learned to create and discuss computer art. In addition, since the students were often taking the course to fulfill either requirements for their general education curriculum or electives in their visual arts programs, it was not clear how the varied backgrounds and educational experiences of the students affected the social dynamics of the classroom, instructional strategies, and learning experiences.

The focus of this study was to gain a clearer understanding of the relationship between the course, *Art Education 252*, and what students perceived they were learning, as well as how this course related to their overall undergraduate education. The problem was to gain insight into how students perceived course objectives, activities, instruction, and their own learning processes within this visual arts course and how these perceptions correlated with the aims of undergraduate curricular reform.
The Theoretical Framework

The theoretical foundation for this study was presented in three parts:

1. Reform in undergraduate education
2. Issues associated with technology in the visual arts
3. The value of students' perceptions in research and curriculum development

The first area focused on reform in undergraduate education towards a greater integration of a liberal arts education with a specialized major area of study. The concept of a core curriculum was presented as a means toward achieving the aims of higher education. An integrated core would be one that introduces students to essential knowledge, promotes unification between general education course work and major areas of study, and sets students upon a path of lifelong learning.

The concept of the educated person was presented as a foundation for the aims of undergraduate education. Various disciplines were identified as contributing to the development of the individual while addressing the aims of education. Of particular interest in this study was the inclusion of the visual arts within a general education curriculum core.

The visual arts component featured within this study has been the course, Art Education 252. This course represents a specialized area of study within the visual arts and incorporates creating imagery and discussing issues associated with technology in the arts.

The second area of focus within the theoretical framework identified a multitude of issues associated with the inclusion of technology in visual arts
creative processes and the implications for aesthetic discourse and visual arts education. Several artists, art historians, aestheticians, and art educators viewpoints were presented as a means toward understanding the issues associated with content, concepts, and pedagogy for this introductory computer art course. Issues identified included the role of the computer as a tool, medium, or the work of art itself. Other issues presented focused on the unique qualities of computing in the arts for both the art making process and the appreciation of works created utilizing technology.

Three approaches to including technology in the arts in visual arts education were also presented. These included the following areas of focus,

1. Technical
2. Conceptual
3. Content

The first approach focused on computer technology itself and emphasized the technical skills necessary for incorporating technology into the visual arts. The second approach stressed the creative artistic process approach and included computer technology as one tool or medium among many that can be included by artists to visually communicate their ideas. The third approach focused on visual arts education and stressed the potential for interactive computer technology in teaching studio arts production, art history, aesthetics, criticism, art representing different cultures, and the social and cultural implications of computing in the arts.

The third focus of the theoretical framework for this study stressed the value of students' perceptions in research and curriculum development in higher education. Arguments were presented that challenged the value of students in
determining the aims of education, evaluating instruction, and making curricular
decisions. The focus of this dissertation study supported the students' role in
these areas and favored a Taoist humanistic philosophy of teaching as presented
by Maslow (1970). The Taoist approach values and encourages students as
individuals actively seeking, gaining, and assessing their own knowledge within
the context of curricular decisions in course selections, and within each course
they select.

Three research strategies for gaining a clearer understanding of students' perceptions in their experiences in higher education were presented. These approaches focused on the following methodologies:

1. Conceptual
2. Practical qualitative
3. Quantitative

The conceptual approach stressed a philosophical inquiry, defining issues and developing arguments with supporting materials from previous research studies. The practical qualitative approach emphasized the implications of implementing theoretical educational concepts into practice within real and observable environments. The descriptive case study approach was presented as an opportunity to gain insight into classroom dynamics and social interactions within classroom environments.

Freedman's and Relan's (1992) investigation into the social practices and artistic production associated with computer graphics in the art education classroom in higher education was presented as a significant descriptive case study in technology and visual arts education. Research findings from their
investigation will be reviewed and compared to this study within the concluding section of this chapter.

The third research strategy to gaining access to students' perceptions of their experiences in higher education presented was the quantitative approach. These studies were usually designed to allow for comparisons of students' perceptions before, during, and after a change or experience in the classroom. Studies such as these often collect measurable data and incorporate a variety of statistical analyses to formulate their conclusions. Although this approach was not utilized within this study, its merit for inclusion lies within the recommendations for further research.

The Research Methodology

The research methodology utilized in this study was a naturalistic descriptive case study approach emphasizing a qualitative orientation toward classroom research in higher education. Fieldwork techniques from ethnography were incorporated into this study. The role of the participant observer and ethnographic interviewing techniques closely followed the recommended research sequence of Spradley's The Ethnographic Interview (1979) and Participant Observation (1980).

An introductory computer art course was selected as the location for the social setting. The participant observer attended the course Art Education 252 and participated as a teacher's helper throughout the autumn quarter of 1991. The participant observation included observing the instruction, instructor, and students, participating in the activities within this course, interviewing students, and collecting field data. The ethnographic record included field data that was
comprised of descriptive observations and fieldnotes, students' reflective diaries, examples of students' work, photographs, audio and video recordings, recorded interviews, and examples of course materials distributed by the instructor.

The data was organized and analyzed within a series of domain analyses to determine relationships among the environment, the people, activities, actions, events, times, goals, feelings, and structure of the course. Focused observations were conducted that attempted to clarify and gain an increased understanding of relationships discovered in the domain analysis. A taxonomic analysis followed to establish larger relationships or categories among the previously determined relationships. This process served to narrow 75 domains into 14 larger domains or taxonomies of focus for this study.

Selected observations were made within the classroom to gain further insight into more focused areas of interest as the analysis continued. These observations stressed an increased awareness of the various categories established during the taxonomic analysis. For example, one category within the taxonomy involved problems experienced within the Amiga Lab. Selected observations were conducted to discover how these problems occurred, how different people handled them, and how they felt about these experiences. Although the nature of the observations did become more focused throughout the study, a fairly wide view was maintained throughout the research and has been included in the descriptive content of the research findings.

A componential analysis followed in an effort to establish contrasts between the narrowed domains and to further delineate the larger categories. A componential worksheet was completed and two larger domains were
established that incorporated all of the selected areas of focus for this study. Cultural themes were established to provide clearer connections between the subcategories within the two larger domains.

An inventory of all the data collected and a review of all the analyses followed in preparation for the written account of this study. Strategies for organizing the theoretical foundation, methodology, descriptive data, analysis, conclusions, limitations, and recommendations were formulated and then a written account was generated as the dissertation document.

7.2 Conclusions

Throughout the report of this dissertation study, descriptive analysis and conclusions have been drawn regarding the students' integration of their general education curriculum and their major areas of study. Descriptive conclusions have included how students select courses to fulfill their GEC requirements and how the varied backgrounds of students influence their expectations, experiences, and perceptions. Other conclusions have been suggested, including the influences that the social dynamics of the classroom and style of instruction have on the students' learning, activities, and perceptions of experiences in the course.

Within this section, these conclusions will be further clarified and discussed within the theoretical framework context of this study. The discussion begins with a list of conclusions drawn from the data and analyses. This is followed by a discussion regarding the relationships between the course Art Education 252, the aims of undergraduate education, and students methods in selecting and perceiving courses.
As a result of this study the following list of conclusions has been formulated,

1) Students do not perceive their undergraduate experience as an integrated program unifying their general education curriculum with their major areas of study. Students view GEC courses as isolated pockets of experiences with little relevance to their majors. Therefore, the aim to foster a greater understanding by students of the nature of given profession within the society may not be realized.

2). Students outside of the visual arts that are enrolled in their second course for their visual arts requirement in the arts and humanities lack the background and experience to engage in in-depth aesthetic, interpretative, and evaluative discourse. However, they are equal or advanced in their critical listening, reading, seeking, thinking, and writing skills to students majoring in a visual arts field. As a result, both groups benefit from one another in their social interaction as they experience the arts together and help each other develop their lacking skills. The aims of the arts and humanities component in the general education curriculum is successful when students are enrolled in courses with a mixture of visual arts and non-visual-arts majors and are encouraged to participate in peer interaction.

3) Students with little to no previous computer experience can learn to create visual Imagery using Interactive graphics software within a ten week course. Students with previous computer experience transfer their technical skills quickly and are more comfortable working with technology.
Students with backgrounds and experiences in the visual arts transfer their skills to the computer environment and are more comfortable communicating their ideas visually. Students with very little experience in visual arts studio production do not acquire artistic skills just because they are creating imagery with a graphics software program that has a multitude of previously determined tools, palettes, and perspectives.

4) **Students view the computer as just another tool in the artistic production process.** They do not consider the role of computers in the visual arts to be an important issue. They accept technology as an integral part of our society. However, unless they have had previous course work in computer programming, they lack basic computer literacy that enables them to understand the differences between writing a computer program and using one as an artist.

5) **Although the computer offers the opportunity to create and save multiple versions of the same image and to quickly fix mistakes utilizing undo functions, students often do not utilize these flexible options and approach their final image making in a very linear fashion.** However, in the ideation phase they do rely on the flexible nature of the computer in a trial and error, or interactive, approach to discover what the computer can do, and how these functions can be incorporated into an image.

6) **Studio production assignments that emphasize technical skills yield imagery and critiques with very few opportunities for**
Interpretation. Students are able to generate ideas more quickly and discuss them in more detail when they are given assignments in which they are able to communicate an idea or concept. Assignments that lack conceptual direction are not only more difficult to get started on, it is more difficult for the students to communicate the goals and objectives of their artistic process beyond the technical level.

7) Students cannot communicate the major goals and objectives of courses and often do not recognize the breadth and scope of their own learning or development of skills. As a result, students are unable to perceive the relationships between different types of activities within a course and the relationship between these activities and the goals and objectives of the course. Although students viewed their experience in this course as an independent study in computer art production, their developing skills in critical thinking, writing, and talking about technology in the visual arts reflected the unification of theory and practice embedded in the course’s structure, philosophy, goals, and objectives.

8) Students assume the responsibility for their own learning and initially blame themselves for problems they are having remembering and applying technical skills on the computer. Once they realize that they are not alone in their frustrations, they begin to transfer some of the blame onto the instructor, software, and/or hardware. Although they may partially blame the instructor, if they are getting good grades in the course, learning the
necessary skills, and able to accomplish their work, they maintain a fairly positive attitude toward this individual.

9) Students assume that if they are getting good grades then they are producing good work. However, if they know the instructor is a lenient grader they do not put forth as much effort in completing their assignments.

10) Students and instructors have very different perspectives about what is important for them to learn in the class. The students perceived focused acquisitions of technical and artistic skills as their goals and objectives for this course. The instructor felt that he emphasized the development of critical thinking and communications skills concerning the role of technology in our society.

11) Students that have preliminary information about a course, from students that have taken the course before, tend to perceive the course in much the same way they anticipated. Students rely a great deal on the recommendations from their friends and classmates regarding which courses and instructors to take and why.

12) Students perceive their own learning, quality of work, and participation in the social dynamics of the classroom differently than do their instructor and fellow classmates.
Discussion

When students were asked to reflect on their general education curriculum, many were unable to articulate, or focus upon, the relationships between the core curriculum and the major areas of study. The courses taken from outside their majors were often viewed as isolated pockets of experiences and, with only one exception, there was no effort to consciously integrate their coursework into a larger field of study. For the most part, students relied on a list of courses that could be taken to fulfill their requirements when planning their education. Many received these lists from the offices of their academic advisors, but did not rely on these advisors for input into shaping their GEC requirements into a cohesive program of integration with their major areas of study.

All of the students reported that the most important element in deciding which courses they selected to fulfill their GEC requirements was to take a course whose content was of interest to them. Students tended first to read the descriptive summary of the courses in the OSU course offerings catalog or printed materials provided by their colleges. Most said that they normally relied on the advice of friends when making the final decision to take a course. Many reported that they also relied on the advice of friends when deciding which instructors were best for teaching these courses.

Only one student in this study seemed to consciously plan an integrated course of study with an emphasis on a liberal arts education. However, it is important to note that this individual was a transfer student, had changed his major, and was trying to finish his requirements for graduation. Since he had changed colleges within The Ohio State University, his list of requirements had also changed. It may have been that his focus on integration was the result of a
recent meeting with his advisor and the fact that he was taking these GEC courses later in his undergraduate education.

Students that take all of their GEC courses within the first two years, and have not yet taken the higher level of concentrated courses within their major area of study, may not have had the opportunities to understand the relationship between courses taken from within and outside their majors. Students lacked guidance and practice in learning to integrate and reflect on their educational plans and experiences.

These findings support the need for reform in higher education, as recommended by the Carnegie Foundation and implemented by The Ohio State University, toward a continuation of the general education curriculum throughout the four- or five-year undergraduate experience. This study also supports Brubacher's (1982) contention that students lack the broad experience and knowledge of the past, present, and ideals of the future and are primarily concerned with desirable particulars when it comes to the planning and implementation of their undergraduate education. However, this finding also suggest that Maslow's (1970) Taoist humanistic philosophy toward education, in which students take on more responsibility for their own learning, may not work for all learners and that it will not work unless these autonomous skills are fostered.

Since the visual arts students and students from outside of visual arts majors all benefited from the peer teaching and interaction that took place within the classroom, one can see that integration at a grass roots level has already begun at this university. Although there is a natural tendency for individuals to group together in difficult situations to solve problems, this survivalist approach is
limited in its breadth and scope for achieving the aims of education. Active learning and problem solving strategies in small groups are recommended, which allow for more control in the objectives and outcomes of educational experiences.

The study also supports the stance that students will not automatically become artists just because they are learning to use interactive graphics software. Although the students felt that they had improved the aesthetic qualities of their imagery as the quarter progressed, those that did not have any formal education in visual arts theories were still lacking basic art production skills. Most nonart students did not even seem to be aware of these concepts and therefore felt they were creating work with the same artistic control as their visual arts classmates. However, the visual arts students did feel that their backgrounds in formal art concepts helped them considerably in the planning and execution of their imagery.

This finding supports views presented by Binkley (1990), Ettinger (1988), Livine (1989), Stredney (1991), and Wright (1989). Incorporating computer technology into the visual arts curricula does not take the place of traditional visual arts theories or practices. Since this course did not include history of art or present detailed concepts of color theory, composition, perspective, abstraction, or realism, students without experience in these areas were unable to reflect adequately on the impact of their planning and execution in the image making process.

Since the students tended to take for granted the role of computers in our society, they did not see the relevance of contemplating the role of technology in the arts. This attitude against theoretical discourse about the issues associated with technology in the arts was more prevalent in the visual arts students.
Students from outside the visual arts found that the readings and discussions about aesthetics introduced new concepts and opportunities for discussion that they had not experienced before. However, both groups lacked the skills to reflect on the impact of the technology on their image making process until they began to read and discuss issues associated with this course.

Unless the students were encouraged to reflect on their experiences in creating imagery utilizing technology, they were unable to articulate what they were learning that was unique to this course while doing the studio projects. These findings support the views presented by Jones (1989), Linehan (1985), Nadin (1989), and Sheridan (1990), which call for a more reflective approach to incorporating technology into the art process and warns of the consequences of simulating traditional tools and art processes. Although these students have become accustomed to technology in almost every facet of their lives, many lack basic computer literacy and do not understand the differences between writing and utilizing software programs. Therefore, as Nadin (1989) suggests, students are unable to understand the influence these technologies have with their "prefabricated solutions," in the art making process.

The study also supports the collaborative role of technology in the generation of ideas as presented by Van Der Bogart (1990) and Freedman and Relan (1992). Students in this study stressed the importance of exploration and trial and error not only in the acquisition of skills using the computer, but also in the generation of ideas for studio projects. Students did utilize the computer as the primary environment for the planning of their imagery. However, they did not become engrossed in the generation of multiple instances with slight variations, or seriation, as presented by Freedman (1989, 1991, 1992). Nor did the study
support the views of Wright (1989) when he warns of the risk-free computer environment and its potential for endless floundering in the generation of imagery.

The students did not view the computer environment as risk-free since many of them lost their digital work several times throughout the quarter. And many never understood basic computer concepts or skills. Therefore, some were in a state of constant apprehension because they did not know how to prevent or control the loss of the work they were generating on the computer. The notion that students will shift from a focus on the final product to an emphasis on the creative process was only perceived in a few cases. Although they were observed to spend a great of time exploring and interacting with the computer and fellow classmates, most students were more inclined to stress the learning of technical skills rather than the creative process as the most important aspect of their image making.

When studio assignments were given that stressed technical skills, students not only tended to perceive the purpose of the assignments to be technical but they also had a difficult time formulating ideas and discussing interpretive concepts associated with these images. This observation supported the direction that West (1990) proposes, which encourages a shift away from media focused curricula to one that emphasizes ideas and concepts. He does acknowledge the importance of exploring a variety of processes in his approach to teaching the visual arts. However, unless the students are able to acquire the necessary technical and theoretical skills necessary for creating a visual image, as indicated by Binkley (1990), Ettinger (1988), Livine (1989), Stredney (1991),
and Wright (1989), then it doesn't matter how stimulating a concept may be for creating an image.

A balance between aesthetic and technical development, when incorporated into a visual arts studio assignment, still does not lead students to perceiving the purpose of an assignment as anything other than learning the necessary skills. If goals and objectives are not clearly presented, discussed, and reflected upon, students are unable to recognize them. In addition, if the relationships between various types of activities are not clearly communicated, then students will not consciously recognize the role these activities have in fulfilling the goals and objectives of the course. For example, in this course students could not see a relationship between the reading, writing, and discussion assignments and the studio projects. Nor could they envision what could be asked on a midterm exam for this course. However, most did participate in these activities and felt they learned something from each of them.

That students will assume responsibility for their own learning supports the Maslow (1970) approach. However, when they are assuming this responsibility because they are not provided with adequate information necessary for participating in a course, then they begin to question why they are so frustrated learning the course content. The dynamics of the shifting of blame from oneself to the instructor, hardware, and software in this study highlights an issue raised by Feldman (1976) when he questions whether or not students are in a position to evaluate instruction accurately.

Students in this course displayed a variety of behavior that explained why they missed vital information that was presented by the instructor. At the same time, they assumed he had a great deal of knowledge about the course's subject
matter and many thought he did a very good job teaching the course. It was not until the close of the quarter that they began to indicate that they felt his preparation and teaching could be improved. Ironically, he had improved a great deal throughout the quarter. The instructor's most disorganized presentations took place in the first five weeks of the quarter and the students were, for the most part, impressed with his instruction of the course during this time.

The students began to perceive their own abilities to learn and help others learn material for the course. Many of them were also influenced by the preliminary information they received about this course. Most that had prior knowledge of the content and structure of this course anticipated an educational experience that would be frustrating and time consuming, but at the same time fun and worth the effort. Students who were told by their friends that they would really like this instructor did not communicate any negative or critical information about his instruction. Or, if they did, they would rationalize it by saying that they were sure with more experience he would be a much better teacher. The influence of anticipated experiences and perceptions from preliminary information regarding students' reported perceptions supports the findings of Terry and McIntosh (1989). They conclude that students' ratings of courses and instructors are influenced by extraneous variables. In this course the students shared extraneous information they received regarding the course, instructor, and individual activities both before taking the course and during the quarter. As Terry and McIntosh (1989) indicate, the validity of this extraneous information does not alter the anticipated experiences or perceptions of them in the classroom.

Boud and Falchikov (1989) stress the role of self-assessment in the process of students' assuming more responsibility for their own learning. The
ability for students to assess their own competence is crucial if they are to develop along a path of life-long learning. Boud and Falchikov (1989) acknowledge the lack of information instructors have about students' knowledge and skills when they assess student learning. Their research supports the notion that students and teachers have very different ideas of what is important. These differing perspectives lead to vastly different interpretations of effort and learning.

The instructor in this study had very little actual knowledge of the students' backgrounds, experiences, or participation and learning in this course. However, his assessment of their work was proclaimed to be on an individual basis. He was unable to recall earlier work that they had produced or whether or not they were visual arts students. Although there were eight students in this course from the visual arts majors, he perceived only three of them to be art students. He tended to be a very lenient grader who provided very few comments on written work for feedback. As a result, students felt that they were doing very well in the class because they were making good grades.

There was a contradiction between their frustrations and perceptions while acquiring the necessary technical skills and the grades they were receiving. Since the students valued the instructor's assessment of their work, they were not inclined to work harder or question their own competence in their studio, reading, writing, and discussion skills. The students reported that they felt they learned a great deal from this course, and they felt that they tended to learn more from instructors with a similar easy-going style of teaching and evaluation.

As presented within the theoretical framework chapter, the study by Freedman and Relan (1992) of students in an art education course learning a paint program on computers has the highest relevance for comparison with the
technology in the visual arts aspect of this dissertation study. For review, their study involved 11 undergraduate art education students attending a ten week course. Their research methodology incorporated both qualitative and quantitative strategies for data collection and analysis. Their qualitative methods were very similar to those utilized in this study. The focus of their study was the practical applications of theoretical issues associated with social interaction, learning, and instruction, utilizing computers in the art education classroom.

As previously cited, Freedman and Relan concluded that

The results of the study indicate that descriptions of computers as either controlling student imagery or as just another art medium are inadequate. Three group trends resulted that correspond to the initial research questions: (a) there was a general shift during the learning process from a focus on production to ideation in the students’ responses about their image development and learning processes; (b) the students’ images developed interactively in both production and ideation, indicating that the students both controlled the computer and the computer influenced changes in their images and ideas and that these interactions were important to learning not only about the computer but about aesthetic possibilities; and (c) the social interactions among students were important to computer graphic development and to learning processes (1992, p. 108).

The conclusions of the Freedman and Relan (1992) study support many of the observations, analyses, and conclusions pertaining to these three areas within this study. However, in this study the shift from production to ideation shifted back to production when the students began working on the animation project. Since Freedman and Relan do not include information regarding the nature of the studio assignments, it may be that a similar phenomenon would have occurred in their case study had their students been introduced to animation at the conclusion of the quarter. Since the animation project for this study did not have a conceptual component, and there was a large degree of
technical information to be acquired, students were following a pattern established earlier in the course when new material was introduced.

The findings in this study were similar to Freedman's and Relan's (1992) in the interactive nature of the students working with the computers in the development of ideas, production, and aesthetic possibilities. Students indicated that they generated many of their ideas through exploration with the computer and seeing what their classmates were creating using the computer.

This study also supports the importance of social interaction in the learning and development of ideas within the classroom. Students in this course not only learned technical skills from one another, but they were also influenced by the aesthetic qualities of the work being produced in the class. Furthermore, they were affected by what they perceived to be the reactions of other students when their own work was being discussed during informal discussions and critiques. While the nature of these perceptions was at times different from what the participant observer and others in the class observed, the comments and attitudes of other students played a major role in students' learning and perceptions of their own work.

The Freedman and Relan (1992) study report lacked sufficient contextual information concerning the course, participants, environment, and the role of the researchers within the social setting. Therefore, these comparative conclusions are limited. It was not clear to what extent the students were influenced by Freedman's role as the instructor in the course or how much information these researchers may have shared concerning the desired outcomes of their study.
7.3 Implications for Education

Contributing factors to the lack of conscious integration of GEC courses with the major areas of study include the lack of either knowledge or willingness of academic advisors, within the major fields of study, to help students plan and reflect on their overall undergraduate education. Many students in this study seemed very focused in their major areas of study and reported that their advisors knew little about other courses outside of their departments or colleges. In addition, many instructors are unable to correlate information presented in either GEC courses or the major areas of study with other areas outside their own disciplines (Carnegie Foundation for the Advancement of Teaching (1986)). Some students in this study reported a blatant negative attitude by their advisors toward any coursework outside the focused areas.

Therefore, if undergraduate reform is to become truly integrated, students and faculty will need to learn the process of integration. The recommended integrated core by the Carnegie Foundation (1986), which stresses a continuation of GEC courses throughout the four or five year undergraduate program, may provide more opportunities for unification. Since students have already assumed much of the responsibility for creating a balanced curriculum within the basic guidelines, they should be further empowered with a greater understanding of the relationships between various disciplines to aid in their course planning decisions. Although much of this information is presented in freshman orientation courses, the practice needs to continue throughout the students' undergraduate education. This may be especially relevant for transfer students.
Many students currently lack the skills to adequately reflect on what they are learning within individual courses. This phenomenon makes it even more difficult for them to reflect on the overall integration these courses have had in their undergraduate education. Although students are often unable clearly to define an integrated core that constitutes their general education curriculum, they are able to rationalize the selection of individual courses.

Many students from the study were taking this introductory computer art course because they wanted to learn more about computers and art. This rationale was similar for both the visual arts students and those from outside the visual arts majors. Most wanted to learn more and expand their notions of art and to become more comfortable using computers. The art education students viewed the course as an essential element in their preparation for teaching. Those with more computer experience wanted to learn to utilize the computer in a more creative manner. And those with more creative experiences wanted to learn to use the computer to accomplish what was already familiar to them, creating visual imagery.

Courses, such as this introductory computer art course, that fulfill GEC requirements offer unique opportunities for students to experience disciplines from outside their own academic domain. These courses and their instructors are in the position to integrate various disciplines through more active participation of students sharing their perspectives, and by incorporating course materials that cross the boundaries of various disciplines. Therefore, an increased awareness of integration in education and multidisciplinary approaches within our society needs to become an integral part of courses offered throughout the undergraduate experience.
Students attending introductory computer art courses that have a variety of learning activities should receive clearer guidance in the relationships between these activities and the goals and objectives for the course. They should also be encouraged to reflect on the relationships between what they are reading and experiencing in the classroom. In other words, it cannot be taken for granted that students will draw an association between reading about the issues associated with incorporating technology into the art process and their own experiences in creating imagery utilizing technology.

Furthermore, when individual assignments are presented to students, clarity in their goals and objectives should be emphasized. Students are unable to articulate what they have learned doing course activities because they have not had practice, or developed the skills, for reflecting on the relationships between goals and objectives with the outcomes of these experiences.

Since there often exists a vast difference in perceptions regarding what is important in courses and individual learning, instructors need to find ways in which to establish environments with greater communication. In addition, students need to be more involved in assessing their own learning and providing this information to instructors. Utilization of active learning strategies, with multiple opportunities for instructors to engage in dialogue with students, is essential for addressing individual needs in education. At the same time, students need to assume more responsibility for communicating their perceptions of the course, its content, and their experiences learning the content to instructors. If they are having difficulty learning material, they need to take some of the initiative to communicate this to the instructor.
And finally, students and instructors need to learn strategies for focusing on what is happening in the classroom while they are there. Outside distractions, simply not paying attention, and schedules over loaded with school, work, and social activities create an environment in which much of the vital information necessary for fully participating in a course is never even perceived.

7.4 Limitations and Generalizability

The report of this study, the conclusions drawn, the implications for education cited, and the recommendations for further research are presented with the realization that the environment, participants, and course are to some extent unique to this situation. However, detailed information about the research environment has been provided to aid the readers in synthesizing the data within their own areas of interests in order to determine the scope of generalizability. This approach has been utilized in order to alleviate the criticism of Boud and Falchikov (1989) that many research reports lack sufficient descriptive material about the context of the study. They indicate that without detailed descriptive data, it is very difficult for the consumers of research to adequately draw comparisons between studies to formulate a larger body of conceptual data for the development of educational theories. A larger body of contextual information also enables closer comparisons when studies such as this are replicated.

Information about the ways in which students plan and perceive their general education curriculum and about the goals, objectives, and learning in this course was limited to 13 students. Eight of these students were from the visual arts and five were from other major areas of study. While the size of the data
sample is relatively small, detailed triangulated information was collected. As a result, larger patterns for comparison were possible and validation within this study enabled the development of conclusions that could be generalized to a larger population.

The students in this study were open and cooperative in communicating their perceptions and experiences within this course and their undergraduate education. However, there were instances in which the participants seemed unable to clearly articulate their perceptions. This may have been because they were not accustomed to such reflection, or perhaps because they were just not comfortable discussing their personal thoughts and feelings. Others seemed to lack the vocabulary specific to the content of this course and may not have been comfortable with the generalized terminology when talking with someone that they felt may have known more about computer art.

As the quarter progressed, most of the students did become more communicative and seemed to feel more comfortable being interviewed. Within the reflective diaries, students that tended to be very verbal and open shared more information. Students that tended to require more prompting during interviews were more brief and superficial in their responses. Since one part of the study was to gain insight into the natural depth of reflection of the students concerning their studio work, they were not influenced to change their approaches to completing the diaries. However, as the study progressed, students became aware of the types questions that would be asked in the diaries and interviews; as a result, they were developing reflective skills not normally associated with this course.
The instructor for this study did not openly acknowledge being influenced by the presence of the participant observer in this course. However, he did say that he wished that he had been more organized and better prepared for class. Since the participant observer was in a supervisory position to this instructor, a possible influence cannot be ignored. It is probable that the improvement throughout the quarter of the instructor's demonstrations was influenced by the daily presence of the participant observer. It is also probable that the instructor was slightly influenced by the knowledge that the students were discussing their perceptions of the course with the researcher. The instructor's change in organizing class discussions was the direct result of the participant observer asking him to include more discussions in order to find out the students' feelings about the relationship between discussions and the studio activities. Although the instructor was informed at the onset of the study that his instruction was not part of the study, he may have sensed that he was being evaluated in some way.

The role and experiences of this researcher as a supervisor and instructor cannot be ignored as a contributing factor to the ways in which the course and instruction were perceived. When collecting and analyzing data a great deal of effort was made not to compare the instruction in this classroom with my own approach and the pedagogy of other GTAs. In addition, knowledge gained in coursework and research in teaching in higher education may have influenced perceptions of the instructor.
7.5 Recommendations for Further Research

The scope of this descriptive case study included a broad view of how students perceive their own learning, their general education curriculum, and their experiences creating and discussing computer art. Recommendations for further research include replication of this study for comparison and more focused studies on specific conclusions drawn.

The following list of recommendations is presented within the context of the three research strategies presented in the theoretical framework.

A Conceptual Research Strategy

a. An in-depth philosophical investigation into the three approaches to incorporating technology in visual arts education.
   i. Technical
   ii. Conceptual
   iii. Content

b. A philosophical investigation into the unique implications of technology on the creative artistic process.

A Practical Qualitative Research Strategy

a. Replications of this study within the same course, but with a different instructor, the upgraded computer hardware and software environment, and new reading materials. The study would encompass three different course sections. The first with a balance between the number of visual arts and nonart students. The second with a predominate number of visual arts students, and the
third with a predominate number of nonart students. Comparisons
would be drawn to clarify the influences of integrating visual
arts students with nonart students within this course.

b. A descriptive case study with the same research methodology focusing
on students within another visual arts course serving to fulfill a GEC
requirement. This study would encompass the same aspect ratios
and number of course sections as described in the previous
study recommended in this list. This study would allow for further
clarification of the unique technological aspects and influences in
the computer art course on selection, GEC integration, learning,
and social interaction.

c. A long-range case study that follows a group students from the onset
of their undergraduate education to their graduation. The focus of
this study would be to gain an understanding of how students plan
and perceive their undergraduate education and how they select
and integrate their major areas of study with their general education
curriculum.

A Quantitative Research Strategy

a. A focused study from within an introductory computer art course that
measures the changes in students' attitudes toward learning
experiences and technology, increased awareness and usage of
computer art related terminology, and changes in production
processes. These variables would be measured before and after instructional activities, utilizing a question survey and multiple choice instrument. An example would include measuring the impact of readings and discussions on the development of language specific to the issues associated with technology in the visual arts.

b. A study that measures changes in anticipated attitude toward the content, work, and learning in a computer art course, with attitudes surveyed at the midterm time and conclusion of the course. The focus of this study would be to determine the influence preliminary information about courses and instructors has on students' attitudes throughout the duration of the course.

These recommendations represent just a few examples of research needed within this newly emerging field of technology in art education. Replication of studies is especially important to strengthen the development of theories in visual arts education literature. Currently, the research foundation within this area is so small that very little critical analysis and comparison of studies has taken place. The written account of this dissertation study serves as a contribution toward the field of visual arts education research with an emphasis on the role of technology. The broad range of research questions, observations, analyses, and conclusions presented will serve as a foundation for inquiry for future studies in technology and visual arts education.
7.6 Implications for Art Education 252

A practical outcome of this study involved implementing some changes in the course Art Education 252. Information gathered from students' perceptions and my own observations during the study led to some adjustments in supervising the course, its structure, and instruction. Another contributing factor to the change in Art Education 252 has been a major hardware and software upgrade and a move to a newly renovated room.

The number of studio assignments for this course has been changed to five instead of seven. The self-portrait and portrait assignment were combined into one project. The internal and external space assignment was changed to an editorial project in which the students are to communicate a stance on an issue. The animation assignment was consolidated and now includes two formalized introductory projects—animating a bouncing ball and creating a storyboard.

There are now only four assigned readings in the article packet, and the articles have been updated. There is now a text for the course that provides a broader overview of the history of technology in the arts and the various approaches artists take in incorporating computing in the arts. Information presented in the text regarding the collaborative efforts of artists, scientists, and corporations provides opportunities for discussions about multidisciplinary approaches to the arts in our society. Videos and slides representing contemporary computer mediated art are also now utilized in the course.

The term paper is now expected to be six to eight pages in length. The midterm exam is no longer included in the course. The grade apportionment has been adjusted to place more emphasis on the synopses, term paper, and class
participation. There has only been a minor adjustment in the total points earned in studio projects.

Social interaction is now more integrated into the course structure. Students are provided time to break into small groups at various points in their studio work to discuss their goals and techniques and ask for advice concerning their work in progress. A variety of techniques are employed to facilitate small group discussions on the articles and assigned readings in the text. Students are also encouraged to share their own unique perspectives and experiences during class discussions.

The supervision of the course has been adjusted to include more group interaction among the GTAs. The GTAs spend several days together prior to the first day of classes fall quarter. During this time they practice giving demonstrations, presenting the course materials, and answering questions students typically ask. The experienced GTAs share information concerning their experiences teaching the course and discuss areas that they hope to strengthen in their own teaching. The new GTAs have an opportunity to learn from the more experienced teachers and establish peer mentoring relationships that last throughout their GTA appointments. The more experienced GTAs are requested to drop in on the new ones during the first few days of class in case they have any questions. Normally, they work at a computer in the back of the room and are simply available in case there is a question.

The GTAs are expected to attend biweekly meetings during the autumn quarter to discuss the course and their experiences. These meetings provide opportunities for sharing problem solving ideas and discussing strategies for creating an active learning environment for their students. Emphasis is placed on
open communication in the classroom. The GTAs are encouraged to get to know their students' unique backgrounds, majors, and goals and to utilize this information in class discussions and help sessions. They are also encouraged to seek feedback from their students regarding the structure, content, and pace of the course. Subsequent to the autumn quarter meetings, I meet individually with the GTAs to discuss and plan strategies for instruction.

And finally, this study has had a profound impact on this researcher's understanding of students and their perceptions within the classroom. A greater effort to employ the techniques cited above has been incorporated into the teaching and supervision of Art Education 252. One of the most important outcomes has been the realization that an instructor can make a difference in a student's life by taking the time to get to know students, individualize instruction, help students learn from each other, and promote a greater understanding of the students' participatory role in learning.
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APPENDIX A
INTRODUCTORY SURVEY OF PARTICIPANTS
Art Education 252
Introduction to the Role of Computers in the Visual Arts

Introductory Survey

Course Section:
Instructor:

1. Name:

2. Phone:

3. Department:

4. Major:

5. Class Rank:

6. Schedule:

7. Do you have any previous computer experience? If so, please specify.

8. Briefly describe your experience and background in the visual arts.

9. What are your expectations of this course?

10. How do you plan to incorporate this course into your academic and professional goals?
APPENDIX B
FIRST SET OF FORMAL INTERVIEW QUESTIONS
First Set of Formal Interview Questions

1. If you were going to describe this course to a friend, what would you tell them?

2. Would you describe for me a typical class session? What I mean by that is, what do you normally do from the time you come in until you leave, each Monday and Wednesday from 3:00 to 5:00 in this class?

3. Would you describe what you do when you come in during the open lab hours and how it differs from what you do during regular class time?

4. Please describe your sequence of doing a studio activity?

5. How do you go about summarizing the reading assignments?

6. Could you tell me how this course relates to your general education curriculum? Or, if you are used to calling them the BER’s, how does this course relate to them?

7. What do you think of the course including both reading about computer art and making it?

8. What do you think the reason is for discussing the reading assignments?

9. What do you feel you are learning in this class?

10. Can you give me an example of something you've learned in another course that has helped you in this course?

11. Can you tell me how you go about selecting your courses to fulfill your general education requirements?

12. How did you find out about this course? And, Why did you decide to take it?

13. Is there anything else that you would like say about yourself or this course?
APPENDIX C
SECOND SET OF FORMAL INTERVIEW QUESTIONS
Second/Final Set of Formal Interview Questions

1. How has your attitude toward computers and computer art changed throughout this quarter?

2. Has the approach that you take when completing a studio project on the Amigas changed from the first assignments?

3. What is your general impression of the instructor's knowledge of the issues concerning computer art?

4a. Could you describe your instructor's style of teaching?

4b. How has the instructor's attitude toward grading and teaching influenced your learning and quality of work?

5. What do you consider to be your most important resource for learning the tools in the DPaint program and camera digitizer?

6a. What influences the amount of talking that you do during discussions in the class?

6b. And, what about during the critiques?

7a. Have you had any experiences where you lost your work on the computer?

7b. How has this affected your attitude and methods of working?

8. Do you take notes during the demonstrations that the instructor gives?

9. What did you learn about your own work and the possibilities of the DPaint program during the critiques?

10. Can you tell me about an experience where you had a hard time understanding a new tool or activity?

11. Could you tell me about an experience where you felt that you really understood something important about the computer or software?

12. Do you interact with classmates in other courses to the same extent as you have in this class?

13. After completing this course, how would you feel about approaching an unfamiliar computer and learning its graphics software?

14. Did you consider this course to be easy or difficult?
15. Did you consider the work you were doing in this course to be productive learning time, or what some people might call busy work?

16. Do you think this class has improved your understanding of contemporary art?

17. If you were going to change anything about how you participated in this course, what would it be?

18. Is there anything that you would change about this course?

19. Do you have any other comments that you would like to share about your experience in this class?
APPENDIX D
FIRST SET OF REFLECTIVE DIARY QUESTIONS
Reflective Diary questions for the Still life, Self-Portrait, and Portrait assignments.

A Descriptive Case Study of Student Perceptions in an Introductory Computer Art Course

Marsha J. McDevitt, Ph.D. candidate, Department of Art Education
Dr. Robert Arnold, Associate Provost, Principal Investigator

**Studio Activities Reflective Diary**

Name_____________________________________

Date_______________________________________

Studio Activity___________________________

1. What do you consider to be the most important thing you learned doing this project?

2. What do you consider to be the purpose of this assignment?

3. If you were going to do this project over again, knowing what you do now, what would you do differently?

4. How did this project relate to the readings and discussions in this course?
5. How does this project relate to your professional and education goals, and/or your general education curriculum?

6. Any other comments?
APPENDIX E
SECOND SET OF REFLECTIVE DIARY QUESTIONS
Reflective Diary questions for the Internal/External and Animation assignments.

**A Descriptive Case Study of Student Perceptions in an Introductory Computer Art Course**

Marsha J. McDevitt, Ph.D. candidate, Department of Art Education
Dr. Robert Arnold, Associate Provost, Principal Investigator

**Studio Activities Reflective Diary**

Name________________________________________

Date________________________________________

Studio Activity___________________________

1. What do you consider to be the most important thing you learned doing this project?

2. Did you use any new tools or functions? If so, please indicate what they were.

3. What do you consider to be the purpose of this assignment?

4. Please describe the concept that you were trying to communicate through your project?
5. Please describe the visual elements in your image that you used to express or communicate your concept.

6. If you were going to do this project over again, knowing what you do now, what would you do differently?

7. Did any information presented in the readings or during class discussions influence your process or attitude toward this project?

8. What do you consider to be the most important resource of information for completing your assignments? (both technically and conceptually) In other words, how do you find out how to do the things you want to do with the computer. And, how do you find out if the image is communicating your ideas effectively?
9. How do you feel about the responses you received during the critique concerning your image?

10. Any other comments?
APPENDIX F
PHOTOGRAPHS FROM THE CLASSROOM
Photographs from 352 Hopkins Hall Classroom
Art Education 252 - Introduction to the Role of Computers in the Visual Arts

Plate I
Instructor providing individual help to student.
Plate II
Instructor leading class discussion and students sitting at computers.

Plate III
Students working at computers during class discussion.
Plate IV
Students working at computers and discussing the animation project.

Plate V
Students planning group project for animation assignment.
Art Education 252
Introduction to the Computer in the Visual Arts.

Credits: 5 credit hours
Quarters offered: Su, Au, Wi, Sp
Meeting time: 4 hours class time/week
3 hours lab time/week arranged

Quarter: Autumn, 1991
Section: 252 - M W 3-5
Call Number: 02248-4
Instructor: [Redacted]
Office: Advanced Computing Center for the Arts and Design
Phone: 292-3415
Office Hours:

Prerequisites: Arts College 160, or Art 162, or any History of Art course, or permission of instructor. NO PROGRAMMING EXPERIENCE IS REQUIRED.

Required Materials: ART EDUC 252 Handbook, Available at Kinkos
Four 3 1/2" double density diskettes.

COURSE DESCRIPTION:

Introductory study of the role of computers in the visual arts. The class features a unique combination of studio activities, readings, writing, and discussions focusing on computer graphics issues. Imagery will be created using interactive graphics software on Amiga computers. Discussions will be based on a collection of articles featuring computer graphics issues. This class serves as a general orientation to the Hopkins Hall Amiga Laboratory.

RATIONALE and PURPOSE:

As society becomes more computer intensive, visual artists and art educators need to be familiar with the implications of computer generated imagery. The computer will both enhance our traditional forms of artistic communication and it will also provoke new forms. In both respects it will cause us to question a number of concepts and beliefs we have about the arts.

The purpose of this course is to introduce students to these questions. It will focus on the
changing relationships between art and technology and our perceptions of both, and on the aesthetics and criticism of computer art.

**COURSE OBJECTIVES:**

Upon successful completion of the course, students will:

- understand how the computer influences the character of images made electronically. The influence of algorithmic forms, digital representation and generic system features will be analyzed and related to aesthetic features of computer artwork.

- understand how the computer might influence and change our perception of traditional art forms. For instance, students will digitize photographs and manipulate their elements and then discuss the sense of credibility usually accorded to photographs.

- understand some of the ways in which the computer is promoting the emergence of new art forms.

- investigate the possible need for new aesthetic and criteria resulting from the computer's influences on the visual arts.

**COURSE CONTENT and PROCEDURE:**

The course consist of lectures and class discussions of topics relating to the above objectives. Prior to each discussion is a reading and a computer-based studio activity. These activities are designed to cultivate an understanding of the nature of computer art. Critique of these activities is one starting point for critical discussion of computer art and its characteristics. There will be midterm exam and a final term paper.

*Studio Activities:*

There will be seven studio activities. Five of these activities, as apportioned in the grade section, will be handed in for credit. Students are expected to incorporate techniques presented in class into the appropriate studio activities.

*Midterm Examination:*

The midterm examination will be based on the content of assigned readings, discussions, and studio experiences.

*Term Paper:*

Students are required to write a 5-7 page typed term paper analyzing one of the following issues. In each case they are expected to discuss examples and to draw
on material from class discussions and class and/or outside readings. References should be cited within the writing and a reference list should append the paper.

1) the influence of computer graphics technology on society's perception of art forms.

2) the need for new critical distinctions resulting from the use of computers in the visual arts.

3) the computer's role in the emergence of new art forms.

The paper will be evaluated on its content, clarity, spelling, and grammar.

Synopses:

There are six assigned readings within the article packet. Students are expected to read all six and write a brief synopsis. The synopses are due on the discussion dates, as specified in the syllabus section. Synopses will be evaluated in terms of their clear and concise summary of the articles, inclusion of student's reaction (agree or disagree), spelling, and grammar.

Class Participation and Attendance:

Students' participation in class discussions and studio activities will be evaluated based on how well their contribution reflects an understanding of topics and issues relevant to course content. Students are encouraged to push the boundaries of the technology through creative expression. Since many demonstrations and studio activities will take place within one class meeting, attendance is encouraged.

Extra Credit:

Five potential extra credit points may be earned by handing in an additional studio activity, with prior approval from instructor regarding its criteria. This request for approval for extra credit must be submitted as a brief proposal outlining the content, goals, and techniques to be addressed. The request must take place by the ninth week of the quarter.

Grade Apportionment:

Studio Activities: Images, representing activities 2, 3, 4, and 5 will be given 6 pts when presented for critiques. Studio Activity 7 will be given 8 points when presented for critique. (In order to receive the full 6 or 8 pts., students must participate in the critiques) Students will then have the opportunity to refine the images and hand them in for an additional 2pts. Activities 2-4 will be handed in for the additional 2pts at midterm time. Activities 5 & 7 will be handed in for their final 2 pts. during finals week. 1 pt. will be deducted for each late day on all assignments.
#2 Still Life  8 pts.
#3 Self-Portrait  8 pts.
#4 Portrait  8 pts.
#5 3-D space  8 pts.
#7 Animation  10 pts.

Synopses (3 pts each)  18 pts.
Midterm Examination  15 pts.
Term Paper  15 pts.
Participation  10 pts.

Total points possible = 100

Grading Scale:

A = 95 - 100  B+ = 90 - 91  C+ = 80 - 81  D+ = 70 - 71
A- = 92 - 94  B = 85 - 89  C = 75 - 79  D = 65 - 69
B- = 82 - 84  C- = 72 - 74  E = 0 - 64

Laboratory Policies

Students may reserve a maximum of four hours computer time each week. Students may not reserve the video digitizer for longer than one hour at a time. Obviously, students may not reserve computers in the large room during time that a class is scheduled. The computer system in the back room that is located between the SUN and the video deck is for instructional development and cannot be reserved.

The Laboratory Monitors are responsible for checking in and out software and manuals, and documenting equipment reservations. They are NOT responsible for instruction. However, instructor consultation is available during open lab time. The instructor consultant on duty is available to assist any student enrolled in courses in the Amiga Lab. The Hopkins Hall Amiga Lab's systems manager, Dariusz Bolski is available for technical assistance for anyone utilizing the lab.

Students are responsible for documenting their own work; images and animations stored on Ohio State University facilities (e.g. the SUN hard disk) are subject to deletion after a weeks notice. Student work stored on the Hopkins Amiga Laboratory file-server will be erased between each quarter as part of general systems administration. Students wishing to keep data on the file-server between quarters must contact Marsha McDevitt or Dariusz Bolski.

Student projects produced for this course are the property of the student who produced them. However, The Advanced Computing Center for the Arts and Design, and the Department of Art Education of The Ohio State University reserve the right to use student
projects resulting from requirements of this course, and produced through the use of Ohio State University facilities, for the promotion of their instructional programs and as instructional material.

*No food or drink is to be brought into the Amiga laboratory by students.*

Students using computers to play games have lowest priority. Students may not reserve equipment to play games. Violators may lose their right to sign-up for computer time. When playing games the computer's audio output must be turned down so as to not to interfere with others working.

If you have any questions or concerns regarding computers in the visual arts courses, offered through the Department of Art Education, contact Marsha McDevitt @292-0259.

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**SYLLABUS**

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**Week One:**

Day One: (session 1) - Sept. 25  
Overview of course.  
Screen Icons for accessing software.  
Introduction to paint software.  
*For next class:* Buy four 3 1/2" single density floppy disks.

**Week Two:**

Day One: (session 2) - Sept. 30  
Initialize Disk.  
Deluxe Paint III manual, chapter 6, tutorial 1. (pp. 87-97)  
Saving and Loading Files.  
Image Files and .info Files  
Studio Activity #1  
*For next class:* Recommended reading - "Graphics Tips Miscellany".

Day Two: (session 3) - Oct. 2  
Screen and Color Resolution.  
Painting Modes and Brush Manipulation  
Studio Activity #2 - Still Life  
*For next class:* Recommended Reading: "A Monochromatic Approach".
Week Three:

Day One: (session 4) - Oct. 7
Discuss Reading Assignment.
Studio Activity #2 - Still Life

Day Two: (session 5) Oct. 9
Critique - Still Life
*For next class:* Assigned reading: “The Computer as an Art Tool and Art Form
Issues and Considerations”.

*Recommended Reading:* “Electronic Collage”

Week Four:

Day One: (session 6) - Oct. 14
Discuss Reading Assignment - *Synopsis due.*
DigiView - Digitizing camera introduction.
Studio Activity #3 - Self-Portrait
Removing, Renaming, and Copying Files and Disks
*Optional:* Pixmate Tutorial T1.0 - T4.0 (p. T-1 - T10)

*For next class:* Assigned Reading: “Inspiration: The Anatomy of an Idea”.

Day Two: (session 7) - Oct. 16
Studio Activity #3 continued - Self-Portrait
Deluxe Paint III demo - Perspective Mode.
Discuss Reading Assignment - *Synopsis due.*
*For next class: Recommended Reading:* Deluxe Paint III Tutorial #3
(The world of stencils),
and “Compositing Conjury”

Week Five:

Day One: (session 8) - Oct. 21
Critique Studio Activity #3 - Self-Portraits
*For next class:* Assigned Reading: “The Digital Revolution: Art in the
Computer Age”, by Cynthia Goodman.

Day Two: (session 9) - Oct. 23
Discuss Reading Assignment - *Synopsis due.*
Introduction to Studio Activity #4 - Portraits.
*For next class:* Assigned Reading: “Computers & Fine Arts”.
Week Six:

Day One: (session 10) - Oct. 28
Discuss Reading Assignment - **Synopsis due.**
Studio Activity #4 continued - Portraits

Day Two: (session 11) - Oct. 30.
Review for Midterm.
Critique - Studio Activity #4 - Portraits.
**For next class:** Recommended reading: Chapter 5 Deluxe Paint III - Tutorial #4 and Chapter 5 p.69-83. - Perspective.

Week Seven:

Day One: (session 12) - Nov. 4.
**Midterm**
Hand in Studio Activities 2-4
Paper Topic Approval - Last day to Inform instructor of selected topic for paper.
Introduction to Studio Activity #5 - Internal/External Relationships
Deluxe Paint III demo - Perspective Mode
**For next class:**

Day Two: (session 13) - Nov. 6.
Studio Activity #5 - Internal/External Relationships
**For next class:** Assigned Reading: "Computer Art as Conceptual Art", by Christine Tamblyn.

Week Eight:

Day One: Nov. 11 - Veteran's Day. **NO CLASSES**

Day Two: (session 14) - Nov. 13.
Discuss Reading Assignment - **Synopsis due.**
Studio Activity #5 - Internal/External Relationships
**For next class:**

Week Nine:

Day One: (session 15) - Nov. 18.
Critique - Studio Activity #5
**For next class:** Assigned Reading: “Principles of Traditional Animation Applied to 3D Computer Animation”
**Recommended Reading:** "Free Hand Animation" Parts I & II
Day Two: (session 16) - Nov. 20.
Deluxe Paint III - Animation Demo
Discuss Reading Assignment - Synopsis due.
View Animation.
Studio Activity #6 - Introduction to Animation - in class exercises.
Introduction to Studio Activity #7
For next class: Recommended Reading: "How to Make a Fish Sneeze".

Week Ten
Day One: (session 17) - Nov. 25
Studio Activity #7 - Animation -continued.

Day Two: (session 18) - Nov. 27
Term Paper Due.
Studio Activity #7 - Animation -continued.
For Next Class:

Week Eleven:
Day One: (session 19) - Dec. 2.
Discuss Reading Assignment.
Studio Activity #7 - Animation -continued.

Day Two: (session 20) - Dec. 4.
Studio Activity #7 - Animation -continued.

Final: Look for final critique meeting time in Master's schedule.
Critique - Studio Activity #7.
Hand in - Studio Activities 5 & 7.
APPENDIX H

LIST OF READINGS IN THE ARTICLE PACKET
List of Readings in the Art Education 252 Article Packet

NOTE: Bold text indicates required readings

1. *Graphics Tips Miscellany*, by Joel Hagen
   AMIGA WORLD, April, 1989, pp. 40-41

2. *A Monochromatic Approach*,
   AMIGA WORLD, November, 1989, pp. 74-75

   by Nancy J. Freeman
   Proceedings of the Ninth Symposium on Small Computers in the Arts
   1989, p. 17-21

   AMIGA WORLD, January, 1990, pp. 26, 28, 30, 32


6. *Compositing Conjure*, by Joel Hagen
   AMIGA WORLD, November, 1990, pp. 66-67

   ART JOURNAL, Fall, 1990, pp. 248-252

   COMPUTER GRAPHICS WORLD, October, 1988, pp. 68-75

9. *Computer Art as Conceptual Art*, by Christine Tamblyn
   ART JOURNAL, Fall, 1990, PP. 253-256

10. *Principles of Traditional Animation Applied to 3D Computer Animation*,
    by John Lasseter
    COMPUTER GRAPHICS WORLD, July, 1987, pp. 35-44.

11. Freehand Animation Part I: The Pencil Test, by Joel Hagen
    AMIGA WORLD, March, 1990, pp. 56-57

12. Freehand Animation Part II: Ready for Action, by Joel Hagen
    AMIGA WORLD, April, pp. 46-47

13. How to Make a Fish Sneeze, by Eric Daniels

14. An Introduction to Computer in the Arts, by Robin King
   ART JOURNAL, Fall, 1990, pp. 283-297.

16. AMIGA DOS 1.2 CLI COMMANDS, by William B. Catchings and Mark L. Van Name
   AMIGA WORLD, Special Issue, 1987, pp. 50-52.

17. Glossary of Terms.

18. Art Education 252, Sample Midterm Exam.
APPENDIX I

STUDIO ASSIGNMENTS
Art Education 252 - Introduction to the Computer in the Visual Arts

Studio Activity #2 - Still Life

There are many ways to approach a still life. The most important outcome of this assignment is your interaction with the still life. What you bring to this, perhaps your first piece of artwork made with a computer, will be very different for each of you. The goal is not to realistically render the object of objects you have been asked to select, though that may be a priority in how you interpret the still life, but to communicate something about the still life that corresponds with your particular and unique interest in it. Are the colors most interesting to you, or would you prefer to change the colors? Perhaps, the shapes themselves, and their reciprocal negative shapes are visually interesting. Is a certain section of the still life more interesting to you? You might focus on that section, cropping out the rest of the still life as you would a photograph? Remember to fill your screen with the image. Do the objects hold some symbolic meaning for you? Do they seem to relate a narrative? What viewpoint do you wish the viewer of your finished piece to take? Use this assignment to investigate changing the default palette of the software we are currently using, Deluxe Paint III. Try as many of the tools as possible and experiment with how they work with different painting modes and brushes.
Art Education 252 - Introduction to the Computer in the Visual Arts

Studio Activity #3 - Self-Portrait

This assignment is a chance for you to learn the digitizing process and its integration into the artmaking process. You will be asked to digitize your image with the 2-D DigiView software and video camera set up in the room attached to the main lab. It is good to work in pairs since the process of digitizing your own image is best handled with an assistant. A straightforward short of you face is certainly a possibility in this assignment, but how else might you approach a self portrait. As in the still life, you will be trying to communicate something that is uniquely you. In this case, you the artist will be communicating something about you the person. What about you interests you the most? How can you convey those aspects through a digitized image of your face.

Remember that the position of the camera, the position and motion of the subject, the position and brightness of the lights, and the length of scanning time will all contribute to the character of the final image. After this image is completed you may bring it into the Deluxe Paint III program to further enhance it's communicative properties. Don't let the thought of a traditional portrait, the kind you have from your high school days, limit your creative approach. Dive in. What can you tell us, your audience, about you? What do you wish to remain hidden? What is important to you?

You can multiply, minimize, enlarge, reduce, elaborate, exaggerate, simplify, embellish, distort, flatten, symbolize, abstract, substitute, alter, adapt, soften, harden, thicken, stretch, rearrange and/or unify in your drive to communicate yourself.
Art Education 252 - Introduction to the Computer in the Visual Arts

Studio Activity #4 - Digital Portraits

Using a classmate, a friend or relative as a subject, communicate in visual imagery the essence of that person. It may be someone you like, love, or hate. The person maybe living or dead. You may represent this person in any visual way except a direct visual representation of that person's face. Collect various sorts of imagery, including photographs, reproductions, paintings, drawings, and found objects. These may be digitized into a composition which will then be ready for manipulation using image processing (PIXMATE) and paint software (DPAINT III). You may choose to digitize each item separately before bringing them into the programs mentioned above.

In the final image, you will be attempting to convey visually what is invisible - that singular quality transmitted to you when you speak someone's name. The total image will convey what individual components of the image are unable to do. Try to convey more about a person than their more superficial interests. We are all attending OSU, so including OSU insignia will not communicate much that is particular about your subject to your audience. Don't be afraid to abstract vague, difficult, or complex aspects of a person's personality to reveal their more profound nature. You might try to approach this activity from the standpoint of what effect this person has or had on you. It is advisable to focus on one or two major themes, and have lesser ideas interwoven with those. As in the previous activity, use the time-honored creative techniques of manipulation listed on that handout. You should not feel bound by a representational slavishness to the photos, images, or objects you have chosen. Save multiple versions of your image, then decide which you like best. That is easy to do on the computer!!!
Art Education 252 - Introduction to the Computer in the Visual Arts

Studio Activity #5 - Internal and External Space

The activity allows you an environment in which to investigate the use of different concepts of space in your imagery. You are being asked to integrate both internal and external space within this image. An example of a physical representation of this might be indoors and outdoors. The image may convey deep and shallow space, in other words, the immediate surroundings and the space that is much further away.

However, do not limit your investigation to simply the level of physical representation. As artists before you have done throughout time and in many cultures, allow spatial imagery to incorporate other levels of meaning. Those levels might include symbolic, psychological, spiritual, political, and emotional space. An example might be to allow a visual image to delineate the emotional, political, psychological, and spiritual space of a political prisoner in South Africa. Where would you place the viewer? Inside the cell, or outside. The idea here is to incorporate both the internal and external space, so that both can be better understood. Also, remember, this does not have to be representational. Try incorporating both abstract and realistic imagery. The perspective mode (in DPAINT III) may be used to help create the illusion of three dimensional space on your two dimensional screen. You may base this on a representational imagery or abstract.

NOTE: DO NOT divide your image in half, with internal on one side and external on the other. Attempt to integrate the ideas you are trying to communicate about the two kinds of space into one complete image. As a rule of thumb, this will make for a stronger visual image.
Art Education 252 - Introduction to the Computer in the Visual Arts

Studio Activity #7 - Animation

This activity is your initial examination of two dimensional animation. While incorporating what you have learned about the artmaking process utilizing the computer so far, you will also have the chance to add a new dimension to your images, that of motion. The content of this assignment is entirely up to you. You may prefer to work in a narrative mode of in one that is more abstract. In any case, the addition of movement to the process of making visual imagery will expand you repertoire of visual communication possibilities. What kind of motion do you wish to include? What does the quality of that motion convey? Consider what import the direction of motion, the space in which that motion occurs, and how and why whatever is moving changes from the beginning of one movement, to the next. Take some risks. Don't be afraid to try something even though you are not sure how you might accomplish it.
APPENDIX J

MAP OF SITE
APPENDIX K
SAMPLE DOMAIN ANALYSIS WORKSHEET
Domain Analysis Worksheet

1. Semantic Relationship: ___________________________

2. Form: ____________________________

3. Example: ____________________________

<table>
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<th>Included Terms</th>
<th>Semantic Relationship</th>
<th>Cover Term</th>
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Structural Questions: ___________________________________________

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Structural Questions: ___________________________________________
APPENDIX L

COMPONENTIAL ANALYSIS - FIRST DOMAIN
Component Organizing Domains

Students - 1st Domain

Schedule
- 10 Weeks
  - work time
  - instruction/lecture
  - discussion

Finals Week
- demonstrations
  - hardware
    - software
  - about art
    - about articles
  - critiques
- discussions
- studio projects
  - still life
  - self portrait
  - portrait
  - internal/external
  - animation
- written assignments
- reading assignments
  - synopsis
  - midterm
  - term paper
- manual
- research

Content

Grading
- policy
  - procedure
    - handing in projects
      - points
        - projects
      - synopsis
      - mid-term exam
      - term paper
      - participation

Goals
- objectives
  - rationale
- expectations

Course - Art Education 252
APPENDIX N

COMPLETE COMPONENTIAL ANALYSIS PARADIGM
### Componential Analysis Paradigm Worksheet

<table>
<thead>
<tr>
<th>Domain</th>
<th>Read Article</th>
<th>High-Fat Keyphrases</th>
<th>Write Summary of Opinion</th>
<th>Re-Read Synopses</th>
<th>Make Correctives or Changes</th>
<th>Review Synopses</th>
<th>Express Opinions</th>
<th>Intepret</th>
<th>Describe</th>
<th>Analyze and Represent</th>
<th>Display on Image or on Screen</th>
<th>Students Think About Work</th>
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<tbody>
<tr>
<td>Studio Activities</td>
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APPENDIX O

SAMPLE HUMAN SUBJECTS RELEASE FORM
I consent to participating in (or my child’s participation in) research entitled:

A Descriptive Case Study of Student Perceptions in an Introductory Computer Art Course.

Dr. Robert Arnold, Associate Provost is the Principal Investigator

Marsha J. McDermott or his/her authorized representative has explained the purpose of the study, the procedures to be followed, and the expected duration of my (my child’s) participation. Possible benefits of the study have been described as have alternative procedures, if such procedures are applicable and available.

I acknowledge that I have had the opportunity to obtain additional information regarding the study and that any questions I have raised have been answered to my full satisfaction. Further, I understand that I am (my child is) free to withdraw consent at any time and to discontinue participation in the study without prejudice to me (my child).

Finally, I acknowledge that I have read and fully understand the consent form. I sign it freely and voluntarily. A copy has been given to me.

Date: ______________________ Signed: ______________________ (Participant)

Signed: ______________________ Signed: ______________________
(Principal Investigator or his/her Authorized Representative) (Person Authorized to Consent for Participant - If Required)

Witness: ______________________
APPENDIX P

EXCERPTS FROM FIELDNOTES AND TRANSCRIBED RECORDINGS
Excerpts from Fieldnotes and Transcribed Recordings.

*Fieldnotes—September 25, 1991.*
There are five female and three male students sitting at computers as the bell rings. The room is a dingy white shade with computers grouped in small circles of three or four. They are Amiga 2000 computers with Commodore 13" RGB monitors. There are 16 computers in the room. One of these computers is alone at the front of the room connected to a larger television monitor and video deck. The room is quiet and warm. The walls are barren except for a few small signs and some stains from an apparent leak from the room above. There is a door leading into a back room. There is also a desk and cabinet in the rear of the room next to the entry door. At this desk a student monitor sits.

Before the class begins a few women are chatting. One is complaining about another course. They talked back and forth as if they knew each other from another course or time. The students in general look anxious. They look around the room at each other and seem awkward in front of the computers. Some look as if they are afraid to touch anything. Others begin to move the mouse around to see what will happen.

The substitute teacher passes out the syllabus. She speaks briefly about the course in a very low-key manner lacking enthusiasm. The class is VERY quiet. The students read over the syllabus. The hum of the machines is loud. The sound of 16 small fans fills the air. After the syllabus has been passed out the instructor says that Bob, the actual instructor, will be here on Monday and that he will go over the syllabus.
She says that we are free to leave. Most look puzzled but almost relieved. Some look like they were on the edge of their seat ready to leave anyway.

All but two women leave, the two who were chatting at the beginning of the class. They continue to talk. The one goes on complaining about the work in another course. She talked throughout the time she was in the room. She is slightly older than the other students. She leaves the room with the other woman and then returns to ask about the open lab schedule. The substitute instructor walks out into the hall with them to show them a schedule posted outside the door.

By 3:15 the lab is almost empty. One student stays to fill out a permission form to add the class. The student monitor sits at his desk looking bored and tired. At 3:18 a male student arrives for class. The teacher gives him a syllabus and advises him to buy a disk and the reading packet at Kinko’s. She tells him that the instructor will be here on Monday.

She stays for a short time and then leaves. No one else arrives. The student monitor reads the paper and then talks with me. He says that he has a long night ahead of him and that he hates the first week of classes because no one comes in the lab during the evenings. His name is Mike. He has an Amiga at home and has taken several classes in the lab before. He is starting his second year working in the lab as a student monitor.

Since the roster was not called, it was not clear if these were the same students listed. However, there were not fourteen students there so some either did not attend the first class or must have dropped.
Fieldnotes—October 14, 1991.

2:55 The students are talkative, some have started working on their computers. They seem eager to get started on a new project. The still life's are still decorating the room. I get up and move one of them to the next room.

The bell rings and the instructor begins by double-checking who has filled out the introductory survey. I am nervous because today I have received the official OK to ask the students to participate in my study. I sit in a chair close to the front of the room. Some students stop to listen to the instructor while others continue to work at their computers.

As the room quiets I jump up to announce who I am and what I'm doing here. I'm excited and suddenly feel the group's attention on me. I talk a bit too fast as I explain my goal to learn what this class is like from a student's point of view. I outline who my advisor is, what I'll be doing throughout the quarter, and what I would like for them to do as participants. I offer them five points extra credit in the course for filling in a series of reflective diaries after each studio project and helping me with two formal interviews during the quarter. I tell them that I will be writing a dissertation on the study and that I will not use their names in the writing. However, I will be photographing the class, video taping, and requesting samples of their art work for the study. I also said that I would be asking Bob, the instructor, for a copy of their introductory surveys if they agreed to participate. I tell the class that I have taught the course before and that I can help them if they need it. However, I note that it has
been a long time since I have used the software and will be learning much of it with them all over again.

I had wanted to participate in the course as a student would but with the limited number of computers this has not been possible. Participating as the instructor’s helper will allow me to gain insight into the students’ views without risking breaking their trust by having to pretend I don’t know the software. The students seem very interested in my talk but I am uncertain as to whether they will agree to participate. I pass out the consent to participate in social and behavioral research forms and ask if they would be willing to help me in my study, and to sign the forms. I ask if there are any questions and say that I will be waiting in the rear of the room. I ask the student monitor, Steve, to act as a witness for the signing.

As I sit there it seems like an eternity has passed. After five minutes, I’ve only received four signed forms. I’m filled with all sorts of mixed feelings, like what will I do if no one agrees. Finally, the students start bringing their responses back signed. I’m so thrilled. All but two have agreed. One is Alice, the woman who rarely listens and I had earlier asked her to remove her drink from the lab. She was very annoyed. Most commented or asked me questions as they gave me their signed forms. I felt that they were interested in helping me and intrigued with the prospect of participating. However, I also think that getting the five points extra credit was a big incentive.
Fieldnotes—November 18, 1991

Bob begins to get annoyed that most of the students are not participating in the discussion. He says that he should make them turn the computers off. This is the first time that he has ever reacted to the majority of the students working at their computers rather than actively participating in the course. Brent says that the article didn't make sense. Rose says she didn't understand it. Then Brent goes on to say that one project you had to know programming and wanted to know what that had to do with art.

During the discussion Sophia asks me for help. She works on her project throughout the discussion. Others are referring back to their written synopsis and the article.

Once again, Bob says that he wants everyone to get their noses out of the computer screen and talk. He seems discouraged and frustrated. He says that they have had longer to work on their projects than any other class.

It seems that the class is so accustomed to Bob's easy-going attitude that they either don't notice or ignore his attempts at structure. Some are beginning to sense that he is getting irritated with them. Some begin to look through their written synopsis as if hoping to find out something to say from their notes.

Bob: "All right computers off, we got to do this I want to talk about it, and I want you guys to talk about it. Come on how did the article strike you, did you do it? Did you read the article? Anybody."

Brent: "I didn't think it made much sense."

Rose: "I didn't understand it."

Bob: "Didn't understand it, in what respect?"

Brent: "It just talked about, um, interacting the computer, you know the artists had programming knowledge and they wanted basic computers to talk to one another. And you have to have programming knowledge to be able to do that so what does that have to do with art?"

Bob: "Yeah, but she was talking about for example where they have to, where they are emulating, here it is, 'creating interactive computer installations that model the interrelationships of human relationships.' So, uh, in fact then she starts, is she the one that says that most of them are based on interrelationships? Anyway, um, emulates some of the characteristics of person and interpersonal communication dynamics of human relationships. What do you think about that? I mean you'd have to kinda imagine it I guess, has anybody here ever run into any installations of these interactive, uh..."
Ed: "There was something like that....it was hooked up to this, uh, like a video deck that had all this stuff they called 3-dimensional animation that was the closest thing that I've ever come to this. Uh, it would actually give us the key to actually being able to do something instead of just watching stuff. Yeah, it would be better to experience some of this stuff so that we could understand it."

Bob: "Well to me there was this irony, and this was it, isn't there an irony in saying that interactive computer installations emulated the dynamics of interpersonal human relations, as if the relationships to the machine is a totally neutral thing? As if, uh, right there you have some sort of interaction going on between human beings and it's ignoring that and suggesting that you are interacting, you are pretending to be having a human interaction and it's ignoring the fact that you are interacting with the machine totally. It doesn't even mention that."