

INFLUENCES OF VISUAL CULTURE IN THE DESIGN OF WEB-BASED ART  
EDUCATION INSTRUCTION: USING CONTENT ANALYSIS FOR INTERPRETING  
RESEARCH AND STUDENT OPINIONS TO (RE)CONSIDER INTERACTIVE DESIGN

DISSERTATION

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

By

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2005

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## ABSTRACT

This study explores how the way students learn through visual culture can inform the design of Web-based art education instruction. It focuses on four interrelated topics relevant to current art education curriculum and Web-based learning in higher education: technology and learning, constructivist theory, visual culture, and graphic design. A literature review of each topic in addition to undergraduate student interviews about their experiences contributes to discussing ways to improve Web-based instruction. This interdisciplinary case study presents a critique of the current usability guidelines and standards used for developing websites. The research places an emphasis on the visual interface that serves as the main form of communication between the function of the website and the student audience. The information provides a foundation for interactive design recommendations applicable to Web-based instruction. Recommendations made as a result of this research are applicable to improving constructive, inquiry-based teaching and learning environments in art education and related academic disciplines.

Dedicated to Marc  
And to my grandmother for being my first art teacher

## ACKNOWLEDGMENTS

I wish to thank my adviser, Robert Arnold, for your help, guidance, and patience throughout the many years I was at OSU. Thank you for everything you have taught me, your endless encouragement, and for opening my eyes to contemporary art.

I am very grateful for all the knowledge and support I received from my committee members, Sydney Walker and Wayne Carlson, for your knowledge and advice, which helped me build bridges between academic theory and my skills as a designer and illustrator. Most of all, thank you for being my mentors and my friends.

I appreciate the endless support from many faculty for contributing to my knowledge about Art, Art Education, Education, Computer Animation, and Interactive Design: Charles Csuri, Rick Voithofer, Terry Barrett, Patricia Stuhr, Patty Lather, and Vesta Daniel. And to Jacqueline Buell and Eva Bradshaw for helping make my dissertation research possible.

My most heart-felt thank you is to my husband, Marc, for your unwavering support and love. You were my greatest comfort. I am grateful you were by my side through this process. And, to Tag, Bo, and Tucker for always reminding me of the important things in life.

I wish to thank my brother Ryan for your love and support. Our conversations about design were helpful and played an important part in my thoughts about the research. I am appreciative to my parents for giving me the opportunity to attend college where I learned to see the world through a different lens.

I am indebted to my friends for all your unconditional love and encouragement: Viki Jones, Jonathan Gladden, Paula Dimarco, Tracy Kroeger, Beth Novak, Diane Dagefoerde, Kris

Picard-Wambolt, David D. Coleman, and many others. To Michael Braun and Jeff Smutny for helping me finish from a distance and your constant encouragement and belief in me throughout the years. To Allen Kraus, Beth Yapple-McGuffey, Karin Shirey-Henn, Preston Pickett, Mabel Freeman and all my friends at Undergraduate Admissions and First Year Experiences, thank you for all the fun and laughter during my last quarters as a graduate student.

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## FIELDS OF STUDY

Major Fields: Art Education

Studies in:

Visual Communication Design

Technology

Visual Culture

History of Art

Medical Illustration

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## CHAPTER 1

### INTRODUCTION

This study examines how Web-based learning environments can be designed by understanding how students learn through visual culture. It focuses on four interrelated topics relevant to current art education curriculum and online learning in higher education. These topics include: technology and learning, constructivist theory, visual culture, and graphic design. Aspects of each topic are used in conjunction with student feedback about their experiences learning in blended and distance courses. The information provides a foundation for interactive design recommendations applicable to Web-based instruction, and at the same time (re)examines standards of established user-centered guidelines, which focus strictly on visually indistinct functions and organizations of sites found across the Web.

Interactive graphical interface design can be used to promote visual learning experiences, fostering learning in constructive, inquiry-based environments. It is important to develop Web-based courses based on an understanding of students' expectations for the design and structure of course websites, how and why they use the Internet, and how the influences of mass media may impact their learning. In combination with sound pedagogy and curriculum development, graphic design of Web-based instruction that is informed by the ways students learn through visual culture helps with the creation of visual contexts for instruction, and has the potential to contribute to improved learning outcomes.

This dissertation is a case study exploring related literature, website examples, and student feedback relating to visual culture, the Internet, and education. This first chapter provides a descriptive outline of the dissertation, beginning with the background to the problem, discussing the issues and concerns regarding usability design standards for the Web. I present justification for the research, followed by a statement of the dissertation problem, which leads to the main research question and the list of questions used to help formulate the inquiry. Next, I present a brief literature review that points to the focus areas of the study: constructive theory, technology and learning, visual culture, and graphic design. Following this section, I provide an explanation of the methodology, methods, and data analysis strategies used to conduct the research. I then explain the significance of the study, and conclude the chapter with brief reviews of the remaining chapters in the dissertation.

### Background to the Problem

Public and private four-year universities are implementing forms of Web-based, online education programs, which include Web-enhanced<sup>1</sup> and distance education courses<sup>2</sup> (Brown and Duguid, 2002). Faculty are increasingly encouraged by university administrators to adopt course content for Web-based education while trying to understand how technologies may support their teaching and curricular goals (Blackboard, 2003; Mitchell, Inouye, & Blunthal, 2003; WebCT, 2003; Zhao, Pugh, Sheldon, & Byers, 2002). In addition, college students are heavier users of the Internet compared to the general population. Students use the Internet to communicate with professors and classmates, to study, to conduct research, and to access library materials (Pew Internet & American Life Project, 2002). Students have the opportunity to acquire knowledge in

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<sup>1</sup> Web-enhanced courses contain supplemental information and tasks (i.e., syllabus, quizzes, readings, assignments) that are accessed on the Web. Other terms for Web-enhanced courses include “blended”, and “hybrid” (Technology Enhanced Learning and Research [TELRL], 2003).

<sup>2</sup> Distance education courses are courses that are offered entirely on the Web. Students enrolled in these courses do not meet for traditional lectures, with few exceptions (i.e., tests or examinations (TELRL, 2003)).

visually rich online environments by accessing a multi-layered, contextual array of any combination of textual and visual information.

As technology is increasingly adopted at all levels of education, there is a call for the federal government to work with various education agencies to come up with standards for the instructional design of Web-based courses (Web-Based Education Commission, 2000). At the same time there are concerns about the levels of effective and innovative uses of technology in education (Hokanson & Hooper, 2000). Computer use is criticized for not improving teaching and learning as predicted. How computers are used is described as the application of existing instructional methods to new technology with disappointing results (Clark, 1994; Cuban, 2001; Hokanson & Hooper, 2000). There is a concern about the type of educational experience created for students and how computer use in society will change the way we conceptualize education.

Web design guidelines assist in the graphic design, development, and function of education websites (Lohr, 2000; Lynch & Horton, 1999; Nielsen, 2000). A main goal of published guidelines and software for Web-based education is to help in the creation of standard, interactive online environments that are deliverable to and accessible by all students. During the early years of the Web, these guidelines were useful for individuals creating Web pages that were available to people worldwide. Faculty in higher education benefited by relying on user-centered research, which told them how to build websites that could be used by students with varying levels of computer literacy. The impact of these rules continue to be seen today in large numbers of look-alike Web pages with limited visual and structural differences (Kneymeyer, 2004).

Modernist traditions of teaching through linear modes of delivery are being replaced with attention to the need to understand and build new knowledge based on students' lived experiences. Yet, the paradigm for Web-based learning, course management software, and design guidelines continue to reflect objectivist pedagogy. The same popularly adopted Web design

guidelines, and in addition, Web-based course management software are described as providing for an application of constructivist pedagogy, situating cognitive experiences in information-rich, realistic contexts (Cognition and Technology Group at Vanderbilt University [CTGV], 1999; Duffy & Jonassen, 1992; Wijekumar, 2001). Lacking is “visual difference and a sense of active design” (Kneymeyer, 2004; ¶ 10). Websites using structured guidelines are based on a one-size-fits-all approach to interactive design, particularly in education where course management software dictates the aesthetic quality of university Web-based courses.

#### Justification

The Internet connects us to the world in ways not experienced in the past; it is a source of information, and a means of communicating and transferring information in visual or textual forms, utilizing a combination of design and technology to engage audiences (Helfand, 2001). The visual interface functions as the primary connection between the content in the website and the student. Interactive visual design plays an equally important role for usability and accessibility standards, adding to the social conditions of viewing and interacting with multiple media online for learning. Design contributes to the way visual and textual information is understood. In order to create effective experiences, developers need to understand the users and how their interpretation of design and content affect their experiences (Niederheman, 2001).

Audiences have increased expectations regarding the ways websites in various fields (corporate, entertainment and education) combine visual and audio media, and the ways websites are designed (Walker, 2002). Courseware designers and producers are predicted to begin managing the work of faculty who can offer a “polished performance in a new medium” and educational technology is predicted to “evolve into Hollywood levels of complexity” (Feenberg, 2001, p. 88). Interactive designers have the opportunity to further the advancement of online learning spaces by introducing more effective graphic and media features, resulting in more

sophisticated education websites and visually engaging learning experiences (Walker, 2002). Specific research does not exist linking contemporary design attributes to the expansion of constructivist theory and improvements of online instructional methods. By looking at theoretical similarities between constructivist theory, reviewing design and usability guidelines grounded in modernist design theory (Horton & Lynch, 1999; Nielsen, 2000; Mullet & Sano, 1995), and drawing from an amalgam of research about how students learn in today's increasingly visual media culture, we can begin to hypothesize how interface design attributes can expand or improve learning environments, instructional methods, and the way students learn online using multiple media. More research is needed to offer a model of applying theoretical and practical approaches for using multimedia in Web-based learning environments and processes for instructional interface development (Kneymeyer, 2004; Lohr, 2000; Weiss, Knowlton, & Morrison, 2002).

#### Statement of the Problem

The case study I conducted (re)examined the application of Web design guidelines influenced by modern graphic design principles used for creating Web-based educational sites. The study was based on the idea that established usability guidelines and frameworks for Web-based education prevented further design and development of authentic learning experiences. At the same time this research was a response to website audiences' increased expectations for how sites in various commercial and entertainment fields are designed. Having grown up in a visually saturated world with exposure to an infinite number of images, students have the ability to critically view the societies in which they live. There is limited research qualitatively investigating how students learn using educational websites that utilize many forms of juxtaposed visual and textual media in ways they are accustomed to seeing and interacting with daily. Constructivist learning theory thus far has been limited in online education due to technological

constraints. These constraints include, but are not restricted to, the use of old technologies, slow bandwidths, slow software developments, and limited computer experience by faculty and students. Emerging technologies provide us with opportunities to capitalize on our media rich society by integrating and applying dynamic visual media within online learning spaces, while considering interactive options for constructivist curriculum and instruction.

### *Research Questions*

The main goal for conducting this case study was to develop recommendations for designing blended courses that contextualize learning using multiple forms of media. In order to formulate a theoretical inquiry and meet this objective, my research explored the following questions:

1. How does constructivist theory contribute to student learning with Web-based instruction?
2. How can we characterize student learning through visual culture?
3. How do students' experiences of visual culture influence Web-based learning?
4. How do the aesthetics of Web design influenced by mass media impact learning?

My interpretive analysis of the findings from the investigation of these questions helped to formulate a response to the main question in which my dissertation research was centered: How can the way students learn through visual culture inform the design of Web-based art education instruction? Through combining the results from the analysis, I created an example of how the findings would be applied to the interactive design for a unit within a blended, undergraduate art education course. The blended course includes contemporary art education pedagogy utilizing constructivist theory for teaching the overall theme, power, which is apparent throughout body works by Keith Haring, Barbara Kruger, and Carrie Mae Weems.

## Review of the Literature

For more than five years I consulted with faculty and taught courses in higher education about how to construct websites for Web-based courses. Prior to, and throughout this time I actively collaborated in the design of visually rich CD-ROMs and Internet sites for art exhibitions, and undergraduate and graduate courses. When I started designing websites, “how to” journals were scarce leaving those of us working with new interactive technologies to rely on software manuals and limited online resources. I intuitively designed projects and performed user-testing using educational formative evaluation strategies and analysis. Often my projects were used as exemplars in administrative meetings and academic conference presentations. Individual reactions to these projects differed from other interactive computer-based modules; they were perceived as graphically aesthetic while setting the course content in a visual context that effectively communicated the course material.

### *Technology and Learning*

I watched the increased popularity of Web-enhanced and distance learning courses at the university level by administrators seeking ways to increase student enrollments and department revenues, specifically by offering distance learning for large undergraduate general education lectures. At the same time I witnessed faculty frustrations as the expectations to apply their course content to online learning increased. Specific frustrations faculty had concerning teaching by way of the Internet were based on course management software (CMS) they were required to use. For some faculty, these software applications did not support their individual teaching methodologies or their visual aesthetic demands.

For twenty-five years, technology-based methods for learning have been compared to traditional teaching methods. “Does technology have a positive impact on learning?” (Roblyer, 1996, p. 14) is a question that is continues to be asked today. Clark (1994) concluded that media

did have important influences on learning, but it was the instructional methods that had the most impact. Since then, availability of emerging technologies in university classrooms has increased. However, it can be debated if students and teachers use them as frequently as initially expected.

Computers have not drastically changed conventional forms of teaching (Cuban, 2001). Media use consisted of applying existing instructional methods to new technology with disappointing results. Technology was not fulfilling the expectation that it would fix the problems of education. In response, scholars began to call for technology to be used as a catalyst for change in education, stating that it is not enough to use computers because they are readily available. To effectively integrate technology professors need to understand the function and limitations of various technologies, and how specific technologies such as computers, computer-mediated communication, and the Internet may be used to support curricular goals (Watts, 2003a; Zhao, et. al., 2002).

When applying sound pedagogy and educational theory in blended courses and Web-based education, computers provide for interactive experiences with a variety of materials, resulting in understanding and the creation of knowledge (Oliver, 2000; Yang, 2001). Technology has a positive impact on learning by offering students accessibility to content, and collaborative learning opportunities. Unfortunately, the ways in which computers are used does not reflect the potential of emerging technologies (Hokanson & Hooper, 2000; Roblyer, 1996). The uses of technology with which researchers find criticism includes uses for transmitting messages, applying traditional instructional strategies, pre-packaged computer-based materials (Feenberg, 2001), and limitations of telepresence (e.g., visiting museums) (Dreyfus, 2001). “Adding technology does not change the instruction qualitatively” (Hokanson & Hooper, 2000, p. 541). Changes in instructional methods, conceptualizing computers as a medium rather than a tool are

issues that need to be considered. Emerging technologies can function as supportive learning media providing pedagogy and educational philosophy guide their development (Watts, 2003a).

### *Constructivist theory*

Constructivist learning practices and tasks combined with Web tools support the unique contributions of each student to the learning process, promoting the construction of new knowledge influenced by prior experiences. The situation in which learning is embedded is important to students' understanding and ability to transfer ideas to more than one academic discipline and to life. Students construct knowledge through interpreting experiences in the external world (Duffy & Jonassen, 1992; Jonassen, 1993). The goal of teaching within the principles of constructivist theory is to provide students with the ability to think critically, and acquire reflective uses of knowledge by interacting with teachers and students.

Constructivist instructional design research recognizes that computers offer students flexibility during learning. These features include, interactive spaces consisting of multiple forms of media, unlimited access to course materials, multiple sources of information from diverse perspectives, and a variety of choices for accessing information. Use of multiple media capitalizes on the strengths and weaknesses of visual and audio forms. Construction of knowledge results from exposure to media forms that may be more appropriate for inquiry-based learning (Yang, 2001). Availability of visual materials and information online gives students access to numerous resources they can use for their own class assignments (Freedman, 2003), and students can determine the order in which they receive content.

Students create, build, and negotiate multiple media when constructing knowledge in Web-based courses (Gallini, 2001). The intertextual characteristics of current instructional design trends and the Web are used to develop complex structures among multiple media inviting comparisons and nonlinear thinking (Rogoff, 2002; Yang, 2001). Online instructional methods

may be improved with the application and reconsideration of how media used for teaching are a part of a visual communication that mimics our contemporary experiences. Students can be presented with multilayered forms of content, diverse examples interpretations, and perspectives while drawing on their own experiences. Students have the choice to learn in ways that are consistent with their personal learning style. They are not restricted by linear presentations of information, but have access to nonlinear, non-hierarchical, and interactive structures in Web-based courses. Information is experienced in various contexts, allowing the student to construct connections between elements (Koroscik, 1996). The structure and content of information can be transformed into collaborative or individual construction of knowledge (Oliver, 2000; Yang, 2001). Examples of the use of online learner-centered approaches include, students working individually or in groups to research and develop websites, and peer discussions using a variety of computer-mediated communication software (i.e., e-mail, chat rooms, bulletin boards, and blogs<sup>3</sup>).

### *Visual Culture*

Today, the Internet is at the center of visual culture and visual literacy. Second to television, it is the primary means through which students experience multiple forms of visual media, expanding on the idea that visual culture consists only of images (Mitchell, 2002). Images and visual elements functioning as cultural symbols established since the first use of icons and metaphors on the Web can create visual context reflecting course subject matter. The intermixing of media, cultural forms, and symbols provide for a new description of the visual experience and representations online. Web-based learning is not restricted to book-like linear pages of textual information; it involves interacting with video, audio, text, images, all of which take turns at being the prominent mode of representation (Mitchell, 1994).

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<sup>3</sup> Blogs are used as discussion forums in blended and online courses.

Students can examine concepts in various media forms, which add context to concepts and leads to the construction of more in depth understanding of materials (Koroscik, 1996). Visual culture as it pertains to art education is widely published (Duncum, 2002; Freedman, 2003; Freedman & Stuhr, 2004; Sullivan, 2002). The impact of visual culture on today's youth is discussed forming a basis for art education's role of providing students with a new form of visual literacy. Online visual modes of delivery can provide diverse examples, clarify concepts, and convey information for a better conceptual understanding in ill-structured domains characteristic of art education. Web-based learning offers students opportunities to make comparisons and connections using a wide variety of visual and textual information, increasing retention and knowledge transfer.

Students' lives today are vast, complex, and predominately visual. School and life are increasingly more connected. "Everyday, more people discover the power of the Web as a storytelling medium" (Laurel, 2001, p. 61). The Internet will not replace students' real world experiences, but the popularity of the Internet will continue to grow and be a part of their everyday lives (Amichai-Hamburger, 2002; Havik, 2000; Tavin, 2001). Students are living in a visually saturated, multi-sensory culture, where they learn from the visual representations, which are "ubiquitous, powerful and pedagogical" (Tavin, 2001, p. 37; Mirzeoff, 2002). They learn by being immersed in activities even when inquiry is done online and includes real-world simulations, animations, media representation, and documentary video. Students are able to construct interdisciplinary connections from multiple and conflicting perspectives (Yang, 2001) presented textually and/or visually.

Design guidelines and Web-based course management tools appear not to address the visual culture in which students live. Designers typically implement numerous and varied user-centered, interface design approaches from academic disciplines, including human factors,

cognitive engineering, graphic arts, and instructional design (Lohr, 2000, 164). The goal is to present rule-oriented principles of communication that are applicable across disciplines (Mullet & Sano, 1995). Graphic designers and educators also need to be informed of visual representations, which captivate and engage today's students. Unconventional, disjointed postmodern media design qualities, seen on television, in advertising, and in some Internet sites, are now conventional; it is a new language of visual information that depends on the relationship of juxtaposing different images (Rushkoff, 1999). Today's students are accustomed to viewing media-driven information in this format.

### *Interactive Design*

Apple Computer® changed human-computer interaction when the company implemented an office metaphor to the desktop, establishing a visual and textual interface for individuals to interact with the computer's operating system (Johnson, 1997; Negroponte, 1995; Turkle, 1995). Computing became "user friendly" and software developments allowed anyone with the technical means to become print publishers. CD-ROM and Web authoring had similar results, yet were more limited by the early networking technologies, and the large file sizes of visual material. Technology advancements and improvements increased opportunities for online media applications (video, audio, animation, graphics, etc.). Web design guidelines emerged out of the cognitive engineering and graphic design fields, providing systematic, user-centered approaches to website development (Kneymeyer, 2004; Nielsen, 2000; Lynch & Horton, 1999). Rules, principles, guidelines, and methods were established for education and corporate developers in order to change their behavior when designing websites. Nielsen (2000) published the "how" and "what" of good Web design, and insisted everyone follow rules, while Lynch and Horton (1999) proclaimed to be teaching a new genre for design and writing for the Web. Nielsen (2000) openly stated that there were two approaches to Web design, artistic and engineering, and graphic

designers were criticized for creating environments “for their own pleasure” (p. 13). The discourse these authors established for Web design using modern graphic design trends are still applied today, and require rules which result in look-alike Web pages (Kneymeyer, 2004). Ways online learning environments are structured reflect a paradigm in education that is based on standardization of learning (Reigeluth, 1999), wherein learning and instruction becomes a simple delivery of course content, perpetuating identical learning for all students within indistinguishable interface environments.

A well-designed interface that exists between the learner and the learning environment is an important part of the instructional development process, and can help guide students through lessons (Lohr, 2000). The Internet has greater educational capacities than what is currently being utilized (Amichai-Hamburger, 2002). Guidelines established for designing websites have not adjusted to the advances in Internet technology and may not be appropriate for the requirements of specific learning environments (e.g., art education and art history). Most websites conform to matrices, guidelines, and patterns (Amichai-Hamburger, 2002; Nielsen, 2000). Sites are made according to the predictability of user behavior patterns and are relics of the modernist classroom outfitted with virtual memo books, bulletin boards, test forms, lesson plans, time-on-task arrangements, and management devices. Developers assume that all courses can organize and present discipline specific content using a “one-fits-all” structure.

Postmodernism is tied to economic, social, and technical conditions prevalent in consumer and media society. The image dominates these conditions resulting in a television, advertising, and consumerism impacting graphic design (Jobling & Crowley, 1996). Postmodern design attributes, more specifically those influenced by mainstream media and popular culture (Poyner, 2003), can be applied to create graphic online environments that are similar to the complex visual contexts in which students live. Visual experiences are imperfect, disjointed, and

contextual. Context is not limited to Swiss School design styles that simplify and sterilize online spaces. A postmodern style as an expression of individuality, positioned from inside and outside of culture, creates a look and feel which leads to meaningful learning and knowing inherently situated in the increasingly daily activity of online experiences (Yang, 2001). Graphic design can take on the role of meaning making and readers are encouraged to become active participants in the constructing of the message. Design can transform immersive interactive experiences into interpretive learning experiences that take place in visual contexts.

The literature provides a theoretical framework for designing learning-centered Web spaces, but there is limited and contradictory information about effective uses of graphics and media for Web interface design. Published research and case studies offering theories for how students construct meaning online using multiple media are based primarily in the physical sciences (mathematics, physics, chemistry, etc.) versus the human social science disciplines and *Experience Graphic Design*<sup>4</sup> (Kneymeyer, 2004; Mayer, 1993). Certain combinations of mixed media (i.e., text, graphics, and animation) have been characterized as “gratuitous” (Merrill, 2002, p. 49), are ignored by learners, compete for learner attention, distract from learning (Weiss, et. al., 2002) and increase the “cognitive load for the student” (Merrill, 2002, p. 49). Yet, combinations of media, such as animation, text, graphics, and audio, support one another and promote more effective learning. When used appropriately, these media provide visual context for ideas and improve understanding and retention (Weiss, et. al., 2002). Research is needed to offer options for applying media by combining heuristics with a specific design context that can alter multiple media and learning spaces based on what we currently know about the use of technology for Web-based instruction.

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<sup>4</sup> Experience graphic design focuses on communication problem solving by defining the target audience, communication problem to be addressed, and uses of new media to create image and text-based environments.

Opportunities remain for more diverse aesthetic guidelines and processes for interface design based on the influence of visual media culture on today's students. If media over the decades have not lived up to expected improvements in learning, how can instructional methods be enhanced through changing the interface design for Internet-based instructional media? Constructivist online learning has not addressed interface design—specifically placing content in a visual medium. Lohr (2000) and Amichai-Hamburger (2002) both call for additional research that is needed for interface design improvements that speak to the user versus responding to the technological advancements that are being made.

How do we create learning environments through understanding visual culture, the aesthetic experiences of computer games, Hollywood films, MTV, etc.? Genres from television, movies, and radio are increasingly reproduced on the Internet (Seiter, 2000). While much research specific to instructional interface design exists, more needs to be considered concerning the visual design of learning environments, addressing the social context of the undergraduate audience. Designers can adopt a mode of address<sup>5</sup> that looks at the contexts in which students view and use technology. Website designers have the opportunity to further the advancement of online learning spaces by introducing more effective, dynamic graphic and media features resulting in more sophisticated education websites and visually engaging learning experiences (Walker, 2002).

#### Purpose of the Study

Traditional learning theories and pedagogy that emphasizes an identical, factual knowledge base is a framework for usability Web design guidelines. Constructivist theories applied to online learning improve upon these structures but do not address the expectations of the website audience regarding interface design and learning. The purpose of this study is to make

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<sup>5</sup> Mode of address is how positioning gets played out in film viewing; it asks, "Who does this film think you are?" in relation to an individual's social status, gender, race, sexuality, religion ethnicity (Ellsworth, 1997).

available research for a new method of applying interactive design criteria for Web-based learning environments. Recommendations focusing on the design of interactive environments for learner-centered teaching of art education materials will result in the awareness of audience expectations of how websites are designed based on influences of visual culture and mass media design styles. This research will create a dialogue for changes within related discourses that move beyond user-centered guidelines to create more authentic interactive Web-based learning spaces, and respond to what can be discovered about the ways students learn through visual culture. The study will primarily draw from graphic design, visual culture, and art education disciplines to theoretically contextualize existing online websites. It will add to the design theory as it is applied to Web-based learning, situated learning research, and allow for considering integrating mass media influences in interface design.

#### Methodology

The design of the study established a framework for the methods of a case study approach which addressed the relevant issues and answers my primary research question: How can the way students learn through visual culture inform the design of Web-based art education instruction? There were four facets to my study: 1) literature review 2) website review 3) interviews and 4) questionnaire. The process of inquiry relied on research grounded in visual culture, art education, graphic design, and constructivist theory specifically related to Web-based instruction. The research results in a contextualized interpretive description of the findings, which may be generally or specifically transferred across a broad number of cases within art education, graphic design, education, and other disciplines (Stake, 2000).

### *Methods and Methods of Data Collection*

A multi-method approach was selected, helping me identify, analyze and interpret the data from the study. The methods I used include literature review, website review, questionnaires, and student interviews.

#### *Literature Review*

I began with surveying the literature related to constructivist instructional design principles, technology and learning, visual culture, and graphic design. I used the information to conduct an analysis for understanding how design qualities of online interactive multimedia environments expand constructivist theory to qualitatively change and improve online instructional methods. In addition, the literature also included an examination of related historical components for technology and learning, visual culture, and graphic design. Supportive information was retrieved from art education research studies used to begin discovering students' interpretations of visual images, artwork, and ways students construct meaning from visual culture.

#### *Website review*

I utilized mass media genre theory and description to identify five examples of websites that were designed based on mass media aesthetics. Using what I discovered in the literature review, I continued the website review by selecting four examples that demonstrated uses of postmodern design principles and constructivist learning theory. I provided a descriptive analysis of each website, emphasizing elements that were useful for this study.

#### *Interviews*

I conducted seventeen semi-structured, open-ended interviews with undergraduate students who volunteered to participate in the study. The objective for conducting the interviews was to understand students' opinions about (pre)selected websites used for education,

entertainment, news and information. The websites were representative of many interactive design styles. I began the interviews with pre-established, open-ended questions, allowing the students to talk freely about their opinions of website examples shown, why and how they use the Internet, their opinions of online learning, and their views of specific media influenced Web sites. The goal was to get an experiential account of how students learn using multiple media in Web-based environment.

### *Questionnaires*

Students participating in the interviews were asked to fill-out questionnaires. I used the information they provided to help gather demographic data about the participants and their educational use(s) of computers and Internet. Data from the questionnaire helped me define how often they use the computer, for what purposes, types of Internet tools used, and websites visited.

### *Location and Participants*

A portion of my study was conducted at the library and using the Internet. Student interviews were conducted in person at a university office during traditional business hours. All participants in the study volunteered to be interviewed and were given minimal compensation for their time. I used the following criteria as a set of guidelines to help me choose participants to include in this study: undergraduate art and non-art majors ranging from freshman to senior level; students who were enrolled in and/or had enrolled in university non-discipline specific blended or distance education courses; students who had basic to advanced experiences of using e-mail and the Internet; and students of various backgrounds, gender, culture, race, class, ethnicity, etc.

### *Methods of Data Analysis*

I used content analysis to identify key themes and patterns, and as a way to organize, manage, and retrieve data from interview transcripts, literature review, and review of the websites. I selected the strategic approach of grounded theory as a constant comparative

methodology used to determine inclusion and exclusion criteria when coding the interview transcripts (Glaser & Strauss, 1967; Strauss & Corbin, 1998). When analyzing the interview responses, I constructed codes and categories to develop and to link information that shared common properties or elements relating to a particular concept. I repeated the process multiple times, analyzing as I proceeded, to develop more general categories for the analysis, and to think about the linkages between concepts to generate theory (Coffey & Atkinson, 1996). The strategy results in an explanation for designing Web-based courses from what was known through reading the literature and studying design guidelines, and what was discovered as new or supportive information from interviewing students. The findings evolved into new concepts that may be considered for this study and for future research. A more descriptive content analysis approach was conducted to analyze examples chosen for the website reviews. I established a set of criteria based on terms used in the literature, and from media genre, modern and postmodern design elements and principles.

#### Significance of the Study

The findings from this study contribute to the existing literature by answering the need for more instructional interactive design research for Web-based learning. The study supports the need for (re)considering the design of interactive Web spaces and makes recommendations, by example, for ways online learning can be designed that reflects what we know about how students learn through visual culture. This study is important for future faculty who will be more experienced using software to design and develop websites, and who will be more accustomed to using the Internet for teaching. Today and tomorrow's faculty are going to continue to be inundated with technological advancements. Interest in my findings help professors move beyond concerns about technology, and return them to concerns about delivering course materials in ways that are understandable in an interactive, knowledge creating, learning experience. The analysis

of the findings can be generalized across disciplines, and aspects of the outcomes can be applied to arts and non-arts online courses based on what and when it is appropriate.

### Overview of the Dissertation

In chapter 2, I review literature relevant to the main topics that contribute to researching the design and development of learning environments through understanding how students learn through visual culture: technology and learning, constructivist theory, visual culture, and graphic design. Included in the review is a section explaining contemporary art education curriculum, and the concept of using big ideas and essential questions for teaching art from social, cultural, political, and personal perspectives. Chapter 3 outlines the methodological approach used to conduct the case study. I include an explanation of the methods employed, methods of data collection, and the strategy of content analysis used to interpret and analyze the data. In chapter 4, I present criteria used to select website examples, and provide descriptive analysis of each website. Following this section, I present the criteria used to code and categorize data from student interviews in chapter 5. I include summaries of each interview, followed by a synopsis of all responses. I discuss my findings in chapter 6, and answer the research questions, which formulated my theoretical inquiry. Using bulleted summaries of the findings, I provide an example of a unit in an art education course, teaching visual culture and contemporary art. I provide a discussion of my process and decision making for the interface design. In chapter 7, I conclude my research, discuss limitations of the study, and make recommendations for future study.

## CHAPTER 2

### LITERATURE REVIEW

The areas of inquiry for this study are guided by four themes: constructivist learning, visual culture, graphic design, and technology and learning. The themes I review are not necessarily interrelated in cited research, therefore, the literature review focuses on theories specific to each theme as well as the historical and contemporary issues relevant to this study. The issues include situated activity and apprenticeship approaches to learning, integrated learning in art education for the teaching of big ideas using essential questions, a review of the relationship between images and text as it pertains to visual literacy in visual culture, and current issues regarding the use of technology in education. The focus areas of my research are on what we know about constructivist learning, visual culture, and design that can inform ways websites are structured that are relevant how students learn through visual culture.

This chapter begins with a review of the role of emerging media technology for distance and blended learning, and the shift in the academic climate from learning about technology to reapplying education philosophy to Web-based education. Concerns about effective uses of technology for teaching and learning have resulted in professors focusing less on technology itself and more on teaching modules built on sound pedagogy and what is known about teaching and learning strategies. I mention specific technologies used for Web-based instruction that support constructivist learning online. In addition, I pay attention to accessibility and

deliverability, and issues of marginalization specific to quality education at the undergraduate level.

I provide an overview of constructivist learning theory, cognitive and social principles, and I discuss in more detail situated learning. Included is information about conditions that have to be met for students to become and remain motivated in a course. I view this as important because Web-based learning requires a high degree of self-directed instruction. Constructivist learning literature establishes a foundation upon which I review integrated instructional approaches as they are applied to the concept of teaching “big ideas” in art education. I review Discipline Based Art Education (DBAE) as it continues to influence art education content and knowledge, which is now taught through a more inclusive framework, linking art with the ideas of students and artists.

Visual culture is a dominant subject in contemporary art education and it is a main topic driving this research. I review the definition of visual culture from literature most influential in visual culture studies. Art education is broadening its focus and research to include teaching visual culture within social and political contexts, and comes out of the need for students to be more aware of the pervasiveness of images in society. How we read images and what we read is directly related to the relationship between image and text—asking us to (re)address the historical positioning and dominance of one mode over the other. I believe it is necessary to discuss semiotics as a foundation for understanding text and images, representation, and graphic design. The relevance of signification is directly related to the changing design trends from modern to postmodern. In this last section, I review the two design trends, including the use of text and image in relation to visual communication.

The areas of visual culture, image-text, and graphic design theory and research intersect as well as constructivist learning, and technology. Research interrelating all four themes has not

been investigated. Published literature to this point focuses theories and practical application within each discipline. This opens the opportunity to address the relationships between these topics.

### Technology and Learning

K-12 schools and universities quickly adopted technology as a means to improve teaching and learning. Early computer software supplemented teaching skill and practice drills for learning mathematics and language (vocabulary). Word processing and desktop publishing software was made available for faculty and students at the college level. Course materials and class assignments could be created and edited with greater ease. In the early 1990s, the Internet was quickly adopted for communication and academic publication. With knowledge of Hypertext Markup Language (HTML), anyone affiliated with an organization capable of providing a Web server, could electronically publish on the Internet written content and simple, low-resolution graphics. Faculty seeking innovative ways to teach and provide access to information began making course content accessible by way of the Web. Web-based teaching and learning systems consisting of educational software for children to computer-assisted learning tools for traditional and non-traditional college students is now applied to almost every academic subject, including art education and graphic design.

Computer technologies are developing into a new cultural symbol. College students live a portion of their lives experiencing the influences of the Internet. In many ways, students are contributing to the enculturation of Internet technologies in Western society. The relationship between people and information is creating a new view of the world. We consume images, icons, and new words that have suddenly entered into our vocabulary. We are a part of significant cultural change that is having a profound impact on how we learn, work, and communicate. With the Net generation now enrolled in college, there is a need to “rethink and reenvision our

educational system to meet the needs of children who have grown up surrounded by digital media” (Watts, 2003a, p. 5). Society is now shaping technology—visual learners, the one’s whose views of the world are influenced by television commercials and feature films are demanding more and more from technology and the Internet.

Application of computer software for educational purposes can be dated back 30 years (Ausserhofer, 1999). Using technology for teaching and learning was not a new concept, however, with the integration of the Internet into higher education, Internet access to course materials quickly gained popularity. Since it was first used in education, Web-based learning has been continuously scrutinized and compared to traditional methods of teaching. Criticism focused on questioning technology’s impact on teaching and learning outcomes. (Criticism was similar to when television, videotape, and film was thought to be a solution to problems in education.) The computer as a tool was quickly perceived by administrators and faculty to be the solution to academic problems and would play a significant role in education reform, however, in many cases, early adoption of technology was poorly designed and resulted in learning experiences that were worse than traditional classroom environments (Poole & Axemann, 2002). Faculty, staff, graduate students, and administrators placed an emphasis on connectivity before making pedagogical decisions and asking how to effectively use technology for teaching and learning. Large and small grants were awarded for outfitting computing labs, with the idea that faculty would be automatically motivated to conduct research in the state-of-the-art facilities. Academic administrations allocated tremendous amounts of money to equip educational institutions with the most up-to-date technologies (Mitchell, et. al., 2003). This was done with few administrators and faculty asking “why” they were buying hardware, software, and peripheral equipment (Watts, 2003a). Hardware and software upgrade expectations became a costly reality, yet with every upgrade, funding was distributed to purchase new equipment. The concept of Moore’s Law came

into effect. Named after Gordon Moore, it was the idea that the computing power of a chip would at least double every eighteen months (Brown & Duguid, 2002). It appeared that administrations and faculty were relying on Moore's Law to solve problems with integrating technology into courses. Better software and faster computers would solve issues in education brought about by technology.

Computers continued to be discussed and criticized as a means to fixing the problems in education, particularly at the college level. Questions began to arise, asking when we will move beyond a focus on technology and return to emphasizing the need to think about what technology can provide within the framework of educational philosophy (Watts, 2003a)? The ways in which computers have been used does not reflect the potential of emerging technologies for teaching and learning (Hokanson & Hooper, 2000).

I believe now—academic scholarship supports my view—that researchers and professors are moving beyond a focus on learning the tool to a focus on pedagogy and educational philosophy (Watts, 2003a; Poole & Axemann, 2002). There continues to be a need for the application of technology to move beyond use for transmitting messages, applying traditional instructional strategies, pre-packaged computer-based materials, and limitations of telepresence (Dryfus, 2001; Feenberg, 2001). “Technology needs to function as a catalyst to education, in that it should allow all of us an opportunity to revisit how, what, and why we are teaching” (Watts, 2003a, p. 6). We need to discuss not strictly what kind of software is available, but what kind of critical thinking skills can be developed when using the software.

### *Distance Learning*

Colleges are restructuring their general education requirements. This is in part due to decreased state and federal funding, which is resulting in a push to increase student enrollments in order to generate department and college revenues. Faculty are being (re)trained to deliver course

content online using active teaching and learning modules, while trying to maintain a personalized academic experience for each student. At the same time, Web-based courses, and particularly pure distance courses, which in most cases are less than personal, are thought to be an inexpensive way to generate funding. The dichotomy between the two initiatives is apparent—one that includes individual, personalized learning and the other that promotes distance through online models (Watts, 2003b). In addition, the development of distance education courses was soon found to be costly, both financially and because it required a tremendous amount of faculty time.

Distance education is a process of delivering instruction to individuals at locations away from an academic institution to another classroom, computer lab or personal residence, using multiple technical methods, and multiple media resources—video, audio, computer, telecommunications (Hentea, Shea, & Pennington, 2003). The United States Distance Learning Association (USDLA) (2003) defines distance learning as “The acquisition of knowledge and skills through mediated information and instruction, encompassing all technologies and other forms of learning at a distance” (p. 1). Teachers and students in several locations are linked through technology that allows for interaction (Bingham, Davis, & Moore, 1999). Distance learning, through conventional technology, can bring together individuals who are separated by location and are different culturally (Romanoff, 2003). In addition, distance education exists on the premise that technology and teaching will combine to provide an effective learning experience for the student; it is a teaching and learning vehicle that capitalizes on traditional and innovative pedagogies.

Traditional classroom learning and distance learning can be combined, utilizing the benefits of both. This is what is termed as *blended* or *hybrid* learning. Blended learning combines the best of traditional and online learning, giving students face-to-face social interaction of a

classroom setting combined with the flexibility and content resources that can be made available via the Web (Hentea, et. al., 2003). Most faculty today, whether they realize it or not, have created blended courses by making course content, syllabi, and lecture notes available on the Web in order to support what is taught in class.

Technologies used in distance and hybrid learning include hardware and software technologies, computer and network infrastructure, broadband, multimedia, wireless (laptops, PDAs) and mobile systems. The tools used to support distance and blended courses included traditional media such as videotape, cable/public television, teleconferencing, textbook, and PowerPoint presentations, in combination with Web-based tools such as Web browsers (Firefox®, Netscape®, Safari®, Microsoft® Internet Explorer®, etc.) Chat rooms, QuickTime™ and Realplayer™, teleconferencing, WebCT®, and Blackboard® to name a few (Hentea, et. al., 2003). Traditional media and Web-based tools are used together with course management software applications. Course management software contributes to easier conversion of traditional course materials, creation of communication, and student assessment (Wijekumar, 2001). These products are promoted as being modular, flexible, and scalable. Manufacturers and developers of Web-based course management systems suggest that Web-based learning using their tools (i.e., bulletin boards, chat rooms, quizzes) allow for the creation of effective constructivist learning and collaborative environments. The advertising, marketing, and training literature leads us to believe that if the right product is chosen for your institution, the development of an effective Web-based distance learning course will follow, “when in fact none of the products supports most of the fundamental research findings related to constructive learning” (Wijekumar, 2001, p. 2). Distance education is also promoted as a cost-cutting solution for administrators. Speaking realistically, Web-based learning is more expensive to create than traditional courses. Unfortunately, software does not always allow philosophy, pedagogy, and

simply good teaching practices to drive teaching and learning activities. Discussions are needed focusing on the delivery methods in order to design effective educational models which assist in improving learning outcomes (Watts, 2003a).

### *Pedagogy and Web-based Learning*

When used appropriately and grounded in sound pedagogy, computer technologies can enable us to create good Web-based course examples that have a positive impact on education. If technologies are used just because they are available or for economic reasons, there is a chance professors will fail to engage students in learning and provide a forum where students can actively shape their learning environment (Watts, 2003b). For example, course management software serves as tools for quickly and inexpensively accomplishing goals, while academe is caught losing its best practices of teaching:

The creation of Web-based learning environments must start with the subject matter and be grounded in theory.... Here the role technology can play in learning is secondary to the content and based on research findings showing how it can enable multiple perspectives to problems, provide different organizations of information, provide scaffolds to learning, provide feedback, and engage learners in higher order thinking and problem solving. (Wijekumar, 2001, p. 1)

Teaching modules need to be built on sound pedagogy and what we know about effective teaching and learning strategies. Faculty should be aware and refrain from believing lecture courses will automatically translate from lecture-and-listen mode to Web-based presentation without a need for change. For example, professors should understand the need to limit lengthy texts and “chunk” information, be aware of the benefits and drawback of posting PowerPoint slides containing bulleted lists of items, and present complex ideas as brief outlines on a course Website (Keller, 2003). Administration and faculty need to be cognizant of issues relating to deliverability, accessibility, representation, and content management, and make further consideration for marginalization and diversity.

Pure distance and hybrid courses are offered to students from all academic ranks. A majority of college courses provide some form of Web-based content for students to access; this content may range from a syllabus to recordings of course notes, lectures, PowerPoint slides, video clips, and quizzes. Traditional college students attending on-campus, undergraduate, four year universities, are finding increased numbers of general education courses (GEC) available online. Students choose to enroll in these courses because they can learn at their own pace, and at a time and location that is convenient to them. These students are characterized in the literature as motivated, committed to learning, highly focused, self-directed, and know when and how tasks must be completed (Moore, 1998). The literature also indicates that students are not always interested in self-directed learning. Their goal is to finish the course while applying a limited amount of effort needed to pass. They want the professor to provide specific directions on how to complete assignments, they want to bypass any additional content found available on the Web, and to easily access required reading. General descriptions of students enrolling in Web-based courses are available, but according to Moore, there is not enough information to create a profile characterizing all students:

Although the proportions of students sharing particular demographic and situational characteristics have been high enough to encourage general descriptions of distance learners, they have not been high enough to support development of profiles that can guide the design of uniform programs appropriate for a 'general audience' of distance learners. The increasing emphasis within the field on meeting individual needs, and the aforementioned convergence of distance education practice and campus-based instruction argue against both the desirability and the possibility of developing anything approaching a standardized description—or program for—the distance learner. (p. 19)

It is equally difficult to come up with a standardized description of faculty who are drawn to online learning. Many professors have resisted change from traditional teaching methods and the feverish advocacy of distance learning in education. Professors who do adopt technology are providing additional resources, broadening the curricula. This gives students new opportunities to interact outside of class (email, discussion boards, chat rooms, etc.); to provide for individualized

and customized learning; and to focus attention on making courses and learning experiences that empower them to learn effectively, efficiently, independently, and with satisfaction.

“The future of distance learning technologies in education will be most influenced by the manner in which educational administrators handle the change process” (Bingham, et. al, 1999, p.

5). While never before has technology available to teachers and students been readily available,

“paradoxically, never has the gap of understanding between those who know how to design and deliver distance education programs of good quality and the policy-makers and administrators, both on our campuses as well as in our state and national capitals, who talk about the need for distance education but understand it so little—never has this gap been wider than it is today.” (Moore, 1998, p. 2)

What we need to remember is a balance is needed between learning technology and applying sound pedagogy. Professors cannot be expected to apply effective teaching methods without understanding the fundamentals of using computers and software. Proficiency plays an important role in the innovative use of computers for learning. This applies to students, as well. They must learn how to use a software application and what it can do before (re)structuring a traditional course using emerging media technologies.

#### *Accessibility and Deliverability*

Proper training in the form of workshops that provide faculty with basic hardware and software knowledge is available at most colleges. Course management software workshops are available for faculty from all disciplines, and training for using specific software (e.g., digital imaging, video, audio, Web page authoring, and animation) occurs at the college and department levels. Yet, workshop attendance varies and is usually on an as needed basis due to the limited amount of time professors have available to learn about new and upgraded hardware and software. The adoption of new media tools adds to research and teaching responsibilities. Time has to be taken away from faculty research, teaching, writing, research grants, and committee

work (Cuban, 2001), limiting the time available for instructors to learn how to use computers well.

Staying current with hardware and software developments is vital if faculty are to maintain a level of competence that is congruent with that of the typical student. College students are heavier users of the Internet compared to the general population. Reported in the Pew Internet & American Life Project ([PEW], 2002), twenty percent of college students begin using computers between the ages of five and eight. By the time they are between sixteen and eighteen, all college students have started using computers. The time students spend using the Internet is divided between academic and social purposes. Seventy-nine percent of students polled believed the Internet has a positive impact on their academic experience. They use the Internet to communicate with professors and classmates, to study, to conduct research, and to access library materials. In general, students feel their relationships with their professors are positively influenced because of new media communication tools.

Students can sense and have witnessed reluctance among faculty to adopt Internet technology and its use in the classroom (PEW, 2002). According to the PEW reports, faculty use technology for sending e-mail while students use technology as a part of their daily routine. Students want professors who are proficient with using emerging media for teaching. Similarly, students need to be competent users (Schott, Chernish, Dooley & Lindner, 2003). They should have access to courses and workshops to insure a level of computer literacy needed to participate and complete objectives in hybrid and online university courses.

Both students and faculty have expressed concerns about access to adequate computing facilities that are well organized, functional, available, and convenient for studying, research, and teaching (Zhao, et. al., 2002). Many students today have access to computers in their homes, university residence halls, libraries, and computing labs. Students without computers and Internet

access at home or in their dorm room, depend on university labs with up-to-date technology and high-speed connections to the Internet.

Resources and knowledge required to use innovative media are often beyond most professors' technical abilities. This is in part due to the time required to keep pace with constant upgrades and changes in software, which is added to teachers' time constraints and other obligations. Universities provide a human infrastructure (e.g., systems administrators and instructional media specialists) to help professors and students achieve instructional goals and to understand how to use different tools and for what purposes. Emerging technologies and advanced applications require dependence on other resources and individuals for their implementation. Experienced personnel are needed to assist with basic and advanced computing questions. Technology literate professors are less dependent on graduate students and technical staff for implementing Internet-based courses resulting in greater success using computers in the classroom (Zhao, et. al, 2002).

A resource found at many universities is a twenty-four hour telephone help service available to answer technical questions from students using computers on and off campus. On-campus computing labs have systems complete with course management software used for distance learning courses (e.g., WebCT and BlackBoard), needed Internet plug-ins, instant messenger software and video playback media (QuickTime, RealPlayer, and Windows Media Player™), and available staff to answer questions. Students using home computers find they have multiple roles including that of systems administrator. For students to access courses and interact with tools and content, they must be capable of downloading needed software and plug-ins. Concerns among faculty regarding students working at home focus on if Web browser compatibility issues of home computers provide full functioning access to course content and media. Even with proper software and hardware, students increasingly miss deadlines, do not

participate in synchronous<sup>6</sup> and asynchronous<sup>7</sup> discussions, and do not complete all course requirements (Laird, 2003).

Teaching faculty and students how to use technology is not enough. “To integrate technology in teaching, instructors need to know the affordances and constraints of various technologies and how specific technologies might support their own teaching practices and curricular goals” (Zhao, et. al., 2002, p. 511). Administrative decisions determining standards need to address social and pedagogical contexts, and implications of technology. Professors need to define learning outcomes as a result of adopting technology in their classroom. Learning environments and pedagogy should determine the appropriate tools to be used (Wijekumar, 2001). Emerging technologies can function as supportive learning media providing pedagogy and educational philosophy guide their development (Watts, 2003b).

### *Emerging Technologies*

Wireless technologies and mobile computing are becoming mainstream in today’s society and in educational institutions (NMC, 2003). Notebooks, hand-held computers, pen computers, PDAs, and laptops authenticate what has become the catch phrase, “any time/any where” access to information and learning. University of Arizona, University of Florida, Colorado State University and the State University of New York are only four of many colleges that have created wireless campuses, allowing students to be in any physical location and be connected to the university by way of the Internet (Campbell & Pargas, 2003). A number of universities and university departments are now pursuing initiatives that provide cost free technologies, or requiring students to purchase laptops or hand-held devices and use them in class. Duke University gave Apple iPods to the 2004 incoming freshman, as a part of a pilot program to

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<sup>6</sup> Synchronous communication occurs in real-time between two or more people through a virtual or electronically mediated system.

<sup>7</sup> Asynchronous communication does not occur at the same time between two or more people

encourage creative uses of technology, and to make available useful information such as the academic calendar, course content, and faculty lectures (Duke University, 2004). Requiring students to purchase their own computers and peripheral equipment is helping colleges save money by not having to create or update computing centers. Money is allocated for the purchase of more advanced and emerging technologies for beta testing and innovative academic research. The drawback to this practice is, unless the initiative is funded by the university in collaboration with hardware and software corporations, it adds to educational expenses students' incur in a struggling economic time. This will only further exacerbate access to education by students who do not have resources to purchase new media equipment beyond required books and study materials.

Use of PDA technology is expanding to higher education where students use them to organize their life activities, note taking, checking e-mail, and scheduling appointments (The Chronicle of Higher Education, 2002). Depending on the individual's learning style, PDAs either supplement or replace laptop computers when used in class. Teachers see hand-held devices as useful and effective classroom tools for augmenting instruction making a positive impact on learning; they are less disruptive to classes. Students find them easy to use and easy to transport.

Questions arise regarding how to effectively integrate laptops and hand-helds into the course curriculum or day's lecture. If they do not serve a needed and specific purpose the use will be more of a novelty than a learning tool. Technologically, PDAs as one example, are limiting due to their reliance on battery power, bandwidth issues, small memory, and compatible educational software. Formatting Web pages, syllabi, schedules, and digital course content needs to be adaptable with these small devices in order for information to be viewed on the small screens and to prevent compatibility mismatching (Carlson, 2002; Joshi, 2000). I expect this to

change quickly, and continue to change, due to the rapid advancements and upgrades of technology.

#### *Course Management Software*

Universities contract with course management software vendors in order to economically provide Internet course development tools and establish a standard for delivering online course content. Development and management tools have contributed to easier conversions and assembly of content, ease of communication, automated student assessment, and dissemination components in Web-based distance learning programs (Wijekumar, 2001). Moving data among course management software is difficult and software upgrades make the use of old content obsolete requiring reworking or rebuilding online courses (Arnone, 2002). More vendors are starting to share the software marketplace currently dominated by Blackboard and WebCT (NMC, 2003). Advancements are being made to allow sharing of content and information, and improved technical standards provide opportunities for more customized distance learning programs (Arnone, 2002). Faculty, previously and currently, not interested in using course management software because of inherent customization restrictions (e.g., interface design) and pedagogical limitations, will be more likely to use the software with open source codes needed for customization of online environments. In combination with the use of learning objects, media can be assembled and rearranged. More diverse applications of software will simplify teaching, create better functionality for more reliable accessibility and delivery, and provide choices of functions that will best suit pedagogy.

#### *Collaborative Tools*

Learning management systems include collaborative tools for teacher and student use, and these tools are easily and inexpensively accessed and used without course software. Multi-

user Domains<sup>8</sup> (MUDs), email, news groups, bulletin boards, and messaging tools are used in higher education to extend learning beyond class meeting times (Grinter & Palen, 2002). Many of these discussion forums and virtual environments began as a social means for communicating with people who share common interests, and with friends and family. Collaborative tools are now used for synchronous or asynchronous student-to-teacher or student-to-student communication, and use depends on teaching and learning objectives. Students using asynchronous communication (e-mail, news groups and bulletin boards) are described as being more concerned with content of the message, resulting in well thought out and more complete assignments (Weisskirch & Milburn, 2003). Electronic communication spaces are excellent for practicing critical thinking, and for developing fluency in thinking and writing (Bertsch, 2003).

Internet-based synchronous text chat as interpersonal communication in everyday life is rapidly changing ways in which students socialize with their peers (Grinter & Palen, 2002).

Network communities, such as MUDs and Instant Messenger (IM), are technologically mediated environments that allow a sense of community among users (Mynatt, Ito, & O'Day, 1997).

MUDs and IMs have supported real-time text chat for over ten years. MUDs are virtual spaces in which you can converse with others, and build communities (Turkle, 1995). A significant benefit for using MUDs and IMs as an extension of hybrid or online courses is the familiarity students have with using the software. Lower cost in comparison to video conferencing they are technically mediated virtual spaces attempting to reduce the distance between members to create a social cohesion (Mynatt, et. al, 1997). Easy to download and access, students use these tools for more informal discussions in comparison to the more formal perceptions they have of email use.

Teachers incorporating messaging tools into their courses will post times they will be available on IM to discuss class projects and answer students' questions. Requiring limited bandwidth and

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<sup>8</sup> The MUD acronym is used to stand for Multiple User Dimension and Multiple User Dungeon interchangeably. For more information about MUDs, please see question 4.

processing power to run, these collaborative tools have few limitations. Similarly, Web logs<sup>9</sup> known as “blogs” are gaining popularity in education. Created by Internet users as electronic journals, blogs are used as discussion forums in blended and online courses. This form of asynchronous discussion promotes reflective practice in education, giving students a greater sense of their roles as producers of knowledge.

### *Telepresence*

Goals driving improvements in new media technologies simulating immersive experiences for students participating in a course from a distance have led to advancements in video conferencing. Video conferencing has drastically improved from the past video recorded “talking heads” played on multiple small screen television monitors. Telepresence gives the perception of a real-life experience through a “transparent display system, high resolution image and wide field of view” (Dreyfus, 2001, p. 57). Synchronous in nature, new emerging telepresence technologies allow for immediate real-time interaction between students and teachers, in which interpersonal skills, previously difficult to portray, become a component of the distance learning experience.

With the increasing number of students opting to enroll in distance courses offered by universities across the country, funds are allocated for building state-of-the-art facilities. The goal is to create virtual one-to-one interaction for collaborative, dialogic learning in lecture or group forms of teaching (Olsen, 2003). Students enrolled in courses utilizing new video media express concerns about teachers who are not comfortable with technology, but overall these students react positively to the experience. Video conferencing can serve as a substitute for the real, but immediate presence of teacher and student is lost even with the most advanced technologies. The

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<sup>9</sup> A Web log is a chronological documentation of a person’s thoughts sometimes in a hybrid form combining personal thoughts with political or social issues occurring at that time. Web logs are synonymous with blogs.

current state of technology does not create a truly immersive, real-life experience. What is virtually identical to a physical presence is philosophically debatable (Dreyfus, 2001; Olsen, 2003).

#### *Availability and Marginalization*

State and national economic situations affect public universities, requiring administrators to rethink ways of generating revenues through increasing student enrollments by offering more courses online. The rise in the number of degrees earned at a distance and more students enrolling in online education creates competition between universities making them think and function more like businesses. Universities are taking serious consideration of competition, markets, products, customers, clients, productivity, and economic survival. Colleges may find they can generate revenue through the preparation of learning objects for commercial sale in a world-wide education market. Commerce will pressure those offering online education for better products with innovative, customizable ways to deliver course materials. (NextEd, 2000). Higher education is competing for students and competing with corporate research centers for funds, projects, and research (Brown & Duguid, 2002).

Decisions to attend colleges based on geographic location may no longer be an issue for students choosing from which academic institution(s) they will earn a degree. University credentials consisting of name, social status (Harvard and Princeton as examples), and college rankings will drive the decision making of students looking for an online education. These universities will maintain a public trust, and the value of a degree earned from such an institution will remain the same (Brown & Duguid, 2002). This is not distinctly different from how students make choices today, but it has the potential to make it more difficult and less cost effective to sell electronic materials and enroll enough students to make distance learning courses economically worthwhile. Smaller institutions perceived as less prestigious may be left behind.

The traditional real-life classroom and campus experience will not become extinct as the result of an abundance of online courses. Universities view online education as different from campus universities (NextEd, 2000). Students will continue to live at universities and attend classes in person. Life and learning at a university will become even more of a social, lived experience with access to a variety of different communities. Students' learning will be a social construction of distinct knowledge and the credentials they receive will be more valued than those of students who earn degrees online, in what may be perceived as learning in isolation (Brown & Duguid, 2002).

Having choices between convenient online learning and traditional on campus courses will not necessarily create equal access to education by minorities, women, and those who struggle economically. What Brown and Duguid (2002) describe as social distance, "...is not overcome by 'a few strokes of the keyboard'" (p. 224). New technologies are likely to have a positive impact on learning in traditional on-campus settings where learning communities are already established versus in virtual environments where communities continue to be formed. Conventional campuses are expected to become increasingly expensive to attend. Access to technology resources purchased for on-campus use will contribute to the increased cost of a traditional education perpetuating problematic issues of marginalization. For many people unable to pay higher tuition costs combined with technology fees, the only means for earning a higher education will be through distance learning courses.

### Constructivist Learning

Traditional skill-and-drill curricula outlined by behaviorist and cognitive principles in education have dominated the ways students are taught. Behaviorist principles characterize education in terms of the process of learning, which is assumed to be general and independent of what is learned. According to this view, both content and students are fixed entities—not

changing based on educational research or learning styles. Emphasis continues to be placed on standardized approaches in lesson planning and teaching (Gee, 2003; Prawat, 1992). Education consists of (de)contextualized information that is believed to be received without difficulty and is transferable to real-life situations (Lave, 1997). Acquiring skills through preconceived activity results in effective learning; it is assumed that student engagement can be the measure of student learning—the more engaged the student and how quickly and efficiently s/he acquire skills, the greater chance s/he are gaining knowledge (Greeno & the Middle School Mathematics Through Applications Projects Group, 2000). Teaching involves specifying the exact content to be learned and requiring intellectual activity to take place in isolation (Lave, 1997). “In school students are considered to differ only by being better or worse at ‘getting it’” (p. 18). Educators focus on curricula and teaching processes instead of considering the varying ways in which students learn. Students are assumed to know something if they simply receive information independent of using knowledge in relation to other disciplines and life (Resnick & Klopfer, 1989).

Modern cognitive theory, according to Resnick & Klopfer (1989), does not characterize students as “recorders of information” (p. 4); they are builders of knowledge structures. To teach and learn is not limited to delivering and receiving information inasmuch as reflecting on how information is interpreted and related to other knowledge. “To be skilled is not just to know how to perform some action but also to know when to perform it and to adapt the performance to varied circumstances” (p. 4). This instructional theory is concerned with the traditional principles of teaching: how to present information; how to outline content and topics; how to organize practice assignments and get feedback, how to integrate activities; how to motivate students; and how to assess learning. In addition to conventional instruction, acquiring knowledge results from active comprehension by the individual learner. We construct meaning based on past experiences, and the application of past knowledge and experiences to new situations.

Constructivist theory has many interpretations. The most agreed upon is it changes the focus of teaching, emphasizing students efforts toward understanding and placing it at the center of educational objectives (Prawat, 1992). Individual differences among students are emphasized, as well as student thinking, sense making, and the ability to transfer knowledge from one setting to another. Constructivists are concerned with how learners construct knowledge and make sense of their own every day lives (Driscoll, 2000). Understanding is influenced by prior experiences, mental structures, beliefs, and cultures that an individual uses to interpret objects and events. “Each of us constructs our own reality through interpreting perceptual experiences of the external world” (Jonassen, 1993, p. 10). The situation in which an idea is embedded is important to the understanding of and the ability to use the idea (Duffy & Jonassen, 1992). The goal of teaching within the principles of constructivist theory is to provide students with the ability to problem solve, reason, think critically, and acquire active and reflective uses of knowledge through more than one instructional approach.

Current epistemology focuses on how people make meaning of their lives and how experiences are historically and socially influenced—multiple truths exist and realities are co-constructed through human interaction. Different people read the world differently. In that respect, individuals read different types of texts (visual and literal) differently. Instruction has shifted from emphasis on individuals to groups and communities who share rules and facts (Wilson & Myers, 2000). Activity, participation, and cognition are connected with the activity of the social group. For example, learning is intertwined with other students, and with the tools, symbols, and processes established in a culture. How students participate in learning, the practices they engage in, is strongly influenced and motivated socially and culturally (Lemke, 1997). What determines how someone reads or thinks about a thing, subject, idea, etc., is based on their experiences when interacting with people who are members of various social groups.

Gee (2002), when relating constructivist epistemology to learning and playing video games, stated that learning is not one dimensional, existing only within the mind of the individual. His research is founded on the constructivist idea that you always read or think within a discourse: You align yourself with new people and groups at various times for different purposes—contexts, social practices, and intents that shape thinking in different domains. For certain goals, a group’s way of thinking may be better than another in order for us to achieve specific objectives. “Since reading and thinking are social achievements connected to social groups, we can all read and think in different ways when we read and think as members (or as if we are members) of different groups” (p. 3). Understanding is a social construction of reality versus an individually cognized experience. Knowledge and construction of meaning is linked to specific contexts and purposes. Within discourses, people can change their views, thoughts, and interpretations (Wilson & Myers, 2000).

Constructive theory places greater demands on the teacher as their role becomes more complex and interactive, making it more challenging and requiring more pedagogical responsibilities. Education becomes a departure from teacher-centered strategies, to focusing on understanding course content through complex questions, challenging students to think critically (Prawat, 1992). Effective teaching begins when teachers do not simply teach subject matter; they rethink what it means to know subject matter:

Current research supports the commonsense notion that teachers are better able to assess student understanding when they are more knowledgeable about the topics they are teaching. This most often is referred to as knowledge *of* subject matter; it entails an understanding of the substance of the discipline—that is, of the ideas that are considered most central or core to those within the discipline. (Prawat, 1992, p. 364-365)

Teachers’ attention is given to issues of content selection and understanding. Teachers pose complex questions, challenging students, while beginning to serve as facilitators and guides instead of sole distributors of content. They attribute equal value to what students need to know

“and how they are construing that knowledge” (Prawat, 1992, p. 361). This results in a departure from teacher-centered scenario and emphasizes the importance of student cognition and understanding.

Socially mediated aspects of learning and interactions help students develop socially relevant skills and knowledge (Doolittle, 1999). Interactions are not limited to teacher-to-student dialogue, but are encouraged to involve student-to-student and student-to-professional interaction in order for the learner to explore, interpret, negotiate, and understand while considering multiple perspectives (Land & Hannafin, 2000). These interactions, as a part of the learning process, help students develop a knowledge base<sup>10</sup> they can draw from to further evaluate and negotiate new meanings (Koroscik, 1996; Merrill, 2001). In addition, students should be given ownership of learning goals and strategies for achieving adequate solutions to learning problems. Allowing students to develop their own experiences also gives them opportunities to analyze exactly what they are able to transfer from one learning context to another (CTGV, 1999).

### *Situated Learning*

Situated learning builds upon cognitive constructive theory and places individual cognition within a larger socio-cultural context of interactions, tools, and meanings (Wilson & Myers, 2000). Learning is not restricted to generalized and localized situations; it is characterized in terms of interaction, inquiry and discourse, and forming conceptual understandings and acquired skills (Greeno, et. al., 1998; Wilson & Myers, 2000). Students are “effective participants in the meaningful social practices of their learning communities in school and elsewhere in their lives” (Greeno, et. al., 1998, p. 17).

Real-world experiences, activities, and situations are fundamental to effective learning, whether they are based within social activities or personal models of reality. Individuals are

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<sup>10</sup> Representations of content to be taught including a number of different instructional objects in the form of text, graphics, audio, etc.

characterized by their participation in an activity and roles they play in social practice. This is in contrast to the traditional “top down” transmission of knowledge teaching approach (Lave, 1997, p. 18). The belief, that as long as children are active they are learning, is discredited in constructivist scholarship. What students are asked to do in school rarely mimics the activities in which professionals take part in the real-world practice. According to Pravat (1992), “Because context is so important...it may make educational sense to begin with activities or situations, then work back to relevant skills or concepts” (p. 377-378). Ideas versus activities should function as starting points when planning lessons. “When a skill or concept is used in a specific situation, it acquires meaning that it did not possess before. The situation thus becomes an important part of what one knows or understands about the particular skill or concept...” (p. 377). Learning skills should be done in context and applied to real-world issues and problems.

#### *Apprenticeship and Active Learning*

Constructivist teaching and learning places an emphasis on situating cognitive learning tasks in authentic activities, similar to apprenticeship forms of learning (Brown, Collins, & Duguid, 1989; Efland, 2002; Lave, 1997). Apprenticeship embeds learning in activities, and utilizes social and physical contexts. For example, students who use tools, such as the Internet, actively understand the tools and the contexts in which they can be used (e.g. school, entertainment, and a news resource). Learning becomes continuous and life-long. Situated, apprenticeship forms of learning focuses students’ attention on the broad concepts, and occurs when “knowing, thinking and understanding are generated in practice, in situations whose specific characteristics are part of practice as it unfolds” (Lave, 1997, p. 19).

Active learning involves teachers and students experiencing the world in new ways, preparing students for learning within one domain, and providing knowledge needed to transfer new knowledge to other school subjects. “Whole-activity practice is viewed as more important in

long-term mastery than is the consistent, correct execution of decomposed parts of the process” and “...equal accomplishment is possible and expected for all learners” (Lave, 1997, p. 22). Constructivism emphasizes situating cognitive experiences in information-rich, interesting, realistic contexts that engages students in active inquiry allowing them to understand important concepts (CTGV, 1999). Apprentices learn to think, debate and interact in knowledgeable ways, alongside people who are experts at their skill. These students, when interacting with experts, begin active learning with them and become participants in the process.

Students who are included as legitimate participants in learning understand how to think and interact in more knowledgeable ways with people who demonstrate excellent models of thinking. Students need to be engaged in interactions that allow them to take on an identity, which is related to the discipline of study. For example, a student taking on the identity of an art teacher may be given learning opportunities that require them to use vocabulary, interactions, and actions of the educator to talk about overall themes present in an artist’s work. They can learn to discuss art using common terms read in art journals and newspapers, and they can learn to categorize art works according to period based on descriptive skills acquired in an authentic learning environment. At the same time, the student brings to the classroom their real-world identity, which as already stated, is culturally and historically influenced. “It is the connections or associations that people make among their experiences that are crucial to learning, thinking, and problem solving” (Gee, 2003, p. 73). Students need to be encouraged to build bridges between their real-world experiences and the identity they take-on in the classroom. In the case of the student’s role as an art educator, students can discuss an experience they had seeing an artist’s work in a gallery, community space, or museum. Teachers can help learners build these bridges by encouraging students to try, even if he or she is afraid to try; encourage the learner to exert

effort, especially when they have little motivation; and construct lessons in ways that helps the learner achieve meaningful success as a result of their efforts.

Constructivist principles include designing tasks, content, and skills in ways that make learning more relevant to students. Usually if students in a course are given a list of facts, when they are asked to apply what they have learned to a new situation, they are faced with memorizing more facts making transference difficult because of the inability to relate knowledge and context. Without developing patterns of knowledge through learning, when students are in new situations they cannot reflect on how their previous or current knowledge can be used (Gee, 2003).

It is important that students' prerequisite knowledge is consistent with the complexity of problems characteristic of ill-structured environments (Savery & Duffy, 1995; Spiro, Feltovich, Jacobson & Coulson, 1992). Within ill-structured environments, standard methods, strategies, and solutions are not pre-specified. Different learning situations require the application of different principles and methods (Bruer, 1995; Spiro et. al., 1992). Providing resources and arranging materials in a way that gives students opportunities to revisit the same information at different times for different purposes allows for cognitive flexibility. Cognitive flexibility theory (Spiro, et. al, 1992; Efland, 2002) involves reviewing the same material at different times, in different contexts, for a variety of purposes, and from multiple perspectives. This helps students attain learning goals and further advances the acquisition of knowledge. Students are able to identify any missed yet needed concepts while becoming cognizant of possible connections with other material. The content and skills taught are within the framework of the learner's prior knowledge, so that teachers can create effective learning environments and experiences with successful outcomes (Doolittle, 1999).

Students learn to apply skills as they are acquired. Early metacognitive research emphasized simple skills such as repetitive practice and memorizing (Resnick & Klopfer, 1989).

More current scholarship supports the idea that metacognitive skills are developed when the learner is able to successfully make connections between knowledge and context in school and life. In addition, when students move from novice to expert learner, they begin to rely more on tools (e.g., technology, the Web, simulations, etc.) as a means to enhance thinking (Hannafin, Land & Oliver, 1999). Metacognitive thinking is a way to provide for and encourage students to test their new knowledge against alternative views, and develop more complex schemas. Transfer and adaptability of knowledge increases when students can examine what they have learned and compare what they know to multiple perspectives (Doolittle, 1999).

### *Transfer*

Transfer occurs when a student is able to apply something s/he has learned about in a subject to a new problem faced in a subject from a different discipline. Transfer requires active learning and the student to call on previous experience and apply it within a new context (Gee, 2003). Prawat (1992) states that the current views of transfer are problematic: “it is unclear how much real transfer occurs as a result of our current educational practice...” (p. 371). Transfer is limited to behaviorist assumptions about the delivery of content and the development of knowledge. There is little evidence that indicates transfer of general skills and abilities is successful as a result of the structure of formal education models.

Formal education categorizes transfer using two views: Vertical transfer is hierarchical—mastering simple knowledge and skills will make acquiring more complex skills easy. Horizontal transfer is described as a “ripple effect” (Prawat, 1992, p. 373), in which knowledge or skills learned influences students’ behavior in a broad set of situations. Complexity of content remains the same; it is a general-to-general process. Behaviorist and cognitive learning strategies do not promote transfer across disciplines. What is learned is restricted to memorization and application within a single context. Thinking skills and application of knowledge in various contexts is not

always taught. The student because of their previous knowledge, which may be inaccurate, may misinterpret new information. Adding to this, traditional teaching practices may conflict with community practices.

Constructivist views of transfer believe that sequential learning from lower-level to higher-level can occur effectively. Knowledge is not independent of situations in which it is acquired, and knowledge is deeply associated within the context it is used. When knowledge is connected and accessible, transference can occur to new and unique situations. “The breadth and depth of the connections or associations between elements of knowledge may be as important as the extent of one’s knowledge” (Prawat, 1992, p. 373). When comparing novice and expert learners, experts are able to apply new knowledge to novel situations because their knowledge is more organized and coherent. The result is a more lasting understanding. Gee (2003) provides an example of successful transfer using video games as a model:

Many times the early parts of games are replete with things to find, places and situations to explore, and things to do that teach players the range or types of artifacts to be discovered, places and spaces to be encountered, and actions to be expected. Players gain a good “feel” for the game and its controls. By the time they get past the early parts, they are more adept and ready for more advanced learning. Further, against a background of knowing what is normal to be expected, players can assess and reason well about new and more special cases they encounter later. (p. 136)

Good learning principles, like good video games, organize situations and problems in the order with which they confront the player. Earlier situations and problems in games are designed for generalizations and the discovery of patterns in regards to skills and strategies. Generalizations and strategies can then be used for playing the entire game and provide a basis for more complicated situations and problems.

It is important to note that situated learning does not completely dismiss behaviorist and cognitive learning principles. According to Wilson and Meyers’s (2000) review of the literature, situated learning “accommodate[s] both individual and social scales of study” (p. 73). Behaviorist

and cognitive perspectives regarding understanding have “informed the development of educational practices significantly...” (Greeno et. al., 1998). Within a constructive pedagogy, elements of both can be combined. Situated learning recognizes contexts where a combination of learning strategies may be necessary and relevant.

Different learning situations require different tools, models, and methods. Methods and tools are used by students within the immediate learning environment, versus the general application by all students in all learning situations. Strengths and values of multiple learning theories can be included within situated principles. “Situative principles can provide a useful framework evaluating the contributions of behaviorist and cognitive practices in larger contexts” (Greeno et. al., 1998, p. 15). There needs to be some form of organization and guidelines for prescriptive elements in order to motivate undergraduates enrolled in conventional and online courses, as an example.

### *Motivation*

Academic success at the college level places special demands on students. Feedback from professors is often limited to few assignments and tests during the semester (Zimmerman & Paulsen, 1995). Student motivation to learn in general education courses (GEC), required in order for them to advance in academic rank and to graduate, is driven by their interest in performing what is required by the instructor and moving on to the next lesson. This typically takes precedence over their gaining an understanding of a lesson’s purpose and content (Buer, 1993). Traditional classroom practices and course structures are known to place a greater value on performance goals (skills and outcomes) before mastery goals (understanding and learning), therefore, having a negative influence on students’ ideas about intelligence, learning, and motivation. Assessment using a value structure, directive-based rules for grading, and competitive

structures, as examples, can have adverse affects on the performance, creativity, and level of interest a student maintains (Garcia, 1995).

Motivation is intrinsic; it is a key factor in learning, yet it is viewed as highly unpredictable and changeable (Keller, 1987; Lave, 1997; Resnick & Klopfer, 1989). Motivation should not be anticipated as the result of rewards and punishment. “If there are systematic differences between the organization of what children are intended to learn and what in fact they learn, then the question of what motivates activity—what gives it meaning and impels people to act—looks increasingly important” (Lave, 1997, p. 23). Successfully accomplishing a goal and presenting the knowledge learned can increase a student’s confidence and satisfaction, leading to an increased desire to learn.

Questions about how to improve student motivation are continuously asked by teachers in all levels of education. A model of motivation, ARCS (Attention, Relevance, Confidence, and Satisfaction), developed by Keller (1987) is applicable to today’s conventional higher education classroom and online learning courses. Keller’s model outlines research advocating motivation as a key factor in effective learning. ARCS is a method for improving motivational appeal of instructional materials, and provides suggestions for establishing contexts friendly to student-centered and integrated learning programs; it encompasses many of the specific categories of human motivation, and sets of strategies which can be used to enhance the motivational appeal of instruction. Recent scholarship published by case studies investigating learner motivation and goals and motivations of online learning courses (distance or blended) continue to apply many components of Keller’s model in addition to self-monitoring research and metacognitive learning strategies (Anderson & Garrison, 1998; Fallows & Ahmet, 1999; Olgren, 1998; Zimmerman & Paulsen, 1995).

Four conditions have to be met for people to become and remain motivated in a course—attention, relevance, confidence, and satisfaction. Attention is a prerequisite if the goal is to get and sustain motivation for learning. “To do this, it is necessary to respond to the sensation-seeking needs of students and arouse their knowledge-seeking curiosity” (Keller, 1987, p. 3).

Attention can be gained by introducing a fact that seems to contradict the student’s past experience, presenting examples that do not exemplify a given concept, or introduce scenarios or facts, yet only one can be true.

Relevance comes from the way people are taught. “The feeling that the material is not relevant to the learner’s life experiences often causes lack of student interest” (Fallows & Ahmet, 1999, p. 170). Stating how the instruction builds on learner’s existing skills and using analogies from past experience relates the instruction to the students’ lives. In addition, teachers can establish relevance by discussing how the instruction relates to future activities for the student; how students relate the instruction to their future goals; provide opportunities for student responsibility, authority, and interpersonal influence; and provide alternative ways to accomplish assignments and learning goals.

Confidence is exhibited when students see learning as a result of their ability and effort instead of a product of luck or chance. Students enjoy learning even when they make mistakes, and if the course context provides the opportunity for them to make mistakes. To build student confidence, instructors should clearly state the learning requirements into the materials and provide self-evaluation tools based on those goals. Material should be organized on an increasing level of difficulty and must not exceed students’ abilities at that level otherwise it will lead to frustration and learned helplessness. Expectations need to be clearly communicated along with the likelihood of success based on the amount of effort and ability demonstrated by the student (Keller, 1987).

Extrinsic and intrinsic rewards lead to satisfaction. Students are encouraged to apply their new knowledge and skills as soon as possible and are asked to help other students with tasks. Positive outcomes can be given in the form of verbal praise for successful progress, and motivating feedback immediately following task performance. Frequent reinforcements motivate students to become more competent.

### *Assessment*

Student assessment, according to constructivist theory, is structured around authentic tasks and knowledge construction, focusing on students' higher order thinking skills. Students are evaluated on their abilities to solve relevant problems and on their processes of constructing knowledge (Jonassen, 1992). Assessment methods should help students demonstrate their developing understanding and application skills. Objective testing used in many courses does not provide a way for students to demonstrate the extent to which they have mastered the information, transfer their knowledge from context to context, and demonstrate and understanding of interrelated concepts (Olgren, 1998). Forms of assessment in addition to or in replacement of objective testing can include case studies, projects, portfolios, investigations, and interviews to name a few. Assessment methods may also encourage self-assessment to teach students how to evaluate and take control of their work. Assessment, in this respect, "is concerned with both content and process of learning" (p. 91).

My position is that we always have some level of comparison, a basis, for which we assess student performance. Evaluation is subjective, especially in the arts and should occur "in contexts that are as complex as what the learner experiences during instruction" (Jonassen, 1992, p. 141). Teachers should provide constant feedback regarding the learning progress that is taking place. Often in the arts the progress and mastering of skills becomes visibly obvious, especially when students are learning to use computer software applications to create art and animations.

## Art Education

The field of art education has undergone significant changes, which have influenced content and practice along with introducing new areas of study. Theoretical frameworks have evolved from formalism, child-centered learning, and DBAE, resulting in curricular development, and new ways to guide pedagogy in the classroom emphasizing integrated, inquiry-based curricula (Gaudelius & Speirs, 2002). These earlier frameworks are viewed as inadequate for teaching, classroom discussions, and critiquing art works and artifacts from a multitude of cultures in today's global society. Theories have grown and changed as a reaction to social conditions and new philosophies in both art education, education in general, and life. Contemporary theories pay attention to ways in which art and art education are linked to the issues and lives of students through advocating integrated learning.

Modern art education paradigms evolved from formalist values focusing on visual qualities and artistic processes to DBAE which focuses on art as subject, serving an important part of general education curriculum (Efland, 1990; Gaudelius & Speirs, 2002). The bases of DBAE content and knowledge focuses on four major art disciplines—philosophical aesthetics, art criticism, art history, and art production (Gaudelius & Speirs, 2002; Eisner, 2000; Neperud, 1995). DBAE theory establishes the study of art as more than students producing works: Art relates to other academic subjects and the activities students participate in at school, and to life outside the classroom. What is taught in the classroom is made relevant to students' lives. When a student is learning and when s/he finds learning meaningful, there is a better chance s/he will transfer the knowledge to other disciplines (Eisner, 2000).

DBAE continues to influence art education, guiding students to construct critical thinking skills and a process for inquiry in the arts, education, and life (Gaudelius & Speirs, 2002; Neperud, 1995). Contemporary teaching theories abandon earlier canons making way for

inclusive, democratic, active, and individualized education that is meaningful to students (Parsons, 2004). Postmodern theories in art education accept many varying forms of knowledge characterized by multiple perspectives and cultural diversity (Sullivan, 2002), placing at the forefront, issues of race, class, multiculturalism, sexual orientation and gender, revealing hidden truths, and no longer fully accepting Western dominated historical and aesthetic assumptions of art.

Presently, approaches to teaching art are through a more inclusive framework linking art with ideas and lives of artists and students (Gaudelius & Speirs, 2002). The categories of art education content and knowledge are influenced by cultural, social, and ideological distinctions in addition to technical processes. “Art is a form of individual and cultural expression that influences the way we see ourselves” (Sullivan, 2002, p. 24). The meaning of art cannot be separated from the social context in which it is created, and context is viewed as a legitimate issue in art education theory and practice (Neperud, 1995). New theoretical and pedagogical frameworks—multicultural, popular visual culture, critical theory, cultural theory, feminist theory, etc.—are centered on aspects of issues of identity and difference, visual culture, popular media, and artistic subjects. These categories of content and knowledge are no longer fixed and objective (Gaudelius & Speirs, 2002).

Art education content is responsive to social contexts and not directly dictated by a few experts in the arts. “Content is historically and culturally situated and does not exist as a universal truth with no connection to life or particular times and places” (Neperud, 1995, p. 9); it is derived from themes such as popular culture, indigenous culture, politics and war, economy and environment to name a few. Knowledge is socially constructed and interpreted according to individual needs. Art education content (concepts, processes, or information) embraces more constructive ways of learning. Subjective and personal experiences become legitimate sources of

information for viewing, critiquing, and producing art, and artworks created by culturally diverse populations are accepted as legitimate. Creative development is not determined by formalist techniques for drawing and painting, but instead, includes aesthetics, non-linear historical perspectives, criticism in context, and multicultural studies.

### *Integrated Learning*

Education today reflects the complex world in which students live, responding to rapid social changes attributed to the burgeoning of information technology and visual communication (Parsons, 2004; Ohio State University TETAC Mentors [TETAC], 2002). For example, the ongoing war in Iraq is touching the lives of many students whose family or friends are being deployed. This has an impact on how they view politics, the government, what they see on television, and potentially the assignments they are asked to complete in school. What is taught in a history class can be represented through the use of text and images from current video and images seen in newspapers and magazines as examples. The current trend in art education—research ways in which students interpret visual culture—plays an equally important part in helping students learn and understand politics of war and how war is depicted visually. Art can be a means for expressing students' views, which in all probability are based on what they see on television, and learn from their family and within their immediate community. What is taught and learned in the art classroom can relate to what is taught in history, science, and other subjects through the integration of curricula.

How academic disciplines are segregated does not reflect the way people construct meaning in their daily lives. “Neither academic disciplines or school subjects fit the way we need to organize knowledge to understand our major problems in the world” (TETAC, 2002, p. 14). Information becomes meaningful when it is related to prior and existing knowledge and interests. Instead of focusing on discipline-based structures, teachers are asked to focus on real-life issues

impacting their students. Integrating learning in this way has been found to make school more meaningful to students as they become active participants in the learning process. “Integration occurs when students make sense for themselves of their varied learning and experiences, when they pull these together to make one view of their world and of their place in it” (Parsons, 2004, p. 3). Understanding is the main goal of education and an effective integrated curriculum creates “an understanding of one’s lifeworld” (p. 3). Associated with constructivist learning theory, it promotes inquiry-based learning structured around important ideas, life-centered issues, and across multiple subjects. Integrated curriculum focuses on encouraging students to contemplate, interpret, and relate ideas to their own experiences (Parsons, 2004; TETAC, 2002). Connecting content from different school subjects makes learning each subject more meaningful. Students are able to make sense of themselves, their education and experiences by developing a better understanding of their lives and environments. Integrating curriculum promotes democratic education by giving students opportunities for self-reflection, and active inquiry to look at and resolve social concerns.

Associated with constructivist theory and principles, specifically the study of art and visual culture, the student becomes an active learner, basing their knowledge on experiences and relating what they learn with what they already know (Efland, 2002). Learning occurs in ill-structured domains where students make judgments without the restriction of rules and generalizations. The teacher’s role changes from director of information, to advisor and assistant allowing students to become engaged learners (Parsons, 2004; TETAC, 2002). Goals include having students think about meanings and ways to explore contemporary art. This requires the student to understand contemporary artworks by inquiring about topics that are related to other school subjects, and to use intuition and ambiguity to make connections between school and life, and art and life. The study and creation of artworks can bring together knowledge from different

sources and function as a way to understand complex issues. In art courses, learning tasks are structured to promote thinking about new ideas and art techniques as forms of expression (TETAC, 2002).

### *Big Ideas and Essential Questions*

Less prescriptive approaches to learning are more respectful of students' values and concerns in today's world. When teaching goals advocate practice that represents diverse interests and political beliefs, strategies incorporate a variety of methods and approaches (Wilson & Meyers, 2000). Ideas versus activities serve as starting points when planning lessons and when making what is taught relevant to students' lives. In an article written by Prawat (1992), he discusses his perspective regarding situated learning and big ideas:

Ideas, being more substantive by nature, may be a more important resource for promoting thought than thinking skills per se. Ideas...can and often do serve as valuable lenses, directing our attention to important aspects of the environment that otherwise might go unnoticed. Ideas play both an assimilative and accommodative role...allowing individuals to build on old information while continuing to search the environment for new information that leads to increased understanding. Ideas are created through a social process—'the dialectical interplay of many minds, not just one mind,'... In this sense, a social-interactive model of learning is equally applicable to idea and skill learning (p. 378-279).

Experts in every domain have developed concepts that are used when describing and explaining specific phenomena. Education grounded in constructivist theory provides concepts and big ideas in contextualized forms and authentic activities. Prawat (1992) emphasizes a focus on ideas that students can use to understand important aspects of their lives, opposed to limiting instruction and learning to that of skills or strategies. This model, using ideas applied to specific aspects of a culture and/or environment, results in organized and transferable knowledge networks.

Constructivist principles support an interactive approach to teaching—the curriculum emerges through a process of negotiating with students. It is the teacher's responsibility to set

broad goals that serve as guides to help structure curriculum. Curricula can be organized around a central set of big ideas versus a hierarchical, fixed structuring of content. Big ideas and essential questions can function as frameworks for an existing curriculum or they can become elements that are embedded in the course of study (TETAC, 2002). According to Prawat (1992), “It is more important that teachers develop a global view, understanding the network of big ideas that helps define a domain of inquiry, and possible relationships among those ideas” (p. 387). An idea-oriented curriculum allows for experimentation and exploration for both teacher and student and is not limited to the traditional idea of one topic before another.

Art education today is built around big ideas, helping to inform integrated, inquiry-based learning (Walker, 2001). Inquiry-based learning in art education is when teachers engage students with meaningful concepts and issues. Structuring a curriculum around important ideas that call for the construction of knowledge across subjects helps when creating a learning experience that give students the means to understand the complex global culture in which they live today (TETAC, 2002; Walker, 2005).

The role of big ideas in the making of art drives an artist’s personal interest and motivates them to continue creating art over a period of time; it expands the art making process from the exercise of problem solving to representing the reasons why art is created. The subject matter of an artist’s work functions “as the context for examining the big idea” (Walker, 2001, p. 2). An artist may base his or her work on a theme; it is when the theme persists over time and throughout the body of work that it becomes a big idea. Ideas may be framed with multiple perspectives (e.g. social, environmental, political) and within a discourse or discursive practice while addressing important questions. Key concepts embedded in big ideas keep art instruction from becoming too abstract for students to understand. Using Keith Haring as an example, we can see the distinction between his subject matter, topics, and big ideas. Haring’s subject matter included “radiant baby”,

women, non-gender specific figures, barking dogs, spaceships, and television, as examples, in a significant number of his works. His subject matter was used to depict topics that ranged from racial issues to animal rights to AIDS awareness and gay rights issues. Haring's work was based on the idea of power, with specific themes being expressed in individual works—commentary on power, religion, government, media issues, homosexuality, race, and gender.

Big ideas are larger than art and art education; they are human concerns relevant to artists and to student lives. Ideas reach “beyond particular subject area content and escapes the confines of the classroom setting” (Walker, 2003). Subject matter is linked with life issues and informs art making in a deep and meaningful matter; it is more relevant when framed with ideas related to human concerns. Studying art becomes an informed, meaningful process engaging students in relevant learning topics about art and how to make art and art making.

Big ideas are transformed into manageable questions to be studied and to show the various connections of key concepts, which then lead to more questions (TETAC, 2002; Walker, 2003). Essential questions are tools for communicating important aspects of a curriculum—“large questions that are a reflection of conceptual priorities for instruction” (Walker, 2001, p. 7). Questions used for refining and organizing curriculum in the classroom and for integrated curriculum purposes focuses teaching and learning on the intended skills and concepts (Jacobs, 1997). These questions function as a means to talk about ideas and their role in a curriculum. School subject, including art, can serve as approaches to formulating essential questions, which need to be understandable and appropriate for students' learning level and ability. In art education, the role of these questions is to focus the student on the big idea instead of focusing on just the artist.

Language used to construct the questions is written in broad terms organizing key concepts and activities, helping teachers choose learning outcomes for the student (Walker,

2003). A limited number of distinct, substantial non-repetitive questions are required, and the sequence of questions logically explain the rationale for the problem with a sense of direction (Jacobs, 1997). When discussing the concept of identity and heroes, these examples may serve as the essential questions: “What makes a hero? Why do we have heroes?” (TETAC, 2002, p. 18).

Criteria for essential questions serve as guidelines for big ideas (Jacobs, 1997). When developing questions, Walker (2003) recommends limiting the number of broad essential questions to three or four. In summary, the criteria for essential questions should be a reflection of important concepts; distinct and substantial; broad and encompassing; should not be repetitious; understandable for all students; written in a logical sequence; and number of questions and what questions ask should be reasonable for the amount of time allocated for the lesson.

#### Visual Culture

There are few who would disagree that we are living in a rapidly changing world. We do not function in a homogeneous culture, but instead, live in a culture that is complexly diverse and discursively divided, requiring new forms of communication. For information to reach the global population, it has to be “adaptable to a variety of cultural and ideological constructions” (Kress & van Leeuwen, 1996, p. 27), and presented in a way that is sensitive to the realization that we no longer live in a common culture. One of the main activities of a Modern society is the production and consumption of images, and when images gain the power to become substitutes for immediate experiences they become vital to the “health of the economy, the stability of the polity, and the pursuit of private happiness” (Sontag, 1999, p. 80). In a ‘society of the spectacle’ images teach us how to think, altering and mediating ways in which we interact with others. In Guy Debord’s words, “all that once was directly lived has become mere representation” and the spectacle is not simply an assemblage of images, but ‘a social relationship that is mediated by

images” (Debord, 2002, p. 143). In this respect, images are ideological; they strongly influence and teach us how to see, think, and feel in modern culture.

Marshall McLuhan’s (1967) phrase, “the medium is the message” (p. 7) has developed a quiet and not so quiet hum in academia and in popular culture as the result of the pervasiveness of communication and information technologies connecting people and cultures globally, and altering our psychological, political, and social lives. The medium changes our human experience, and the understanding of this change cannot take place without understanding the ways in which media and images work socially and culturally.

We are inundated with an increasing number of technology devices (DVDs, cellular phones, PDAs, etc.), images, and events we do not always understand yet they are a part of our daily lives (Rushkoff, 1999). “Technological media affects and mediates our seeing, knowing, interpreting, and classifying what we call art and visual culture” (Taylor, 2004, p. 328). The “age of electronics” (Weibel, 1996, p. 340) provides an abundance of visual and textual information that increasingly changes the way individuals interact with their environment. How humans interface with the world is progressively impacted by the visual. The technical image has changed the fundamental idea of pictures from the study of paintings to the study of popular images, photographs, and cultural artifacts. In Peter Weibel’s words, “encounter between image and technical media was the birth of the visual” (p. 340).

We live in a world no longer represented by pictures, “but is actually constituted and brought into being by picture making” (Mitchell, 1994, p. 41). The cultural change includes a (re)examination of the use of imagery in multiple academic disciplines resulting in what is called “visual culture.” (Mitchell, 1996). A shift is occurring in the disciplines of art history, art education, cultural studies, and public culture. This transformation occurs within and across a range of academic studies, which in some ways has been disrupted by the realization that we are

inundated by compelling and powerful images; by our inability to fully understand images and their relation to language; how images engage viewers and are engaged by viewers; how images are understood historically; and what to do with and what to do about them (Mitchell, 1994).

Students, today, have acquired an understanding of new visualities as a result of being raised in a culture of film, television, animation, video games, and a mass global dissemination of images. Their knowledge bypasses that of an older generation of experts traditionally trained in the fine and graphic arts (Mitchell, 1995). Academicians are now paying attention to culture (popular, visual, media) and coming up with theories and understandings to answer our social and cultural experiences (Rushkoff, 1999). Attention to visual studies results from a paradigm change that more accurately reflects our current cultural experiences and responds to "...a need to interpret the postmodern globalization of the visual as everyday life" (Mirzoeff, 1999, p. 3). Visual culture creates a slippery distinction between fine art and popular media, and exposes connections between popular and fine art forms (Freedman, 2003; Freedman & Stuhr, 2004).

#### *Art Education and Visual Culture*

Art education is broadening its research and focus to include elements of visual culture not formerly thought of as art and in doing so, is emphasizing understanding and teaching diversity of visual culture within social and political contexts (Hicks, 2004). Art education research has outlined visual culture as a subject primarily informed by the visual arts—a comprehensive collection of images and media that contribute to our experience (Duncum, 2002; Freedman, 2003; Freedman & Stuhr, 2004; Tavin, 2002). This is motivated by scholars' acknowledgment of the pervasive influence of society by visual culture through media (television, movies, the Internet, advertising, and so on), convincing them to define curricular and pedagogical practices that will enable students to examine and critique codes of mass media and delivery systems (Garoian & Gaudelius, 2004). Hicks (2004), for example, used

the concept of play to help articulate what is at stake in a proposed transition from an art education focused mainly on traditional fine arts and crafts to a visual or material culture education that would examine the icons, meanings, and forms present throughout our cultural space and social experience. (p. 288)

The emergence of visual culture, while questioning the traditional perception of reading and literacy, is as much “a revolution in verbal culture as it is, the study of image proper” (Mitchell, 1995, p. 209). It is made up of many forms of mixed media, and does not separate images from text, graphics, speech, perception, and non-visual modes of representation (Mitchell, 2002). Juxtaposing images with text, audio, and video impacts understanding and characteristics of visual media. Meanings are not fixed: a wide-range of connotations can be made from an image, and individuals do not automatically accept an ideological, preferred meaning, and may also resist socially negotiated meanings (Duncum, 2002). Visual culture is defined by interaction between the viewer and the viewed. Individuals draw on their own experiences when trying to understand pictures put side by side with other forms of media (Duncum, 2002; Struken & Cartwright, 2001). When students broaden their ability to understand a visual message situated in historical, cultural, and social context (Walker, 2005), they begin to expand their ability to “see” (Dondis, 1973, p. 7; Jenks, 1995). The process of how we see what we see is individual, yet our history and environment have a profound influence on our understanding of images. This is more specifically referred to as “visuality”—“the process of attributing meaning to what we see” (Duncum, 2002 p. 18) and how individuals see the world and other people as a social practice (Mitchell, 2002; Raney, 1999; Walker, 2005). Images are not a superficial spectacle; they embody social relations and, at the same time, they require us to be reflective, considering the relationship between our perception and knowledge (Debord, 2002; Cavallaro, 2001).

Visual culture, understood in social context, is not stable and concrete but continuously developing and changing (Mitchell, 2002). Visual representations are interpreted based on an individual’s past and present experiences (Mitchell, 2001; Struken & Cartwright, 2000). It is

important that visual culture is studied from the point of the student and in a socio-cultural context in order for students to understand the importance of images in their lives. Understanding provides for a varied and complex visual experience; it is not about what we know but more about who we are individually and socially (Freedman, 2003; Freedman & Stuhr, 2004).

Visuality can lead to the transfer of knowledge in disciplinary or interdisciplinary contexts.

Visual culture is both a field of study and its content (Mitchell, 2002); it is interdisciplinary and multimodal<sup>11</sup> (Freedman, 2003; Rogoff, 2002) and provides a framework on which to interpret visuals that are a part of everyday life. W. J. T. Mitchell (1995) in his article *What is Visual Culture?* recommends that a curriculum about visual culture theory should include its relation to language and forms of discourse.

If the concept has any power, it should not merely supplement or reinforce what we have already learned from phonetic and aural and ‘non-visual’ models of language, but make the whole field of verbal expression look different. The mediation of visual experience in verbal descriptions, for instance, is typically accompanied by concessions that the words are ‘no substitute’ for a visual representation, even as the description attempts to provide such a substitute. (p. 209)

Traditions of teaching through linear modes of delivery are replaced with attention to the need to understand and build new knowledge based on students’ lived experiences and attention to both visual and textual media. Added to the challenge is the need to determine and teach what role images play in our culture, to assist students in understanding how images and their viewers make meaning, and what it means to negotiate images in a multitude of forms delivered through print and digital media (fine art, popular film, television, advertising, etc.) (Sturken & Cartwright, 2001).

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<sup>11</sup> Multimodal texts (text that mix words, images, sound, animation, etc.) communicate meanings that neither single mode can do independently of the other (Gee, 2003).

### *Visual Literacy*

Redefining language includes the emphasis that all types of symbols and signs can be considered “language”; it is not restricted to merely verbal words or written text. The concept of reading makes room for the idea that what we read in a formal sense is not limited to books, newspapers, or magazines. Included is the concept that we read our cultural environment as a whole and what we come in contact with in life (what we see) can be regarded as text: billboards, advertisements, plays, etc. Texts (visual or literal) in differing ways are always open to a variety of interpretations and readings. For example, cultural commodities have become central to how people construct meanings in their lives. People construct identities and express themselves through what they see in advertising and through the products they purchase. Theoretical developments support the concept that text can no longer be viewed as a self-contained product of a single person (author), nor can texts be considered having a distinct existence or purpose. “Texts are not so much fixed entities as processes: they keep changing and gaining novel connotations according to how they are received and perceived by their readers and to the cultural circumstances in which they are produced and consumed” (Cavallaro, 2001, p. 59).

Visual culture is the everyday practice of seeing and showing, concerned with the meaning of images, their power, how that power works, and what effect it has on people (Mitchell, 2002; 1996). In order to know how to read an image, we must know what it says and what we can say about it. Visual literacy is a learned skill similar to how we verbally and textually learn to understand and read: the ability to interpret and use spoken and written text (Burmark, 2002; Hortin, 1994) for communication and the construction of knowledge. Letters, words, and spaces are abstract and meaningless until we begin to associate shapes with sounds and identify their meanings according to cultural codes. Visual literacy gives students knowledge to ask what pictures mean and what they communicate. The objective is to see images differently,

going beyond traditional academic interpretation to seeing the power images possess that are not obvious or literal—a way to question our relationships with images and how they manipulate us.

### *Semiotics*

Interpreting our visual culture (understanding what images that surround us signify) requires the tools of semiotics to understand significations and meanings of images (Sturken & Cartwright, 2001). Ferdinand de Saussure (1857-1913) was the most influential in the development of semiology—the study of a language as a system of signs by examining ways in which signs operate in a culture (Hall, 1997; Cavallaro, 2001). Culture theorist and critic, Stuart Hall (1997), defines semiotics:

The underlying argument behind the semiotic approach is that, since all cultural objects convey meaning, and all cultural practices depend on meaning, they must make use of signs; and in so far as they do, they must work like language works, and be amenable to an analysis which basically makes use of Saussure's linguistic concepts (e.g. the signifier/signified and *langue/parole* distinctions, his idea of underlying codes and structures, and the arbitrary nature of the sign). (p. 36)

The importance of Saussure's work is "his general view of representation and the way his model of language shaped the semiotic approach to the problem of representation in a variety of cultural fields" (p. 30-31). According to Hall, Saussure believed that language depends on conventions and codes for its meanings, therefore the production of meaning depends on language. Language consists of a system of signs within language that serve to communicate ideas: sounds, images, written words, paintings, photos, etc. Saussure's argument outlines the relationship between a word, or sound of the word when spoken (signifier), and the things in the world, the idea or concept with which the signifier is associated (signified) is arbitrary and relative. Signs do not hold fixed or essential meanings. The relationship between the signifier and the signified changes according to the context and to the rules of language(s) and what makes a sign meaningful is not intrinsically limited. As a result we understand signs in the context of other signs and relation to

other signs in a language (Cavallaro, 2001). The relation is fixed by cultural codes, which do not possess a natural link between signifier and signified.

Semioticians assumed that we naturally acknowledged the existence of some sign system which has been mastered — whether we are consciously aware of it or not. The way in which Saussure's structured the study of language led to the term, structuralist (Cavallaro, 2001; Hall, 1997). "Structuralism looks for reality in the relationships amongst things rather than in individual things" (Cavallaro, 2001, p. 22). It focuses on the universal patterns of signs and acknowledges that signs used by a culture are restricted by context and all cultures arrange signs into structures that are fundamentally similar.

In the early period of structuralist semiology, attention was given to the analogy between what was considered to be the natural language (the phenomenon of speech and writing) and the visual language. (Burgin, 1995; Mitchell, 1986). Strategies founded on the structuralist theories of language and representation have been used by critics to study non-verbal sign systems, most notably Roland Barthes. Barthes' publishings use the "tools" of structural linguistics to decode systems that are not strictly text based: fashion, architecture, advertisements, etc. He uses the semiotic system to "bear on 'reading' popular culture, treating these activities and objects as signs, as a language through which meaning is communicated" (Hall, 1997, p. 36). He asks, "How does meaning get into the image?" (Barthes, 1999, p. 33).

According to Barthes, there are two functions of the linguistic message in regard to the iconic message: anchor and relay (Barthes, 1999). Text adopts the function of anchorage when, from multiple connotations offered by the visual image it selects some meanings while rejecting others. In relay, the relationship between the image and the linguistic text is complimentary: the linguistic message explains and develops the meaning of the image (Burgin, 1999). In Barthes' (1999) words:

At the level of the literal message, the text replies—in a more or less direct, more or less partial manner—to the question: what is it? The text helps to identify purely and simply the elements of the scene and the scene itself; it is a matter of a denoted description of the image (a description which is often incomplete.... (p. 37)

In Barthes' view, reading images requires knowledge of a culture, based on the familiarity of cultural sign systems and codes. Signs within an image, in order to form a coherent whole, require "generally a cultural knowledge" (p. 35). Yet, the views of the semioticians, including Barthes, do not take into consideration the ongoing displacement of meaning in language, in that meaning changes across time and space and is not culturally and historically bound. Sign systems are not universally applicable to all visual and literary texts. Mitchell (1986) criticizes "semiotics, the very field that claims to be a 'general science of signs,' [because it] encounters special difficulties when it tries to describe the nature of images and the difference between text and images" (p. 53-54). Accepted analysis focusing on the analogy between natural language (words resembling what they represent) and visual language is critically reviewed. "The history of culture is in part the story of a protracted struggle for dominance between pictorial and linguistic signs, each claiming for itself certain proprietary rights on a 'nature' to which only it has access" (p. 43). Instead of language providing a model for all symbolic systems—a system that makes it difficult to imagine images and objects existing independently of language—semiotics needs to offer an intelligible explanation of imagery and its relation to other sign types. There is a need for a culturally relative view of imagery (realistic) accepting that meanings are not fixed and universal. For example, people who have not seen a photograph have to learn how to see, how to read what is shown. Pictures have to be read and the ability to read, that is, visual literacy needed to read images in our pervasive visual culture has to be acquired.

### *Social Semiotics*

New semiotic change is brought about by social and cultural factors: by the weakening boundaries that divide the two as a result of the recognition of multiculturalism, electronic media

and telecommunication, and global economic developments. Social semiotic modes are shaped intrinsically and by histories and values of societies and their cultures (Kress & van Leeuwen, 1996). Written and visual literacy are brought about by social and cultural factors—what you can say and how you can say it, in any medium, is not limited by a system of available meanings or forms. Poststructuralist view of literacy, positions language as signs (verbal and visual) “through which history, philosophy, literature and human subjectivity itself are constructed and always open to freeplay” (Cavallaro, 2001, p. 26). Text without a reader is meaningless, moreover, at the same time a reader’s interpretation depends on her/his historical and cultural context. Cavallaro further iterates that texts are open to a large number of readings, and language is “marked by the slippage of meaning” (p. 33).

Language and visual images connote meanings, which belong to and are structured by cultures. Not everything in language can be realized by the means of images and vice versa. Literate (written/verbal) cultures have historically suppressed the importance of analyzing visual representations: Visual literacy has been made menial to language and images have been regarded as unstructured representations of reality. Culture and visual culture studies provide room for the analysis of how different audiences read the same text, including the freedom to interpret images.

Mitchell (1996) moves beyond the structuralist interpretation and definition of decoding images and beyond the academic art history view of images, to recognizing that the power images possess is not obvious or literal. How images are made helps with the understanding of how meaning is created visually (Messaris, 1994; Raney, 1999). Visual literacy requires understanding the vocabulary of formal elements (color, line, shape), identifying characteristics that give images meaning, and requires development of cognitive skills for describing, critiquing, and interpreting images, and knowing how images are persuasive, telling, and descriptive (Burmark, 2002; Mitchell, 1986). Visual intelligence is an important part of living in today’s media saturated

culture; it allows for critical awareness of the relationship between pictures, images, and words (Raney, 1999).

### *Image and Text*

The move toward a new literacy, based on images and visual design, is viewed as a threat to the authority of verbal literacy among elite social groups—“a sign of the decline of culture...” (Kress & van Leeuwen, 1996, p. 15). Culture has been understood predominately as a relationship of language and texts. The prevalent position of image over text or text over image is not absolute in today’s visual culture, particularly when theorizing and critiquing online education and information technology. The image-text relationship is viewed as having an ongoing exchange of dominant positions depending upon message, information, and aesthetics, and what is increasingly recognized as social, cultural, and political influences. We perceive a deep fissure between words and pictures while often overlooking the idea that both words and images reflect representation, communication, and signification in our media saturated society, either when standing independently of one another or when juxtaposed to create multimodal messages. Mitchell (1986), reflects on the answers to the questions “What is an image?” and “What is the difference between images and words?” in *Iconology*, a book about “the way we talk about the idea of imagery, and all its related notions of picturing, imagining, perceiving, likening, and imitating,” (p. 1). His essays and publications, in addition to the work of other theorists, are important foundations for the understanding of the ever-growing number of images we experience in our society.

### *History of the Image-Text Relationship*

Historically, the difference between words and images were defined by their value and interest, grounded in literary ideological traditions (Mitchell, 1986). During the Enlightenment, word and image were confined according to theoretical perspectives, and broken down into

categories of value and interest. Literary arts were involved with narrative, taking the superior role over pictures, while a large portion of literature about images was dominated by theories of semiotics (Barthes, 1999; Morely, 2003). Text continues to be viewed as serving a relay or anchorage function to an image or picture, helping the viewer to “choose the correct level of perception” and interpretation (Barthes, 1999, p. 37). The visual arts, including pictures and graphic images, were non-cognitive and non-conceptual: painting, for example, was a purely optical experience. Exemplified by Morely (2003):

The arts were envisaged as fields of specialist knowledge, autonomous and independent both from the world of daily life and from other media, and a fundamental distinction was made between the directly sensual response appropriate for the visual image and the mediated one intrinsic to the reading of text. (p. 16)

Representations (mental, verbal, and images) mediate our knowledge and continue to have the power to obstruct and negate that knowledge, functioning to support ideological positions. Text is believed to guide the viewer through the interpretation of the image influenced by an ideological position; it is superior to imagery, viewed as giving us freedom from nature. Text is capable of articulating complex ideas, while images can only represent visible objects. Images can only express themselves when they are dependent on verbal titles, descriptions and commentaries. Pictures, precisely because they are “natural signs,” can convey only limited and inferior information, suitable for children, illiterates, or animals (Mitchell, 1986). The goal of modernist juxtapositioning of text and image is thought to be seeking pure perception and a perfect reading of the world.

Contemporary theories (deconstructivist “grammatology”) remove spoken language from its dominant role in the study of language and communication (Mitchell, 1986). Jacques Derrida’s theory about the “science of writing” replaces language with an idea that the image is another form of writing—a type of graphic sign which is a transcript of what it represents or the way things look. Mitchell (1994) utilizes this theory and elaborates in this explanation:

A verbal representation cannot represent—that is, make present—its object in the same way a visual representation can. It may refer to an object, describe it, invoke it, but it can never bring its visual presence before us in the way pictures do. Words can ‘cite,’ but never ‘sight’ their objects. (p. 152)

These views do not conclude that differences between words and images dissolve. They do give way to the notion that the differences are more complex than originally thought, and their differences change over time as modes of representation and cultures change.

Images have taken on an inferior role to text for centuries. Their inferiority has been attributed to their consumption by the working and lower class, their ability to be understood by individuals from disparate cultures, and their likening to the femininity (sensitive, beautiful, emotional), while appealing to the senses. Directly stated, “Even something as mundane and familiar as the relative proportion of image and text on the front page of the daily newspaper is a direct indicator of the social class of its readership” (Mitchell, 1994, p. 91). However, explanations about the subordination of imagery can be altered through the magnification of the ways in which pictures are superior to text. “The fact that the natural sign can be decoded by lesser beings...becomes, in this context, an argument for the greater epistemological power of imagery and its universality as a means of communication” (Mitchell, 1986, p. 79).

Images need to be understood as a kind of language, regarded as a type of sign that does serve the sole purpose of a transparent, perfect media through which reality is represented (Mitchell, 1994). Pictures, once thought of needing descriptive labels to assist with an individual’s reading, are now accepted as evoking sensations of sound, touch, and even emotions. Images can “speak,” provoking the viewer to reflect on past experiences, events, memories, etc. When defining images, we now pay attention to “sequences of events of acoustic and visual variability and virtual information: of dynamic sequences of local (acoustic, visual, or olfactory) events,” challenging formalistic aesthetic assumptions (Weibel, 1996, p. 347).

### *Image-Text and Media*

In today's mass media and telecommunications, the linguistic message is thought to continue to be present in images (Barthes, 1999). At the same time, postmodern descriptions of images (iconology) are seen as repressing language (Mitchell, 1994). The relationship between text and image is ongoing and our thought processes are guided by a visual paradigm. "Looking, seeing and knowing have become perilously intertwined" (Jenks, 1995, p. 1). In visual culture, the image has become the primary, universal means for communication. Images are accurate representations of nature with epistemological power addressing object and viewer. It does not always require knowledge, but relies on how we learn to visually experience our world. "The modern world is very much a 'seen' phenomenon" (p. 2).

A picture is read similarly to the way text can be read. A painting, for example, is filled with semantic capabilities, and elements within the image may be read independent of written text. The width of a line or color may have signification. A picture's meaning may depend on how elements included in the pictorial space relate, and what prior knowledge and experience the viewer brings to the image. The meaning of a picture is not determined by a reference to an object or the object it depicts. Images may depict an idea, emotion, memory, or thing. To "read" an image, it often requires understanding what it says and what can be said about it (Mitchell, 1986). Reading is required, more importantly than ever, whether one is looking at a text, an image, or a combination of both in a shared space. Words and images can enhance or contradict the understanding of images, while images can enhance the understanding of texts.

My objective is not to say that images are more important than text or that images should replace text. At the same time, text should not and cannot continue to dominate communication and human experiences. I support Mitchell's (1996) view when considering the power of images:

I think it may be time to rein in our notions of the political stakes in a critique of visual culture and to scale down the rhetoric of the 'power of images.' Images are certainly not

powerless, but they may be a lot weaker than we think... We as critics may want pictures to be stronger than they actually are in order to give ourselves a sense of power in opposing, exposing, or praising them. (p. 74)

With the increased use of the Internet as a supportive or sole device for delivering course content, and with the pervasiveness of multiple media available, continuing to discuss the dichotomy between image and text is not advantageous. Instead, focus should be given to the benefits of the image-text relationship. Students experience the world dominated by technology by interpreting text and image, side-by-side or independent of the other. Text and images are capable of several different realizations, and one cannot exhaust the multiple readings each person will experience and interpret. The text-image differences cannot be defined on the basis of what is easy to read and what is difficult. Images may be considered more natural, as easy as opening your eyes to see what it means or represents. Likewise, words can be viewed as natural because everyone is expected to speak the natural language of his/her community. “We create much of our world out of the dialogue between verbal and pictorial representations, and...our task is not to renounce the dialogue in favor of a direct assault on nature but to see that nature already informs both sides of this convention” (Mitchell, 1986, p. 44). To think about this in another way, writing can literally make language visible, not in the form of a supplement to speech, but an art of language and vision (Mitchell, 1994).

It is important to remember that language and visual communication overlap. A descriptive paragraph does not have to be exactly like a picture to have a similar function as a symbol. Images may be literal or descriptive. A paragraph may be read from left to right or constructed in a way that it is purely visual. “What determines the mode of reading is the symbol system that happens to be in effect, and this is regularly a matter of habit, convention, and authorial stipulation—thus a matter of choice, need, and interest” (Mitchell, 1986, p. 70). It is equally difficult to keep visuality out of literature as it is to keep discourse out of images. Pictures

can incorporate textuality in literal ways, while language can become visual through the act of writing, and using terms with visual connotations. Simply stated, language can function as representation and pictorial representation can function as language (Mitchell, 1994).

“Vision is a social practice” (Jenks, 1995, p. 2), requiring images and texts to be understood in social-cultural contexts (Mitchell, 1986). Images, texts, and their meanings are embedded in discourse(s) (Mitchell, 1994) and the way these are read by the individual viewer is dependent on individualities, knowledge, and cultural experiences. Knowledge is a dialogue between different ways of seeing the world including different modes of representation— combination of word and image is an interweaving of signs that culture creates for itself (Mitchell, 1986). When meaning and context change, it is possible that the meaning of the image changes while retaining what is signified in its original context (Jenks, 1995; Mitchell, 1996). The relationship of words and images is dependent on social context reflecting many possible representations, significations, relationships between symbols and the world, and signs and their meanings. Pictures are a construction of the real world and we acquire the ability to read images. These constructions depend on learning through repetition. Because we see images over and over we learn their meaning in a specific context making images culturally relative.

Some things can only be said visually and other things can only be said verbally, but when said both visually and verbally, the way in which it is said changes (Kress & van Leeuwen, 1996). Paintings can express universal ideas as can text. Text and images can say the same things, functioning as descriptors and communicators of information. The image-text problem is an issue that the arts cannot avoid, because all arts, according to Mitchell (1994), are “ ‘composite’ arts (both text and image)” and “all media are mixed media, combining different codes, discursive conventions, channels, sensory and cognitive modes” (pp. 94-95).

Understanding the ways text, or other forms of media, can alter the meaning of images and vice versa overrides the separation of the verbal and visual disciplines (Mitchell, 1986). As an important part of our information society, both images and text share online Web spaces framed within the computer screen. Dominance of one over the other is not fixed, but malleable according to interface design decisions. How images and text shape or change the meaning of the other are considerations designers and educators need to make when developing online courses consisting of multiple forms of media. Relations between media are important when thinking about the layout of forms in a Web space. Media traditionally viewed in one form and in certain contexts may be placed in a new situation, asked to be a stand-alone medium, blended, juxtaposed, or thought about in conjunction with other media to convey a message or used to ask students to ponder a discourse. Students may not be aware that the mixing of media may change the intended message of, in this case, artists, artworks, and their overall ideas that are being taught. The subject of the mixed media inherits the image-text problem because the forms that make up new media are historically grounded in print and cinema.

#### Graphic Design Aesthetics

There is not a single characteristic that can be described as distinctly defining postmodern design in comparison to modern design. This reflects the views that historically there is not a single moment signaling a historic transition between modernism and postmodernism. Many theorists and critics do not believe in or accept the term postmodernism as viable, marking the end of modern philosophy. Included among these critics and theorists are graphic designers who do not categorize their creative process or graphic design work as postmodern (Poyner, 2003).

#### *Modernism*

Physical and human sciences, art, and design in the modernist tradition were characterized by the pursuit of absolute standards, grand theory, and universal categories. What

was regarded as authentic disciplines of political practices, science, art, and design relied on metanarratives (Schwandt, 2001). The metanarrative assertions were used to find a way to explain the world and to control individuals using religion, science, or politics (Poyner, 2003, p. 11). Reality was agreed upon (Lyotard, 1999, p. 376) and shared by everyone, and the concept of aesthetic theory was thought of as objective and universally accepted. A synthesis of art and life was characteristic of modernism. Empiricist epistemology was based on the concept that reason through observation is the key to legitimate knowledge derived from a sense of experience based on external causes (concepts and theories) that provided a structure for making sense of life (Lupton & Miller, 1999; Schwandt, 2001). There was a desire for a controlled and rational world represented in objective truth and reality. An example of the consequences of this ideology was an attack on commercial and mass culture (Poyner, 2003), which established a distance between design and everyday life. There were distinct boundaries set between the avant-garde and consumer culture (Lupton & Miller, 1999).

### *Modern Graphic Design*

Modern graphic design transcends historic periods with different social, cultural, and political influences at different times. In the 1920s, graphic design works were in galleries alongside abstract paintings or in avant-garde manifestos (Jobling & Crowley, 1996). Modern design parallels the time-span of modern art and in many cases was directly influenced by modern art movements (Meggs, 1998). The Cubist, Surrealist, Dada, and Expressionist movements continue to influence today's contemporary artists, illustrators, and designers. Cubism's altering of form and space and visual composition transformed graphic design toward more geometric abstraction. A shift in planes, sharp angles, and superimposed type and images were characteristic of new graphic forms. It has been suggested that twentieth-century graphic design was the outcome of the fusion between cubist painting and futurist poetry (Meggs, 1988).

Collaged images, design in the context of industrial culture, and the aesthetic forms of expressionism, including expressionist theories about color (strong color contrasts) and form became important foundations for graphic design.

The evolution of graphic principles was a part of the modernist search for a common language of graphic design (Jobling & Crowley, 1996). Modern art and design did not have conceptual determinations. What was viewed as beautiful was decided within a universal consensus of what was aesthetically<sup>12</sup> acceptable (Lyotard, 1999). Graphic design reflected the modernist celebration of mechanical and industrial forms (Meggs, 1998). In the modernist tradition, aesthetics were universally accepted based on what was socially agreed upon as art (high art). Personal taste and preferences were separate from what was determined to be fine art versus popular media (low art). Modern graphic design aesthetic was influenced by industrial forms with a focus on simplicity and structure, and a way to perceive reality through the combining of text and pictures (Jobling & Crowley, 1996).

Distinctly modern graphic forms were seen as early as the beginning of the twentieth century when design was located in commercial and industrial settings. A strong emphasis was placed on formalism—an aesthetic analysis that focused on structural elements and graphic techniques versus a focus on content (Jobling & Crowley, 1996). Designs consisted of simplified shapes and semantically rich images that were easily understood by the viewer. There was a strong focus and interest on a renewed typography, which drew designers away from decorative serif fonts to sans serif fonts that were geometric in form. Sans serif font families were believed to be more legible, rational, and efficient, creating a uniform whole that can be used together in harmony (Meggs, 1998). Legibility allowed for an immediate understanding of textual communication.

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<sup>12</sup> Aesthetics is a theoretical way of looking at art; it questions the nature of art, the value of art, and the perceptual experience of the viewer (Mitchell, 2002).

Type was united with photographic images, realistic in style. Modern designers preferred photos versus hand-drawn illustrations, graphics, or engravings, which were dominant in centuries prior to the 1900s. Photomontage, photo-essays, and photo-weeklies signified modernity (Jobling & Crowley, 1996; Meggs, 1998). The style characteristic of the photomontage included clear focus, simplistic, systematic attention to detail, and isolating the object photographed with no indication of scale or proportion. Photo-essays and photo-weeklies provided diverse pictorial content, supported by written text, which was necessary to communicate the images' representation of current affairs, politics, and cultural events of the time. The use of photography in these forms of media were meant to aesthetically reflect the social and political order, in which mass-production and images would "form the basis of a democratic, utilitarian culture" (Jobling & Crowley, 1996, p. 173). The systematic structure and flow of the layout composed photographs into a sequence of pictures of different, overlapping sizes. These were combined with lower and upper case type, and the primary function was to communicate a documentary description of the upper social class and ordinary people.

Early design forms spanned the first part of the century and transitioned into mid-century principles. These became the dominant design rules, which are still taught and practiced today. These structures and rules have regained prominence in the planning, design, and development of Web publications and websites. The two design systems being referred to are Bauhaus and the Swiss School system. They are described as foundations of good design (Jobling & Crowley, 1996).

### *Bauhaus Principles*

The Bauhaus system (Meggs, 1998) is rational designing for the machine, mechanical in style and influence with objective design. Characteristic principles included use of lower case letters, flush-left, ragged-right typesetting without justification, and extreme, systematic contrast

of type sizes and weights used to establish a visual hierarchy. Bars and rules were used to visually divide pages bringing attention to important graphic information and elements. The style and composition was based on a modern underlying grid structure unifying all design elements (typography, photography, diagrams, charts, etc.). The relationship of contrasting elements within a systematic, asymmetrical format brought “life” to visual design. Photos were centrally placed on colored backgrounds with type above and below the image. Preferred color application was black with one color, typically red. In general, modern design principles mirrored aesthetic tastes, attitudes, and values of the period, reflecting utopian views of the time.

#### *Swiss School Principles*

Similar to Bauhaus, the Swiss School principles dictated clarity and order (Jobling & Crowley, 1996; Meggs, 1998). Designers were concerned more with the systematic design methods and problem-solving research than with the content. Geometric sans serif type created a uniform whole, easily readable, and letters were arranged for legibility, not for visual impact. The title of the work, or name of the product or service, was set in the largest letters fulfilling typography’s main function as a means for communication.

The use of white space as a compositional element on the page was as equally important as other printed forms. Asymmetrical layouts were based on a grid structure that was used to maintain consistency. It is important to note that photos were objective in content, required to have a straight-forward message with dramatic impact (Jobling & Crowley, 1996; Meggs, 1998). Use of cropping and scaling created impact and engaged the learner. Bold color characteristics were typical of modern color selections.

Beginning in the 1950s, designs were a critical practice used to help improve the worst effects of consumerism on society. Designs were a reaction against the “brash, fantasy world of American film posters and ‘vulgar’ pulp magazines” (Jobling & Crowley, 1996, p. 164). These

were believed to threaten the modernist project. Popular graphics were criticized by the Swiss School designers who conceived of a different kind of modern design, “working in the service of both commerce and society” (Jobling & Crowley, 1996, p. 164).

### *Postmodernism*

Postmodernism is understood in reference to modernism. It does not replace or reject modernism; it depends on modernist principles and design elements, yet meanings have changed (Lyotard, 1999). Although there are stylistic and formal similarities between postmodern products and modernist works, what inspires the designer and the purpose of design is fundamentally different. The main difference is postmodernism’s loss of ideals, quest for a single truth, single mode of representation, an objective reality and understanding, and the Enlightenment project— “The possibility of human progress through reason and science” (Poyner, 2003, p. 11).

Postmodern theory does not accept universal truths, values, or solutions; the world is accepted as it is. Distinctions between high and low culture are blurred. Characteristics of postmodern culture can be thought of as fragmented, impure form, intertextual, pluralism, eclecticism, and a return to the vernacular. “The postmodern object ‘problematizes’ meaning, offers multiple points of access and makes itself as open as possible to interpretation” (Poyner, 2003, p. 12).

Postmodernism is one way of thinking about the period of time and the social and cultural condition (Poyner, 2003). Lyotard (1999) wrote that postmodernism is modernism as emerging and recurring; it is a reinventing of rules within art and design. It conserves modernist assumptions versus overturning them, and it is inclusive of alternative thoughts, including those outside Western culture that have up to this time been excluded (Aronowitz, 1994). A new aesthetic was developed revealing the blurred boundary between high and popular culture.

### *Postmodern Graphic Design*

Postmodern graphic design<sup>13</sup> became an eclectic style recombining elements of avant-garde art and popular media (Lupton & Miller, 1999). It is defined aesthetically and characterized by how it is influenced culturally, socially, and technologically. “Meaning produced through any form of ‘language’, whether literary, graphic or satirical—has increasingly come to be viewed as relative and dependent on the social or cultural context in which it operates and the subjectivity of the reader” (Jobling & Crowley, 1996, p. 274). In the 1980s, and even prior, designers began to challenge the conventions and rules that had been regarded by the Bauhaus and Swiss School as “good design practice” (Poyner, 2003, p. 12). Designers challenged and began to break the hegemony by creating works that were intuitive and personal (Meggs, 1998). They resisted and transcended the rules of modern design. Some rule-breaking methods by designers were grounded in modernist conventions, while self-taught designers went against norms purely out of naiveté (Blackwell & Carson, 1995; Poyner, 2003). Postmodern designs were without underlying grids: They were striking, visually dynamic, and design was based on intuition<sup>14</sup> instead of the rational process taught in most schools. Examples of elements of style include skewed or bitmapped type that is multilayered with other forms of graphics or photos and often within confusing compositions (Blackwell & Carson, 1995; Poyner, 2003). These elements were a part of a multilayered communication that captured the complex and ambiguous modern experience. There was an obvious interest in popular culture and a global awareness. Postmodern design is positioned between high and low culture (Jameson, 1988) and tied to particular technical, social, and economic conditions throughout the world. Television and cinema play an important role in

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<sup>13</sup> Some surveys and histories of design see it as ending in the 1990s, yet culturally it continues because of access to information through the use of modern technologies (television, computers, film, etc.) and it will continue to flourish (Poyner, 2003).

<sup>14</sup> Intuition was a reflection of the reluctance in the changing society to submit to imposed or external authority (Poyner, 2003). It is important to note that the process of designing was not solely driven by intuition.

the simulacra of experiences—the world is experienced as a series of images that become more important than the real (Jobling & Crowley, 1996; Baudrillard, 1999).

Postmodern designers communicated attitudes and opinions through visual language (Meggs, 1998). Graphic forms became signifiers with new values in new contexts. There was not a collective, singular, or universal style. High modernism, instead of being rejected, was used as a style. Modernism became a pastiche—the reusing and incorporation of past styles was a nostalgic view of the past in the form of a graphic style of an older period (Jobling & Crowley, 1996; Meggs, 1998; Poyner, 2003). Designers began juxtaposing old with new in a contradictory manner. Privileged forms from other cultures were incorporated in graphic texts. Photographs were no longer the central object. The intertextuality of the postmodern image was used for critical means. For example, graphic responses to and making awareness of HIV/AIDS became activist interventions through use of design elements (Jobling & Crowley, 1996).

Postmodern design became a style of appropriation (Jobling & Crowley, 1996). Poyner (2003) states that assimilation of previous styles in the form of pastiche or vernacular design recombines old with new creating an authentic cultural context in the postmodern. Works of previous artists and designers were (re)contextualized and incorporated to create new forms of visual communication.

Vernacular design, designs mimicking and/or works produced by ordinary people rather than slick professional designs, were appealing because it exhibited a feeling of authenticity. Design paraphrased a more natural, pure, and honest form of communication from another time (typewriter text, baseball cards, illustrations, clip art, etc) (Meggs, 1998; Poyner, 2003).

Retroactive (retro) design, drawing on Pictorial Modernism, Expressionism, and Art Deco and the vernacular, began as an eclectic interest in modernist European design from the first half of the twentieth century, disregarding typographic rules of the period. In postmodernism, the type

became figurative and animated (Meggs, 1998). Nostalgic retro design was a search for a romanticized past and a look at the visual underclass (Lupton & Miller, 1999). Ready-made signifiers were used as a reaction against the sterile, slick style of professional design structures of the past applied in new cultural contexts (Poyner, 2003).

Design also became a reference to other sign systems and encouraged the proactive role of the reader in the construction of meaning. Text, whether visual or literary, do not have a fixed meaning. Deconstructionist<sup>15</sup> graphics consisted of compositional complexity—the layering of signs in playful and/or confusing ways in order for the viewer to deconstruct hidden meanings. Designs promoted multiple meanings allowing viewers to become active participants in the message (Jobling & Crowley, 1996). The process of designing graphics involved an emphasis on meaning.

Type was no longer used for reading a message; letters were transformed into imagery. Postmodernism's handling of type was well thought out inconsistency and irregularity. Typographic style could be characterized as hand drawn, distorted, differences in characters, and inconsistent baseline<sup>16</sup>. Type became a part of creating a photographic pictorial space (Poyner, 2003). Design compositions were experimental, contemporary, vernacular, textured, irregular, and in flux while in many cases there was a hint of an underlying grid beneath the surface with visual evidence that the grid rules were being broken.

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<sup>15</sup> Deconstructionism as a postmodern theory was not adopted by graphic design in its true sense of the definition or as it is described by Jacques Derrida. “Deconstruction is a kind of internal critique that reveals that the meaning of words occurs only in relations of sameness and difference” (Schwandt, 2001, p.52). “If deconstruction was seen as anything at all by most designers, it was a transiently fashionable, lamentably misguided style, and the small number of designers and critics who did understand deconstruction, or believed in its possibilities for graphic communication, were quick to point out the inadequacy of this view (Poyner, 2003, p. 44).

<sup>16</sup> An imaginary line letters appear to sit on so that they are at a consistent level making the line of text appear straight.

In the 1990s, the economical advancements and accessibility of computer technology brought the designer central to the design process (Poyner, 2003). Graphic designers were able to create their own letter forms, expanding the choices available. Typefaces became more inventive and creative in comparison to the type of the Swiss design guidelines. Effects of computerization on typography and postmodern design aesthetic emerged. As technology became immersive, design was developing into the construction of personal experiences. Designers were creating with multiple media, juxtaposing photographs, text, and illustrations with video and animation, while enhancing experiences with audio (Meggs, 1998). The various media that were drawn together, absolved the assumptions about the distinctions between the visual and the verbal (text-image) (Morely, 2003). Design styles developed into complex, easily made montages, technographic style with robotic-like graphics, three-dimensional type, and the illusion of movement in space. High impact visual experiences with altered relationships between image and text changed older hierarchies and restrictions.

#### *Mass Media Aesthetic and Web Design*

The Internet connects us to the world in ways not experienced in the past (Helfand, 2001). The Web is a source of information, and a means of communicating and transferring information in graphic or textual forms. The computer is an alternative way of representing information and ideas, and is talked about as being an improvement on television media, which is described as passive and sterile versus interactive and educational (Seiter, 2000). Education, entertainment, and information accessible by way of the Web utilizes a combination of design and technology to engage audiences (Helfand, 2001). Visual forms of representation that have become characteristic of contemporary Web design are influenced by the aesthetics of mass media, which are both historical and postmodern.

Media is a combination of physical hardware, reception, and transmission technologies of today, and the concepts, usage and social relations that people produce through the use of media in every day experiences (Grossberg, Wartella, & Whitney, 1998). Mass media are primarily used to communicate globally. Media are a means of mass communication in the form of a single medium and what we commonly see as books, magazines, television, newspapers, film, and video (Grossberg et. al., 1998). Each medium is characterized by technologies, social relationships in the form of institutions, and cultural forms. “Cultural forms are the various structures of languages and meanings [text and images] that are embodied in the products of the media technologies and organizations” (p. 14). Cultural forms result in products produced by media organizations and “...in many cases, new media technologies borrow cultural forms from older technologies” (p. 14). For example, hyperlinked storytelling is a common form of the television soap opera genre narrative interconnecting characters and stories and people and places. Early hypertext programs allowed for linking between journal texts, online stories, and people placing an emphasis on the physical interaction (Helfand, 2001) of the computer user with the virtual document or space.

Postmodern design offers a new aesthetic form that traverses many cultural forms and media (Jameson, 1988). Mass media is no longer restricted to the formalist conception of aesthetics, reducing graphic forms into line, shape, color, and principles of balance and unity. The newer design aesthetic considers socio-cultural aspects of media in today’s visual culture (Grossberg, et. al., 1998). There are many forms of aesthetics making up the contemporary experience with visual culture, which dominates every day lives, asking individuals to be cognizant of graphic effects (e.g. camera angles and film editing techniques) in the context of cultural experiences and understandings (Freedman, 2003).

Aesthetic influences of mass media includes design forms characteristic of a single medium (magazines, books, film, television, and comics), or a combination of multiple media. These forms have a visual affect on contemporary Web design (Seiter, 2000). Media genres, such as print, television, magazine, cartoon, and video, aesthetically influence what can be seen on the Web through adaptation of design qualities, layout, color, and the handling of graphic elements. Design qualities and strategies that have been tested and proven to attract and engage viewers (within seconds in some cases) are found in interface design (Helfand, 2001). For example, television's abbreviated form due to what is thought to be limited attention spans of its audience, are adopted by the Web in the form of "chunking" information textually and visually. In additional, the term "surfing" is applied to both television and the Web as a way of describing the user interaction with media (Helfand, 2001; Rushkoff, 1999).

Media designers, particularly interface designers, are experimenting with components from different forms of media, changing the presentation of content in order to develop a new, often nostalgic screen aesthetic (Helfand, 2001). Contemporary Web design has developed into the simulacra of experiences—the result of an interdisciplinary compilation of basic graphic forms characteristic of print, television, comic strips, film, magazines, video games, and books. Aesthetics are not restricted to literal communications and interpretations of the image and message (Grossberg, et. al., 1998; Poyner, 2003). The application of mass media visual qualities, referred to as the hyper-real, take on new forms perpetuating the erasure of distinctions between virtual and real visual spaces.

Aesthetic influences are multi-directional. It is important to understand that as the Web has inherited the look and feel of cinema and print (Manovich, 2001), and it also has an enormous impact on the visual graphics we see on television. The Internet's immersion into society brought

about a new verbal language (spam, emoticon<sup>17</sup>, netiquette) and visual sign systems. These examples of terms and sign systems evolved because of the new technology and/or they were adapted from older forms of communication and media. As formal qualities of print first influenced Web pages, an intersecting of element usage and design style began to occur. Sign systems, icons, and online page composition were seen in print design. The most visual impact of Web page design can be seen in screen design layouts of broadcast and cable news channels. Television programs are filled with references to the Web (Seiter, 2003). Screens are divided into sections resembling the typical layout of Web pages—sectioned so that the left side mimicked a space for navigation links, the top or bottom of the screen held the title graphics, and the right section of the screen used for text, video, or images placed over colorful, textured, montage backgrounds.

In addition to sharing of aesthetics and sign systems, visual and textual meanings are transferred from medium to medium. Meanings are flexible and can be interpreted a variety of different ways. The Internet developed different signs (or adapted them) that produced new and different meanings. Acculturation of these symbols used online and their meanings maintain their intended representation when used for television screen design. The successful use of these codes depends on social and cultural contexts in which they are used, and people's understanding of them (Grossberg, et. al., 1998). Common use and references to the Internet seen in print, television, magazines and film has made these codes recognizable by most people in Western societies.

#### Relevance to My Research

Concerns regarding the validity of qualitative and quantitative research about the effectiveness of technology in learning remain. Ways in which computers and Web-based

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<sup>17</sup> *Emoticon* is a glyph used in e-mail and chatrooms to symbolize an emotional state. For example, ☺ ☹ (Webnox Corp., 2002-2003).

learning are used does not reflect the potentials of emerging technologies (Hokanson & Hooper, 2000). The uses of technology that are criticized include applying instructional strategies within prepackaged computer-based materials (Feenburg, 2001). Issues concerning changes in instructional methods, and conceptualizing computers as a medium versus a tool need to be considered.

Modernist traditions of teaching through linear modes of delivery are being replaced with attention to the need to understand and build new knowledge based on students' lived experiences. Yet, the paradigm for Web-based learning, supported by course management systems, and design guidelines continues to reflect an objectivist pedagogy in which learning is extrinsic and independent of individual cognitive and social experiences. These guidelines established for Websites have not adjusted to the advancements in Internet technology and may not be appropriate for the requirement of learning environments in art education (Amiachai-Hamburger, 2002). Weiss, et. al., (2002) call for research offering options for applying media by combining general formula with design context that can alter online spaces based on what we know about the use of technology for learning. This would include the appropriate uses of multiple media that provides a visual context for ideas, improving learning, and understanding.

Visual culture provides a framework for the understanding of how we interface with visual media seen on television, film, and by way of the Internet. The Internet connects us to the world in ways not experienced in the past; it is a source of information, and a means of communicating and transferring information in visual or textual forms, utilizing a combination of design and technology to engage audiences. Visual representations that have become characteristic of contemporary Web design are influenced by the aesthetics of mass media, which are both modern and postmodern. The social conditions of viewing and interacting with multiple media on-line are important to the way visual messages are understood.

Postmodern design attributes, more specifically those influenced by mainstream media and popular culture can be used to create graphic online spaces that are similar to the visual contexts in which students live. The intertextual characteristics of visual Web environments create complex structures among multiple media inviting comparisons and non-linear thinking. What we know about current design trends can contribute to the development of online learning reflecting the increasing visual climate in which students exist today. Online instructional methods may be improved with the application and reconsideration of how media used for teaching are a part of a visual communication that mimics our contemporary experiences. Students can be presented with multilayered, numerous forms of content, diverse examples interpretations, and perspectives while drawing on their own experiences. The process of seeing the world by constructing connections between what was previously unimagined in various forms (visual culture, mass media) expands students' abilities to construct knowledge.

Web-based course design guidelines, course management tools as examples, do not address the visual culture in which students live. Instead, interface design approaches are based on rule-oriented principles of communication. Supported by the literature, this research responds to the need for interface design research that improves upon what is available today, and to the need for sound pedagogy in a context that addresses the student instead of only paying attention to technological advancements being made (Lohr, 2000; Amichai-Hamburger, 2002). It is a qualitative, theoretical examination of the ways interface design is influenced by visual culture. My goal is to recommend a constructivist cultural delivery of course materials involving transdisciplinary research, while considering the visual design of learning environments that addresses the social context of the undergraduate audience.

## CHAPTER 3

### METHODOLOGY

In this chapter, I build on the theoretical issues in chapter 2, and establish the methodology of data collection used for this study. I begin by explaining how I arrived at this topic, how I utilize a constructive research approach, and why my perspectives correspond with media cultural studies research. I explain my personal biases in order to recognize when my own biases, assumptions, and beliefs are reflected in the analysis and development of concepts and theories. Content analysis and grounded theory are the methodologies I determine are appropriate for the study. I use qualitative data analysis to compare, contrast, and categorize data, and explain how the methods of content analysis are theory-oriented. A grounded theory methodology is applicable to my research as I explore and consider evolving concepts and ideas from different perspectives. I employ the strategy of case study, and utilize a combination of empirical methods for addressing the issues and analyzing the data collected. I gathered information from the literature review, website reviews, and semi-structure, open-ended interviews with students. I describe the processes I used to develop general categories needed to organize the data in order to interpret and analyze the findings. The objective for using a triangulation of the methods is to look at what is common across the data, and to develop an understanding through interpretation and description.

## Development of the Topic

The Purple Moon experience proved to me beyond any doubt that you have to talk to people, not just to see if they like your idea, but to find out what's going on with them, what their issues and tastes are, how they actually spend their time. I don't mean self-validating focus groups—I mean learning about people with your eyes and ears and mind and heart wide open. (Laurel, 2001, p. 36)

When I began designing CD-ROM and Web-based projects, courses beyond using Photoshop to create artwork and two and three-dimensional animation classes were not offered at the graduate level. Interactive projects were limited to linking hypertext “cards” using early versions of multimedia authoring software. One or two faculty in the department in which I was enrolled conducted research related to multimedia design and interactivity. Otherwise, a majority of research and practice was focused on animation, scientific visualization, cyborgs, and avatars to name a few.

Funding for purchasing equipment and outfitting computer labs with the fastest processors, scanners, and CD-ROM writers was abundant, making it easier to design, produce, and conduct research about interactive multimedia. I was encouraged at that time to pursue my graduate research using the technology. I began designing without conforming to rules and guidelines. My approach to design was similar to postmodern designers who used intuition to guide and form their projects. Using the foundation knowledge from my experience as an illustrator and designer, I was a self-taught computer user, interface designer, and programmer.

During the 1990s, design and usability guidelines began to appear in publications teaching people about how interactive projects should be constructed. This literature was based in cognitive engineering science, psychology, and design communication (Lynch & Horton, 1999; Mullet & Sano, 1995; Nielsen, 2000). It proved useful for people with limited knowledge of visual communication design by offering, for example, suggestions for legible type faces, awareness of the negative effect of patterned backgrounds, and provided step-by-step guidance on

when to use GIF and JPEG compression algorithms. Guidelines were quickly adopted by individuals in higher education as a model for constructing course websites. Universities began subscribing to course development software, which were used as a shell for the development and delivery of distance and blended learning courses. This software made it easier for faculty to “cut and paste” content and materials used in conventional lectures without the need to understand HTML (Hypertext Markup Language) and other programming languages. Twenty-four hour telephone assistance, compatibility with registrar listings, simplified grading, and anytime/anywhere access to class materials were benefits offered by the software manufacturers. However, for some faculty the benefits did not outweigh the drawbacks: The aesthetic quality of Web-based courses was not unique to the content, pedagogical approaches were restrictive, there were few graphic design choices, and flexibility for customization was only available with advanced understanding of JavaScript.

The concerns and frustrations expressed by professors and students about the current situation of creating Web-based courses in higher education caused me to begin questioning the usefulness of interactive design guidelines in comparison to projects I designed and developed earlier. Their concerns went against the abundance of research, which proclaimed and advocated availability and access to distance learning. I began to wonder why so many education sites were constructed in ways that seemed to ignore the visual and technological culture in which students are living. In my opinion, it was time to critically examine Web-based learning environments that were structured in ways that reflected a paradigm based on standardization of learning, and begin addressing how instructional methods can be improved by changing interface design for online instructional media.

## Qualitative Research

The positive research paradigm continues to be a dominant research paradigm in many academic disciplines; it has been the accepted way to objectively discover reality, and truth through established scientific methods. Positivist epistemology assumes facts exist and can be measured as a result of carefully structured research. Investigators position themselves as neutral and present authoritative, single-focused narratives to explain reality (Greene, 1994). The a priori approach to methodology establishes a research plan and strategy, for example, hypothesis, statistical tools, and component analysis for verification. Positivist researchers believe that because truth is logical and can be proved or disproved, this traditional approach produces objective knowledge.

Positivist ideology dominated my course of study when I was an undergraduate student in allied medicine. I am now situated qualitatively in that I utilize a more constructive research approach, and my perspectives are congruent with media cultural studies research. Qualitative research is a naturalistic approach, and uses interconnected, interpretive practices to gain understanding rather than explanation about the meaning of what is happening in some field of human action (Greene, 1997; Denzin & Lincoln, 2000). Described by Maxine Greene (1997), “Qualitative thinkers resist the conception of science as a body of finished propositions derived from empirical research or a set of formulations to be applied as technical rationality to the shifting, induplicable situations in which people live” (p. 190). Understanding or knowledge is something that is discovered as much as it is something we construct or make. All research is interpretive, guided by a set of beliefs about the world and how it should be understood and studied. Qualitative researchers believe in a relativist ontology and subjectivist epistemology: Multiple realities exist and knower and responder create understanding (Denzin & Lincoln, 2000; Schwandt, 2000).

### *Media Cultural Studies*

My interests are in the ways of knowing how to create meaningful interpretations from a popular media-driven visual culture. Listening to how different students use the Internet for Web-based learning and for personal reasons, including their attitudes about examples of different websites will be one way to begin understanding why technology has not lived up to its expectations to improve learning, what is needed to make improvements, and how design influenced by mass media may contribute to scholarship pertaining to Web-based instruction.

Characteristic of the cultural studies perspective is a historical, self-reflective, interdisciplinary approach to research, taking into account historical, political, economical, cultural, and everyday discourses (Denzin & Lincoln, 2000). In a description by John Frow and Meaghan Morris (2000), culture is “a network of embedded practices and representations (texts, images, talk, codes of behavior, and the narrative structures organizing these) that shapes every aspect of social life” (p. 316). Cultural studies research has responded to the pervasiveness of communications technologies in the later part of the twentieth and early part of the twenty-first century. The study of media is important in the development of cultural studies particularly when examining how meanings move between media formations. Researchers are concerned with cultural texts, lived experiences, and relationships between texts and everyday life. Cultural media research focuses on questioning problems between media and other spaces and times of social life; it crosses discourses of a number of disciplines and may include a detailed study of aesthetic form. Researcher’s findings are open-ended and do not claim the outcomes to be an absolute truth or objective description of reality.

### *Research Assumptions*

Because this study was cross-disciplinary, I used multiple discourses that were interconnected, evolving, and competing—visual culture, art education, graphic design, situated

learning, and distance learning. My research was grounded in theory and put in dialogue with a priori theory in order for it to become emergent; it was not predetermined through hypothesis with expected outcomes. The data was open to interpretation, change, and I strived to refrain from claiming my findings to be fixed, objective, and universally applicable (Greene, 1994).

This dissertation includes my interpretation of the literature, Web-site design aesthetics and function, and interview responses. The method and process for interpreting the data will be a logical questioning of the information to makes sense of what is discovered. My intention is not to develop a model for other's to use verbatim when developing Web-based courses. Instead, I want to present an alternative to established Web design guidelines, and further advancement of online learning spaces by presenting more effective uses of media for more useful education websites. I hope to create a dialogue for changes within related discourses that move beyond conventional design guidelines and respond to the ways students learn online using multiple media. My intention is to have others consider integrating visual cultural influences in interface design, and add to design theory as it is applied to situated learning in blended courses.

#### Personal Biases

Personal biases are not viewed as a negative trait in qualitative research. As described by Anselm Strauss and Juliet Corbin's *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory* (1998),

persons are products of their cultures, the times in which they live, their genders, their experiences, and their training. The important thing is to recognize when either our own or the respondents' biases, assumptions, or beliefs are intruding into the analysis. (p. 97)

My personal biases are what brought me to develop this study from the beginning. After conducting research, I realized there was little research connecting graphic design aesthetics with constructivist learning theory. From my experience, I watched how people reacted to dynamic, interactive Web and CD-ROM projects, and my initial interpretations made me believe that the

way the sites were designed and structured altered people's view of them. Responses to course content published in these forms were very positive. Juxtaposed video with text and images with audio made for new representations and readings of material. This made me begin to wonder if recommended guideline and usability studies were restricting the ways in which Web-based courses (blended or distant learning) were developed. I not only wanted to review the literature, I wanted to talk to students to find out what their opinions were about their experiences taking online or blended courses.

### *Web Design Standards and Guidelines*

Web design guidelines assist in the graphic design, development, and functionality of education websites (Lohr, 2000; Nielsen, 2000; Lynch & Horton, 1999). Literature outlining the "dos" and "don'ts" when creating Web sites are based in scientific disciplines whose research paradigm continues to be situated within the dominant. I believe these guidelines support an objectivist pedagogy in which learning is extrinsic of individualized experiences. When transferring course material to a Web-based format, these rules help in the creation of standard, interactive online environments that are deliverable to and accessible by all students. I do not believe the ways in which Web-based courses are designed supports constructive learning for all students. My view does not mean that I will completely ignore standardized recommendations. I will consider visual design for learning environments, look at contexts in which students view and use technology, and address the social context of the undergraduate audience.

### *Course Management Software*

Course management software companies claim to offer Internet course development tools that when used can provide a constructive teaching and learning experience. The intention is to recycle course materials in conventional formats (lecture notes, slides, video, etc.) for use in distance learning and blended courses. For many professors, this software has made the transition

from traditional lecture style teaching to Web-based instruction easier—as easy as a “cut and paste” approach. The course management software, however, does not always support research findings related to constructive learning, and does not allow for alternative teaching methodologies that may be preferred by instructors from the Arts, Humanities, and Social Science disciplines (Wijekumar, 2001). These tools offer, in my opinion, a one-size-fits all approach to education. In addition, the aesthetic quality of the graphics and layout results in an art course looking like a chemistry course looking like a business course, and so on. In this study, I considered linking contemporary design attributes with constructive theory, improving Web-based teaching and learning.

### *Visual Culture and Learning*

We experience a visual world; it is a daily occurrence—seeing billboards along side highways, watching television, reading magazines, and using the Internet. Telephones, which once were stationary, are now visual, auditory, and mobile. A partial result of our everyday experience is an increased expectation regarding the ways websites for different purposes look and function. I believe we need to consider how students learn through visual culture and how that information can inform the design of online multiple media instruction. This expands on the idea that course management software limits the unique identity of a course site. (This is not to say that I expect all professors from all disciplines to be capable of or interested in designing mass media influenced course websites.) My bias is to believe that design elements, including color, composition, type, and use of media can expand or improve learning environments— websites that are designed with an awareness of the student audience.

### Content Analysis

My approach to this study, as with all my research and writing, and even resembling my artistic technique when painting and drawing was non-linear and evolving. The resources I

selected and my process for collecting data was emergent making content analysis and grounded theory appropriate methodologies chosen to analyze and interpret the literature, websites, and responses from the interviews I conducted.

Content analysis involves comparing, contrasting, and categorizing data to test a hypothesis; it is a strategy of data analysis for organizing what is read, observed, and learned in order to make sense of the data (Schwandt, 2001). It is a method associated with quantitative researchers whose objective is to produce specific content elements, and apply clear-cut rules for identifying and recording reliable evidence about large masses of texts (Berg, 1998; Silverman, 2000). Classical content analysis is typically associated with relying on statistical procedures used by objective researchers to establish a set of categories that are counted for the number of instances that fall into each category. An emphasis is placed on the importance of asking a fixed set of questions about the data and developing categories that enable different researchers and readers to obtain comparable results when the same material is examined (Marshall & Rossman, 1989, p. 98; Schwandt, 2001; Silverman, 2000; Titscher, Meyer, Wodak, & Vetter, 2000).

While classic content analysis emphasizes systematic, objective, and quantitative description from developed categories, contemporary qualitative methods include more interpretive means of analyzing data (Schwandt, 2001, p. 34). Catherine Marshall & Gretchen Rossman in their book, *Designing Qualitative Research* (1995) define qualitative data analysis as “a search for general statements about relationships among categories of data; it builds grounded theory” (p. 111). The focus is to understand categories and to see how these categories are used in interviews, telling stories, assembling files, describing a work environment, etc. Researchers are “concerned with the process through which texts depict ‘reality’ than whether such texts contain true or false statements” (Silverman, 2000, p. 828).

Qualitative methods of content analysis are theory-oriented categorizations of information (Bos, & Tarnai, 1999). The types of things that are coded are varied and determined according to specific research conducted. The process is flexible and evolving. Categories and codes may be structured before data collection, from the literature, and/or allowed to emerge from a constant comparative analysis strategy. Development of research categories comes from patterns that emerge in the data, and significance of the categories is determined by the need to discover connections and structures in the data to be examined. Transcriptions of interviews, questionnaires, and notes from observations, for example, can be analyzed and used to identify elements in texts and for assigning variables to categories in coding (Schamber, 2000). Analysis is finished when important categories are defined and relationships among them are established and integrated into a grounded theory (Marshall & Rossman, 1995).

I used content analysis to identify key themes and patterns, and as a way to organize, manage, and retrieve data from interview transcripts, literature review, and review of websites. The codes and categories that were developed linked different segments and instances in the data, and were a way to create categories that shared common properties or elements relating to a particular concept (topic or theme). This research analysis provided a way for me to think about linkages between concepts through a process of abductive reasoning to generate theory (Coffey & Atkinson, 1996).

### *Grounded Theory*

I chose the strategic approach of grounded theory outlined by Strauss and Corbin (1998) as a way to break from a descriptive approach for designing online courses. Grounded theory, first described by Barney Glaser and Anselm Strauss (1967), is a constant comparative methodology used to determine inclusion and exclusion criteria for initiating inquiry and

discovering substantive theory from research data. Defined in a more recently published book by Strauss and Corbin (1998), grounded theory is a

theory that...[is] derived from data, systematically gathered and analyzed through the research process. In this method, data collection, analysis, and eventual theory stand in close relationship to one another. A researcher does not begin a project with a preconceived theory in mind (unless his or her purpose is to elaborate and extend existing theory). (p. 12)

Interpretation and development of theory using this methodology is applicable to my research because this study entails the investigation of an idea, which I explore and consider from different perspectives and angles. I utilize theoretical sampling to look for precise information, and to jointly collect and code data. This method helped me develop emerging categories; make the categories more definitive and useful with the goal of refining my ideas; and identify conceptual boundaries and relevance to the categories (Charmaz, 2000; Glaser & Strauss, 1967).

I began with open coding to identify particular elements, words, thoughts, etc. in the data and proceeded to relate these accounts to broader concepts, either already established in published books and journals, based on my own professional experience and knowledge, and/or new concepts that emerged from the data. Using the process of abductive reasoning, which is at the “heart of grounded theorizing” (Coffey & Atkinson, 1996, p. 55), I worked to move the analysis beyond the data to interpretive frameworks for development of new ideas and theories.

The development of new ideas and theories involved investigation of the research questions through exploring and considering what informed and continues to inform the study. My research included more than one set of findings; it resulted in an explanation of a phenomenon— what works for designing Web-based courses from what was known through reading the literature and studying design guidelines, and what was discovered as new information or supportive information from interviewing students. The findings evolved into new concepts that may be considered for this study and for future research. The theory is substantive

in that it is developed specific to undergraduate teaching and learning, and it is the basis for which a design example is proposed—uses for art education content and context, contemporary theories and pedagogy. Added, it may expand beyond the bounds of art education and the arts, but I do not make assumptions that the findings from this research are universally suitable to all academic disciplines.

### Methods

This study employed a strategy of case study, and utilized a combination of empirical methods for addressing relevant issues and analyzing material needed to answer the primary research question: How can the way students learn through visual culture inform the design of Web-based art education instruction? The research was informed by topics from a number of disciplines including those reviewed in chapter 2 of this dissertation. I utilized situated learning, visuality, graphic design aesthetics, and art education content and knowledge to talk about positions from which the analysis can be communicated (Frow & Morris, 2001). This study evolved throughout the research process, and resulted in a contextualized, interpretive, description of the findings.

#### *Case Study*

Robert E. Stake (2000) describes case study as a strategy of inquiry that “draws attention to the question of what can be learned from the case” (p. 435). This methodological approach incorporates a number of data gathering measures, however, it does not have a set routine. Qualitative case studies let us look deep into the heart of an issue, focusing on an individual, group, or community, and they give us the opportunity to conduct in-depth research to pursue complex themes (Berg, 1998; Stake, 1997).

I used a collective case study approach to study information from a number of resources and gather empirical materials for a better understanding of the issues and content, which

informed the topic, and are used for analysis. Bruce L. Berg (1998) further describes the purpose of this form of inquiry: “The selection of these cases is intended to allow better understanding or perhaps an enhanced ability to theorize about some larger collection of cases” (p. 217). The objective is to look for what is common across cases, and to discover negative cases in order to develop understanding through interpretation and description (Stake, 1997).

This was an intrinsic study organized around the central question, and the issues and information questions: How can we characterize student learning through visual culture? How does a students’ experience of visual culture influence Web-based learning? How do the aesthetics of Web design influenced by mass media impact learning? How does constructivist theory contribute to student learning with Web-based instruction? I chose relevant issues to organize the study by asking what topics dominate the theme and bring attention to the issues. Because case studies do not have an established routine or specific methods, I selected empirical methods I believed would be appropriate for gathering data about the conceptual and practical structure of the study (Stake, 1997; 2000). I used a triangulation of methods for this study: interview, questionnaire, literature review, website review. I reviewed content from multiple discourses in order to investigate graphic design trends and how students construct knowledge online. I looked for patterns, consistencies, and repetitions pertinent to the issues in order to provide a better interpretation of the materials. This research does not claim to be exhaustive, nor do I assume what is presented encompasses everything we need to know about linking postmodern design attributes to the expansion of constructivist theory or showing evidence that it improves online instructional methods (Greene, 1997; Frow & Morris, 2001; Stake, 2000). The analysis of the material gathered from these methods is used to discuss and illustrate the recommendations I make in chapter 6, for designing the interface for Web-based art education

instruction with the objective to help understand how students learn using multiple forms of media online.

### *Literature Review*

When I began this study, I realized a literature review would be a preliminary step in familiarizing myself with scholarship relevant to my research. The review would also serve as a method for researching topics and issues pertinent to understanding how students learning through visual culture and how this may inform Web-based art education. Scholars and theorists cited in the literature review wrote about the pervasiveness of visual media in our culture, research published in art education relating to integrated teaching and visual literacy that is idea-based, constructivist views of learning using multiple forms of media online, and mass media's influence on Web design. This review looked at historical and contemporary issues in learning, art education, graphic design, technology, and visual culture that frame theories related to the research topic. My objective was to judge whether this research expands beyond existing studies, and builds further understanding while contributing to the field of art education (Glesne, 1999; Krathwohl, 1988; Sommer & Sommer, 1991). The process I used is described by Corrine Glesne (1999) as a way of "try[ing] to warrant your own project on the basis of what has been done and what has not been done" (p. 20). The literature helped me focus the topic, what is said about the general area of inquiry, and what is missing. This included literature not confined to my topic or discipline.

Recommendations for conducting literature reviews differ on whether the researcher should summarize the pertinent information used to discuss the theoretical base for the study. Krathwohl (1988) provides an in-depth, critical discussion about how to conduct literature reviews and his view emphasizes summarizing information as a means to understand how theories interrelate and help the researcher to grasp how the theory is being developed and tested

in specific areas. However, my approach was more closely associated with what Glesne (1999) outlines in the book, *Becoming Qualitative Researchers: An Introduction*. She expands the idea of summarization by stating that a literature review is “an integration of reviewed sources around particular trends and themes” (p. 21). This review required integration of sources from visual culture, technology and contemporary learning theories, and graphic design, focusing on trends and themes. I used concepts from the review to support or negate findings from the website review and interview data received. Comparisons were made among all data to contribute to the analysis and support my interpretation of theories that evolved from the research.

### *Website Review*

I chose to conduct what I have termed a website design analysis as a method to identify and link issues reviewed in the literature. First, I selected websites whose design qualities exemplify how mass media aesthetic influences interface design. Criteria used for selecting the websites was based on categories taken from the literature review. These categories were effective for analyzing the sites, which are representative of contemporary media genres specific to this study. These sites were selected with the understanding that there are thousands if not millions of sites that could have been used. It was beneficial for me to select examples that were substantive, and would help limit the focus of this study (Glesne, 1999). Second, I categorized constructivist learning principles and combined those with categories from the description of modern and postmodern graphic design principles to identify qualities in websites that link graphic design with learning theory and shows evidence of their usage in online spaces. Comparisons were made among education sites, and between education and commercial sites. I did not confine selections to my research topic or academic discipline. Instead, I included websites from diverse subjects and genres. I relied on a more simplified, descriptive form of content analysis to conduct the website reviews.

### *Qualitative Interviewing*

The goal of qualitative interviewing is to encourage respondents to “answer questions in the context of dispositions (motives, values, concerns, needs) that researchers need to unravel in order to make sense out of the words that their questions generate” (Glesne, 1999, p. 68). Unlike structured interviews often conducted for quantifying data results, the language used to construct questions for qualitative interviewing is not bounded or stable; it is described by James Joseph Scheurich (1995) in his article *A Postmodern Critique of Research Interviewing* as “persistently slippery, unstable, and ambiguous from person to person, from situation to situation, from time to time” (p. 240). Conducting interviews requires the researcher to be flexible during the process and interpret participant’s answers which are viewed as subjective and changing (Marshall and Rossman, 1995).

I utilized the method of qualitative interviewing in order to explore general topics for this study and to uncover participants’ perspectives on the phenomenon of interest: why and how students use the Internet, their opinions of website designs, their views of tools used in online learning courses, their views of specific media influenced sites. I conducted semi-structured, open-ended interviews. Each interview began with structured questions based on websites I selected for the discussion. Additional questions evolved from the interview process based on the participant’s responses and the need for probing questions (Glesne, 1999; Marshall & Rossman, 1995; Scheurich, 1995). During each interview, I was flexible when forming and asking questions. As suggested by Glesne (1999), I believed it was important to be willing to add, modify, and abandon questions if necessary. This was done to some degree, but not often enough to impact the data collected or to require (re)questioning the participants.

### *Open Sampling*

I elicited student participation in the study by initially contacting university staff members who knew of specific online courses, and faculty and graduate teaching associates (GTA) who were currently teaching online GEC courses. I was given access to two courses with enrollments exceeding two hundred students. The first class gave me a list of student email addresses that I used to send a request for participation and description of the study. The professor teaching the second course gave me valuable in-person access to the students in her course. I met with the professor to discuss the study and to have her approve an advertisement she agreed to post on her course website (see Figure 1). In addition, I was invited to address the students immediately prior to the mid-term exam, which the students were required to take in a conventional university lecture hall setting without the use of computers.

The content in the email sent to the first class and the second class was the same. A brief description of the interview was given followed by an outline of the requirements necessary to participate in the study: Participants needed to be eighteen years of age or older, were presently or formerly enrolled in an online course(s) that utilized the Web (blended, Web-centric, or distance), were available for approximately 45 minutes, and would be given a ten dollar gift certificate to a food establishment or video store as compensation for their time. The gift certificates were a means to motivate as many students as possible to participate. Students wishing to be interviewed were asked to contact me by email or telephone<sup>18</sup>.

### *Scheduling and Location*

I determined a two-week period during the mid weeks of the academic term when the interviews would be scheduled and conducted. Two days before each interview I sent an email

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<sup>18</sup> Although not specifically pertinent to this study, I found a majority of the students who contacted me did so through email instead of by telephone. Email appeared to be their preferred mode of communication.

reminding the participant of the interview, and asking for an email response if they were unable to meet at the scheduled time. Rescheduling was required for only two students.

An on-campus location was chosen for the interviews. A semi-private university office with a large screen laptop computer was designated for the study. (There were adjoining offices with working staff and students, but these were not disruptive.) All interviews were scheduled at the participants' convenience (typically when they were on campus and before or after their scheduled classes for that particular day). None of the interviews were schedule at time beyond the traditional workday. Students were asked to sign a consent form and fill out a brief questionnaire<sup>19</sup> before beginning the interview. The consent form gave a written description of the study, outlined the use of their responses, gave assurance of confidentiality, and explained that their responses would not have an impact on their grades in the online course(s) in which they were enrolled. They were informed that I would tape record the interview, and the tapes would be used by me to transcribe our discussion for the sole purpose of this study. Every student agreed to the interview having been tape-recorded. In addition, students were reassured that at any time and for any reason they did not want to continue the interview they could stop without negative repercussions.

The choice of the informants and allocation of time was made in the context of the study. The researcher must be aware of the ramifications of their choices—how long to conduct the interview and in my case the websites chosen. I did not approach the sampling with the idea that I was required to spend the same amount of time with everyone (Bogden & Biklen, 2003). Interviews were anticipated to last approximately forty-five minutes, depending on how in-depth the responses were from each participant. I chose to limit interview length for manageability purposes and to prevent redundancy in questions asked, which could have risked participants

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<sup>19</sup> See the *Participants in the Study* section later in this chapter for more information, and chapter 4 for information pertaining to the analysis.

losing interest, or becoming impatient with me and the interview process. In three cases, the interviews lasted almost one hour.

### *Participants in the Study*

The students who participated in this study were not required by their professors or graduate teaching associates to be interviewed. This increased the likelihood of their interest in responding to questions, however, some students appeared to have different interests and motivations for participating. Some students mentioned their motivation was because they received a gift certificate, while others expressed interest in the topic immediately before, during, or immediately following their interview. One student asked me to send her the results of the study.

Forty students contacted me by email expressing interest in the study. Twenty of the forty students scheduled a time to meet with me, and out of those students, seventeen participated. (Two students did not show up for their interviews, and one student cancelled due to a scheduling conflict.)

Questionnaires the students completed prior to their interview provided information about each student and the participants as a group: gender, college rank, age, technologies used, access to the Internet from home or university computing labs, cable or dial-up connections, enrollment in online course(s), if they completed the course(s), use of the Internet for entertainment purposes (Table 3.1). Eleven of the students were female and six male and they ranged from freshman to senior in college rank (1 freshman, 5 sophomores, 4 juniors, 7 seniors), and from eighteen to twenty three years old (10, eighteen-twenty; 7, twenty-one to twenty-three). The students indicated the technologies they had experience using and how often. All the participants used email and the WWW (World Wide Web) daily, while fourteen students used IM (Instant Messenger) daily and three indicated never using it. Included in the usage was iChat (Apple

software), ICQ, and the WebCT chat room. A majority of the participants never used these tools versus IM or WWW. Every student had access to the Internet from home or their dorm room, and 16 of the students had cable-modem access with only one using DSL (Digital Subscriber Line). Sixteen of the students had enrolled in and completed, or were in the process of completing at least one or more online courses (blended and/or distant). A list of the subjects of

<b>Demographic summary of student's interviewed</b>			
<b>Gender</b>	Male	6	
	Female	11	
<b>College Rank</b>	Freshman	1	
	Sophomore	5	
	Junior	4	
	Senior	7	
<b>Age</b>	18-20	10	
	21-23	7	
	24 And Over	0	
<b>Technology Used</b>	<i>E-mail</i>	Daily 17	
	<i>WWW</i>	Daily 17	
	<i>IM</i>	Daily	14
		Weekly	3
	<i>iChat</i>	Daily	1
		Never	15
	<i>ICQ</i>	Daily	1
		Never	13
<b>Computer Use (Home/Dorm Room)</b>	Daily	17	
<b>Internet Access</b>	Cable	16	
	DSL	1	
<b>Use University Computing Labs</b>	Daily	5	
	Weekly	8	
	Monthly	4	
<b>Completed Online Course(s)</b>	YES	17	
<b>Use Internet for Entertainment</b>	YES	15	

Table 3.1: Demographic summary of student's interviewed.

<b>Online course subjects students interviewed had enrolled in and completed</b>	
Human Nutrition	Art Education
Business Management	Computer Info Systems
Accounting	Biology
Spanish	Electrical Engineering
Education	Chemistry
Chemical Engineering	Math
Art Education	English
Engineering Graphics	Journalism and Communication
Finance	Art

Table 3.2: Online course subjects students interviewed had enrolled in and completed.

<b>Academic majors indicated by students interviewed</b>
Business: Finance Marketing Accounting International Business
Engineering: Chemical Electrical
Visual Communication Design
Human Resources/Hospitality Management
Math
Pre-medicine
Political Science
Women's Studies
Undeclared

Table 3.3: Academic majors indicated by students interviewed.

courses with some form of online presence can be reviewed in Table 3.2. The students interviewed came from diverse academic majors as shown in Table 3.3. The representation of majors from the colleges of arts, science, and business, as examples, was a result of soliciting participation from large GEC online courses. The different perspectives based on each student's individual experiences and knowledge that they brought to the interview provided more in-depth discussions of websites shown, and students offered feedback that I could not have predicted prior to our meeting.

#### *Web Site Selection*

I conducted a search for websites to discuss during the interviews. The sites chosen were based on the literature review, sites I had discovered and used as examples when I taught Web design, and sites I discovered when conducting Web searches using popular Internet search engines. The process I utilized for determining criteria for selecting website examples was similar to the approach I took when developing interview questions.

Choosing criteria began with asking myself what it was that I intend to understand? The sites I selected were determined by the purpose of the study, and research questions asked in order to formulate a theoretical inquiry. I wanted to understand what students thought about how websites were designed, their tastes, technology they used, and their issues regarding the way Web-based courses are designed based on their experiences (Laurel, 2001). Unlike questions asked during the interviews, I believed websites shown to each participant needed to be the same. This would increase reliability and validity of the method used and data received. I was able to gain similar and conflicting information and feedback about the same Web pages and use of technologies and multiple media.

Derived from the research questions and literature review, four main categories were developed as a means for establishing criteria for selecting the websites:

**Constructivism and Web-based Learning** — This category includes characteristics of situated learning online using multiple media. Criteria based on this category are as listed:

- Websites that provided for collaborative learning
- Use of multiple browser windows for a multilayered, accessible experience
- Non-linear navigation and access to content
- Various media forms, in addition to text, for examining concepts
- Synchronous and asynchronous dialogic exchanges

**Multiple Media** — This category includes elements of websites that make available course content in multiple formats using a variety of media were selected:

- Combined use of images, text, video, and audio
- Intermixing media to change the visual experience
- Examples of strengths and weaknesses of each media
- Availability of media giving students access to course content in various forms

**Web Design Aesthetic** — Websites were chosen based on modern and postmodern design qualities used. Both modern and postmodern design examples were used in order to receive feedback on both styles:

- Color
- Layout of graphics and text
- Typography
- Images, graphics, and/or photographs
- Interface design
- Visual context (color, graphics, animation, etc.)
- Education standard

**Visual Culture and Mass Media** — I selected sites that were representative of mass media genres. The idea was to understand what students thought about similar design styles of sites they used every day for entertainment and information purposes:

- Magazine
- Television/video
- Gaming
- Comic book
- News

My approach to selecting sites was flexible, with the understanding that each criterion could be applicable to more than one example. This provided a way to ask similar questions of more than one Web page to determine if participants' feedback were consistent.

I searched for websites based on what I discovered while writing the literature review chapter and from sites I reviewed on a regular basis out of my continued interest in current interface design trends. I searched *commarts.com network*, the *Communication Arts* journal Web site (<http://www.commarts.com/>), *design interact* (<http://www.designinteract.com>), *Kaliber 1000—The Good Vibe Provider* (<http://www.k10k.net>), and *The Webby Awards* (<http://www.webbyawards.com/>). Using links and information found on these sites, including written articles published in *commarts.com network*, I selected three sites to use for the interviews:

- 1) ***CBC Radio 3: Music and Modern Media***  
([http://www.cbcradio3.com/issues/2003\\_10\\_31/index.cfm](http://www.cbcradio3.com/issues/2003_10_31/index.cfm))  
I selected this website for its postmodern design qualities and use of photography, typography, music, and layout (Figures 2 and 3).
- 2) ***Minnesota Historical Society's Forests, Fields, and the Falls: Connecting Minnesota***  
(<http://discovery.mnhs.org/connectingmn/>)  
This site was selected as an example of application of the comic book genre used to present narrative educational content, it deviated significantly from an education standard aesthetic, and it can be categorized as postmodern (Figures 4 and 5).
- 3) ***Theban Mapping Project***  
(<http://www.thebanmappingproject.com/>)  
This project demonstrated what I consider to be an exemplar design and use of a color palette, which established a context for the educational content, and used non-linear ways in which the viewer could access the content (Figures 6, 7, and 8).
- 4) ***Museum of Modern Art's The Russian Avant-Garde Book, 1910-1934***  
(<http://www.moma.org/exhibitions/2002/russian/>)  
These Web pages demonstrate a postmodern design using characteristics of books for elements in the interface design, and included the use of animation, navigation, and the option to select icons for enlarging images (Figure 9).

Websites I was aware of from my professional experience were chosen because of their diverse design aesthetics creating differing looks for each course:

- 1) ***Art Education 635: Photography Criticism***  
(<http://accad.osu.edu/~tbarrett/AE635/index2.php>)  
I had experience working with the faculty member who taught this online course and similar courses. I understood the approach for determining the design, and usability based

on the professor's pedagogical approach. I chose the site for its unique aesthetic style that breaks-away from the traditional design of online courses, specifically courses using course management software (Figures 10 and 11).

2) ***Visual Communication Design***<sup>20</sup>

I selected this Web-based design education site for the treatment of white text on a black background, the alternative type style used, and as a contrasting alternative to the previous art education design (Figure 12).

3) ***JCOMM 850c: Digital Learning Objects: The building blocks of online course design***  
(<http://morty.uts.ohio-state.edu/Acker/Course850-Site/jcomm850c.htm>)

This course Web page was what I considered to be more traditionally designed according to what may be expected of a Web-based course, and aesthetically similar to courses delivered using course management software (Figure 13).

4) ***EXPN***

(<http://expn.go.com/expn/index>)

EXPN was one of many sites I had the option to select (*Sports Illustrated, Rolling Stone Magazine, VIBE, etc.*). I chose it because of the it represented the influential media design, layout, and navigation found on most popular news, television, and entertainment Web pages (Figure 14).

I searched for exemplar Web-based course sites using popular Internet search engines:

Google™ (<http://www.google.com>), AltaVista™ (<http://www.altavista.com>), Mamma: The

Mother of All Search Engines® (<http://mamma.com>), and Dogpile® (<http://www.dogpile.com>).

These were a few I selected from a vast number of search engines available. I conducted a simple keyword search using the following terms: distance learning, online learning, education websites,

online courses, art education online, art classes online, visual culture. Out of the results I

received, I chose *World Lecture Hall* (<http://web.austin.utexas.edu/wlh/about/index.cfm>) to

narrow my search. This site was developed by the Center for Instructional Technologies, a unit of

the Division of Instructional Innovation and Assessment, The University of Texas at Austin. The

database publishes links to Web pages created by faculty worldwide using the Web for teaching.

Sites found include distance courses, those designed for students in residence, blended, and Web

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<sup>20</sup> This website is no longer online

centric courses. I based my decision to use this site because it was produced by a reputable university, and the site is recognized as a legitimate award-winning resource (Wold Lecture Hall, 2004). Using the database, I conducted a search using the links “browse by area” and “find a course” and “advanced search.” Keywords I used included the following: art history, art, communication, distance learning, education, mass media, graphic design, cultural studies, visual culture, constructivist learning, humanities. I was able to include choices in my search using the advanced search option: course notes, syllabus, video, audio, assignments, exams, links. The result sets provided gave descriptive information about the course including title which served as a link to the home page, faculty member’s name, university or college affiliation, date it was added to the database, and course description. In addition, icons were added to indicate if the online course included a syllabus, audio, video, and course notes. I was interested in sights that included video, audio and other information because of the objective of this study.

I retrieved a large number of sites based on the keywords used, but many of the courses had restricted access or did not contain the criteria listed above, which I determined was necessary to receive informative responses from interview participants. I selected three Web-based courses from the World Lecture Hall database:

1) ***Early Renaissance Through the 20<sup>th</sup> Century: Arts 1304—An Art History Survey II Internet Course***

(<http://www.accd.edu/sac/vat/arthistory/arts1304/Home.htm>)

This course was selected because of the simple layout and design, and in my opinion I believed the design was similar to what many professors create when publishing course content on the Web (Figure 15).

2) ***Francais Interactif***

(<http://www.laits.utexas.edu/fi/html/toc/00.html>)

I wanted to use a Web-based course that included the use of multiple media including audio and video, and graphic design elements (color, type, layout), and it was one website that allowed access to its course content (Figures 16 and 17).

3) ***A. Pintura Art Detective***  
(<http://www.eduweb.com/pintura/>)

I chose this project because of the approach to teaching about art is placed in the context of a game<sup>21</sup>.

I selected an example of a Web-based course published using WebCT as an example of a course developed using course management software, but I discovered during the first five interviews that the students were aware of WebCT's interface and how the software functioned. I did not see a need to continue showing an example of the website, because students spent less time looking at the example and more time reflecting on their own experiences.

Using a common Web browser, I book marked the sites to organize my thoughts and questions while I remained open to variances in each discussion (Bogden & Biklen, 2003). During the interviews I asked the participants to focus on the design of each site versus the subject matter. (When selecting sites I was cognizant of subject matter that could have been offensive or controversial—race, sexual orientation, gender, politics, religion, etc.) My objective was to focus on the study and to conduct topical interviews in search of opinions, perceptions, and attitudes about Web design as it is applied to Web-based learning in higher education

*Formulating Interview Questions*

The approach to formulating the initial interview questions was similar to how I developed categories for the websites selected. I began by asking questions to gain understanding and student views about their experiences using the Internet (Glesne, 1999). Questions were evolving and required students to reflect on their experiences using online websites for courses and for personal reasons (Table 3.4). I asked similar questions of different examples shown, as well as questions specific to elements within selected sites (graphics, media, text, etc.).

Dichotomous questions (yes/no) were used to establish the participants experience and

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<sup>21</sup> It is important to note that I asked three interview participants to comment about this site, and based on their feedback decided to eliminate it from the study.

knowledge with Web-based courses and the Internet. Evolving questions elicited responses characterized as opinion, experience/behavior, knowledge (usage, topic), and attitude (like/dislike) (Glesne, 1999).

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**Guiding questions asked during semi-structured, open-ended interviews:**

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- Does this Web page look like a course website you may have seen or used at one time?
  - Does this look like a course website?
  - Do you prefer the design of this site or the design in WebCT (the way it looks)?
  - Do you prefer this design to the one we just looked at and discussed?
  - Do you print your notes or study by reading from the computer screen?
  - Give me your opinion of the design of this website.
  - Have any of the courses you've taken online or courses with a website had a video for you to see? Do you watch the video(s)?
  - Have any of the courses you've taken online or courses with a website had audio for you to hear? Do you listen to the audio?
  - Are you familiar with opening multiple windows using the browser? Are you comfortable with using multiple windows?
  - Has your previous experience using the Web helped you when taking an online course?
  - What is your reaction to this website? What would you think if a course website was designed using the this format?
  - Tell me your reaction to the introduction for this site.
  - Do all courses in WebCT look the same? Would it help you learn if your course websites used different colors and had different designs?
  - Do you consider yourself a linear or non-linear learner?
  - Would you like a more linear, structured option to accessing the course content?
  - When you open a website that has an animated introduction on the first page, for either school or for fun, do you watch the animation or do you skip it?
  - Are you familiar with the concept of thumbnails? Do you like or dislike thumbnails and clicking on them to see a larger image?
- 

Table 3.4: Guiding questions asked during semi-structured, open-ended interviews.

I began the interviews with a degree of systematization in questioning then allowed the participants to elaborate—sometimes taking the conversation in new directions and introducing new concepts and areas for me to consider. The participants were given latitude in answering

questions. This evoked long, in-depth responses in some cases, as well as brief reflections by students not giving extensive feedback (Marshall & Rossman, 1995). I found in Robert Bogdan and Sari Knapp Biklen's (2003) information to be true: "[Some] people become key informants and often you will talk with them, compared to other subjects, a disproportionate amount of time" (p. 61). I used probing question in attempt to get students to elaborate—clarification, description, or evaluation. Most students were insightful about the questions they were asked and when reflecting on learning experiences online.

#### *Transcripts of Taped Interviews*

Each interview was audio taped. The tapes were transcribed the day the interview was conducted so as to help me to reflect on what was discussed. Reviewing the tapes as soon after the interview was finished took advantage of my recent memory of the discussion, including context and meaning of voice inflections and what pauses during the conversation represented. Listening to the tapes gave me the opportunity to focus on details of each response without limitation of time. I was able to type verbatim transcripts of each interview, organizing transcripts by website and initial questions asked (Bogden & Biklen, 2003). These transcripts were used to establish categories and coding for the data analysis.

#### *Analytic Strategies, Coding, and Categorizing*

I relied on analytic strategies outlined by more than one resource to sample, categorize, and generate ideas from the data. Theoretical sampling was used to code, categorize, conceptualize, analyze, and develop ideas from the interviews and literature data. The literature provided insight into the types of questions developed and asked before and throughout the student interviews. I worked with procedures recommended by Strauss and Corbin (1998) and additional sources (Charmaz, 2000; Coffey & Atkinson, 1996; Dey, 2004; Glaser & Strauss,

1967). I began coding (open and axial) to create ideas and think about the data in broader, conceptual frameworks versus simply describing the literature and interviews.

### *Open and Axial Coding*

I hand coded the data because I believe it was important for me to work hands-on with the data during the entire research process. Using a general description by Coffey & Atkinson (1996), coding consists of “a range of approaches that aid the organization, retrieval, and interpretation of data” (p. 27). Codes are representations of emergent concepts, and theory building and testing are developed mainly out of “the categorization of data through coding procedures and the construction of systematic, hierarchical relationships among categories” (p. 142). I used open coding to discover, name and categorize phenomena, and as a means to find a balance between systematically gathering data and the development of categories (Strauss & Corbin, 1998). Each interview was transcribed using a word processing program. I used this program to hand code sections of the data, changing color of the type to distinguish between the student’s comments and codes and categories that I placed among the text (Table 3.6). Codes reflecting specific themes were attached to chunks of text of varying size— words, phrases, sentences, paragraphs, and whole documents. These were used to expand the inquiry and move the data analysis toward interpretation (Ryan & Bernard, 2000).

I scanned all seventeen interview transcripts and selected three within which I had noted the quality of the student feedback. The three interviews selected were used to develop the process I used for the remaining fourteen transcripts. Below is a step-by-step description followed by an example of the process I used to code and categorize the responses:

- 1) I began with an analysis of words, phrases, and sentences. During the initial coding stages, I created categories by asking questions, and thinking conceptually about the information, which opened up diverse analytic possibilities (Coffey & Atkinson, 1996).

- 2) I developed a “start list” (Miles & Huberman, 1994, as cited in Coffey & Atkinson, 1996) of conceptual frameworks and (pre)selected codes based on the research questions, keywords from the literature, my professional knowledge and experience, questions from the interviews, and the use of in vivo codes<sup>22</sup>.
- 3) I wrote a *memo* under the first coding of the chunks of text. This first memo was my record of analysis, thoughts, and initial interpretations of the responses. In the memo I highlighted keywords I used that correlated with the codes I used for the responses.
- 4) I pulled the codes I had noted among the text and in my memo to make a new list of codes, which served as outlines representing the major idea brought out in the sentence or paragraph, and highlighted problems, issues, concerns, and matters that were important to the student.
- 5) I returned to (re)reading the student response, my memo, and list of codes as resources to focus on words and phrases that I believed to be significant and analytically interesting, and to begin uncovering relationships between categories and subcategories. I wrote a second memo to work through the relationships between concepts, to begin analysis and interpretation, and to continue data collection (Strauss & Corbin, 1998).

I read and (re)read the data multiple times searching for new concepts and to develop categories. This repetitive process allowed me to think about the student responses from different perspectives and to reflect on the responses in comparison to what other students said in the interviews, and what was written in the literature. I believe this approach kept me close to the data and gave me the ability to develop ideas and generate theories I may not have considered earlier. I listed all possible meanings of terms using back and forth comparison of words and phrases to develop working categories.

Following the process I just described, I looked for more instances of words and phrases that pointed to a more general meaning. I began to reduce the data into general categories which helped me characterize what each section of an interview was about “in terms of general thematic content” (Coffey & Atkinson, 1996, p. 35), and reduced the number of grouped concepts with which I was working. For example, I created a category titled *motivation*. This term evolved from

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<sup>22</sup> The use of exact words from the respondents themselves, and/or quotes from the literature (Strauss & Corbin, 1998).

verbatim terms from student responses and codes I used based on the literature: inviting, interesting, boring, “I have to use it,” requirement, “I like,” “different,” “being emmersed into the material,” and student’s academic major, as examples. Many of the initial codes listed became more descriptive subcategories used to segment the data, including the example of motivation shown above. These subcategories answered questions such as “when, where, why, who, how, and with what consequences” (Strauss & Corbin, 1998, p. 125). They uncovered relationships among categories, and by answering questions like those listed above, helped me to contextualize the data. In some cases, subcategories were followed by a third level of terms that functioned as specific and detailed codes. All codes and categories were overlapping and intersecting.

In a new document, I created an outline using the general categories from all the interviews as main section headings. I returned to each interview and pulled relevant memos and quotes from the responses, placing them under a category based on the codes I used, and in some instances placing them under more than one category. I explored the codes and categories I created linking and dividing categories and subcategories. Some codes changed and subcategories moved, while negative findings were identified for further consideration and analysis.

The process I described includes what is termed axial coding. Defined by Strauss and Corbin (1998), axial coding is “the process of relating categories to their subcategories, termed ‘axial’ because coding occurs around the axis of a category, linking categories at the level of properties and dimensions” (p. 123). This is a way of relating categories and subcategories to develop explanations about phenomena, and to “move beyond local codings to generate ideas and broader conceptual frameworks” (Coffey & Atkinson, 1996, p. 48). It is important to mention that the entire process of coding (open and axial), categorizing, and analyzing was not sequential; it was ongoing. I was able to begin (re)assembling data taken apart during the coding process by placing them in the outline under the more general categories.

### *Triangulation of Methods*

A combination of research methods was selected to create a variety of opportunities to obtain data for this study. The use of multiple data-collection methods is a common approach for establishing trustworthiness of data collected for qualitative research (Glesne, 1999).

Conventionally referred to as *triangulation*, and more recently termed by Laurel Richardson (1994) as *crystallization*, the procedures used are a means to establish validity in the research.

Triangulation of methods is a process used in order to secure a thorough understanding of the phenomenon and a means to answer the research question, adding rigor, richness, and depth to the inquiry (Denzin & Lincoln, 2000; Glesne, 1999). There are four types of triangulation that can be used: multiple data sources—use of various data sources in the study; multiple investigators—use of more than one researcher; multiple theoretical positions—relying on a variety theoretical perspectives to interpret the data set; multiple methods—use of more than one method to study a single phenomenon (Glesne, 1999; Janesick, 2000; Schwandt, 2001). Using one or more of these types contributes to the credibility of the research findings because the researcher is involved in a process of discovery in which meanings are uncovered through the investigation and use of varying vantage points (Schwandt, 2001).

Crystallization, similarly, is a way for the researcher to tell the same story from different points of view (Denzin & Lincoln, 2000). Researchers' preferences for using this metaphor, describing the utilization of multiple methods, is based on the acknowledgement that there are more than three ways to approach qualitative research (Richardson, 2000). "Crystallization recognizes the many facets of any given approach to the social world as a fact of life" (Janesick, 2000, p. 392). It advocates the inclusion of multiple disciplines and perspectives.

The views of triangulation and crystallization relate to my research. I selected multiple methods to help with clarifying and creating a variety of opportunities to obtain data for this

study—interview, questionnaire, literature review, website review. The approach to this study is described as triangulated in that I attempted to decrease the likelihood of misinterpretation and to increase trustworthiness and validity of the data. I used multiple data sources from multiple disciplines in the research—literature review and the students (students from many different academic departments). In addition, it may be described as a crystallization of methods because I gathered different points of view to construct the data, analysis, and recommendations. My research relied on mixed-media genre texts and resources, and it is inclusive of perspectives and theories from more than discipline.

### Chapter Summary

In this chapter, I explained how I arrived at this topic and how I utilized research methodologies (content analysis and grounded theory) to help me address the question of how to interpret the literature and data from the interview responses, and combine my analysis with the website examples in order to form recommendations for (re)considering the interactive design of Web-based courses. I provided a detailed explanation of the methods and strategies I used for collecting data. I outlined my approach for coding and categorizing data from the student interviews, and how I came to general categories used for summarizing key points made in each interview, and the interviews as a whole. In addition, I explained the process I used to find and select website examples which were used as references for comparison and justification of the decisions I make when creating a website example. In the following chapter, I define the criteria used for selecting website examples, and the general categories which evolved from the research, how these categories relate to the literature, and provide summaries of the data collected using the selected research methods.

## CHAPTER 4

### DATA SOURCES AND DATA ANALYSIS

This chapter presents the data sources and examples gathered using the empirical research methods discussed in chapter 3. I begin by presenting an overview of criteria, description, and analysis of five websites selected and analyzed for this study. The five cases were chosen to demonstrate aesthetic qualities of Web design that are influenced by mass media genres, and modern and postmodern design principles and forms, and are representative of what we experience in today's media culture. Following these examples, I discuss four websites that exemplify a combination of constructivist learning principles, design and usability guidelines, and postmodern design principles.

Talking to students is an important part of understanding their perspectives and opinions about Web-based learning. I review the strategies used to code and categorize the students' responses, and how I came to generalize the data in terms of thematic content. I provide summaries of each interview, followed by a bulleted list of major ideas brought out in the responses. A collective summary of the responses concludes this chapter. I will use this data to build my interpretation and analysis in chapter 5 of this dissertation.

#### Review of websites

I analyzed five Web sites based on aesthetic qualities that are adopted from mass media genres, and interpreted their meanings. Criteria I used for selecting the websites included, but were not limited to, modern and postmodern forms and principles presented in the literature

review. Considered in the critique are relationships between media and the Web—how the Web embodies, reshapes, and defines the unique aesthetic qualities of media cultural forms, including how the genre is transformed (Grossberg, 2003).

#### *Visual culture and mass media*

A genre is a class of visual texts, which share similar conventions (Grossberg, et. al., 1998; Marshall & Werndly, 2002). Genres can be broad or specific; they are not simple and fixed, and change and evolve over time. A genre is characterized by its content (themes and topics), form (elements and features) and purpose. The attributes that play a significant role in identifying corresponding documents, or in this case media aesthetics, are what make up the form (Shepherd & Watters, 2000; Toms & Campbell, 1999). Different varieties of existing genres can develop into new genres when emerging communications technologies and media are introduced into society. Traditional genres, and the forms and purposes of these, have transferred to contemporary Web design. They can refer to other popular media or share two or more forms, retaining the characteristics of original media. Interactive Web design reproduces popular genres from television, print, news magazines, sporting events, etc. (Seiter, 2000). In some cases traditional media have been altered to form a cybergenre. Cybergenres are characterized by how they function in addition to form, content, and purpose (Crowston & Williams, 1997; Shepherd & Watters, 2000).

#### *Modern forms and principles*

Modern forms and principles are based on the idea that there is a universal consensus determines what is aesthetically acceptable for the design of everyday things, including magazines, advertisements, commercials, books, and websites, as examples. Design style is made up of simple forms within a standardized structure. There is an emphasis on formalism—a focus

on structured elements and graphic techniques. I have summarized the characteristic elements of modern design principles in the bulleted list below<sup>23</sup>:

- simplified shapes
- easily understood, semantically-rich images
- uniform san-serif fonts
- pictorial content supported by written text
- written text communicates what images represent
- flush left, ragged right horizontal positioning of type
- systematic use of type sizes and weights establishing a visual hierarchy
- bars and rules to divide sections of pages
- underlying grid-like structure
- photos and images are centrally placed
- preferred color application is limited to a handful of colors

### *Postmodern forms and principles*

Postmodern forms and principles developed into an eclectic style, recombining elements of avant garde art and popular media, and it is defined by how it is influenced culturally, socially, and technologically. Meaning that is embedded within and/or derived from design is dependent on social or cultural contexts. Listed below are the characteristic elements of postmodern design principles<sup>24</sup>:

- composition and formatting is without underlying grids
- striking, visually dynamic layout and graphics
- multilayered photos and graphics
- not a collective, singular universal style
- photographs are not always the central object
- vernacular, pastiche design, recombining old and new
- design encourages a proactive role of the reader in constructing meaning
- viewers become active participants
- type is skewed, bitmapped, figurative, and/or animated
- letters are transformed into imagery, hand drawn
- inconsistent baseline

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<sup>23</sup> In-depth information about modern design, forms, and principles can be found in chapter 2, Literature Review

<sup>24</sup> In-depth information about postmodern design, forms, and principles can be found in chapter 2, Literature Review

### *Website examples*

The first example, *Forest Fields and the Falls Connecting Minnesota*, is a website commissioned by the Minnesota Historical Society (2002). The purpose of the project is to visually motivate students to learn about the state of Minnesota and what life was like in the late nineteenth-century (Saba, 2003). Comic books are an art of telling stories, using expressive lines and bold, contrasting, flat colors within black outlines (McCloud, 1993). The form of this site is in a comic book-style, illustrated in an intriguing narrative way (see Figures 4 and 5). Elements and principles of the comic book genre are used to create a visually colorful story-telling experience. The pages are made up of juxtaposed pictorial and other images drawn in sequence. The style of the illustrations commands the viewer's attention, involvement, and participation. The characters, whose style is between realistic and iconic, are a part of a harmonious combination of words and pictures. Characteristic of comics, the words and pictures work together to "convey an idea that neither could convey alone" (see Figure 5) (McCloud, 1993, p. 155). The panels that are traditionally used to fracture time and space, are connected with informative text linking the scenes.

*The Russian Avant-Garde Book, 1910-1934*, designed and created for the New York Museum of Modern Art [MoMA] (2002), is the second example demonstrating the influence books have on other forms of media. The project was used as an online resource for the exhibition, which featured 1,100 books and 100 works of the Russian avant-garde (MoMA, 2002). The text and image-based design was inspired by the donated book collection. In addition, the influence of film gives the site a feeling of time through motion (Saba, 2003). Motion through interaction creates a virtual feeling of paging through a book. The overall aesthetic of the site makes subtle references to the physical nature of books — geometric shapes are animated symbolizing an open book and pages turning (see Figure 9). The horizontal bar, placed in the

center of the screen, symbolizes the spine typically seen when browsing library and bookstore shelves. The design of the sections is simple with larger bold type used for titles. Web layout adds to and changes the book genre through the interconnections between sections.

It may seem an obvious choice to select a site created for a broadcast television network. The most influential mass media aesthetics include a hybrid of magazine, television news, and newspaper genres, which have been transformed into a news cybergene. The *ABCNEWS* (ABCNEWS Internet Ventures, 2005) site is a mixture of forms and content from television to magazines to film. The layout and style of the newsprint form was historically ingrained until *USA Today's* design format changed the genre using more modern layouts in the 1980s (Lupton & Miller, 1999). The format was a departure from the conventional design of most newsprint media in order to compete with television and magazines. The form of print media evolved when incorporated into online news sites. The ABCNEWS site uses light-color backgrounds, photos, and graphics resembling network news and magazine elements (see Figure 17). Magazine-like in layout, content is sectioned using wide columns. The left column is commonly set aside for navigation links to news topics (US, International, Weather), leaving the top margins for the network logo and links to interactive features. The large right and bottom columns are used for feature stories, mimicking newspaper frontpage layouts. Text keeps the traditional flush-left/ragged right paragraph format with larger, bold type used for headings. The chunking of information caters to short attention spans and time restrictions of the target audience. The cohesive design allows for easy navigation (Lupton & Miller, 1999) because of its inherit relationship with traditional forms of news media. Photo galleries, including large pictures and descriptive copy, are common when historic events are occurring. These forms of photojournalism draw from picture magazines and photo essays published during the early part of the twentieth century (Heller & Pomeroy, 1998).

Many popular films and video games have postmodern forms and are edited in a pastiche, focusing the audience's attention on the camera movements (Freedman, 2003; Helfand, 2001). Cinematic cuts and camera angles can change the viewer's experience, creating a visual narrative that influences the way the story is read and meanings the viewer constructs. In postmodern games and film, the individual constructs the story versus the movie telling a story. Requiring more interpretive strategies to link mass media aesthetics to contemporary Web design, the *MONO\*crafts* (Nakamura,1999) site is a means for developers to explore new virtual expressions using new concepts of interactivity. The content and purpose of the site is an interactive exploration. Overall it is made up of multilayered graphics with a low tech aesthetic. The composition is in a cinema display format with monochromatic images used as background graphics. When first entering the site an animated horizontal bar resembling a floating filmstrip that begins scrolling across the screen (see Figure 19) (Helfand, 2001). The site is highly interactive, taking advantage of non-linear interfaces that redraw themselves based on user input. Inspired by postmodern film, mouse movements replace camera movements to create a visual dynamic (Helfand, 2001). Unique activities within the site are similar to computer game engagement using the computer mouse and keyboard as input devices. When the viewer selects keys animating type and numbers on the screen, a typed message is recorded. Techno sounds throughout add an audio dimension cueing the user to interact and reacting to user input. The site provides a space for the audience to construct the story and experience.

*CBC Radio: Music and Modern Media* (CBC Radio, 2003) is an online hybrid of music, popular entertainment, art, music magazine, and picture magazine genres (see Figure 2). It is a multilayering of sound, photos, art, text, and graphics. Cropped photos focusing on details, and artworks serve as visual backgrounds (see Figure 3). As the user pages through the stories and art, he or she can use the compact disc player-like icons to select songs to play. The title of the song

is placed in the upper right hand corner with the title of the compact disc placed below. Graphic arrow icons, when selected, animate a transparent visual drop-down menu of music tracks from which you can select a song. A time counter ticks away the playback time. The sans serif text varies in size, weight, and shape. Pages are numbered in the upper right hand corner, in large cut off type. Rollover icon effects reveal the ability to send the site to a friend or bookmark the page for future retrieval.

The five online cases chosen to demonstrate aesthetic qualities of contemporary Web design that are influenced by mass media are diverse, yet share influences from similar media genres. Modern and postmodern graphic design styles evident in many of the examples are incorporated not because of current popular media trends, but because they are engaging; the designs are similar to what we experience in today's media saturated, visual culture.

#### *Design aesthetics and constructivist theory*

By looking at theoretical similarities between constructivist theory, reviewing design and usability guidelines grounded in modernist design theory (Horton & Lynch, 1999; Nielsen, 2000; Mullet & Sano, 1995), and drawing from research about how students learn in today's increasingly visual communication culture, including video games (Gee, 2003), I interpreted and theorized how postmodern design attributes can expand or improve online learning environments and instructional methods. Web design guidelines focusing on communication goals often times contradict what is popular in influential youth subcultures or mass media. The goal is to present rule-oriented principles of communication that are applicable across disciplines (Mullet & Sano, 1995). Structured design guidelines with generic simplicity based on modern design principles, is unlike fashion design<sup>25</sup>, for example, whose marketing strategies require researching youth

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<sup>25</sup> Fashion and graphic designers working for American Eagle Outfitters, Abercrombie and Fitch, and similar clothing retail sales organizations attend the X-Games and other types of youth subculture events to investigate fashion trends that develop within these youth groups.

subcultures by attending the X-Games (ESPN Internet Ventures [ESPN], 2003) searching for new trends in fashion. What we know about postmodern design can result in contributions and improvements creating learning spaces that reflect the increasing visual climate in which students exist today.

Students create and negotiate multiple media when constructing knowledge in multiple learning spaces (Gallini, 2001). The characteristics of postmodernism and Internet learning spaces creates complex structures among multiple media inviting comparisons and non-linear thinking (Yang, 2001). Students can examine concepts in many forms through different perspectives heightening learning. Access to the information in many forms of media, visual and textual, is non-linear, and criss-crosses and overlaps in many directions (Spiro, et. al., 1992; Efland, 2002).

#### *Website examples*

The *Seattle Times: The Terrorist Within* (Bernton, Carter, Heath & Neff, 2002) is a hybrid news publication (see Figure 20) made up of layered storytelling over a period of time. The interplay between different forms of representations interact to create meaning, and meaning is important to the way in which visual and textual content are interpreted and understood (Freedman & Stuhr, 2004) in the context of a news publication and one's own experience on the day of the September 11, 2001 terrorist attacks. The content consisting of news copy, videos from broadcast news sources, audio segments, descriptive images, photos, and maps are expansive and intermixed. The format gives the viewer an opportunity to revisit topics and construct connections between elements, specifically the construction of events. In addition, the site provides links to additional information.

Situated and authentic learning environments have an impact on how students construct meaning. Postmodernism is tied to economic, social, and technical conditions prevalent in

consumer and media society. The image dominates these conditions resulting in television, advertising, and consumerism, impacting graphic design (Jobling & Crowley, 1996). Postmodern design attributes can create graphic online environments that are similar to the complex visual contexts in which students live. Processes of seeing the world by constructing connections between what was previously unimagined in various forms (visual culture, mass media) expands the students' abilities to understand (Mitchell, 2002; Dondis, 1975; Koroscik, 1996). By combining non-privileged graphic forms that were previously viewed as marginal (from other cultures and non patriarchal) with diverse, non-linear content from multiple perspectives, pluralistic design can add to critical interpretations of materials with the potential of motivating students to become self-regulated and self-reflective. Students learn by being immersed in activities that take place in visual contexts, which may have the look and feel of something produced by ordinary people with an authentic appeal, or from another time period. For example, *akaKurdistan* website (Meiselas, 2003) let viewers become participants through telling their own stories about the history of the Kurds and submitting their own photographs (see Figure 21). What emerges from the collaborative experience is a history that closely reveals the truth of the Kurdish people (McMillan, 2003). The site is a non-linear presentation of content from multiple perspectives. The postmodern vernacular design style is homemade, possibly making the environment more inviting for people to tell their own stories.

Graphic design can take on the role of meaning making and readers are encouraged to become active participants in the constructing of the message. Often times these forms of design can help “clarify and develop aspects of a communication that uniform, modernist treatments sometimes obscure” (Poyner, 2003, p. 50). Art education students participate in critical and aesthetic analysis of art works based on larger social, economic, and political influences within ill-structured learning activities (Efland, 2002). In this respect, students participate in the

deconstruction of images, while constructing new knowledge based on their own experiences and the experiences of others.

Postmodern design qualities can transform immersive interactive experiences into interpretive learning experiences that involve the formation and negotiation of multiple perspectives. For example, *RE: Vietnam Stories Since the War* (see Figure 22) (Public Broadcasting System [PBS], 2003) is an online interactive documentary twenty-five years after the war. The site, described as a visual storytelling of the war experience within engaging interfaces, cultivates knowledge and understanding while inviting participation in a dialogue about Vietnam (McMillan, 2003). Stories can be both posted and responded to by different viewers. Postmodern attributes can be found in this site expanding constructivist principles of constructing and negotiating knowledge from different perspectives in an asynchronous collaborative space. Specifically, the design is an appropriation of Maya Lin's artworks that are constructed from stone, water and text. Ideas are linked with images and concepts creating an interactive, non-linear experience.

A combination of modern and postmodern design qualities are used to create an immersive, interactive, constructive learning environment for the *Theban Mapping Project* (TMP). TMP is a website used for teaching, learning, and archiving information about archeological work being done in the Valley of the Kings, Thebes, Egypt. The site provides visitors with access to archeological and image databases, historical information about TMP, and topographical drawings to name a few (see Figure 6). The use of multiple media (images, maps, animation, video, and audio) is provided for learning content and making content comparisons. For example, video can be viewed next to schematic map drawings of the tombs. Interactive rollover techniques are used to provide a visual example of hieroglyphs with written translations of the picture symbols (see Figure 8). In addition, interested viewers can print written transcripts

of the video segments in the site. Individuals are encouraged to become participants in the project by filling out surveys. Updated reports about ongoing work at TMP are available, and information is readily accessible through the easy to navigate site architecture, the search function, and articles. The subject matter of the site is represented in the design elements—use of color, animation, layout, images and graphics.

### Student Interviews

Seventeen interviews were conducted with undergraduate students enrolled at a large public university. The interviews took place over a span of two weeks. Students were required to have enrolled in at least one online course or a course that had a Web presence. All participants used the Internet on a daily basis for personal or educational purposes. Twelve students who participated provided what I noted in the transcripts as “good feedback,” and I described their responses as “thoughtful and forthcoming.” Five of the students gave limited feedback consisting of short answer, and/or dichotomous “yes” or “no” answers. Probing questions used during these interviews did not initiate more in-depth responses. The information given by these five students was still considered essential and contributed to the study, although not as extensively as the others. I believe differences in responses may be attributed to individual personalities and the type of compensation received for participation. I would not conclude that there was a lack of interest in the interview process. Every student asked me questions about the study after the interview had ended, and students were not required to participate in the study<sup>26</sup>.

#### *Review of codes and categories*

Four general categories were determined for beginning the analysis of the data from the interview responses. I worked through a process of theoretical sampling using open and axial

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<sup>26</sup> In addition, I had noted on one transcript that the student “was not forthcoming” with her answers, but when the interview was finished she asked if I would email her the results of this study, and she sent me an email the day after her interview which contained follow-up comments about what we discussed.

coding as a way to let categories and concepts evolve from the data. I could have selected different descriptive names for each category, but after reducing the data to the point at which I was able to make generalizations in terms of thematic content, I realized the process brought me back to working with terms used in and derived from the literature review: *Effective Learning, Effective Teaching, Technology and Learning, Interactive Design*.

I began with open coding to identify particular elements, words, thoughts, etc. in the data<sup>27</sup>. I did not have a set formula for the first coding of the transcripts. I sectioned each interview according to each website we discussed, and created subsections based on topic changes during the interviews. It was obvious when I started coding that I could not create definitive categories, because I discovered there were more than one code attached to sentences, phrases, and paragraphs. I made a three page “start list” of conceptual frameworks and codes (Miles & Huberman, 1994, cited in Coffee, 1996). The codes evolved from the research using exact phrases from students (shown in quotations), and were terms I am familiar with from the literature and my professional experience. Examples from the start list can be reviewed in Table 4.1.

(Re)occurring categories and subcategories were used to create an outline. I used this outline to organize quotes from the interviews and my memos. From this point in the data collection process, I began to see the overarching ideas brought out in the data, and proceeded to generalize the categories and subcategories. A listing of the categories and subcategories can be found in Table 4.2.

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<sup>27</sup> I wrote my thoughts about the coding and categorizing process in a book, which I was able to use to reflect on my process and for providing this summary of my analytic strategy.

**“Start list” of open coding and categories**

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<p>1) Expectation(s) Web-based course design aesthetic</p> <ul style="list-style-type: none"> <li>a) standard look/“Typical” <ul style="list-style-type: none"> <li>i) “looks like”</li> <li>ii) syllabus</li> <li>iii) assignments</li> <li>iv) info</li> </ul> </li> <li>b) standard elements <ul style="list-style-type: none"> <li>i) graphics</li> <li>ii) layout,</li> <li>iii) design</li> <li>iv) font</li> </ul> </li> </ul> <p>2) Design aesthetic</p> <ul style="list-style-type: none"> <li>a) modern</li> <li>b) quality</li> <li>c) “different”</li> <li>d) “aesthetically”</li> <li>e) “nice”</li> <li>f) initial reaction</li> <li>g) juvenile</li> <li>h) “cool”</li> <li>i) “out of the ordinary”</li> </ul> <p>3) Readability</p> <ul style="list-style-type: none"> <li>a) legible (“it’s not hard to read”)</li> <li>b) “you can figure out what it is”</li> <li>c) ability to concentrate</li> </ul>	<p>4) Usability</p> <ul style="list-style-type: none"> <li>a) Ease of use <ul style="list-style-type: none"> <li>i) “easy”</li> <li>ii) “difficult”</li> </ul> </li> <li>b) “intimidating”</li> <li>c) intuitive</li> <li>d) providing directions <ul style="list-style-type: none"> <li>i) “wasn’t entirely clear how to use it”</li> </ul> </li> <li>e) navigation <ul style="list-style-type: none"> <li>i) “browser”</li> <li>ii) immediate accessibility <ul style="list-style-type: none"> <li>(1) quick access”</li> <li>(2) “quick jump”</li> </ul> </li> </ul> </li> </ul> <p>5) Motivation</p> <ul style="list-style-type: none"> <li>a) inviting</li> <li>b) “interesting”</li> <li>c) boring (negative connotation)</li> <li>d) “I have to use it”</li> <li>e) requirement</li> <li>f) control of own learning</li> <li>g) “I like”</li> <li>h) “different”</li> <li>i) “learn anything new”</li> <li>j) “not learn anything new”</li> <li>k) “being immersed into the material”</li> <li>l) student’s academic major</li> </ul>
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Table 4.1: Example of a “start list” of open coding and categories.

*Effective learning*

I defined the category, effective learning, based on constructivist, situated learning principles and data from the interviews: Students construct knowledge online by having access to information that is meaningful in social, cultural, and personal contexts and their prior knowledge; there are opportunities for active, linear, and/or non-linear learning; students are

given ownership of learning goals and strategies for achieving solutions to assignments; and what is learned can be transferred to other school subjects and to life experiences. This is accomplished through the effective uses of technologies to support online learning, and includes knowledge that is constructed through dialogic interactions among students, and students and teachers.

### *Effective Teaching*

Effective teaching is defined according to the ways in which technology is used for Web-based courses: Learning environments are created in ways that foster critical thinking skills, and community learning using synchronous and asynchronous communication; professors are successful and unsuccessful at applying effective teaching methods, and their understanding of the fundamentals of student computer use is apparent; and proficiency with using technology is viewed as playing a role in the innovative use of the Internet for learning. This includes but is not limited to student perceptions of professors' interest in teaching a course by way of how the professor structures and designs a Web-based course—visual and textual content.

### *Technology and Learning*

Technology and learning may be considered an even more generalized category, encompassing effective teaching, effective learning, and interactive design. For the purposes of this study, I use the category to describe accessibility to online learning based on technical considerations, problems, issues, and concerns (bandwidth, wireless, access to computers).

### *Interactive Design*

Interactive design combines student expectations for how a Web-based course should look, considerations for the use of modern and postmodern graphic design aesthetics for

**Categories and subcategories for analysis and interpretation**

<b>Categories</b>	<b>Subcategories and third-level categories</b>
<b>Effective learning</b>	<p><i>Comparison of traditional and Web-based courses</i></p> <p><i>Constructivist, situated learning</i></p> <ul style="list-style-type: none"> <li>• Learning style</li> <li>• Comparing content using multiple browser windows</li> <li>• Community learning environment</li> <li>• Utilizing Internet for additional information (links)</li> <li>• Multiple media</li> </ul> <p><i>Motivation</i></p> <ul style="list-style-type: none"> <li>• Perceived level of course difficulty</li> <li>• Appealing (content and website design)</li> <li>• Organization of content</li> <li>• Requirements to fulfill academic obligations</li> <li>• Use of images and graphics</li> <li>• Format of website</li> </ul>
<b>Effective teaching</b>	<p><i>Pedagogy and teaching philosophy</i></p> <ul style="list-style-type: none"> <li>• Ways technology is used</li> <li>• Organization</li> </ul> <p><i>Teaching and learning using multiple media</i></p> <ul style="list-style-type: none"> <li>• Demonstration of interest in subject matter</li> </ul>
<b>Technology and Learning</b>	<p><i>Accessibility</i></p> <ul style="list-style-type: none"> <li>• Bandwidth</li> <li>• Plug-ins</li> <li>• University computing facilities and home computers</li> <li>• Any-time, anywhere</li> </ul> <p><i>Access to course content</i></p> <ul style="list-style-type: none"> <li>• Study from printouts or computer monitor</li> </ul>
<b>Interactive design</b>	<p><i>Genre</i></p> <ul style="list-style-type: none"> <li>• Course management software</li> <li>• University administration</li> <li>• Commercial websites</li> </ul> <p><i>Student expectations</i></p> <ul style="list-style-type: none"> <li>• Interactive, Internet features</li> <li>• Interface design</li> </ul> <p><i>Establishing context through the use of graphic design</i></p> <ul style="list-style-type: none"> <li>• Course content</li> <li>• Graphic design elements</li> <li>• Design aesthetic</li> <li>• Design and learning <ul style="list-style-type: none"> <li>○ Motivation</li> <li>○ Legibility</li> <li>○ Transfer</li> <li>○ Usability</li> </ul> </li> </ul>

Table 4.2: Categories and subcategories for analysis and interpretation.

commercial and educational websites, how interactive design establishes a context for learning through the use of graphic elements and media, and considerations for usability.

The term *interactive design* is defined as the design for how an individual interacts with a computer, electronic device, PDA, etc., and the planning of methods and elements a user needs to operate such devices. *Establishing a context* serves as a subcategory and (re)occurs many times in the summaries of the interviews. I define this phrase as the use of graphic elements (color, type style, images, graphics, animation, video, etc.) that visually represents the subject matter for the course and/or creates a feeling of being in a place, situation, or time period. For example, I asked students to give me their opinion of the use of color and graphics in the *Theban Mapping Project* website (see Figure 8). Students described the site using statements such as, “It made me feel like...” and “It reminds me of...”

#### *Data Analysis and Summaries of Student Interviews*

In this section, I provide data analyses of each student interview based on the four categories defined above. A bulleted list after my description of each interview is used to summarize the main ideas and issues expressed by the student.

*Student 1* was a female, age twenty-one to twenty-three, majoring in women’s studies. She enrolled in and completed at least ten courses that had some form of Web presence, including distance learning. She was aware of her learning style and described linear learning as “boring,” because of the limited control she had over how she could “move” through the material. She talked about liking online courses, yet at the same time recognized the value of conventional learning as a backup if technology failed. Her motivation to attend and participate in any class increased when the subject was interesting and/or related to her major. In addition, having access to information in two different ways (online and lecture) increased her understanding of the course content.

Course material and subject matter that were perceived as being difficult would impact the student's interest and motivation to take the course. There were no indications by this student that the design of a website resulted in a similar response. She explained being aware that professors were often restricted to using whatever resources were available to them to design course websites (e.g., clip art graphics and course development software). She described a preference for professionally designed sites but was aware that faculty did not always have the ability to design a site similar to some of the examples shown during the interview.

Access to technology (computers and peripherals) determined how the student studied for an online course. She talked about studying from the computer screen because she did not have access to a printer. Economic considerations played a significant role in why she did not print course notes. In addition, she wanted access to material in more than one format. She gave an example of a foreign language course she had enrolled in that provided audio examples using a CD-ROM purchased by the students or for free by accessing a course website.

For professors who used course development software to post grades and not for delivering content or for taking quizzes, the site design did not matter according to this student. For online courses with a greater Web presence, she preferred a website designed more like those she used for personal reasons. She described graphic design as having the potential to make the class feel "less like work," with the likelihood of increasing student motivation. However, a design that could be described as "cool" may be difficult to read, and annoying when used for a Web-based course. She did have an expectation for how courses should look graphically.

Faculty who used video as a part of their online courses did not make watching the video a requirement. The student chose not to watch video because of its linear format and "boring content." In comparison to a book or text, the video did not give the student access to information in a non-linear way for learning new content. She recommended that the relationship between

media (text, images, animations, video, audio) should have a connection between the information it contains, and the subject matter taught in the course. If graphics and media would function as a way to establish a context for the course material, students may be more interested in taking the class.

She was aware of the terms “minimize” and “shrink” which made it apparent that she understood how multiple browser windows function. She described her ability to use more than one window as enhancing usability of a website, and accessibility to course content. Her personal experience using the Internet increased her confidence when learning how to navigate a new website.

Summary:

- Positive comments about online learning
- Conventional teaching and learning important if technology failed
- Motivating factors included interesting subject matter and academic major
- Level of course difficulty impacted interest and motivation
- Access to information, lecture and online, increased understanding of course content
- Studied from computer screen because printing course notes was cost prohibitive
- Access to content available in more than one format
- Preference for professionally designed websites or similar to websites used daily
- Design aesthetic attributed to making class feel less like work
- “Cool” designs may interfere with ease of use and understanding content
- Awareness of limitations faculty faced when designing Web-based courses
- Interactive design not necessary for websites used for quizzes and posting grades
- Expectation for education, administration, and commercial interactive design
- Videos described as linear and boring limiting viewing to only when required
- Previous Internet use and knowledge established comfort using course websites

*Student 2* was a female, age twenty-one to twenty-three, and a senior majoring in Finance. She enrolled in and completed at least five courses that had some form of Web presence, including distance learning. The comparisons she made between traditional lecture and Web-based classes were based on prior experiences. Her response was consistent with other participants in this study: When enrolled in an online course students were able to learn at their own pace, working ahead if they wanted. She did not think learning online or in lecture changed

how effectively she understood the material. She recognized that she worked as hard in an online course as she did in a conventional classroom environment. She did not view Web-based or large lecture courses differently—there was little interaction with the professor in both environments. She preferred small, person-to-person classes for her major, but elected to take her GEC courses online.

This student explained that reading from the computer screen “hurt” her eyes, yet she complained that she had to print too many course notes from the website because the professor placed large images on the screen. She liked when thumbnail images were used to open a browser window containing a larger image. The student relied on descriptive information in the form of images and text to tell her if she was entering an education, entertainment, or news website. She did not expect to see Web-based courses contain “eye-catching” graphics. The amount of content on a Web page had an impact on her motivation and interest in a course. Too much content was frustrating, making her scroll to read information that was below the fold, disrupting her concentration. Added extraneous material that did not provide useful content or contribute to learning was “skipped” by the student. She preferred when professors used images to support the text she was reading, but too many images and detailed graphics were not helpful.

“Simple” and “uniform” were descriptive terms the student used to describe how she would like a website to look. Black text on a white background was easy to read. Alternative treatments of text and color, white text on black backgrounds, would be useful if used for emphasizing supplemental material or specific points in the text. Color and graphic selection were important elements; they established a context for the online environment. For example, if a website had a “classic” aesthetic, it gave the impression that the site was more “serious” and students would have more respect for the course. The student would like to see more original, sophisticated interactive designs and a variety of designs for Web-based courses, which would be

directed to and reflective of the student audience. For example, sites designed in ways similar to media genres—television and magazine—would intrigue her, motivating her to spend more time using the website.

Her ability to effectively and easily navigate through a course website was attributed to her familiarity with the layout, structure, and navigation system. She described course management software as having a format and hierarchical navigation, making it easy to access material. Having the option to move through the website in a linear or non-linear manner gave the student multiple ways to learn. This also included the use of multiple browser windows for comparing information.

Summary:

- Self-paced learning and ability to work ahead describes online learning
- Preferred multiple ways to learn material
- Learned effectively in both conventional and Web-based courses
- Contributed equal effort to both conventional and Web-based courses
- Motivation to enroll in online course was to fulfill GEC requirement
- Large images interfere when printing, causing student to print too many pages
- Thumbnail images were easy to navigate and print
- Did not expect Web-based courses to use “eye-catching” graphics
- Amount of content on the page influenced motivation; too much created frustration
- Scrolling a Web page was disruptive
- Suggested “simple” and “uniform” design style
- Color and graphics established context
- “Classic” aesthetic increased respect for course
- Previous Internet use and knowledge increased comfort using course websites

*Student 3* was a male student, age eighteen to twenty, and a sophomore majoring in Business. He enrolled in and completed one distance learning course. This student commented that completing an online course made him aware that he had to be a self-motivated learner. His responses during the interview focused on how the organization and amount of content on a course Web page was important for his learning experience. Too much information was distracting and difficult to manage. He was aware that students have different learning styles and he preferred to study from printed notes versus from the computer screen. His prior experiences

that involved learning in a blended course with teacher-student interaction in comparison to a distance learning course made him recognize that he did not learn well in a self-directed environment. He attends more traditional lecture courses where he is able to ask the professor what he needs to know in order to pass the course.

Different graphic styles were appealing to the student and would potentially make him more motivated to learn in a Web-based course. He had an expectation for how an online course should look, “There is a fine line that I think you can’t cross when you’re designing a website for a class; you need it to be fun and entertaining but not too fun so you don’t learn everything.” His expectation included visual references in the form of images, and standardized layout and navigation. He commented regularly on his preference for a Web page to be well organized, which also seemed to be a motivating factor.

The student did not access course material in media forms other than text and images. He watched a section of a video for an online class, but stopped it when he found it to be “boring.” Even if the video was shortened, unless it was interesting and relevant, the student would not watch it. Similar to reasons why the student did not view online videos for a course, he would not select links to other websites unless required by the professor.

Color and animation shown in the examples was associated with establishing context and ease of use (see Figure 7). The animation focused the student’s attention on the subject matter, and he wanted the option to view it again. Color helped him mentally differentiate among the courses he was taking. He gave the analogy of more than one class being in the same room:

It might be a visual cue that this is such and such class or... it’s just like having 2 classes in the same room you can mess that up...you could be like I’m going to my accounting class but in reality this is my business class. And you forgot because it is in the same room. It is kind’a the same idea. It would make you feel like your there. It makes me feel like I’m at Egypt with the colors.

The student described one site (see Figure 11) as looking “brand new.” The student is willing to take time to become familiar with how to use a site that is not designed using WebCT. Design aesthetics that are pleasing would increase the likelihood that the student may spend time learning the navigation. He liked to have all the content in one browser window, thus being able to read text while images download. He did not object to the use of multiple windows and was comfortable with the concept due to his previous experience using the Internet. He talked about not liking frames<sup>28</sup> used in sites created with course management software.

Summary:

- Online learning required self-motivation
- Organization and amount of content important for positive learning experience
- Studied from printed notes versus computer screen
- Blended courses were better for teacher-student interaction
- Alternative design style increased motivation to use course website
- Expectation for how Web-based courses should look
- Learned from text and images and not from video, audio, or other media
- Watched short video containing relevant content
- Did not link to additional websites unless required
- Color selection established content

*Student 4* was a male, age eighteen to twenty, and a junior majoring in Finance/International Business, with a minor in Spanish. He had enrolled in and completed more than ten courses that had some form of Web presence, including distance learning. The major ideas brought out in the transcript of his responses emphasized the amount of content placed on a Web page, and the amount of time the student perceived the professor having dedicated to the creation of a Web-based course. He discussed a common feature on many course websites: The uploading of PowerPoint slides used in lecture. The student described them as “not visually

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<sup>28</sup> The term frames is an HTML technique for combining two or more separate Web pages in a single browser window. The format divides Web documents into segments, and the user has the ability to control each scroll bar as if the page contained a window within a window.

enhanced—just black text on white backgrounds.” Visually enhancing the slides, in his opinion showed “ more attempts to try to motivate kids to get interested in what they are doing.”

Website design should relate directly to the purpose of the website. If the purpose was for reading material, he did not care what the design looked like as long as the material was legible. However, a professional design was more “stimulating,” and made it appear as if the professor took some time to think about how to present course materials online: “If you put it more on a professional level you have a little more respect for the class.” It was apparent when a professor cared about a Web-based course, increasing the student’s respect for the course and his motivation to read and learn the material increased.

“If you put too much on one page, it’s tough to find things. You have to search for it and you get frustrated.” Organization of course material, including the amount on one Web page affected the learning experience. Effective content management, the amount of material on a page, made it easier to print notes in comparison to studying from the computer monitor.

Watching a video clip for additional course information was done only when the student was required to view the video for note taking. Unless he had extra time he would not watch videos if they were not essential for passing a test or fulfilling an assignment. This was similar to selecting links to websites with content that related to what the he was learning:

Sometimes it [going to alternative websites] just depends on the course and whether I’m struggling in the course or not. It depends on how the professor words it, ‘If you want to go for a little extra help...’ and I’m doing fine in the course, then I won’t worry about it. But if he says, ‘this is a really good website to help you and these are really good problems that would be similar to what is on the test.’ Then yeah, for sure I’ll go and check it out. It all depends on how he words it.

Communication among faculty and students changed since the inception of the Internet. In this case, the student viewed the use of email as more efficient than the use of the phone. The time needed to return a call took longer than receiving an email reply. He believed everyone was

“good about checking their email.” In a later statement he provided a different perspective when discussing going to office hours: “I like to get a personal feel.” Going to office hours increases the chance the teacher will “remember your name or face,” and it may demonstrate that you have shown interest in the course.

Summary:

- Experience using online courses containing PowerPoint slides
- Visually enhancing PowerPoint slides motivated student
- Expectation for design aesthetic based on the purpose of the website
- Well designed websites were more “stimulating”
- Website design shows a professors interest in teaching the course
- Respect for course increased when professor demonstrated interest in teaching
- Organization and amount of content affected the learning experience
- Student watched videos when required or for extra help
- Communicated with teaching associate (TA) or professor via email
- Office hours useful for one-to-one interaction

*Student 5* was a male, age twenty one to twenty-three, and a senior majoring in Visual Communication Design. He was enrolled in and completed two blended courses. He did not have experience taking a distance learning course because his major did not offer online courses, and he had not enrolled in an online GEC class. I wanted to note that his opinion of conventional lecture versus a Web-based course explained why he had fewer experience using websites for class in comparison to other participants in this study. However, this student had experience designing websites for education and business. Surprisingly, he gave less feedback about design elements in each site, and more useful information about issues and concerns important to him regarding effective teaching and learning in a Web-based environment. He did not believe the value of an online course was the same as a lecture. Web-based courses were made up of things like the professor’s notes, syllabus, and/or lectures that were put on a website with little consideration for creating an interactive, multimedia experience. His attending a lecture required

more participation in the learning experience by the teacher and the student. In addition, he viewed distance learning as a way for universities to save money.

If I actually go to class, even if it is sitting in lecture and falling asleep, at least I feel like I'm participating for some reason. If online courses evolved and became more interactive and more multimedia was thrown in there and you could actually read something and then it says click here to do this interactive experiment, and then I do it... Yeah, I'm definitely going to like it better because I learn better in an interactive environment. I will learn better online than I would in the lecture class, but right now the state of courses are, 'Here is some information I found in this book, I'm just going to put it on line for you.' Or, 'Come online and grab this syllabus,' or 'come online and take this quiz.' I could just buy the book and do the chapter survey questions or go to the book's online site and take it.

Having said this, it was not surprising to learn the student liked meeting with professors or TAs during office hours. He was able to get at the "root of the problem," it was easier to interpret the dialogue, and he received immediate responses to his questions.

This student stated that he was interested in using Web-based courses when it appeared the professor demonstrated an interest in the "look and feel" of the course. Appearance of the website was viewed as correlating with teacher involvement in the class and interest in the subject matter. A Web page containing large amounts of content made the student think of a large lecture course "where you come in, you sit down, you get bored to death, you go home." A well-designed site using graphics, interaction, and community learning created a more interesting experience. He had an expectation of how the design of a website should be structured, using a standard navigation system and a logo identifying the university at which the course is taught. In addition, access to course material was increased when design was simple and organized. Organization helped him quickly review assignments and click on links to other course pages. An important note from this student was the comment about links placed below the fold<sup>29</sup>, making it difficult for the user to see all the link options when opening the site. Having to search for links

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<sup>29</sup> "Below the fold" is any content on a webpage that is beyond the visible space in the browser window.

reduced the number of times students would go to sections of the course and possibly miss the sections all together.

Most students had the option to view video available in their online courses. In this case, the student gave an example of how a professor used PowerPoint slides with a voiceover narrating the information:

One thing I've seen that worked pretty well was a voice over on top of a slide show. So it wasn't really video and it wasn't strictly audio. I liked it almost better than the video because it allowed you to focus on one picture while they were talking about it and then you can kind of sit there and think about it and then it moved on to the next picture as it moved on to whatever else they were talking about.

Summary:

- Preferred conventional lecture courses
- Conventional courses were more valuable
- Professors did not consider the importance of interactive multimedia experience
- Attending lecture insured student participation
- Prefers office hours versus communicating using email
- More motivated when professor demonstrated interest in website design
- Too much content on a Web page was comparable to large lecture courses
- PowerPoint slides with voiceover was an effective way to teach
- Simple and organized design layout, with all links above the fold
- Expectation for how a Web-based course should look

*Student 6* was a female, age eighteen to twenty, and a senior majoring in Business. She enrolled in and completed at least three courses that had some form of Web presence, including distance learning. She liked learning online because she spent more time looking at the material. The self-motivated environment forced her to look at information in more detail. Professor-student interaction characteristic of traditional lecture was missed only when the student wanted to know what was on the mid-term exam. Use of university computing labs was important for when she printed course notes. The primary reason for using the labs was because she pays a technology fee as a part of the university tuition.

She had an expectation for how a website should function for school, and adding to that, there was an expectation for how a Web-based course should be designed for specific subjects. The student anticipated an art course to look different from a business course. For example, she commented that art or history courses online with interesting content would have a site designed in a way that was more intriguing and included animations. This was not what she expected for a math or science course.

The design and layout of a website that organized content (use of borders and sections) made it easy for the student to see what she needed to read. Use of color and images was a motivating feature, grabbing the student's attention. Referring to one course website example discussed during the interview, a picture of the professor that appeared on the homepage made the site more personalized; she could "picture the professor's face" (see Figure 13).

Linear and non-linear layout of material and navigation were effective ways to present material, as long as it was organized and clear. The student liked the content to be separated using boxes and outlines, and compared examples shown during the interview to WebCT. The student talked about the standard organization and layout of WebCT's opening page. Because it is standardized and looks the same for everyone, it was easy to use. If there were more variety it might be confusing to students, especially freshman enrolling in their first Web-based course.

Visual material was important and preferred by the student. Images used with audio made learning more interesting, and the student was more motivated to listen to the audio when images were present. "I like to see things." The use of images and color motivated the students to spend more time learning material.

This student watched videos provided by professors because the media highlighted key points in the content, and emphasized what the student needed to know. "I think it helps make it stick in your memory a little more and kind of outlines what is important because there is a video

on it.” This student believed the video helped her retain the material; it was an effective way to learn because it was another way of receiving the information.

Summary:

- Preferred Web-based courses
- Self-motivated environment increased time studying material
- Missed immediate feedback inherent of conventional lecture setting
- Used university computing facilities to print notes
- Web-based courses should be designed according to subject matter
- Expected art courses to have more creative interface design and multiple media
- Organization and color increased legibility and motivation
- Option to work linearly or non-linearly
- WebCT standardization easy to use
- Video increased retention and transfer

*Student 7* was a female, age twenty-one to twenty three, and a senior majoring in Finance.

She enrolled in and completed at least five courses that had some form of Web presence, including distance learning. Understanding occurred when this student learned in a self-teaching environment, which was characteristic of her Web-based courses and correlated with her motivation to learn. Her interest in the course and choice to take the course was because it appeared to be fun. Non-linear, interactive websites let her establish her own pattern for moving through the material. She understood the flexibility of the Web and how it could work in a way that suited her learning style.

This student utilized Internet communication and socialization tools in her courses. She liked the immediacy of using IM, and chatted with students she knew in her class. Messaging was used to ask questions for lecture courses that did not meet online, to set up times to work on group projects, and to complete homework assignments. She emailed her TA to schedule meetings, and explained that substantive questions were easier discussed when meeting face-to-face, especially when she was not sure about the exact question she needed to ask in order to

clarify concepts. Office hours let the student and the TA work through problems together. If the student were taking a strictly online course, she would email the questions to the TA.

The use of the WebCT's bulletin board for asking and answering questions was frustrating for many students. Peers would ask questions for which they already had the answers, aggravating other students. This student was aware of this issue, and explained,

I do read the bulletin board in case there is information I do not know and to prevent from posting redundant questions. I feel I need to read it because there could be something in there that I'm going to need to know and I don't want to be the one that is posting a question two or three times.

The student would use additional Web resources provided by the professor when she needed more information for understanding the subject matter, but otherwise she would link to other sites only if she found the subject matter interesting. This was a unique case when the student expressed motivation to seek out information as a way to gain a better understanding of material. She was specific about her preference for a hierarchical organization of links, with the navigation bar on the left side of the browser window.

An alternative, non-traditional design style for an online course would initially interest the student and motivate her to look at the site, but when applied to a course her expectation for a "standard" format would be disrupted: "I would say once in a while a comic might be nice for something different but I'm probably more used to a standard, more lecture format or even if it's just notes online than a comic."

She describes images placed within text on a Web page as more difficult to print; it takes more time and uses more paper. She referred to the visuals as the factor that made it "inviting," and a motivating factor. "It looks a little more sophisticated. Maybe a higher level, partly from the [course] number and partly from the appearance" (see Figure 10). She used the written text to describe the context of the course versus relying on graphics or images.

When we discussed the use of video for an online course, the student made reference to high-quality video: “Yeah, but if it’s not high quality then it is not worth it.” There needs to be a consideration for high quality video because it impacts the students’ interest in watching it.

Summary:

- Learned effectively in self-motivated online environment
- “Fun” content increased motivation
- Non-linear navigation let student establish own pattern for learning
- Flexibility of Web-based courses suited learning style
- Liked immediacy of communication technology for learning
- Used IM to schedule study times and discuss homework
- Discussed complicated questions during in-person office hours
- Frustration developed when peers ask redundant questions using the bulletin board
- Did not select links to additional websites unless required
- Expectation for a standard design style for Web-based course
- High quality video needed

*Student 8* was a female, age eighteen to twenty, and a senior majoring in Chemical Engineering. She enrolled in and completed at least ten courses that had some form of Web presence, including distance learning. This student stated that she learned more in lecture, but preferred the flexibility of an online course. She could read ahead then keep up on the assignments and study before exams. Conventional lecture courses made her feel she had to do the work every week, according to a schedule, limiting her decision to work at her own pace.

An issue brought out in one of her responses was that of printing material for studying course content. The amount of material to print determined if the student prints or not. “Fun” material was easier to remember and impacted the effectiveness of learning, helping her retain more without having to print. Importantly, she printed notes from the Web then used those notes in lecture to write more information. PDF files were easy to print and need to be considered as an option to the content in the Web page:

It depends on the course. A lot courses when you need to print the things have it in PDF files and that’s always very easy to print. In the instance of the art ed class I’m taking right now I look at it on the screen because there is so much material that I don’t want to

take notes off of it and it's kind'a fun material where if you just read through it then you can kind'a remember it and you just have to look over it again. Most of the other classes I had the notes are online but those notes you print off and take with you to class and then you jot down notes on it so it's more like an instance when you look at your notes that you have printed off.

The use of WebCT's bulletin board and IM tools had a mixed impact on her learning experience. She used the bulletin board to schedule meetings, and to get answers to questions from the TA. The student did not seem satisfied with the promptness or how often the teachers responded. Most of the discussion, questions, and answers using the bulletin board were with her peers, and the posts from other students did not help. She used IM to talk to her friends or people she knows in class—typically late at night for asking questions about homework. She expressed a frustration with students who asked questions about how to do a problem, before making an attempt to solve the problem first. There were instances when the student expressed a need for one-to-one interaction with the teacher—to discuss and understand complex subject matter. She was one of few students interviewed who had exchanged images for a class using email. In this case it was an engineering problem using visuals, which was exchanged from student to student for help on a homework assignment.

The student had an expectation for how an educational environment should look—formal. She seemed to like a website that was “hip” using a mass media-like style, but the idea to transfer that aesthetic to a course website did not interest her. She liked a non-linear format for interacting with the content, and in addition, suggested a “checklist” that could help the student see what they have and have not studied:

In a case like this I would want a check list to make sure I covered everything and I've seen everything. With the checklist you can just click it and go to it to make sure you have seen everything.

I asked the student if she was a visual learner. She responded by explaining that images served as a starting point for studying and were useful as a visual reference when she needed to

remember specific material. She was able to reflect back to the visual reference to connect it to the text. She liked to read images, but gave an example of how text changed her opinion of an artwork by the artist, Andres Serrano: “It depends on the image itself, because once you know more background information...like the image *Piss Christ*, you think ‘that’s kind’a pretty’ then you find out what it is then you’re like ‘ooh that’s kind’a gross.’” The image text relationship in the case of learning about Serrano’s *Piss Christ* changed the student’s perception and opinion of the artwork.

This student was not unlike other students, who strongly expressed a frustration with the use of browser window frames on websites or having to use the browser “back” button to navigate. She liked to scroll through a page of text. “When you’re doing stuff online for classes it’s easier to not get distracted by other parts of the website if it’s a little more formal and easy to scroll through.” She then contradicted herself when talking about a website that appeared to use frames, when it did not. She described the benefit of the layout is not having to scroll to get information (see Figure 11). “I don’t really mind scrolling but I prefer that all the relevant content to that certain page or little bit of material... it be organized on the same page instead of going through a couple of pages to get all the material.”

Summary:

- Learned more in conventional lecture
- Preferred flexibility of Web-based learning
- Worked ahead when taking an online course
- Amount of content determined printed notes for studying
- Printed notes used in lecture to write more information
- PDF files easier to print than Web page
- Used bulletin board to schedule meetings and ask TA questions
- Bulletin board posts from other students were not helpful
- Used IM to talk to students she knows in her class
- Expected interactive design for course website to look “formal,” not “hip”
- Suggested a “checklist” if course website was non-linear in format
- Used images as visual references when learning
- Frustration using browser window frames

*Student 9* was a female, age eighteen to twenty, and a sophomore majoring in Finance. She was enrolled in and completed at least two courses that had some form of Web presence, including distance learning. The student was a linear learner and provided an effective and descriptive analogy explaining why—“building blocks”. “I don’t like to skip around because I feel like they [course outlines] are building blocks, so if you learn the stuff in the beginning then they’re building off that and so forth.” In addition to being a non-linear learner, it was easier for her to learn from reading text than from looking at images. Students with other learning styles were more likely to “read” visuals, according to her. She explained how she liked having pictures on a website for when she was “bored” and described graphics as appealing to more general people.

This student made an important observation: Effective teaching may be attributed to the impromptu examples and stories a professor would discuss during lecture. She did not believe she received the same quality interaction when taking a Web-based course and mentioned, “I can’t even remember most of my professors’ names [online].”

Access to TAs because of busy student and teacher schedules, and short amount of time a TA was available during office hours made email her preferred mode of communication. A perceived benefit of using email was the student felt she was receiving more thought-out responses versus when she met her instructors in person. She understood the content when she could (re)read and elaborate on descriptions sent from the TA.

The student did not learn effectively when studying from the computer screen. The problems she cited were more detailed than what other students offered during the study: eye fatigue from the screen, people talking in computer labs, and external distractions when learning at home. These factors reduced the amount of time she dedicated to studying. She did, though, like having course materials accessible using multiple browser windows. She was able to control

where the information was placed on the computer screen. Windows could be positioned to allow the student to compare notes and information. This was easier than using the browser navigation, which made her “page” back through material, and comparing online course notes more difficult.

An important idea she presented described accessibility issues when using a university computing lab and a home computer. Not all students had access to the most recent technologies—computers with processing capabilities needed to view animations, videos, and high-resolution graphics. Because of this she explained that students would skip material presented in non-text formats unless they had high-speed access or were motivated to use a computing lab. Her learning style was another factor motivating her to read text before viewing images, video, or animations. “I don’t find it [video] helpful because I’m not like a person that learns something by hearing it. I would read text before I looked at the video.” However, depending on the use of media, animation for example, it could “draw you in” to the subject matter by establishing a context for the course and visually narrowing the scope of the project.

The student made an important point that all the courses using course management software looked the same. Distinct graphics or graphic elements on the page would be helpful for students trying to remember material while taking a test.

“I think that it makes a distinction in your head so maybe when you are studying your notes on the computer you’re trying to remember something you can think of the graphic that’s on the page; it could pop in your head when you’re trying to take a test question.”

She described images and photographs as making learning (reading) more appealing. What she referred to as “sketches” were in her opinion, “another way to get your point across.” I believe as the interview progressed the student began thinking about learning from video and began expanding her idea about learning from both text and video. Presenting information in more than one format would help her retain new information by seeing it and reading it.

The overall ideas brought out were “accessibility” and “usability.” When there was familiarity with the layout of a Web page the student was more comfortable using a site and looking for information. Descriptive links and familiar terms used increased her level of comfort. She commented that after becoming familiar with a non-standard layout for academics, a new design style would be more motivating for her. She would not automatically associate it with what she was accustomed to seeing for online course increasing her interest in the subject matter.

Summary:

- Linear learning style
- Reads text versus relying on images
- Professors give spontaneous examples and stories during lecture
- Did not remember professor’s names after finishing Web-based course
- Email preferred mode of communication with TA
- TA provided thought-out responses by email versus in-person
- Did not effectively learn when studying from computer screen
- Computer labs had external distractions making it difficult to concentrate
- Likes the control of multiple browser windows
- Skipped viewing the video, limiting access
- Afraid to download needed plug-in on her home computer
- Distinct graphics may increase retention
- Image and photographs made learning more appealing

*Student 10* was a female freshman majoring in Business (Accounting and Marketing), age eighteen to twenty. She enrolled in and completed one distance learning course. She appreciated almost anything that a professor put online and stated, “I get frustrated when my teachers don’t have anything on WebCT or their own website.” She relied on email to talk to her TAs and professors, and believed she received quick, better responses. “When I meet with a teacher I might forget what I was going to ask, and when I’m at home it is on my mind and I can get it all out.”

An issue and concern that was important to this student was about access to course material for studying, and to media files on course websites.

When I was studying for the test I couldn't take my computer every where so I printed them [course notes] out, but I had to transfer them to word documents first because I didn't want to have all the pictures taking up all the space. There's a lot of text, though, and so it ended up being a jillion and a half pages. That's why I did Word so I could shrink the size and stuff.

She did not study from the computer screen because she did not always have access to her computer. For economic reasons, she preferred printing material from the Web instead of having to purchase a textbook. When printing a Web page containing large images or a large number of images, she transferred the text to Microsoft Word, deleted the images, and reduced the type size to limit the number of pages she has to print.

She mentioned that the course topic and content was a better motivating factor than the interactive design. Images were important as long as the organization and layout was simple. The design of a site could establish context and "put me in a different state of mind." The layout of the page helped her read the material, and the use of images in an interesting way increased her motivation to use a site. She described the use of images for teaching and learning as more helpful for information association:

If I was asked a question on a text...I could think of the picture. It is word association and picture association. I do a lot of association things instead of straight memorizing. If the picture represents what ever they are talking about... make it easy to associate them.

Summary:

- Frustrated when professors do not have a course website
- Emailing TA and professors resulted in faster and better quality responses
- More care when composing email questions and messages
- Printing notes gave student anytime/anywhere access
- Student converted Web page to Microsoft Word file reducing number of pages printed
- Printing course notes was economically feasible compared to purchasing books
- Course subject and content motivating factor
- Layout of website important when including images

- Organization resulted in easily read Web page
- Design of a site established a context for the subject matter
- Picture-text association increased retention

*Student 11* was a male, age eighteen to twenty, and a junior majoring in Business Marketing. He enrolled in and completed one distance learning course and used the Internet on a daily basis. His experience in college made him aware that professors used course management software for different reasons such as posting student grades, university registrar information (course roster), blended learning, and distance learning. The course in which he was enrolled used WebCT for class notes, assignments, quizzes, and teacher-student and student-student discussions. This student used WebCT's bulletin board to ask students and TA questions, and to set up study sessions.

“I've used the bulletin board to talk to my TA and professors and class [students]. I think it was easier to do that than to go to office hours because I can do it on my own time and they can answer on their own time. If I go to office hours and forget one question that might have been real important...if I have it at that moment I can ask the question instead of having to wait.”

He never used the WebCT chat room. He did use IM to talk with his friends about when they planned to study for a test, but not to discuss the class or review course material.

When he was working online he liked to work in a non-linear format, skipping information while looking for material specific to what he needed to know. Having the option to scroll through the Web page using the browser window made it easier for him to “go back and read something” instead of using hyperlinks to click back. “I may get frustrated if you click back too many times and you lost your place and you don't know where you're going. I think scrolling helps me better.”

“I'd be more apt to use a website that would give me more control.” The use of multiple browser windows gave him control of the information he was viewing and how the information

was displayed on the screen. It allowed him to look at what he wanted to see and compare what he did not understand to additional information.

The issues and concerns brought out in the interview were about interface design and his expectations for how a website for entertainment or news purposes is designed in comparison to a Web-based course. He did not expect a course website to have a design aesthetic similar to an online magazine. “It isn’t something I would go to and learn. If it was set up in an educational sort of way and I got into it more I think I would be interested,” was his response to the CBC Radio website shown (see Figure 3). His was not apposed to alternative design styles that vary from the interactive design he is accustomed to using. More creative, modern/postmodern style would capture his attention and motivate him to learn:

“Pretty much every other Web class course I’ve been to looks about the same so it’s kind’a nice to see something different—something a little more interesting. In WebCT there is the same outlay for every website that I have so it gets kind of boring after a while... looking at the same background the same type of thing every day.”

He admitted that a new interactive design format would take some time to become familiar with, but after about a week he might be able to learn more from it. He believed becoming accustomed to a new site would be frustrating at first because he would not know where to find the information he needed, but it would be worth the time if the website was more interesting.

The student relied mostly on reading text when learning from traditional and online materials to give him the correct interpretation of an image. “I look at the photograph first but I would like it to have something in the text so I could understand what it was about so I didn’t form my own opinion about it.” If a professor added images to a Web page, the student would like to have small thumbnail images that he could enlarge if he needed to see a more detailed photo. He wanted as much information as possible in order to understand subject matter. This included access to videos as long as they were limited to “short five minute clips.” Brief video

segments, increased the chance he would spend time watching. Learning from video gave him a resource added to what he learned from the teacher and written course content.

Summary:

- Non-linear learning style
- Professors used CMS for administrative and teaching purposes
- Bulletin board used to ask students and TAs questions, and schedule study sessions
- Bulletin board forum for asking spontaneous questions
- Course websites should include as much information as possible
- Scrolling was preferred versus hyperlinks
- Multiple browser windows gave control of layout of material on the screen
- Expectation for education, entertainment, and news websites
- Creative design style would be more interesting and motivating
- Written text gave correct interpretation of images
- Clicking on thumbnail images to view enlarged image preferred
- Limit videos to short, five minute clips

*Student 12* was a female pre-medicine senior, age twenty-one to twenty-three. She enrolled in and completed six courses with some form of Web presence, including one distance learning course. When I asked what her opinion was of Web-based courses her simple response was, “awesome.” She described online learning as “ambition-driven.” She was able learn at her own pace and worked one week ahead of when assignments were due.

The student suggested that professors survey students over a period of academic terms to begin learning important topics to discuss for a course, and tools students use (bulletin board, chat room, IM):

“Some topics or the way the topics are structured in the bulletin board are not topics some students care about. It is difficult to please all students in a large class such as one hundred or more students. In addition, what is posted on the BB by students is not viewed as being completely substantial. Students who don’t feel there is content on the BB will post in order to add to the discussion.”

She used the bulletin board often but did not use the chat room set up in WebCT. She described the chat room as, “...kind of worthless.” Instead, she contributed to the bulletin board thinking

that her knowledge and information was worthwhile and added to other students' learning experiences.

We discussed interactive design features that made up a website, and how and when images were used for an online course. Understanding of how to use Web browsers that are available varied from student to student. When printing content, this student was knowledgeable enough to understand how to use the "print preview" feature, giving her control of what she wanted on a page when printing course material. For example, she understood how to eliminate printing extraneous graphics, such as a Web page's background, and large images. "Usually I read on the computer screen then I get bored and my eyes get tired then I print, but I don't print the side stuff. I go to print preview and get the other stuff out of the way—everything except the content."

The student liked the design and layout of websites that immediately grabbed her attention, and made it easy to understand where to find course material. She mentioned how the format of WebCT was easy to understand. She expected the links to the course's internal pages to be on the left side of the browser window, and when she was within the course site, she had access to the home page by clicking one link. She suggested having a login page and course selection page (list of courses students are taking that are online or have an online portion to their course) maintain a standard, design, layout, but each course should have a different design style. "I would still want WebCT to login and have the same standards but each course be different."

When we looked at the website examples, the student gave limited feedback about design styles that were different from WebCT. She mentioned "liking" or "disliking" websites. Reflecting on her experience taking an anatomy course, she expressed wanting small thumbnail images that could be selected to view a larger image. We looked at one example that used a rollover technique to display a larger photo of artwork (see Figure 11). Initially, the student

mentioned liking the pictures and wanting to see what they were about, but did not elaborate.

Later in the day I received a follow-up email from the student (the only student to send additional comments), which read:

I just wanted to add that the site with the "roll over" image and words was FANTASTIC. I love the fact that the picture is not too cluttered with words, but yet you can still find what you need. Hope that helps your research!

Her suggestions for an organized website containing both images and text is an important consideration for this study.

Summary:

- Online learning is “ambition-driven”
- Learned at own pace in an online course
- Student surveys needed for learning content and technologies used
- Bulletin board postings not always useful or “substantial”
- Used bulletin board to help peers
- Chat room described as “worthless”
- Browser options for printing used to decrease amount of material printed
- Standardized format of WebCT easy to understand
- Navigation on left side of browser window expected
- Login pages standardized, while each course should have a different design style
- Rollover graphics best for displaying enlarged images

The remaining five interview summaries are from the students who did not give a substantial amount of feedback, even when I used probing questions. Many of their answers were made up of “yes” or “no” responses, and/or short sentences. In these summaries, I address the major idea brought out in each interview, including the issues and concerns important to the student.

*Student 13* was a male, senior majoring in Political Science, age twenty-one to twenty-three. He enrolled in and completed one distance learning GEC course. The important ideas brought out in this interview were about design of course websites, use of color and images, and design structure he preferred based on two examples, Yahoo® and WebCT. The student contradicted himself when looking at an example website that was designed similar to a magazine

genre (see Figure 14). He started by mentioning that he would not want a Web-based course to be designed like a magazine, but then stated that the design style would be appropriate for a contemporary art history course.

Color choices representing the overall subject matter of a course helped the student “get a feel” for the subject. He talked about an astronomy class that used the color red throughout the course website. He made an important statement about the type of images used for teaching and learning: Cartoon graphics were better for subjects such as anatomy. He added, “I’d rather see a cartoon of a stomach than a picture.”

The student discussed two different websites he used often for personal and educational reasons. He used Yahoo! to get geographic location maps, and weather information. He explained that the headlines on the main Yahoo! page “jump[ed] out” at him, and liked the way the links are accessible and the format is structured therefore you could get to the information easily. “I like it because I’m used to it.” Similarly, he liked the structure of WebCT with class notes on one page and quizzes on another. His objective was to login to the site to learn the material he needed to know. The best way to present the information would be in a linear format.

Summary:

- Creative design styles appropriate for art history course
- Color establishes context
- Cartoon graphics preferred when studying graphic content (e.g., anatomy)
- Likes structured Web page layout similar to sites used for personal reasons

*Student 14* was a female, age eighteen to twenty, majoring in Human Resources/Hospitality Management. She completed a minimum of ten courses with some form of online presence, including one distance learning course. She preferred taking online courses that fulfilled required GEC credit hours, but for certain subjects she recognized that it was more difficult to learn online. There was a difference between being physically present in a class,

watching the teacher demonstrate or give an example, versus the learning experience in a Web-based course. You could not ask spontaneous questions or ask the professor to describe different examples of what is being taught when learning online. “It depends on the class. If it is a math class and you have online lectures I would be totally lost, just because I learn better by someone sitting there and doing the problem right in front of me.”

We discussed the function of using multiple windows in an online course. She gave an example of using WebCT: “With WebCT, when you’re in a discussion area it’ll pop-up a window with the discussion message but you can still go back to the other one [main browser window] easier because the discussion is a smaller window.” The student was aware that her approach to learning course content, linear or non-linear, depended on the subject matter. “If it was a history course, I would like it linear, or if it was math, linear would make more sense.” In her opinion, if it was a “religious studies course it wouldn’t matter where we started.” The subject of the course was also perceived as being more appropriate for the use of both text and media for delivering course content. There was an expectation that an art or literature class would use video examples, but mathematics should be restricted to the use of text. When she had the option to watch a video online for a course, she did not view it because it was for extra credit.

The use of different colors that represent the course topic was appealing to the student. Color selections used in one website we discussed reminded her of “old paper” (see Figure 8). Thinking back to WebCT’s design aesthetic, she remarked, “I think it would make it a little more interesting. It might help think back to a subject.”

The student did not have experience using a Web-based course that was not developed or delivered using WebCT. The concept of changing the design aesthetic was something she had not experienced in education. She could not commit to an opinion about alternative design styles for online learning, but imagined “it might make it more appealing if it appeals to the population as a

whole.” She did recommend having what she called a “new” section in every online course, “...so if the professor changed something they could put it up there so it is the first thing you see.”

Summary:

- Fulfilling GEC requirements motivation for enrolling on online course
- Course subject determined if linear or non-linear learning is needed
- Web-based learning not appropriate for all subjects
- Learning experience differ from Web-based to conventional lecture
- Spontaneity exists during lecture
- A section labeled “new” indicating updated course information suggested
- Browser windows made it easier to multitask
- Subject should determine if video, animation, or audio is used
- Video was not watched because it was not a requirement
- Color may establish context for subject matter

*Student 15* was a female, age eighteen to twenty, and a junior majoring in Marketing. She enrolled in and completed at least one distance learning course. The major idea brought out in her responses was about the design and structure of examples shown during the interview. She liked websites that are organized in a way that separated content. “When stuff is split up like that to me it looks like there is less text so it’s faster to read.” She was attracted to looking at images before reading text when she was learning but it was dependent on the size of the image. If the order in which she was required to learn course material was not an issue, she preferred a non-linear approach, but if the subject matter required a sequential presentation of facts (dates) and information she would pursue a linear approach.

Summary:

- Organization and separation of content was the best layout for course websites
- Chunking content made it easier and faster to read text
- Subject matter requiring sequential presentation of material should be taught linearly
- Non-linear approach to learning was preferred

*Student 16* was a male student, age eighteen to twenty, and a sophomore majoring in Finance/International Business. Many of the courses in which he was enrolled had some form of Web presence but the student had not taken or completed a distance learning course. The main concern he discussed was about layout of Web pages. Organization of links, images, and text was very important: links listed on the left side of the browser window; content placed in the middle of the window; and pictures and links that were easily seen. “I’d rather have everything in the main page. If I have a lot of windows open it feels cluttered. If I’m scrolling back and forth between the main page it is easier.”

Courses he has taken that had a website looked the same using black text on a white background. “I like having a different color scheme instead of all the pages being the same.” He wanted the freedom to decide how he managed the course material, in a linear or non-linear manner. “I would approach it in a more non-linear way if I knew the sequence wouldn’t matter. I think there is a little more freedom. I think I would remember it better if I could put my own sequence in my head.”

Summary:

- Organization of website and Web page was important
- Important content should be placed in the middle of the Web page
- Links need to be visible
- Preferred scrolling through content versus using multiple windows
- Linear and non-linear options for learning should be available
- Student wanted control of his learning experience

*Student 17* was a female student, age eighteen to twenty, and a sophomore majoring in Engineering. She completed a minimum of ten courses that had some form of Web presence, including one online GEC course. The most useful information the student provided was her opinion of using WebCT. She would not change Web-based courses to any format that was not similar to how WebCT is structured. “I know how to use it” was her reasoning for liking it. She

uses the software's bulletin board to talk to TAs about assignments, and to ask students questions. "When my TAs are online it is easy to talk to them and they can talk to you at their leisure." She emphasized that she did not want to take the time to discover a new website for a course, or learn how to use a website that was not structured like WebCT.

Summary:

- All course websites should be structured using a standard CMS layout
- Bulletin board was used to ask TAs questions
- Did not want to learn how to navigate a website that is not structured like WebCT

*Collective summary of interview responses*

Typically, a majority of undergraduate and graduate courses have some form of Web presence, whether limited to the posting of a syllabus and course schedule or course material is delivered completely online with limited to no one-to-one interaction with the instructor. Interviews provided insight into student opinions about course websites and online learning in comparison to traditional lecture-based courses. Students explained their expectations for how education websites should be designed graphically, and what impact they believed design would have on their motivation to learn and their education experience.

*Effective learning*

Education has always been understood as a personalized experience where the student has face-to-face interaction with the professor. This is less true for Web-based courses, according to some of the participants. The students offered important insight into the comparison of online learning to conventional lecture-based courses at the undergraduate level. There was not a consensus among the students indicating that one form is better than the other. In fact, the students' opinions were mixed, giving reasons why they preferred one mode of learning in comparison to the other.

Some participants saw the value of on-campus, lecture-based courses as more significant than online learning. Attending lecture was described as requiring more student and teacher participation. Students believed they understood and retained course material better than if they had taken an online class. Professors' spontaneity to tell a story, or presentations of impromptu examples contributed to students' abilities to comprehend and remember information about the topic discussed. Unspoken visual cues from a teacher, such as "waving their hands" during lecture or in a small classroom, was described as increasing understanding. Students who were more supportive of traditional lecture-based courses believed meeting TAs during office hours was a better means for communicating compared to using the Internet: TAs could determine the difficulties students were having; TAs could more effectively interpret students' questions and answers; and TAs would be able to give immediate responses to students' questions.

Other students did not see Web-based courses as different than large lecture classes. Based on their experience there is little interaction with professors in both environments. Students who preferred learning online explained that Web-based courses gave them flexibility to learn at a pace convenient to their lives; they would read assignments in advance, finish all course requirements early in the academic term, and use remaining time to review for exams.

The most popular response students gave regarding their motivation for enrolling in Web-based courses was to fulfill GEC requirements needed to graduate. A majority of students whose motivation was to take a GEC course online did not think it changed how effectively they learned in comparison to traditional lectures. They claimed to have worked equally as hard in an online course. However, for certain subjects (e.g., math, accounting, and science), especially the higher level classes covering topics specific to students' academic majors, they did not think it would be as easier to learn in an online course. For more complicated subjects, being physically present and

watching the teacher give a demonstration or present examples was important. Students did not believe they would have the same quality learning experience using the Internet.

Access to course materials in both Web-based and lecture-based formats was recognized as the ideal situation for some students. A course Web page could be printed and used in lecture for writing additional class notes. Students liked having the option of getting content in two different ways, increasing the likelihood they would understand what was taught and learn more effectively. For example, students would attend lecture where the professor used PowerPoint to present information. After lecture, students would view the PowerPoint lecture slides online, giving them access to the information twice.

Internet learning spaces can be used to create complex learning environments which foster non-linear thinking. A majority of the students were aware of their personal learning style, which they described as linear and non-linear. Students found ways to use the interactive feature of course websites to set their own patterns for accessing material. Flexibility and interaction inherent of the Internet let the students customize how they progressed through the course content. Non-linear learners who wanted more control would skip some information while looking for material that was specific to what they needed to know. Students who described themselves as better at learning material that was presented in a sequential manner preferred a start and finish point outlined by the professor. This was especially important when subject matter (e.g., history and math) required students learn events or problems sequentially, building upon existing knowledge. Working in a Web-based course made them even more cognizant of the need to be self-motivated. They spent more time looking at course material because they could study at a time convenient to them, and thought they retained more information when self-taught.

Construction of knowledge online is facilitated through dialogic interactions among students, and students and teachers. I asked students to comment on their opinions and

experiences online using Internet technologies and multiple media: preferences for how students used browser windows<sup>30</sup>; if they preferred scrolling<sup>31</sup> through information or using hyperlinks to more than one page; if they clicked on links that took them to information outside the course website; and how they used WebCT's bulletin board, chat room, and IM software to communicate with students and teachers.

Every student I talked to was familiar with the concept of using multiple browser windows when surfing the Internet. We discussed their preference for scrolling through a Web page or using more than one browser window to compare information, or for multitasking. The feedback was mixed with some students wanting all the material for a section of a course in one Web page making it easier for them to scroll. Having to "page" through the material using hyperlinks was described as interrupting their concentration or causing them to be "lost." In addition, when course material was placed in one browser window, students had the option to begin reading the text while images were downloading. While some students preferred the scrolling feature, others liked the control multiple windows gave them over the positioning of content on the computer's desktop. Side-by-side windows could be used to compare notes and information (see Figure 17).

There was an overwhelming consensus among students saying that they did not use WebCT's chat room to talk to peers, TAs, or professors. Some students were not aware the chat room existed, while others explained the reason for using a course website was to learn and not to socialize. One student rhetorically asked, "What's the point?" Instead, students talked about using the bulletin board to schedule meetings, to ask TAs questions, and to post answers. More than one student believed the bulletin board helped her because students who worked ahead would provide

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<sup>30</sup> The area of the screen where the browser displays the content in the website.

<sup>31</sup> Scrolling is the act of moving the scroll bar up and down (vertical) or across a window (horizontal) to view content in the Web page.

answers to problems she had not finished. While students found learning with the help of their peers as effective as learning from the professor, other students expressed frustrations. Redundant questions were posted, making students weed through unnecessary information looking for bits of content they feel they may have needed to know. The number of students using the bulletin board also made it difficult to use. Smaller groups of people using the bulletin board were preferred for discussing assignments. In addition, students who described themselves as self-motivated said they would get frustrated and angry when other students would ask how to complete an assignment before attempting it themselves.

There were mixed preferences for attending office hours versus using email. Email was easier to use because of student and professors' busy schedules; it was more convenient and responses students received from instructors were perceived as being well thought-out and more in-depth. Student explained understanding when descriptions were sent by email because they could spend more time trying to comprehend the information. In some cases, email was seen as more efficient when talking with the instructor. Email was compared to using the telephone, and one student explained that he received more immediate responses. However, other students explained that replies to their questions asked were delayed depending on how long it took for the professor to answer.

The type of question, subjective or objective, determined if students communicated through email or met with professors during office hours. If the question and answer required a discussion, the students preferred to meet in-person. Students described instances when there was a need for one-to-one interaction with the professor—to discuss and understand complex subject matter—and the material would be too difficult to talk about online.

Students did not use the WebCT chat room, but when asked about more popular communication software, all the students used IM for school. Students used IM to talk to students

they knew or friends in class. IMs were limited to scheduling meetings to work on group projects, schedule study sessions, and to ask brief questions about course assignments.

The use of multiple media (video, audio, images) was limited. One student explained having Internet access to videos shown in lecture. The professor made the videos available to students to view online. Otherwise, most of the students did not view videos made available in their online courses, unless required by the professor. When students did watch video for class they said they did not retain what they saw, video was boring and linear in format making it difficult to pin-point the information needed, or video clips were too long. Only one student described video as helpful because it highlighted “key points” about the topic. Students preferred learning using written text they could skim through to find exactly what they needed to know without reading extraneous information.

#### *Effective teaching*

The students’ responses were descriptive of the ways in which professors used technology for Web-based courses. They were insightful and critical of pedagogical approaches that fostered effective learning environments, and professors’ interests in teaching courses. Professors were described as using the Internet for the following reasons: to teach distance learning courses, to post grades, and access to course registrar information, and/or to provide additional resources for lectures in the form of lecture slides, notes, and links to other websites. Courses that were completely online were developed, delivered, and accessed using WebCT.

Students were aware that professors had busy schedules and limited time to learn how to effectively use technology for teaching. Most students did not care what the course’s website looked like if the professor was using it for posting grades and posting lecture slides. According to one student, it did not matter how simple a course site was, any information given by the

professor was helpful. “I get frustrated when my teachers don’t have anything on WebCT or their own website. I want them to keep us updated.”

When the Internet was used for teaching, organization of content, and amount of content on a Web page was important. Students described some examples shown during the interviews as “cluttered” or “well organized” which prompted them to reflect back to course websites they had used in the past. Too much content on a Web page was overwhelming and made it difficult to read. Added, using large images which took up window space, was described as frustrating, taking too long to download or print. Organized websites, where the professor chunked information into sections helped students who had a difficult time understanding course material. One student recommended professors survey students over a period of several academic terms in order to learn what was important to them, the tools they use (bulletin board, chat room, IM, email), and what their interests were when taking an online course. For example, a majority of the students interviewed stated that they did not select links to websites outside of the course unless required by the professor, used for extra credit, or there was a personal interested in the subject matter. In addition, it depended on the context in which the professor suggested going to the site(s)—students seeking out additional information, or to find extra help in the form of written and visual resources. Most students wanted immediate access to information they needed to know to pass the course and were not interested in expanding their knowledge through the use of additional Internet resources or by watching videos.

Students gave positive responses when talking about professors who posted course notes, outlines, and lecture slides on the Internet. Students used printouts of Web pages to study and take additional notes during lecture. The amount of content, including images affected the number of prints the student had to make and the amount of time spent printing. Students saved money when course materials were available online versus purchasing textbooks for courses.

Available PowerPoint slides from lecture served as a second way to review subject matter outside of class. The most effective use of lecture slides was when the professor used a voice-over narration explaining the material. The student was able to move through the presentation at his own pace, reviewing slides when needed. Students did not like what they described as a “talking head” style of teaching—a professor is videotaped and you can see only her/his head and shoulders.

Feedback I did not expect to evolve from the research was about students’ perceptions of their professors’ interest in teaching a class. The organization, amount of content, and “look and feel” of a course website was directly related to students’ motivation to learn. Faculty who took the time to add color and graphics to Web pages, and organized course content into meaningful sections were perceived as caring about teaching. This increased students’ respect for the course and their interest toward learning. Websites with large amounts of content were compared to large lecture halls—neither environment stimulated student interest, promoted interactivity, and resulted in effective learning. Students wanted to learn when using course websites developed by faculty who showed interest in how the interface and interactive design looked, with well-organized material, and “fun” content.

#### *Technology and learning*

Students talked about issues of compatibility and accessibility when using the Internet for school. Some students owned older computers that were not compatible with the latest software and Internet technologies, or high-resolution media in the form of images, video, or audio. Students with older computers or slower bandwidth Internet access reported not downloading video because of slow connections, or they were afraid downloading a plug-in would “mess up” their computers. All students were aware that the university they attended made available computing labs with updated hardware and software for students who had limited access to the

Internet. Students who did not described themselves as “too lazy” to go to a university computer lab, used the facilities to print notes from course websites.

Printing course notes, as I began describing in the section summarizing effective learning, is sometimes difficult and not economically feasible for students. Students were frustrated when too much content was added to one Web page. Not only did the number of pages make it expensive for students to print, they did not like pages and pages of notes which they had to sort through when studying. Three students described using PDF files, converting Web pages to Microsoft Word files, or using browser software features as a means of eliminating extraneous information (interface graphics and images) when printing.

The students I talked to did not have wireless computing capabilities in the form of laptop computers or PDAs. Anytime/anywhere access to online learning, in regards to the interview responses, would be in the form of comparing students’ preferences for studying course content from a computer screen or printing online material. “When I was studying, I couldn’t take my computer every where, so I printed them [notes] out...” “If you print everything at once you can stack them and organize them to study them at once.” Students’ opinions were divided when they described their preferences and abilities to study from either format. Reading from the screen caused eye-strain and “fatigue.” If students used computing labs they had to deal with external distractions from other students in the room. One student explained that she did not have access to a printer, therefore she had to study from the monitor. Other students said they did not learn effectively if they did not have printed notes. The above factors were described as limiting the amount of time students spent studying for a course.

Students’ familiarity with the Internet and how to use WebCT had a positive impact on learning. Prior experiences using the Internet and Web browsers made it easier for students to take a Web-based course. As a result of their comfort using the Internet, most students believed

the time it would take to learn how to use a course website that was not structured using WebCT would not be an issue. At the same time, students were aware of limited time, limited resources, and creative abilities some professors had for designing interactive websites. Professors were not expected to be professional graphic designers. Students expressed an interest in having well designed course websites, similar to the sites they use daily for personal reasons, yet their main focus would be to learn the material needed to pass.

### *Interactive design*

Students had prior experience using the Internet for personal and educational purposes. As a result of their using the Internet, they had developed expectations for how websites should look graphically for different reasons. Students talked about the standardized organization and layout of course pages in WebCT. The design made it easy for the students to access information and find what they needed to read. Students were familiar with the way the courses were structured making the websites easy to use. Interface design for education websites was described as formal. One student said that if there were a variety of designs for the different courses she had taken online she could have been confused.

Students expected Web-based courses to contain a few standard elements: login page with course number and information, graphic or picture, and links to the syllabus and course assignments. Some students did not think online learning should look “fun” because they would not take the courses seriously.

While most students I talked to expected there to be a correlation between how a website was designed and its purpose, they were open to alternative design styles more like websites they used on a daily basis. Their online courses were described as having the same layout for every website and that it got “kind of boring after a while... looking at the same background and the same type...everyday.” One student used the term “cookie cutter” to describe the appearance of

Web-based courses. The art education course talked about during the interview was described by some students as looking like a commercial and entertainment sites they used in the past (see Figure 10). It reminded them of what they would come across when using the Internet for reasons other than education, and they did not view the example as an online place they would go to learn. Course subjects in the arts or history were expected to have creatively designed websites containing video and animation, however, business, math, and science courses were expected to maintain a standard appearance.

Students expressed an interest in design styles that were similar to news and magazine cybergenres (see Figure 14). The design and layout was appealing and interesting because they were familiar with the style and structure. Most students talked about an interest in seeing more styles and varieties of designs for Web-based courses after we talked about different websites during each interview. Aesthetically unique designs could be successfully applied to online learning if the website was easy to use and the course content legible. Online courses that were “pleasing to the eye” were viewed as potentially making the student more motivated to learn. Students liked websites that looked “different,” “modern,” and “brand new.”

I received important feedback to consider when developing interactive course websites. All sites should be designed with the appropriate audience in mind. Sites that looked like they were designed for high school class would not be appealing to the college-level, undergraduate student. In addition, if a professor attempted to make a site appear “cool” or “postmodern” it may not be easy to read and annoying when applied in an educational context.

One category that evolved from the research is the idea that interactive design may establish a context for learning through the use of design elements (color, images, layout, type) and multiple media. Students associated color with establishing a context for subject matter, and effective application of color made websites easier to use. Color was described as helping one

student mentally differentiate among his online and blended courses. He gave an analogy comparing the aesthetic of his Web-based courses and having all of his courses in the same classroom; they all looked the same making you forget for a moment which class you were attending. A website example shown during the interviews that elicited responses about establishing context using graphic design was the *Theban Mapping Project* (Figure 6). Without using probing questions, students commented that it made them feel like they were at an archeology excavation, or the site looked like “old paper.” In addition, color was talked about as giving websites a “classic” look and gave the impression that a website was serious and used for learning.

“The design helped me flow through the page a lot better...” The organization and amount of content on a Web page was described as disruptive to learning if there was too much information. If the overall layout were visually appealing and organized, it would capture students’ attention. Clarity and legibility was important and took precedence before alternative layouts of images and text on a course Web page.

Students commented that unless they were required to watch a video they skipped it listing various reasons why. Animation, on the other hand, when not used in splash pages was described as establishing a context for a website. Animation used in *Theban Mapping Project* made students feel as though they were being drawn into the Web page (Figure 7). The students were able to understand the scope of the topic, by narrowing the subject matter.

Images were described as important to students as long as organization and layout of the Web page was simple. Based on prior experience, students described websites that contained too many pictures, which were distracting and negatively impacted learning. When used effectively, images were motivating elements, making students spend more time reading and studying.

Many of the students were able to separate their personal opinions about the website examples to discuss specific elements. Type styles were associated with the issue of readability. For example, when upper case or italic style fonts were used for large blocks of text, reading was difficult. In addition, if type sizes were too small, blocks of text too wide (horizontally), and if text was placed over images reading became cumbersome and students would not spend time working online. Students preferred small blocks of text on plain white backgrounds. I was curious to know if students liked text placed over an image using the *CBC Radio* website example (see Figure 3). The students had mixed opinions: Some students wanted the image to relate directly to the text, others found the text difficult to read, while a few students thought the placement of the text over the image was a better use of space.

A majority of the students described themselves as visual learners, except, they relied on written textual information to tell them what an image was about, especially when studying for a class. The context in which they were reading or looking at pictures also determined if text had a dominant role over images. Images were viewed as additional content for learning and not the primary source of information. Some students explained that it was easier for them to learn from reading than from looking at pictures. Also, they liked to have images to look at when they were “bored.” One student did describe the way in which she learned was by image-text association. “It is word association and picture association” that helped her learn versus “straight memorizing.” The combination of using graphics in the form of pictures and images increased the chance the student would have a better understanding of material.

Students anticipated that distinct graphics would help them remember course information when taking a test. Use of photographs versus cartoon-like graphics (see Figure 5) or schematics, for example, depended on the subject matter. Pictures of the human body for gross anatomy classes were better presented using cartoons instead of photographs. In general, graphic style and

graphic elements were described as increasing motivation and contributed to more effective learning environments. Students explained they wanted to spend more time using a course website that was professionally designed and visually appealing. Websites that incorporated images and graphics were perceived as being interactive and less like work.

Descriptive links and familiar terms used in course websites increased the level of comfort students experienced when navigating through a Web-based course. A simple layout of a hierarchical navigation system was a way professors visually and interactively outlined the course material into sections. The main links for navigating a course website were expected to be placed at the top or left side of the Web page. Suggestions for this style of layout were consistent with what was recommended in the literature. In addition, students did not like the idea of links that were placed “below the fold” on a Web page. Any links that were not immediately accessible without scrolling made it difficult for them to see how to get to additional course content, and students were concerned that they would miss some sections of a class all together (see Figure 13). One student also recommended having a link to a drop-down menu titled “quick link,” which would give students immediate access to information embedded within a website, while another students recommended a “check list” to make sure they covered everything they needed to know to pass the course. This would help students who were linear or non-linear learners. In general, students did not object to the concept of “multi-links” to get to information. “I don’t mind having to select because I feel like things are organized better that way. I don’t like it when you see everything...” Most importantly, prior knowledge about how to use the Internet and Web-based courses increased student confidence, creating positive learning experiences.

### Chapter Summary

In this chapter, I provided website examples that demonstrated aesthetic qualities inherited from mass media genres, designed using postmodern and modern design principles, and

examples that utilize constructivist learning principles and activities. In addition, I summarized responses from seventeen undergraduate students who offered insight into how they effectively learn in a Web-based course, their perceptions of effective uses of the Internet for teaching, issues and concerns regarding accessibility when using technology, and suggestions for designing websites, that would increase motivation and result in more effective learning spaces. A collective summary of the student responses gave an overview of their ideas, issues, and concerns.

Characteristic of the methodologies and methods I incorporated to gather data, is the ongoing interpretive analysis of the findings. My analysis of the interviews began with the formation of the questions, and evolved throughout the process of open and axial coding, continuing throughout the generalization of categories. The selection of the website examples began with the analysis of graphic elements and aesthetics based on my professional experience and the literature reviewed. In this chapter, I made an attempt to minimize what I wrote to descriptions and summaries of the data. In the following chapter, I present my analysis and interpretation of the findings, including the literature, website examples, and interviews. I discuss how these will inform the example created and the recommendations I make for how we can approach the design of online courses based on how students learn through visual culture.

## CHAPTER 5

### ANALYSIS AND INTERPRETATION

In the preceding chapter, I used content analysis to organize concepts and ideas I discovered from the literature and what I learned from student interviews in order to make sense of the data. This chapter presents an analysis and interpretation of the data through comparing and contrasting what is published on the topics of constructivist teaching and learning, technology and learning, visual culture, and graphic design, and my interpretation of responses from students regarding their experiences and opinions of Web-based courses and learning online using multiple media.

The literature was an important part of my process of reflection and interpretation. I used the literature to develop perspectives on the data, looking for accounts of similarities and differences, and to uncover and explain relationships between categories used for the analysis. I begin this chapter by presenting a comparison for lecture-based and Web-based learning. I discuss the benefits of face-to-face interaction, followed by benefits of learning in an interactive online environment. Self-motivation is an important characteristic for students taking Web-based courses, and I compare and contrast students' explanations for using computer-supported communication and multiple media to what is in the literature. Following, I discuss pedagogical issues for constructive teaching in Web-based environments, outlining organization considerations for course content. I noted concepts that I did not expect to evolve from the

research, such as students' opinions of a professor's interest in teaching a course based on the design and organization of a website for a class.

Technology and learning can be easily interpreted as a broad subject, encompassing massive amounts of topics about distance and blended learning. Through this analysis, I narrow the scope to address specific issues of accessibility, technological literacy, and the characteristic assumption of distance learning providing anytime/anywhere access to education. I present both benefits and limitations of technologies for Web-based learning.

Keeping the preceding sections in mind, I discuss interactive design as it applies to Web-based courses. I emphasize the analysis of student responses and integrate learning, design, and visual culture theory to explain and/or support the findings. The topics discussed were both a priori theories and evolved from my analysis. I draw from semiotic theory and social semiotic theory to give foundation to why students have expectations how websites should look graphically for specific purposes. Added, I continue to reference semiotics to discuss how design can create a context for course subjects, and benefits learning, ending the section with a discussion about student preferences for visual and verbal learning and reasons why.

#### Web-based learning

A majority of colleges provide course material online, either as supportive material for traditional classes or as distance education. Each instructional approach has been extensively researched in the attempt to demonstrate if one is superior to the other at providing high quality education. Most comparative studies have not found significant differences in student learning (Anderson, 2001). The transmission of information in traditional large lecture courses is characteristically similar to distance education: The medium of each differs but the one-way transmission of information in both is accomplished as efficiently as possible with little interactions between student and teacher. A report, *Entering the Mainstream: The Quality and*

*Extent of Online Education in the United States, 2003 and 2004*, published by The Sloan Consortium (Sloan-C, 2004), measured the quality and extent of online education reported by academic leaders. Student responses were described as positive when talking about their satisfaction with online courses. Academic officers, mostly from large public universities, agreed that students enrolled in online courses were at least as satisfied with learning as with their lecture-based classes. Additionally, quality of online learning was equivalent or better than face-to-face instruction.

Web-based courses give students the flexibility to learn at a pace convenient to their busy lives. Students can read ahead and keep up with assignments, leaving more time to prepare for quizzes and exams. They are comfortable learning and communicating online, and the quality of online education continues to get better, including the added number of courses available (Murray, 2004). Web-based courses do not replace the demand for classroom instruction. Students continue to prefer in-class learning to online courses for a variety of reasons. The value of online learning is seen as being equal to or less than a lecture-based course. Students have the perception that faculty do not work as hard when teaching online; they appear to be simply placing lecture notes, syllabi, and assignments in Web pages with little consideration for how to create interactive learning experiences.

Both behaviorist and constructivist learning theories support the idea of student engagement in one form or another to either serve as a measure of student learning, or as a means for interpreting and relating what is understood to other knowledge (Resnick & Kopfler, 1989). Face-to-face interaction provides a forum for presenting and discussing complex questions and problems, which adds to understanding, retention, and transfer, moving instruction toward more constructive ways of teaching (Lave, 1997). Being physically present in class is seen as requiring more participation and interaction with the professor and the class. Impromptu examples and

spontaneous stories told by the professor during lecture serve as supportive information. Body gestures and visual cues increase student comprehension. Visual cues students rely on in face-to-face communication are missing in online communication. Subjects described as “difficult” (Accounting, Math, Science), where students depend on in-class demonstrations and examples, are more appropriately taught in a lecture or small classroom environments. The immediacy of the face-to-face interaction between teacher and student and questions that can be asked and responded to in class outweighs the benefits of online learning, and increases student understanding of material.

What makes a professor effective in lecture contexts also applies to the Web. The tools for creating Web-based courses are becoming more powerful and easier to use. Creating interactive learning experiences online is easier than ever and necessary for developing courses that help students learn effectively. Interactivity offers a rich learning experience, mimicking and improving face-to-face learning by integrating the use of communication software, immediate access to multiple sources of information, and providing environments for students with different learning preferences (Wolfe, 2001a). Online interactions among students and teachers strengthen learning communities, and enrich intellectual discussions among students. Higher order thinking skills are said to be in part a result of social interactions online.

During stressful economic times and because of federal and state funding shortages, public and private universities are seeking ways to increase student enrollments. Distance learning is viewed as a panacea, but not without expressed concerns from undergraduate students. It has become apparent that students are attentive to the idea that distance learning is a way for universities to save money and make money. More students can enroll in online courses, while fewer professors and TAs are needed to teach the courses. This results in online learning that

continues to be viewed as less than personal (Brown & Duguid, 2002; Watts, 2003b). These issues and criticisms are not going away, especially when student responses are supported by the literature and vice versa.

### *Blended Learning*

Blended learning may be viewed as a compromise for students who prefer to meet in lecture, with the added advantage of accessing course material online at a time convenient to them. In some cases, students see blended courses as more restrictive than the flexibility offered by a purely online course—making them feel they have to work and study according to an academic schedule. In most cases, however, blended instruction is a means for broadening curricula, making teaching and learning more effective. Students are given opportunities to interact outside of class using email, IM, and discussion boards, and increasing access to material empowers students to learn effectively, efficiently, and independently. In one sense, it can be compared to students attending lecture then returning to their home or dorm room to read from a textbook and study from notes. Blended learning differs in the amount of material that can be put online by the instructor, the way a course website can be structured to open opportunities for the student to begin making connections among material, and the additional learning resources allowing metacognitive development and cognitive flexibility. Students are able to study and print notes from a course website, and use the printouts for writing additional notes when attending lecture. Blended learning can begin to mimic the activities in which professionals take part in real-world work environments by requiring students to access materials through the Internet, which is viewed as a resource that is relied upon for work, school, and leisure.

### *Motivation*

Students often have intrinsic reasons and interests for learning that are related not to the immediate task, but to broader concerns. Students explain that their main motivation for enrolling

in an online course, or any course, is based on the need to fulfill an academic requirement, their interest in a subject, and the level and difficulty of the course. The need to fulfill GEC and credit hour requirements are the goal structures set by many undergraduates, and an important determination for taking and passing GEC online courses (Wolfe, 2001a). Each student makes a personal decision to either limit what they learn, to perform the minimum of what is required of them, or they are more focused on mastering and thoroughly understanding the course material. I cannot generalize students by saying that they all limit their learning experience to simply performing tasks as a means for completing assignments and passing exams. There is no solid determination that GEC courses online change how effectively students learn in comparison to large lectures. In fact, many students report that they work equally as hard in both environments, and often their motivation extends beyond learning as simply a means to an end.

The Internet itself can be described as a motivating factor; it is a new way to learn without physically attending classes, and it requires students to learn using technologies they are familiar with and/or use for personal reasons. I do not believe the Internet holds the curiosity of students as it may have in the past. This makes it more challenging for teachers who are trying to stimulate and sustain students' motivation to learn. Many computer and Internet technologies are commonplace in our society, including higher education, and its use is now an everyday practice. Student motivation is not embedded in a computer learning environment and students who are motivated when learning online may not maintain the motivation throughout the length of the course. Likewise, students who are not motivated at the beginning of a semester may become more motivated as a course progresses. Understanding what they face, professors have the difficult task of structuring a course that responds to motivational changes (Song & Keller, 2001).

### *Learning Style and Self-motivation*

Students choose to enroll in online courses because they can learn at their own pace and according to their individual learning style. My goal here is not to provide an in-depth review of cognitive learning theory, but to present an analysis of student responses explaining their preference for progressing through material in an online course. For this analysis, I characterize learning styles as linear or non-linear.

Undergraduate students have the ability to reflect on past learning experiences to describe their learning style for both Web-based and lecture-based courses. Students maintain awareness and knowledge of their own learning processes. Olgren (1995) outlined components that characterize students' ability for self-guided decision making for how and what to learn: 1) Students maintain an awareness for how learning is being carried out; 2) they are knowledgeable of their learning style and the learning task, and they have the ability and desire to plan and regulate the learning process, and 3) students can become reflective, positively and critically, of their own learning processes. This often results in the learners demonstrating their ability to not only master new skills and remember knowledge, but to formulate new concepts and problems during the discover of new solutions (Bruer, 1995). Students develop an understanding of how and when to use new skills and concepts and apply them to more than one learning situation.

### *Self-motivated Learning*

Web-based courses are thought to put greater demands on students than conventional learning environments. When learning online, students need to possess the ability to make connections between new and existing knowledge. They spend just as much if not more time studying for online courses because they can work when it is convenient to them. Students enrolling in online courses are required to be self-motivated (Moore, 1998). Learning online makes each student study the information in more detail. Importantly, they have better retention

and transfer of knowledge increases when they are self-taught. These concepts also correlate with motivation to learn that is a result of student's interest in the course and the decision to take a course because it appears to be "fun." Students need to establish motivational strategies (intrinsic and extrinsic) to attain learning goals, and it is important that they are able to monitor their progress (Anderson, 2001).

All students enrolled in a Web-based course cannot be characterized as interested in self-motivated learning. There are students whose goal is to pass a course, more commonly GEC courses, without applying a tremendous amount of effort. They want the professor to guide them and provide specific directions and information needed to fulfill assignments, pass quizzes and exams, and complete the course. Students are open about saying the main reason they miss attending traditional lectures is because they want professors to tell them exactly what they "need to know." This reduces a student's responsibility for learning, limiting a need for them to develop her/his own ability to regulate development of knowledge and understanding. It is possible to conclude that most undergraduate students taking a GEC course can be characterized as novice learners of the subject matter. This factors into how they self-regulate, and the level of their metacognitive abilities to make connections between materials. This adds to the explanation as to why they want a highly structured, linear, teacher-guided presentation of information (Anderson, 2001).

#### *Non-linear Approach to Learning*

The Web is a more difficult reading environment because of its non-linear, hypertextual structure. Depending on the structure of a course website, hypertext can blur connections between concepts that typically build coherence in linear texts. Building blocks of shorter texts, and chunking of information increases the number of documents and amount of material that is

integrated into online learning. This results in a greater cognitive demand on students (Tapia, 2003; Wolfe, 2000b).

Students establish linear and non-linear patterns when learning in a Web-based course. It is important for them to have the flexibility to customize how they progress through course material. Hypertext gives students power to freely navigate through a website, and read in a non-linear way. It provides them with the ability to think in complex and multiple structures by offering different ways of approaching text. A non-linear process is thought to be better than linear systems, allowing students to think “in terms of interconnectivity and multi-order rather than consecutiveness and hierarchies” (Tapia, 2003, p. 7). Some even claimed that linearity should be left behind, breaking the assumption that the reader has to rely on physical pages and can now use a computer screen. The Internet and hypertext and the constant updating of information is changing the pattern for reading and how information is presented.

Non-linear reading is not a new concept and the traditional means of linear communication has not changed. In reality, “the revolution of the digital era is the continuation of a tradition begun many centuries ago, in which the organization of signs used in social life into words, not only written but also spoken, and images, had become devices for the mobilization of ideas” (p. 8). The concept of hypertext dates back to ancient books and today it is seen in almanacs, encyclopedias, magazines, and newspapers. Even footnotes create a nonlinear reading experience. Both printed texts and hypertexts have unidirectional and multidirectional possibilities, and non-linear learning styles do not necessarily indicate students have a more open, metacognitive thought process. Hypertext gives students paths, adapting the learning experience to their personal preferences. Students preferring a non-linear presentation and approach to learning, establish their own structure for accessing material; they focus on content as a whole, see connections between material, and have more control over their experience (Anderson, 2001).

### *Linear Approach to Learning*

Linear learners prefer start and finish points. Linear progression is important for subject matter that outlines a sequence of events or what is learned is built upon throughout a course. An effective and descriptive analogy comparing linear to non-linear learning is the idea of “building blocks.” This is effective when students are learning sequential information and facts. Students are able to pay attention to broad concepts, and their knowing, thinking, and understanding is generated in practice as it unfolds. They use metacognitive skills to make connections between what they know and the material they learn online.

The age and rank of the student may be why they are aware of their learning style. Learning in a Web-based course requires metacognitive ability. Students are capable of understanding and producing meaning in different situations, and know how to think about subject matter as a complex system of interrelated parts (Gee, 2003). Learning style is not necessarily an issue as long as the student is metacognitively aware and has the ability to self-monitor his/her learning. Students can also change their learning style when taking an online course. Faculty can structure Web-based courses to accommodate both non-linear and linear approaches.

### *Web-based Community Learning*

The time students spend using the Internet is divided between academic, work, and social purposes. Students and researchers believe the Internet has a positive impact on education. This is partially the result of interactive, dialogic learning communities using computer-mediated communications systems (CMC)—Instant Messenger (IM), bulletin boards, email, and most recently blogs. Course management software used for delivering Web-based courses provide synchronous and asynchronous communication tools for both teacher and student use. Students and professors use CMCs for communicating with each other, with classmates, and for

scheduling group meetings, to conduct research, and to access library materials. These environments provide a sense of community among users (Mynatt, Ito, & O'Day, 1997). In general, students believe their relationships with professors, TAs, and classmates are positively influenced because of Internet communication technologies (PEW, 2002).

Activity, participation, and cognition in education are connected with the activity of social groups (Wilson & Meyers, 2000). Construction of knowledge online is facilitated through dialogic interactions, and dialogue between individuals within these groups creates more in-depth explorations of ideas and perspectives. Students develop socially relevant skills and knowledge when exposed to socially mediated aspects of learning. Interactions include teacher-student and student-student dialogue. Community environments, virtual or traditional, are a part of the learning process when students develop a knowledge base they can draw from to evaluate and negotiate new meanings (Koroscik, 1996; Merrill, 2001). Students are given ownership of their learning goals, and ability to analyze what they are able to transfer from one learning situation to the next (CTGV, 1999). Students included as legitimate participants in learning, think and interact in ways similar to expert models of thinking. Learning is not restricted to what occurs in students' minds, but is situated within a cultural and social world (Gee, 2003). Characteristics of CMC include the capacity for active learning, interaction, access to group knowledge, convenience, and motivation to finish tasks (Anderson & Garrison, 1998).

#### *Instant Messenger*

Faculty and students have access to a chat room within the course management software they are using, or by downloading free commercial communication services such as AOL's IM, iChat, and Yahoo! Instant Messenger. Students are able to participate in synchronous communication with other students using the same software. This is more commonly termed, "chat." When using IM for school, students describe setting up study sessions and to ask students

they know about homework assignments. They choose to use commercial communication services available for free, or packages that are installed with their computer's operating system. This can lead to compatibility issues making it difficult for all students working in a study group to communicate. Students preferences for one commercial service over another (e.g., Apple's iChat versus Yahoo! Instant Messenger), limits their ability to see each other online. If all students are to communicate using IM, they will need to use the same software and that software needs to be compatible with their computer's platform. Course management systems provide a chat room for students to use in class, but the students I interviewed overwhelmingly do not use this feature. They do not see the point, and when logging into a Web-based course their purpose is to access information for the course without socializing with other students. Synchronous communication is not a priority unless required by the teacher.

#### *Email*

Students use IM for more informal discussions compared to email. Email is the most common form of asynchronous computer-mediated communication (Riva, 2001), and the reasons for using email can be compared to why students attend professor or TAs office hours: They ask questions about assignments, set up meetings, talk about what will be on exams, and resolve problems students may have with understanding course material. Email is described as "easier" and "more efficient" than face-to-face meetings. It is more convenient for students to use email, and their questions and answers from both teachers and students are well thought out and more in-depth. With the permanence of email, students can spend more time reading and comprehending feedback from professors. They understand content when elaborated in descriptions that are sent by email compared to in-person meetings. Students do not feel rushed to comprehend information that resides in their email box. (Re)reading email responses after being received increases the opportunities for understanding.

Students rely on immediate responses to their email questions from professors and TAs. Students had mixed reactions to how quickly instructors respond for the types of questions asked. One student believed email was better than using the telephone. Another student complained that receiving replies to questions depends on how long it takes the professor to answer email. Email is sufficient for “yes” and “no” or questions requiring brief answers. There are times when students need to communicate with professors by phone or face-to-face. Questions requiring detailed discussions or demonstration of problems are better conducted during office hours. Additionally, attending office hours increases the chance a professor will remember individual students enrolled in large lecture courses, and a student’s effort to meet face-to-face demonstrates interest in the class.

#### *Bulletin boards*

Bulletin boards are a method of online asynchronous communication. Users can read messages posted by others and respond or leave messages about other topics. Typically, each bulletin board focuses on a specific subject, and posted messages are accessible by individuals in a specific group. Professors, TAs, and students have access to class bulletin boards when using course management software. Students use the bulletin board to post questions about course material, assignments, and tests. Teachers or other students can respond to questions, giving answers or clues for problem solving. Students learn by helping and being assisted by their peers (Hung & Chen, 2000; Yang, 2001). Individuals who understand the content become tutors. Students seeking help through postings in the bulletin board learn from their students work ahead and provide answers to questions and assignments. Using the bulletin board in different ways can help students learn course content, but it should not be a means for them to find easy answers.

Students are relying on other students for learning and in some cases understand concepts better when their classmates give explanations compared to the instructor. However, frustrations

develop when the same question is posted multiple times by different students who do not read past additions to the board. Students who are willing to help with answers, do not like when their peers ask questions before attempting to solve problems on their own. There is no way to prevent students from posting redundant questions, except for the professor encouraging everyone to review all material in the bulletin board on a regular basis.

Instructors need to consider how and when it is appropriate to use computer-mediated communication. Student experiences are not consistent with the literature—not all students are fortunate enough or even willing to participate in dialogic interactions. Collaborative learning activities should be included in online coursework and not be viewed as an additional activity (Anderson & Garrison, 1998). The use should be structured to directly relate to the learning outcomes of the course.

#### *Web-blogs*

I did not discuss with students the use of Web-blogs (blog) used in education. When talking about bulletin boards and IM, students did not mention the term blog, making me wonder at a later time if they had used blogs at all. A blog is an online instructional forum in blended and Web-based courses. It is similar to other computer-supported communication and collaboration tools (news groups, bulletin boards, threaded discussions), and a chronological record of a person or persons' thoughts. When students participate in using blogs for classes, the process encourages reflective practices, helping students engage in metacognitive learning with the expectation they will learn better. Blogs bring together educational technology and storytelling. Self-expression and creativity is encouraged among students, and peer groups are formed that may not occur in conventional classroom settings. Students can comment on postings by other students, give feedback related to a discussion or begin a new discussion. They can exchange what they may

have learned in other subjects and relate that knowledge to topics talked about in the blog (Hernández-Ramos, 2004; Huffaker, 2004).

Blogs are used by individuals all over the world, documenting experiences, personal stories, and journalist's documentation of their experience at political events, as examples. Research focusing on the use of Web-blogs in education is still needed. The main concern is that students may write what they think the teacher wants them to say and believe, which can bias their entries. In the end, communicating using blogs becomes just another assignment (Hernández-Ramos, 2004). My personal opinion is that blogs are very similar to threaded discussions, which were used in many Web-based courses in the 1990s. How it is used that differs from students' use of bulletin boards needs to be determined by the professor teaching a Web-based course. Explanations and examples of how blogs may be used for certain courses is needed to help initiate dialogue between students, and students and teachers.

#### *Learning Online Using Multiple Media*

My expectation when starting this research was based on the literature reviewed in chapter 2. Research demonstrated that multiple forms of media are used to support concepts and communicate meanings, leading to a more constructive, effective online learning experience. Instead of discovering that students reiterate what is published, I learned that students only view videos that are available on course websites when they are required to do so by the professor. Using video for learning is “boring” because of the “linear format” of the medium, according to students. Even if video were shortened into smaller clips, unless the content was interesting and relevant to the subject, students would not watch it. When students watch video online, they do not retain what is seen and heard, in comparison to watching video in lecture and taking notes. In some cases, different forms of media give students more than one resource for learning course content, highlighting key points in the content and increasing student retention.

After initially analyzing the student responses, I returned to the literature for supportive evidence that media does not always benefit students taking a Web-based course. Benefits of multiple presentations of course material is recognized, suggesting media available in online instruction will enhance student retention. However, retention of specific information and material presented using media such as video is not remembered or understood sufficiently by learners for transfer to other situations (Reyna, Brainerd, Effken, Bootzin, & Lloyd, 2001). Students whose ideas about learning has been dominated by the literary text, are willing to think about learning and expanding knowledge using other forms of media. How media is used for both “seeing” and “reading” information depends on the context in which it is used and presented by the instructor. It cannot be assumed that students will watch video because it is similar to television or film in format.

#### Web-based Teaching

Teachers are moving beyond learning how to use the Internet and paying more attention to sound pedagogical approaches for Web-based courses. Pedagogy at all levels of education is affected by the substantial use of computers. The process through which professors learn the details and principles of using computers for education alters their beliefs about how to improve students’ understanding, retention, and performance in a course (Becker & Ravitz, 1999). Published research indicates that faculty now, more than ever, are able to determine learning outcomes as a result of adopting technology (Wijekumar, 2001).

Many professors have given their courses some form of Web presence. They have created blended courses by making syllabi, schedules, assignments, and other course materials available to students. As a result, students have come to expect all courses, lecture-based included, to have a website. Faculty use of course websites ranges from posting grades and administering quizzes to pure distance learning. Limited uses such as posting grades and accessing course rosters can be

described as an ineffective use of the Internet's potential. However, I view it as utilizing a resource to make teaching efficient and some aspects of the class more accessible to students outside of lecture.

When grounded in sound pedagogy and used efficiently, computers and the Internet have a positive impact on learning. By acknowledging the advancements and attention given to using good pedagogical principles in online environments, there continues to be an awareness of how to transfer conventional lecture materials into a course website. Resources and materials should be arranged to give students opportunities to see patterns and connections in the material, give students the choice for how to move through the content that best suits their learning styles, and allows for cognitive flexibility.

#### *Organization and Amount of Content*

The most criticism students have of professors teaching Web-based course is in regards to the organization and amount of content in the website and on individual pages. By content they refer mainly to the layout of text and images on the page. Organization and amount of content, in addition to understanding features students use in a Web-based course, need to be considered to create an effective online teaching and learning environment. Too much content is overwhelming and difficult to read. When comparing a website containing too much information to a large lecture course, students view both as not interesting, not motivating, does not promote interactivity, and results in frustrations and an ineffective learning space.

Design and structure of a course website should organize the content into sections, using appropriate links to make content immediately accessible. Based on student responses, professors should present material and problems in the order in which they confront the learner. They should not abandon an organized site structure because non-linear access to information is an inherent characteristic of the Internet. How course material is organized can encourage students to use

general and basic information for understanding more complicated concepts and problems (Gee, 2003). Chunking information is one way for professors to organize and reduce the amount of information students read online. This can be accomplished while continuing to offer a level of discovery in course websites. By chunking content, high-quality interactive experiences are created (Wolfe, 2001b). Added, organized presentation of course materials help students focus on learning even when multitasking, using IM and popup browser windows while studying.

### *PowerPoint Slides*

A common feature of Web-based courses and blended courses is the uploading of PowerPoint slides often used in conventional lectures. The most effective use of presentation slides for Web-based instruction is when voice-over narrates the content and the student has control of advancing or repeating single slides within the presentation. Using voice-over allows students to focus on graphics and images, which either make up the content within the slides or are used as examples.

PowerPoint has become a standard presentation tool used in business and education. A limitation inherent in the pervasive uses of PowerPoint for presenting is that it can be used to compress complicated ideas into a preconceived format (format already established by the software manufacturer). Subject matter that is difficult to understand by novice learners is reduced to headings and bullet points. Julia Keller, in her Chicago Tribune Online Edition article, *Killing me Microsoftly with PowerPoint* (2003), asks the question, “Is PowerPoint changing not only the way we do business and educate our young, but also the way we think?” (p. 1). There are faculty who refuse to use the software to reduce their knowledge to a series of bulleted items, claiming that information that is conveyed in lecture gets lost when PowerPoint is used. According to Sherry Turkel, “These technologies are changing the way we think. They change how our kids grow up and how they process information” (quoted in Keller, 2003, p. 3). Critics

are not criticizing PowerPoint specifically, but the presentation format limits encouraging students to think and develop arguments.

The use of PowerPoint and similar means to present lecture material to a class, face-to-face and online, should be a consideration for faculty teaching in higher education. The benefits and limitations of bulleted presentations need to be understood. And, examples such as the one explained by a student interviewed for this study, which I describe in chapter 4, should serve as suggestions for effective use of technology for Web-based and blended learning.

#### *Student Uses of the Internet for Web-based Courses*

Professors should not limit class surveys to those handed out at the end of every academic term. Students recommended being surveyed at the end of every semester and surveyed over a period of several semesters for professors to understand what is important to them in a Web-based course, and what software features they do and do not use. Giving students access to communication technologies does not guarantee that its use will be appropriate or effective. For example, certain subjects or the way topics are structured in the bulletin board are not topics students care about. When studying online, they are not concerned with communication about personal information. It is difficult to please all students in a large class (100+ students), but if the professor talks to the students s/he may be able to find out what is important, and what are the most useful topics to discuss. In addition, postings by students using the bulletin board are not always viewed as completely substantial. Students who do not feel there is informative information on the bulletin board will post what they know in order to add to the discussion, however that does not eliminate their frustrations.

Constructivist learning online gives credence to the availability of endless amounts of content at students' fingertips. Web-based courses contain hyperlinks to websites containing relevant material. I was under the impression from reading the literature, that students clicked on

these links as a way to learn from multiple perspectives, teaching them to negotiate meanings and viewpoints. This is not always the case. Students do not click on links to read information from websites outside the online course unless specifically required by the professors or they are interested in the topic. “I linked to those [Alan Greenspan] because I was interested in reading about his biography and how much money he makes. So I think it just depends on what you find to be interesting.” Opposite of most student statements, one student described linking to additional information when he needed a better understanding of the subject matter. This was a unique case. Professors’ emphasis on using material from other websites depends on the context in which it is suggested: extra help, additional content, and for examples of what will be on an exam.

#### *Computer Literacy and Proficiency*

Students want professors to be proficient with using emerging media for teaching (PEW, 2002). Faculty cannot apply effective teaching methods without understanding the fundamentals of using hardware and software, and latest technologies available to them. Ongoing workshop training and individual training offered by university staff to teach faculty the affordances and constraints of emerging technologies is necessary if universities continue to offer distance learning opportunities, and increase the number of online courses (Cuban, 2001; Zhao, et. al., 2002). Departments and university administration need to give faculty wanting to teach and conduct research using technology time to keep up to date with current advancements and information. Continued and growing recognition of teaching and scholarship about and using technology needs to be emphasized as important for tenure and achievement. Understanding that Web-based instruction is as demanding and often more demanding than traditional face-to-face instruction, requiring the same dedication and attention to details, continues to be a need in higher education.

Professors are not expected to be professional graphic designers or expected to have a full understanding of Web page development software after attending one or two instructional workshops. In cases when the Internet is used for posting grades, students are not concerned with the graphic style or function of the site. What students did discuss (feedback I did not expect) was their perception of the amount of effort their teachers put into creating a Web-based course. A well-designed site makes it appear as if a professor took time to think about how to deliver course content and demonstrates an interest in teaching the class. Students appreciate the effort. Organization of information that is user-friendly and aesthetically appealing results in increased student interest in looking at material. The graphic style and elements contribute to student motivation and a more effective learning environment, making the student want to spend more time studying using the website.

#### *Limitations*

Web-based learning for large courses, unlike face-to-face lectures, brings an expectation that there is more one-to-one computer-mediated interaction between professors and students. There is a focus on diversity of student and learning styles, and faculty are increasingly required to ensure that they are providing appropriate educational environments for students with different learning preferences (Wolfe, 2001a). Tailoring educational experiences to accommodate all students is justified, however, it is difficult for faculty teaching online courses to structure Web-based learning that will please every learner. The non-linear, community, and dialogic features characteristic of the Internet will help faculty begin to solve this dilemma, but it will be an issue that needs ongoing consideration.

I believe students are making valid statements when they describe some subjects being too difficult to learn without face-to-face interaction with the teacher. Students recommend universities offer online and lecture versions of these courses, allowing students to decide which

environment would be best based on their learning style and the level of difficulty of the course. Students find learning online is as effective as in-person lectures, however, want the option to learn in a traditional classroom.

We can find similarities in opinions when students talk about the amount of content students receive in traditional courses and online courses. When students refer to getting “too much information” are they asking for the content to be streamlined to the point of telling them what they need to know to pass a test? What students perceive as too much information may be due to a lack of motivation to take the course and fulfill necessary requirements to pass. This issue is important for all professors who receive similar feedback about their online classes. Faculty need to be able to self-criticize their pedagogical approach, while keeping in mind reasons why students take online courses, especially when fulfilling GEC requirements.

#### Technology and Learning

Distance learning may provide resources to students by way of the Internet, but without adequate technological access, students cannot benefit from the availability of information to gain understanding and develop knowledge from Web-based courses. An article in the United States Distance Learning Association Journal website (USDLA®) outlines the results of a survey used to measure the use of tools designed for distance learning, focusing on accessibility issues for students enrolled in courses that offer blended learning (Irons, Keel & Bielema, 2002). According to the USDLA study, students primarily used home computers, with sixty percent owning new personal computers, and nine percent not owning computers. Students interviewed for this study indicated that they own older computers or no computers at all, relying on university technology labs for access to computer and printing resources.

### *Accessibility*

Students using computers at home or in university residence halls must be willing to download needed plug-ins and software to view all materials and complete assignments for online courses. Individuals with older systems have difficulties downloading and running up-to-date software for media playback and high-resolution graphics, or discover compatibility issues with upgraded software that does not run properly, or at all, on older operating systems. Students reported not using multiple media (audio and video) provided as supportive material in Web-based courses because their systems were outdated and they believed installing new software from the Internet posed a risk to their computers (viruses and incompatibility). Use of non-standard media players was the main reason students had to acquire plug-ins. Students suggested standardization of all university online and blended courses. The concern is valid and the recommendation appropriate, except it is difficult to standardize media playback software due to compatibility issues between Apple® and Microsoft® operating systems. Quicktime® playback, which is standard for Apple is not always compatible using Windows®. Similarly, Windows Media Player® is available for Apple systems, but it is sometimes does not work. Both examples and other software require first time and continuous upgrade installation using the Internet; it is an ongoing process.

Students with access to home computers serve multiple roles. They function as system administrators for their own machine, keeping up with software advancements, downloading needed plug-ins, virus protection, and trouble shooting technical problems. The task of overseeing their own systems, in combination with the need for compatible media playback software, results in students choosing to skip assignments. They do not use media or access needed course material if it means they will have to spend more time maintaining and upgrading their computer.

### *Bandwidth*

Bandwidth speed continues to improve making access to the Internet from home and wireless systems easier and affordable. Many universities are now installing networks in residence halls giving students Internet access using cable modem or DSL technology. Both network technologies provide high-speed access, while cable modem is the most commonly used according to this study. Students without home computers or high-speed network connections use university computing facilities to access Web-based courses. The advantages for using university labs includes the availability of up-to-date technologies (hardware and software), compatibility with course management software, use of peripheral equipment (printers and scanners), and media playback software and plug-ins that are readily available. Viewing videos, animations, and high-resolution images in course Web pages is simple.

Problems with using university resources range from laziness to distractions from other students in the room. Students openly discussed being too lazy to walk to a building with rooms full of available computers, and when studying in a lab there are many external distractions affecting their ability to concentrate. Noise from working printers and other equipment, and students carrying on conversations make these environments frustrating places to study. Added, policy decisions about who can use specific computing labs, hours of operation, blocking and filters preventing unlimited access to all websites on the Internet, can become barriers and limit student access (Levin & Arafeh, 2002).

Advancements in technology quickly catch up to the quality of media and speed of access people desire. Until technology bypasses human needs and desires, there will not be enough capacity. When we reach needed capabilities, new applications are developed and old applications are upgraded requiring even more processing power; it is cyclical process driven by both progress and profit. Accessibility and compatibility issues and concerns will continue to be a

necessary consideration for administration, faculty, and staff working to develop and deliver Web-based courses in higher education. By giving students and professors the human infrastructure needed to assist with problems, maintain current knowledge of the state of technology in education, and answer technical questions, universities will continue to improve students' online educational experiences and learning outcomes.

### *Technological Literacy*

Supporting Web-based instruction requires opportunities for teachers and students to become proficient with the appropriate technology used. Technology training and support is imperative. Student understanding of how to use tools of communication, course websites housed and delivered using course management software, and media playback software is needed to support learner-learner, learner-media, and learner-teacher interaction (Anderson & Garrison, 1998). Higher education needs to continue to provide students with workshops and other resources to become proficient. Students learning online need to feel comfortable using technology and possess a level of technological skills in order to engage with Web-based courses. Learning technology concepts and skills is recommended as part of the complete learning experience (Blocher, et. al., 2002).

Students explain that their prior knowledge using the Internet for personal reasons makes using course websites easy and intuitive. Navigating through course Web pages is easy as long as the overall structure is organized, links are visible, and the professor adds the appropriate amount of content to pages. Research supports student views, outlining the correlation between student and faculty comfort and familiarity with technology, and independent teaching and learning (Anderson & Garrison, 1998; Blocher, et. al., 2002; Moore, 1998; Zhao, et. al., 2002).

Technology proficient professors rely less on technical staff and are able to trouble-shoot

problems as they arise. Combined with university sponsored workshops, teaching students about logging into and accessing courses, as an example, contributes to positive and effective learning.

*Anytime/Anywhere*

Wireless technologies such as laptops, PDAs, camera phones, and iPods are mainstream in society. People are increasingly purchasing these devices to help them with daily functions and for entertainment. PDA and iPod use in higher education is expanding. In a CNN online article, *Phones, handhelds may replace laptops* (2003), handheld technology was boasted as technologies that can do it all—all-in-one cell phone, camera, Internet browser, email, digital music, and organization tools—and developers continue to research the role handhelds will play in our lives. For example, photo print quality will soon be available on picture phones, and iPods have the capacity to record music, and download and display images (Apple Computer [Apple], 2005).

Wireless laptops and handheld computing devices are used in higher education for taking notes in class, downloading lecture notes, recording heart sounds for research, and so on. Students interviewed for this study did not own laptop or handheld devices, specifically PDAs. Students did own iPods or another name brand MP3 player, and used them for entertainment purposes only. I would not generalize their responses to represent students as a whole, but it is worth noting that the students participating in this study did not use wireless technology for Web-based or blended learning.

An email questionnaire given to students who use digital assistants at Wake Forest University revealed the limitations of PDAs, and their feedback can be interpreted as having an impact on learning. PDAs were criticized because of limited battery power, slow bandwidth, small memory, and software incompatibility. Students described that they do not use word processing programs installed in PDAs, and purchasing these devices was not worth the extra money because the handhelds did not always function properly (Carlson, 2002). I believe

solutions to these problems are quickly being developed and the use of PDAs and iPods in higher education will continue to increase. How these will be used to advance contemporary learning principles needs investigation. In my opinion, these will function as one form of media delivery, and similar to Web-based learning, handhelds will not replace traditional lectures.

Students were forthcoming about their preference for studying from the computer screen or from Web pages they printed. Understanding if a large number of students relied on printouts for reading and reviewing course material is important information for designers and faculty developing Web-based learning. Organization of websites and material in Web pages, the amount of content, and the number and size of images included affect how Web pages print, and the amount of time it takes for students to print the information. In addition, by what means students study addresses the idea of anytime/anywhere assumptions that are made about distance education. Students claimed to print notes and reading assignments from course Web pages, instead of reading directly from the screen. Their reasons ranged from computer screens hurting their eyes and causing fatigue to their inability to concentrate. Inability to retain what they read was more difficult when using university computing labs where other students were working and talking. Added, students multitask when working on the computer—chatting with students, checking email, listening to music, surfing the Web, and studying for class. “There are too many distractions,” which reduces the amount of time students spend studying. One student did explain she read from the computer screen because she had limited access to a printer, and the cost of printing the number of pages for a course became economically impossible. She was the exception when compared to all students interviewed.

Reading from prints or computer screen can be considered a learning preference based on learning style. I placed this issue in the anywhere/anytime section because of feedback I received from students. For example, one student stated, “When I was studying for class I couldn’t take

my computer every where, so I printed them out [Web pages] ...” This leads me to the question, does anywhere/anytime access made characteristic of distance learning still exist, at least partially, in theory? I believe it does. Until all students own or have twenty-four hour access to wireless technologies, connecting them to the Internet and their Web-based courses, the concept of anytime/anywhere access has to take into consideration that students continue to rely on print media. Printing course Web pages gives students who do not own mobile computers access to course content. Added, people in general prefer reading and studying from printed material. Book publishers have even slowed the availability of electronic books because the market has yet to demonstrate human preference for them compared to hard and soft covered books.

### *Limitations*

I want to conclude this section by mentioning additional limitations that have an affect on teaching and learning in higher education. The cost of technology is decreasing for the individual buyer. I believe students in general have access to computers for school, either old or new technologies. Individuals attending private universities may have an increased chance the university will have the funds and systems set up to offer laptop computers and printers to every freshman students. The impact the economy has on both private and public universities, large and small, will lead to placing financial responsibilities for acquiring needed technology for higher education on the student. This has the potential to worsen the digital divide, and restrict access to learning online.

Development of distance education is costly in respect to department budgets and faculty time. Keeping up with emerging technology adds time to already busy schedules and strained financial resources (Watts, 2003b). Administrations and faculty should be willing to communicate and collaborate with faculty and staff from other universities. This can aid in expediting the time it takes to research what is new and future projections of technology use in

higher education. Support staff can learn about the type of workshops offered to faculty at other institutions, giving them ideas for how to improve their human infrastructure and programs teaching keyboarding, computer, and Internet literacy skills to faculty and students (Levin & Arafeh, 2002). It is important for professors to remember that students are less concerned with technology, specifically, and more concerned with teacher attention, teacher interest in the course, and course content.

### Interactive Design and Web-based learning

The Internet has evolved into a technology that is integral to society. In many ways it is redefining how we access information and function in a consumer culture—buying movie tickets, making airline reservations, downloading music, etc. Students use some element of the Internet on a daily basis, from chatting with friends online to enrolling in Web-based courses. Their prior experiences and use of the Internet have led to an expectation for how websites should look graphically for different purposes. Students interviewed were able to make mental comparisons to both commercial and educational sites they have experienced using at one time, using phrases such as, “looks like” and “reminds me of...” When opening a feature film’s website, for example, students expect to see images, video, and graphics symbols that represent the movie itself and film genre in general. Similarly, they have an expectation for how a website looks based on text, images, and sign systems commonly used.

### *Semiotics and Interactive Design*

Visual representations are viewed and decoded based on an individual’s past and present experiences. People construct identities and express themselves through what they see in mass media, and through the social groups in which they perceive themselves as belonging. These social groups typically function within, but are not limited to the boundaries, values, and expectations of a particular discourse (Gee, 2003). Traditional college-level students affiliate

themselves with a number of different social groups, moving from one to the next without conscious thought. Relating this concept to the Internet, students use websites that represent a multitude of different discourses (education, information, news, music, etc.) in different ways, and for a variety of reasons (Barnard, 1998; Gee, 2003).

Websites developed and used for commercial purposes have established, although somewhat flexible, rules for how they are designed. Over a decade the Internet has been used in education, and the development of online courses has led to a standard set of guidelines and aesthetics by which education websites are recognized and used. As a result, students have an expectation for how a website should look for education—formal. Even when online courses share similar images, sounds, diagrams, video, and objects with commercial sites, taking on different meanings in the learning context, students have a difficult time initially imagining the use of commercial design aesthetics for their Web-based courses (Gee, 2003).

The pervasiveness of digital data has given rise to the production and use of new symbols and signs, and new rules for communication (Tapia, 2003). These symbols, words, and images take on distinctive meanings when used in specific contexts, and their meanings are read based on an expectation for an established semiotic domain<sup>32</sup>. The theory of semiotics describes individuals as naturally acknowledging the existence of sign systems that have been mastered for specific purposes. We may or may not be consciously aware of the relationships and patterns of signs that are used in our culture (Cavallaro, 2001, Hall, 1997), because we see images over and over and learn their meanings and their uses in specific contexts, making them culturally relative.

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<sup>32</sup> Gee (2003) defines semiotic domains in the following text: “ ‘Semiotic’ here is just a fancy way of saying we want to talk about all sorts of different things that can take on meaning, such as images, sounds, gestures, movements, graphs, diagrams, equations, objects, even people like babies, midwives, and mothers, and not just words. All of these things are signs (symbol, representations, whatever term you want to use) that ‘stand for’ (take on) different meanings in different situations, contexts, practices, cultures, and historical periods....one or more modalities (e.g. oral or written language, images, equations, symbols, sounds, gestures, graphs, artifacts, etc.) to communicate distinctive types of meanings” (p. 18).

Students have an expectation for how Web-based courses look. The design establishes a functional context for using the site. Content and descriptive information (symbols) indicate to students that they are entering a course webpage used for the purpose of learning. This may be attributed to the increased number of online courses that are developed using manufactured course management software. Software typically has a standardized design and structure for all faculty to use for pasting course content into the (pre)established Web pages with a common layout and navigation structure. This results in similar aesthetics for most Web-based courses at one or more universities.

When students open a course Web-site, they understand why they are using the site. Web-based courses delivered using course development software have an opening page that contains a listing of student's online classes with a Web presence and a login field. These elements function as symbols which represent the meaning, purpose, and function of the website. Because this format is the same for every class it is easy to use. The courses themselves are organized and structured in a way that makes it simple for students to read material, and link to different sections of a website. Students' familiarization with the overall structure, appearance, and function reduces the time needed to become proficient using the pages and makes learning a more positive experience.

When describing specifics of course websites, students explain that most sites have a syllabus, links to sections in the course, course notes, assignments, quizzes, and the design style is serious and not fun. Many of the courses look the same with a "cookie cutter" structure and aesthetic. They are viewed by some students as "boring," but at the same time they do not think online learning should look fun because students will not take courses seriously. Other students were more interested in alternative design styles for Web-based courses, thinking interesting aesthetics would motivate them to explore the subject matter and learn.

### *Mass Media Aesthetic and Web-based Learning*

When looking at websites, students interviewed did not anticipate most of the examples to be places they would expect to go for online learning. Only when a login page with a course number and title was used as an introductory “home page” did the student make the connection that it was for a college course. Students did not expect online courses to share similar aesthetics as commercial, news, and entertainment pages they viewed on a daily basis. However, students believed if they were accustomed to interacting with Web-based courses containing graphics similar in style to mass media genres they are familiar with using, they would be more motivated to learn.

Is it possible to design Web-based courses using symbols, images, and text that are shared with mass media and mass media websites? Interactive designers adapt aesthetic qualities from media genres, such as books, magazines, film, and cartoons. Use and placement of graphics on a Web page, and the chunking of textual information is one example of how designers have adopted mass media design for use in websites. These qualities are integrated because they attract and engage viewers (Helfand, 2001). “On the computer, figures which are used for interactions such as home, an envelope, a trash bin, a magnifying glass, a file, a loudspeaker, a musical note, a camera, arrows, a pencil, and a paintbrush regularly appear, and these embody the presence of places in our understanding of the discourse—they are commonplaces made graphic” (Tapia, p. 19). They are commonplace when used on the Internet, but their embedded meanings change when used in different online contexts. These sign systems are no longer firm and permanent. There is a slippage in meaning when icons and metaphors are used within and to visually describe different genres—magazines, newspapers, and other media surrounding us. Meanings of sign systems change across time and space, and are applicable to a multitude of visual and literary texts (Kress & van Leeuwen, 2001). Images, graphics, and type, as examples, take on visual

forms that can directly relate to the discourse within which a website is attributed, and when used in contexts outside a specific discourse, these symbols can take on altered meanings representative of new context.

Clip art is used in many course websites, and the graphic style is cartoon-like or animated. Icons and metaphors (mailbox, trash, folders, etc.) have been used and attributed to Web graphics. These icons are accepted graphic indicators, and have become a common visual language for various technologies (PDAs, Internet, TiVo, etc.). When visually indicating communication mediated technologies (email, IM), or sections of a course websites (home page), faculty should consider using the icons that are commonly found on the Web, and alter the style of the graphic for a sophisticated look.

Dominant education discourse is seen as formal and serious, from K-12 through graduate school. Rules set in conventional education, have transferred to online learning. Added, usability standards and guidelines have attributed to the formal structure and aesthetic of Web-based courses. All websites, in particular those developed using course management software, share a similar, simplistic style. If design styles influenced by both modern and postmodern design are used on a more constant basis, students' expectations for the appearance of a course website would be disrupted, and in time their expectations may change. When alternative design styles similar to those used to create mass media aesthetics are proposed, students are open to the possibility that online learning can be visually interesting. Interactive design that is representative of music, film, and magazine genres can be applied to course websites providing they do not interfere with the student's ability to read and learn course material. Semiotic meanings can be adopted from mass media, and applied to online education. Design, similar to how it is applied in some commercial websites, can be used to engage students. Students are interested in this concept and foresee graphic changes as having a positive impact on their learning experience.

Students today are diverse in age, income, and ability. They have a wide variety of expectations, influences and education, and they have more experiences responding to a world of designed messages (Forlizzi & Lebbon, 2002). It is important to design with the target audience in mind. Before considering alternative design styles, developers of online courses need consider the mode of address for an educational website, and the subject position of the students. By this I am referring to what Elizabeth Ellsworth writes about in *Teaching Positions: Difference, Pedagogy, and the Power of Address* (1997). She writes, “The concept of mode of address is built on this contention: In order for a film to work for an audience, in order for it to simply make sense to a viewer...the viewer must enter into a particular relationship with the film’s story and image system” (p. 23). In education, this process of representation is an issue in how Web-based instruction addresses students. “A pedagogical mode of address is where the social construction of knowledge and learning gets deeply personal. Its subtleties can shape and misshape lives, passions for learning, and broader social dynamics” (p. 6). Subject position is the assumption that can be made about who the intended audience will be for a course, as an example. Who will be using this website, where are they from, what are their ages, what is there gender, etc.?

Graphics appropriate for the intended audience can impact student interest and motivation, while graphics that are inappropriate or “juvenile” will alter the respect students have for an online course. Graphics used for online learning should make sense of the viewer, encouraging the student to enter into a relationship with the subject matter. In addition, some mass media genres are not viewed as appropriate for college-level courses. For example, I showed students an education site created using a comic book genre (see Figures 4 and 5). The style was too extreme for students, using graphics and text that was far removed from their expectations for Web-based courses. Students considered the style useful for emphasizing key points in the course material, but if it were used for an entire websites they would not take learning seriously. Students

interested in interactive design styles that are similar to websites they use for information and entertainment purposes want an aesthetic that is sophisticated and reflective of the students taking the course.

Similar to the application of comic genre for a Web-based course, professors and/or designers need to be cognizant of the idea that a website can look too “cool.” A design that contrasts greatly from common media genres seen on the Web (news, search engines, magazines, etc.) may not be appropriate or liked for online learning. Students have different expectations for how Web-based courses should look depending on the academic discipline and subject matter. Students expect online courses in the Arts and Humanities to have more creative interface design and images than courses in Science and Business.

#### *Context of Learning*

Typefaces, colors, design grids, and graphic signs in a text are important for perceptual and formal qualities in design; they function cognitively and symbolically, and regulate individuals’ interpretations as they read (Tapia, 2003). Research indicates that students are sensitive to the context of learning. Context can be made up of and include technologies, other learners, teacher, the goal structure of the course, and the characteristics of instructional materials. Christopher R. Wolfe writes in his article, *Creating Informal Learning Environments on the Web* (2001), “An informal learning environment on the Web should create an atmosphere for learning rather than serve as an informal delivery vehicle” (p. 107). His idea should not be limited to informal learning. As I stated above, education discourse is set in a tradition of formalities and structures. Researchers in higher education differentiate between formal learning and informal learning, characterizing informal education to have more interesting learning spaces. I believe online learning should have an atmosphere for learning that establishes a context for the subject matter. Web pages and hypertext can be used to construct common metaphors and new

symbols in an appropriate way to extend the full potential of the Internet in education (Tapia, 2003). Researchers and educators often refer to classroom and online spaces as “environments.” These environments are described by students as looking exactly the same and have design styles that are boring. Learning online has the potential to reproduce a classroom learning experience, with benefits not available in a lecture setting.

How students learn in a formal sense does not have to be limited to how they read books, magazines, and newspapers. Graphic decisions can be made that establish an atmosphere for learning subject matter online. Signs and their connotations, including color, images, graphics, sound, etc., do not have to be fixed by cultural codes and can be used for multiple purposes in different environments. These signs may be used indicating experiences that are perceived or expected based on the subject matter. For example, the signs that indicated to students that a website appeared “old” or made her/him “feel like I’m in an archeology dig” were indicative of archeology and the idea of physical presence at an archeological excavation. The use of external signs can indicate to the students the kind of experiences that are associated with certain subjects. For example, art galleries have sign systems that establish a context for the physical space, advertisements about exhibits, display of paintings on the walls, and other elements that signify the presence of art (Barnard, 1998). Other internal signifiers, such as color, can be used by the designer to establish context because it has meaning based on cultural history—what specific colors have been given meanings in contexts within a culture. How viewers interpret the use of color depends on the “occasions in which it is used” (Kress & van Leeuwen, 2001).

The use of graphic design elements (color, layout, images, sound), and media (animation, sound, video) combined with the course content can establish a context for the topic studied. Animation is described as “drawing in” students and “narrows” the subject matter, letting students know the scope of the topic. For example, animation used in *Theban Mapping Project*

virtually moves students to the geographic point of interest in Egypt. Design elements, such as color, can be an expression of emotion, relate to the audience, relate to the subject, and may be descriptive and connotative (Kress & van Leeuwen, 1996). How design is used for a course website has the potential for creating a strong, positive impact on motivation and students' interest in the course, contributing to reflective, visual associations.

### *Web-based Course Structure and Usability*

So far this just seems to be a matter of brute technological facts. But things work in the world in certain ways because people make them do so or the very least, are willing to accept them as such. Then, when they work that way, people come to expect them to do so and build values and norms around them working that way. (Gee, 2003, p. 33)

As people, we are accustomed to interacting with cultural forms within established parameters, guidelines, accepted traditions, and rules. We know this because of accepted social patterns we have experienced during our life and new patterns we learn to trust. The Web has established patterns for accessing information—color coded hyperlinks, thumbnail images that when clicked open a window with an enlarged photo, and expectations for how news websites, for example, are organized and used. Navigation and layout is standard for most Web page genres, with the website's main links placed at the top or down the left side of the browser window.

Effective learning involves a number of steps a student must take to reach the desired goal. If websites are designed to model effective learning strategies and personal learning styles, hypermedia can help novice learners acquire expert learning strategies in a particular subject (Anderson, 2001). In online learning spaces, students make inferences in order to navigate within the content. Any link, window, or new Web page contributes to understanding and knowledge (Tapia, 2003). When students are familiar with the layout of a Web page and the structure of a course site, they feel comfortable and confident using the website. Descriptive links with familiar terms increases their level of comfort. This is one characteristic of course management software

that benefits students and should not be abandoned when using mass media influenced design for online learning.

Websites should be structured with a simple hierarchy, navigation format, which still allows for non-linear access to course materials. Students are intuitive and make linear structures non-linear and vice versa; they set patterns to go through the material in their own way, taking advantage of the flexibility of the Web. A hierarchy organization of links is only useful when the student has to select a limited number of links to reach the page they are seeking. The “three hops<sup>33</sup>” rule is still applied in these cases, and helps to organize the course Web pages containing the content. When text is used as links, the type size should remain the same, unless the professor wants to stress the importance of one section before another. All links need to be placed above the fold to decrease the chance students will miss seeing sections of the site.

When images are used as links, small thumbnail graphics are appropriate and the most economical when it comes to Web page real estate. Large images increase download times, and may impede students’ ability to read content. Thumbnails can be used to open enlarged images in the same browser window or a new browser window which sits on top of the original. “Quick links” can be added for more immediate access to sections of a course site that are used often.

External controls can be designed into a website’s structure, removing the need for a linear presentation of material (Anderson, 2001). Checklists are recommended giving students a visual and textual reference indicating what they have studied and what remains. “I would want a checklist to make sure I covered everything...you can just click it and go to it...” Site maps and table of contents can serve similar functions, giving students an outline of course topics. (These are more common features found on many websites.) Students are willing to use a variety of navigational structures as long as the course content is organized. Websites that are disorganized

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<sup>33</sup> When using a website, in order to link to the point of interest an individual selects no more than three links.

result in students having difficulty reading the material and too much content can be distracting deterring students' motivation to learn.

Students with positive attitudes toward computers perform better in online courses. They rely on previous knowledge and experience using the Internet and the Web to understand how to use course websites. The act of scrolling through a Web page or using multiple windows to display information depends on the personal preference of the student and what they are accustomed to using. Scrolling can be compared to reading a page in a book: The student can go back to sections in the text on the page to (re)read information. When course content that is relevant to one topic is placed in one Web page, it is easy for students to scroll through the material. For students who find scrolling distracting, using multiple browser windows is described as more convenient, giving the student more control, and allowing them to multitask (i.e., listening to the audio while reviewing notes). Displaying content in multiple windows provides a way to compare course content. Student comments were consistently positive and it would be fair to make an analysis that the use of multiple windows for displaying content and studying creates an effective learning environment.

#### *Color and Type Style*

Color selection is important when making course content legible. Students attribute legibility to colors used and a minimal number of pictures and other elements on a page. Color applied in a website establishes context giving the impression that the site is for learning. Poor color choices can change the impression students have of an online course.

The use of type for visual communication purposes in our visual culture is everywhere. Type styles do correlate to content readability. This is common knowledge among professional designers, yet it may not be known by professors designing Web sites. Why professors use type styles that are difficult to read may be because they want to make the site more appealing to

others, when in the end their type style selections create legibility problems. Effective uses of typography that is legible, composed for the space, and selected based on the context of the communication will increase the chance students will be able to read all written content—use of sans serif fonts and larger type sizes make text more legible online. In addition, selecting standard type styles supported by popular browser software increases the likelihood students will see the format and design of the Web page exactly how the professor intended it to be seen.

I was curious to know how students would react to the placement of text over an image. My professional opinion was validated when students explained they would find it difficult to read (see Figure 2). This treatment of the text over the image can be compared to text placed over busy website backgrounds. A few students saw the treatment as a way to save space on the Web page, however, I do not believe that is reason enough to ignore the opinions of a majority of students. If text is placed over an image, it should be legible, in small block format, and used to make key points.

### *Images, Text, and Learning*

Modern design is often utilitarian. Postmodern design has come to be viewed as relative and dependent on social or cultural context. Because graphic design plays a significant role in visual culture—creating visual experiences and constructing visual experiences that tell us how to “read” our environment (Barnard, 1998)—its role as “image,” historically, gives it a lesser value than literary texts. Image inferiority has been attributed to its consumption by the working and lower class, in the form of popular culture, and because images appeal to emotions. Mitchell (1994) theorized how the hierarchical differences between words and images are dissolving, and visual culture (re)examined the use of imagery and media in everyday life (and education). Yet, I believe students continue to define the function of images used in education based on established ideological positions. They can imagine Arts and Humanities to look more aesthetically pleasing

because of the subject matters themselves, and because these disciplines, like images, have been viewed as inferior to the sciences and other literary subjects.

Images are ideological; they influence and teach us how to see, think, and function in modern culture. The abundance of visual and textual information changes the way we interact with our environment. Juxtaposing images with text and other media impacts how we understand visual media, traversing all our experiences from every day activities to education. Our culture, a visual culture, is defined by the interaction between the individual and what they view.

In the modern world, language is not the only communicational system. More current theories alter the dominance of text over image according to social practices of today (Kress & van Leeuwen, 1996). Many visual symbols are significant. Words, images, and graphics are juxtaposed in a variety of ways, and take up increasingly more space next to words. This can be seen in newspapers, magazines, and textbooks. Images also carry meanings that are independent of the text, which images have for many years served to support. Reading and writing today is not as it once was perceived. We read multimodal texts in different ways depending on the rules and requirements of the domain in which we are a part. When we read we have to acknowledge that we are reading more than words; we are reading images, motion, sound, and so on.

The relationship between the image and text has strongly been debated and theorized over many decades. Modern structural and semiotic views places text in a dominant position over images: Text articulates complex ideas while images can only represent visual objects and express themselves when they are dependent on verbal titles. When learning in online spaces, students' dependence on this hierarchy of text before image is pronounced. The students interviewed did not look at images to learn, unless they provide supportive material and information specific to the topic. Students described liking when professors use "descriptive" images, but too many images are not helpful when learning. If a student does look at images that

are included in course material and form an opinion, they return to the text to make sure their interpretation is “correct.” Text is relied upon to give students the correct meaning of pictures.

Contrary to these opinions, students explain when reading a magazine, newspaper, or website for personal reasons, they are drawn to looking at images first. They are not concerned with understanding the correct meaning and are willing to come up with their own interpretation of visual experiences. I do not want to say that students can be categorized as relying on text for learning. A majority of the students I spoke with were enrolled in the physical or chemical sciences, and business. Students from Humanities and the Arts expressed a preference for more images for learning in traditional and Web-based formats.

#### *Visual and Verbal Learning*

Information today is available in visual (animation, video, photos) and verbal (audio and textual) modes. Everyone comprehends both visual and verbal information, yet individuals have a preference for one or the other representational style. Combined uses of visual and audio information contribute to greater retention and recall from students (Anderson, 2001). More impact is made on learning when narration and animation are presented concurrently and not successively. Smaller sequences are better than larger, and learning using multiple media is enhanced when learners can hold visual and verbal information in memory at the same time (Mayer, Moreno, Boire, & Vagge, 1999). Literature supports the opinions of students who like the use of narration in combination with PowerPoint presentations. The combined voice-over, images, and added interactive control of the presentation by the student has a positive impact on understanding and retention.

People differ in their preference for visual or verbal modes of representation (Wolfe, 2001a). Students describe themselves as visual or verbal learners. A majority of the students interviewed said they were visual learners. (If investigated further, research may contradict how

they relied on text for understanding). Students who prefer visuals are capable of taking advantage of pictures, graphs, charts, and video when learning online. Verbal learners learn more effectively when listening to tapes, and reading non-illustrated texts (Anderson, 2001).

### Chapter Summary

Connections can be made among the website review analysis of mass media genre, postmodern design, and constructivist theory, and my interpretation that evolved from the analysis of the student interview responses. How websites are designed for commercial, entertainment, and educational purposes (formal or informal), the benefits and drawbacks, crisscross through each analysis (website, interview, literature) and are represented in my interpretations. My intention is to use the analysis as a way to uncover the similarities and differences discovered among student opinions, published scholarship, and existing websites, in order to provide an example and outline recommendations for online course interactive design considerations. It will be beneficial to faculty for determining how to construct Web-based courses that include effective teaching strategies, interactive design, and Internet technologies resulting in effective learning. The development of new and expansion of existing concepts and theories that have evolved from my analysis and interpretation of the data will help me to answer the research questions that formulate this study. The information will serve as a basis for making aesthetic, interactive, and pedagogical decisions for a hypothetical unit in a Web-based art education course using multiple media.

## CHAPTER 6

### DISCUSSION

In this chapter I would like to return to the four questions that I explore in this study. These questions (re)examine the interactive design frameworks established for Web-based education resulting in new considerations for design and development of online learning experiences for art education instruction. These four questions include: How does constructivist theory contribute to student learning with Web-based instruction? How can we characterize student learning through visual culture? How do students' experiences of visual culture influence Web-based learning? How do the aesthetics of Web design influenced by mass media impact learning?

Discussing constructivist contributions to student learning with Web-based instruction corresponds with postmodern theories and contemporary approaches to teaching art education common in today's classroom and online instruction. This provides a foundation for approaches for Web-based instruction that directly influences interactive design decisions.

Concepts of how students learn through visual culture and their experiences of visual culture is of significant importance in art education, and makes up a large portion of art education research in the late twentieth and early twenty-first century. These questions result in useful information about how student experiences with visual culture influences their expectations of Web-based courses and shapes learning.

Visual technologies and mass media became an important part of visual culture. Both are based on visual aesthetics that are sensual, inviting, provocative, and prevalent. When exploring the Internet, students come in contact with Web interface aesthetics influenced and defined by mass media genres. Yet, these aesthetics are not seen as influencing the design of Web-based learning. Questioning how aesthetics of Web design influenced by mass media impacts learning brought about important information that required me to reflect on my personal biases and expectations going into this study, and at the same time provided useful information needed to answer the main research question: How can the way students learn through visual culture inform the design of Web-based art education instruction?

Included in this discussion is descriptive information for the design of interactive Web-based courses based on student feedback, which both agrees and disagrees with usability design guidelines and standards. This information is used to give me insight into students' opinions about commercial and Web-based education design aesthetics and website structures they have used in the past. Student responses and answers to the research question, combined with my interpretation and analysis of the concepts and theories that evolved from this study are utilized for developing an example of how the information is applied to the interface design of an online course for an art education course unit.

#### Web-based Art Education Instruction

Contemporary approaches to teaching art are through inclusive frameworks, linking together art, and the ideas and lives of artists and students. Postmodern art education theories see art as a form of expression that influences how students view themselves, and how they situate themselves within society and culture. Art is created within a social context; it is taught using one or more pedagogical approaches: multicultural, feminist, visual culture, critical theory, and cultural theory to list a few. Art education today is centered on issues of identity and difference,

and responsive to and representative of the numerous social contexts in which art is created. Curriculum is integrated, promoting inquiry-based learning structured around important ideas and life-centered issues that span multiple subjects. Teaching and learning reflects the complex world in which students live, and how they construct meaning in their daily lives. Students learn about contemporary artworks by inquiring about topics related to other subjects—politics, economics, religion, ecology, mass media, and so on. The objective is to bring together knowledge from many sources to develop an understanding of art and the complex issues it represents. Students learn to think about art as forms of expression (TETAC, 2002). What is taught is made relevant to prior experiences and interests. Lessons focus on today’s real-life issues impacting students and artists. Art education instruction promotes opportunities for self-reflection, and active learning to understand and resolve social concerns within ill-structured domains.

The concept of big ideas is used as a starting point for art education instruction. An idea is used to promote thought, serving as a lens that directs a student’s attention to specific issues and ways of viewing, critiquing, and producing art, and acknowledging artworks created by culturally diverse populations. Students are given opportunities to build upon prior knowledge while seeking new information that leads to increased understanding about artworks. Learning takes place within a community that, for example, is made up of the artist, teacher, and students, and may also include public officials, journalists, scientists, and politicians. Instruction is centered around an idea that is transformed into relevant questions to be studied. These ideas and essential questions help teachers engage with meaningful concepts and issues.

*How does constructivist theory contribute to student learning with Web-based instruction?*

Constructivist instructional approaches characteristic of education today, are applicable to both art education classrooms, and Web-based learning environments. Constructivist theory is interested in how people make meaning of their lives, based on how experiences are historically

and socially influenced. An emphasis is placed on student efforts toward understanding, student thinking, sense making, and the ability to transfer knowledge from one setting to another (Driscoll, 2000; Prawat, 1992). Constructivist theory contributes to student learning with Web-based instruction by creating environments and learning experiences that offer authentic activities, and situations that are fundamental to effective learning (Brown, et. al., 1989; Efland, 2002; Lave, 1997).

Constructivist learning practices applied to Web-based instruction invites contributions of each student to the learning process. They have the opportunity to actively learn in visually rich online environments, which they are accustomed to in their everyday lives—through the use of computers and the Internet giving them access to a multi-layered, textual and visual information. “Online technologies are one type of tool enabling global connectivity that can support constructivist classroom practices” (Gallini, 2001, p. 15). Experiences are in information-rich, interesting, interactive, realistic contexts that engages student in active inquiry (CTGV, 1999).

Web-based instruction does not have to be limited to activities and solving problems. Concepts and ideas that are relevant to students’ lives serve as a starting point when developing a course. For example concepts and ideas about artists and their works are presented in contextualized forms. Curriculum that is organized around a set of ideas helps to inform integrated, inquiry-based learning versus a hierarchical fixed structure of content (Prawat, 1992; TETAC, 2002; Walker, 2005). The learning situation in which an idea is embedded is important to the understanding of and the ability to use an idea.

The art instructor’s role when teaching a Web-based course applying constructivist principles becomes more interactive. They focus on student understanding of course content through the use of complex questions, and by developing learning challenges motivating students to think critically (Prawat, 1992). Attention is given to course content selection, and teachers

function less as vessels of information and focus more on facilitating and guiding learning, emphasizing both how students construct knowledge and their learning outcomes. Professors pay attention to real-life issues impacting their students, and create learning spaces that allow students to make sense of their varied learning experiences. This is done through interactive instruction, providing immediate access to multiples sources of information, and structuring online spaces to accommodate students with different learning preferences (visual/verbal and linear/non-linear). Education and daily interactions “involve learning through images and objects that represent knowledge and mediate relationships between student and content, student and teacher, and student and artist” (Freedman, 2004, p. 83).

Students’ perceptions of faculty interest in a course and the amount of time a professor works on a course website influences respect for a class and motivation to learn. When working online using a website that is well developed, organized, and appeals to the student results in the student wanting to succeed for the professor and for themselves. Creating interactive Web-based courses is made easier with every course development and Web publishing software upgrade. Professors have access to more resources necessary for teaching online. Use of computer-mediated communication software for synchronous communication can mimic the impromptu stories told in lectures, and high quality visuals are easier to create for demonstrating difficult concepts that are currently described as being better discussed in face-to-face classes. Emoticons cannot make up for the loss of spontaneous gestures and visual cues from students and teachers in a classroom. However, a combination of synchronous communication and quality visuals and media can be used to simulate face-to-face discussions. Video cameras available for most desktop computers can be used for one-to-one video conferencing without the need for large scale, expensive video conferencing facilities.

Organization, amount of content, and understanding Internet tools used by students are needed considerations when teaching Web-based courses. Web spaces allow for multiple ways to organize and structure course content. How course material is organized can provide patterns through information helping students build on knowledge as they learn complicated concepts (Gee, 2003). In addition, the amount and organization of information on a Web-page should be structured in a way that is sensitive to students use of printouts of course Web pages for studying and note-taking, and for students who are studying directly from the computer screen. Chunking information leaves opportunities for discovery and high-quality interactive experiences. This includes images, text, and other forms of media. Material can be organized in the order in which the material confronts the learner, encouraging students to use general and basic information for understanding more difficult concepts (Gee, 2003). As a result, students spend more time studying when enrolled in Web-based courses.

Online learning is conducive to improving cognitive flexibility, enabling students to use their knowledge in real-world situations. Web-based modes of delivery can provide diverse examples, clarify concepts, and convey information for better understanding in complex, ill-structured domains characteristic of arts and art education courses. Constructing knowledge online using multiple media provides flexible learning opportunities and content comparisons (fine art and popular media comparisons, for example). This increases the likelihood that knowledge can be transferred to new situations and students will form new understandings structured around concepts and ideas.

PowerPoint software is a standard presentation tool used by professors teaching large and small lecture, blended, and Web-based courses. The most effective use of outlining content using an instructional presentation format is by giving students control over how quickly they move through the material, and providing voice-over narration if the students are asked to contemplate

and study visual material presented on the screen. Narration can also elaborate on difficult concepts that are outlined using bullet points. Accessing lecture slides using PowerPoint gives students increased access to visit course material, and instruction that offers opportunities for cognitive flexibility.

Students choose to enroll in Web-based courses because they can learn at their own pace. Learning online requires self-motivation and requires as much if not more time than when taking lecture-based courses. Students who are able to teach themselves have better retention rates increasing metacognitive, higher order thinking. The intertextuality of Internet learning spaces creates complex structures among multiple media fostering non-linear thinking (Rogoff, 2002; Yang, 2001). Hypertext provides unidirectional and multidirectional options and possibilities for constructing and navigating online courses. Students are able to establish their own patterns when learning. Linear learners can take advantage of an outlined sequence of events, and what is learned can be built upon throughout the course. Non-linear approaches to learning can take advantage of different paths for discovery, and students have the ability to think in complex structures. Students begin to think in terms of interconnectivity.

Exposing students to numerous forms of content, interpretations, and perspectives, and relating their experiences to what is learned promotes metacognitive strategies used to search for similarities and construct connections between topics in a subject (Efland, 2002; Koroscik, 1996). Students are able to make connections between what they know and the material they learn online. Web-based constructivist instructions promotes the advancement of novice learners to expert learners, and students are allowed to test their knowledge against multiple views. For example, students can search for similarities of art movements, and political or social themes which influence specific artists. By constructing connections between similar and different structures, visually and perceptually, students develop their abilities to understand (Dondis, 1973;

Koroscik, 1996; Mitchell, 2002). This process can be accomplished individually or collaboratively; it is based on how students see and learn from their prior experiences and expectations.

Construction of knowledge online is facilitated through dialogic interactions between students, and students and teachers. Students are included as legitimate participants in learning; they understand how to think and interact in knowledgeable ways. Mediated aspects of learning and interaction provide students with socially relevant skills and knowledge. They use computer-mediated communication to exchange ideas and participate in conversations. Online interactions and dialogue strengthens learning communities and encourages intellectual discussions. The collaborative process by individuals working together helps students negotiate meanings and construct new knowledge, while assimilating understanding from multiple perspectives (Yang, 2001). These “collaborative Webs,” “Internet documents created by more than one student in collaboration” (Oliver, 2000, p. 7) help students develop more advanced understandings of content by connecting their ideas to those of their peers.

The types of computer-mediated communications systems most commonly used by students and teachers include IM, bulletin boards, email, and blogs. IM is a forum for synchronous discussions where students schedule meetings with other students to work on homework assignments, or to ask basic homework questions. Email is typically used to communicate with professors and TAs to ask about office hours, and to ask questions about assignments. Questions and responses delivered using email are well thought-out. Students both read and contribute to bulletin boards. Student understanding of course material increases when learning with the assistance of their peers in comparison to seeking help from the instructor. Blogs are a similar form of community learning, bringing together learning technology and story telling. The process of contributing information to a blog encourages self-reflective practices and

helps students engage in metacognitive thinking. Example uses of blogs in art education are for documenting research processes, conducting interviews, and discussing artists' works between teacher and students.

Another way constructivist theory contributes to learning with Web-based instruction is by preparing students to learn in one domain and providing the knowledge needed to transfer information to other school subjects. Students are taught and encouraged to build bridges between their real-world experiences and the identity they take on in the classroom. Online instruction using visual technologies enable students to make connections between people and concepts, ideas, and disciplines.

Construction of knowledge results from exposure to media forms that may be more appropriate for inquiry or problems solving (Yang, 2001). Availability of visual materials and information online gives students access to numerous resources they can download, print and incorporate into their own projects. The social conditions of viewing and interacting with visual media are important for the way students construct interpretations and understandings (Freedman, 2003). Online spaces provide for a powerful and extensive learning environment when incorporating multiple media, which provides context to course topics. Intermixing of media allows for a new description of visual representations. Distinctions between media may be blurred creating a unified synthetic experience.

The availability of vast amounts of information for Web-based instruction is emphasized in constructivist theory as improving learning outcomes. Faculty should be selective when adding links to course websites, and understand that when links are available, students will only seek out additional information if they are required to do so or if the content is relevant to their personal interests.

## Student Learning and Visual Culture

College students live in a complex culture that is diverse and discursively divided, and these differences and divisions are made even more prevalent through the expansive use of the Internet and communication technologies. Mass media and communication have driven changes in culture by coming up with new forms of visual communications, which are adaptable to a variety of cultures and ideological situations. As a result of this, the production and consumption of images has increased. Today, images are theorized as teaching us how to think, see, and feel in modern culture; they change and mediate how students interact with technology and with other people (Duncum, 2002).

### *Art Education and Visual Culture*

Art education emphasizes the teaching and understanding of visual culture within social, cultural, and political contexts (Hicks, 2004). The pervasive visual influence of society through multiple forms of media and communication is studied. Visual culture pedagogical practices help students examine and critique the codes of multiple media. Students rely on their experience and knowledge when trying to understand the complexity of visuals they see on a daily basis, elements that make up artworks, and juxtaposition of media with visuals and text.

Art education instruction teaches students how to view the world as social practice through reflection. Students learn what role images play in our culture, and understand how images and their viewers make meaning. They learn to see the power of images and question their relationships with the visual by examining the histories and values of the artist and viewer.

### *How can we characterize student learning through visual culture?*

Visual culture's impact on student learning is the result of educators recognizing its influence on society through mass media. In response to this, teachers are redefining curricular and pedagogical practices in order to enable students to have a forum for examining and

critiquing the codes of mass media systems, including the changing relationships between images and texts (Garoian & Gaudelius, 2004). Teachers are now acknowledging that students draw on their own experiences when understanding pictures that either stand alone, or are juxtaposed with one or more forms of media.

Modern notions of aesthetic experience were limited to concepts based on one universal aesthetic quality. Beauty was based on formalistic elements. More contemporary experiences with visual culture focus on the importance of visual experience and construction of knowledge through what students see everyday (Freedman, 2004). The study of art is no longer restricted to the study of fine art forms, also referred to as “high art.” Artworks created by the “masters”—predominantly white male painters and sculptors—do not dominate art education, art history, and graphic design curricula, as examples. Visual culture and art forms are understood through individual knowledge of popular culture and new meanings that become attached to imagery. Art, images, and media that represent everyday life, plus cultures, and societies are included in education. Students are paying attention to images that represent more than one ideology through the study of popular media, artifacts, photographs, etc., that have a direct influence on their lives and lives of other people. Learning through visual culture requires a cross-referencing of images and other forms of media and culture in order to make meaning of what is seen and read.

Contexts of visual culture are important as a means to extend meaning and promote learning. For example, it is important that students learn why art exists and its contribution to their lives. Learning in today’s visual culture involves the understanding of the pervasiveness of communication and information technologies connecting people and cultures and leads to better understandings about how visual culture changes human experience. Students learn what role images (artifacts, photographs, advertisements, etc.) play in culture and society, and how images and media work in social and cultural contexts. By understanding how visual images are situated

historically, culturally, and socially, students are able to attribute meaning to what they see in life and in education.

Learning experiences reflect cultural experiences that are dominated by the visual in everyday life. Contemporary visual culture theory assumes an individual constructs her/his own meaning and interpretation of visual and verbal texts, which are dependent on prior knowledge (Freedman, 2004). Qualities of learning through visual culture, involves a student knowing how s/he interacts with images, and how these formulated interrelations result in independent meaning making. Images engage viewers and are engaged by viewers. Learning through visual culture is approached from the student's point of view and in a socio-cultural context. Art, for example, is experienced in different ways by different people at different times. They learn that images, texts, and their meanings are embedded in discourse (Mitchell, 1994), but meanings and context are not fixed or stable. When meanings and contexts change, the meanings of images change while retaining what is signified in their original context. The transference of meaning from one context to another opens opportunities for knowledge to cross multiple disciplines. Visual culture is interdisciplinary and aspects of it can be viewed from an artistic, historical, cultural, economic, political, and many other positions crossing cultures and technologies (Freedman, 2004). In doing this, students take part in integrated learning, increasing the opportunities to transfer knowledge to other education and life activities.

#### *Image, Text, and Media*

Student learning requires the negotiation of images in many forms, delivered through print and digital media. Learning through visual culture means paying attention to images and their relation to language. It is important for students to know how images are understood historically and the traditional boundaries that have placed an emphasis on learning from literary texts. Words and images are defined by their value and interest, based in literary ideological

traditions (Mitchell, 1986). Visual and verbal texts, also referred to as literary arts, are given a superior role over images. Even when postmodern theories have blurred the distinction between the verbal and the visual, text continues to serve a relay function (Barthes, 2000), describing what images mean and/or what is seen, helping the viewer choose the correct interpretation.

Postmodern visual culture and semiotics places an emphasis on image as text. With the abundant interest in visual culture studies today, learning now includes the study of both text and image that are made up of many forms of mixed media, and does not separate text from images, audio, video, animation, etc. Teachers and students use multimedia and multimodal environments to link meaning making, learning, and thinking to multiple modalities (words, images, animation, video, sound, etc.), while being aware that these texts operate in and across different contexts, communicating meanings that neither single mode can do independently of the other (Gee, 2003).

Semiotic modes other than text and language are considered capable of serving the function of representation and communication. Representations ask us to reflect upon what we perceive and what we know, and refer to a combination of possible meanings versus a single, absolute meaning (Cavallaro, 2001; Freedman, 2004). More than one mode (e.g. language, pictures) may be realized in the same medium (e.g. painting or digital art) (Kress & van Leeuwen, 2001). An image, for example, can ultimately represent anything it is capable of suggesting, and any representation can be approached as text or a system of signs. Learning through visual culture requires the understanding that images are more often viewed without the context of their original intent, and juxtaposed with unrelated imagery in new contexts. When this is done through mass media forms, student thinking about their environments and themselves influence the way in which these images are understood.

All types of sign systems can be “read” and considered “language.” Learning is not limited to traditional forms, such as books or newspapers. Students learn to read environments—

what they come in contact with every day. Semiotic theory suggests that images are read as texts. Images and texts are socially and politically influenced and both can be used to mediate knowledge and support ideological positions. Images are no longer dependent on verbal or written descriptions to give them meaning. Instead, images begin to serve as another form of writing and communication (Mitchell, 1986; 1994). In visual culture, the image is the primary, universal means for communication, and is viewed as giving accurate representations of nature with the power to address the viewer.

The study of art and popular culture media through visual culture allows for interpretation of elements and symbols that have different social meanings. Multiple and extended meanings are attributed to the enrichment of learning (Freedman, 2004). Students today learn how to read images and media (text, image, video, audio, etc.), and as a result become more visually literate. They have the skills to use images and texts to develop knowledge and understanding by identifying meanings according to cultural codes. Reading images requires knowledge of a culture, and familiarity of cultural sign systems, and their connotations are understood within the circumstances that they are produced and consumed. What media represents is shaped by histories and values of societies and their cultures. A reader's interpretation of an image depends on his/her historical and cultural context. Students are given the freedom to interpret images, and learning includes visual literacy, which is made equal to language and text, and is regarded as a legitimate representation of reality. Visual intelligence is an important part of how students live in today's media dominated culture, and makes them critically aware of the relationships between multiple forms of media and multimodal experiences.

## Visual Culture and Web-based Learning

Students experience visual culture through the dissemination of images, text, and media, and through the use of modern technologies. These technologies provide for an enormous amount of visual and textual information that changes the way individuals interact with their environments (Weibel, 1996). How students interface with the world and with education is impacted by the visual. How visual culture is defined and the way we characterized student learning through visual culture is derived from social and cultural forms and experiences (mass media, popular culture, art, education, entertainment, etc.). “Visual culture is part of students’ daily lives and they approach life based, in part, on their daily encounters with diversity and complexity” (Freedman, p. 20). It is important to remember that visual culture is not limited to the study of images, but includes text, sound, film, etc.; it is visual, aural, and textual.

*How do students’ experiences of visual culture influence Web-based learning?*

Students have acquired an intuitive and educated understanding of visual culture as a result of their exposure to multiple forms of media and their learning experiences. The Internet is a social form of visual culture and visual literacy because of its didactic quality of mixed media information in Web spaces with an emphasis on the visual. The intermixing of media allows for a new description of visual experiences and representations. Students’ understanding of how to use the Internet, and their daily experiences reading and interpreting visuals help them use multiple browser windows to compare, contrast, and make connections with media. This contributes positively to their learning experiences and improves learning outcomes in Web-based courses.

Media and technologies contribute to students’ experiences of visual culture, with a majority functioning as cultural forms of mass media: television, film, radio, video/DVD, video games, advertisements, and the Internet to name a few. These forms require passive or interactive experiences from the viewers based on their technical characteristics, and their cultural and social

function. Based on experiences using the Internet for social and entertainment purposes, students have predetermined expectations for how websites should look graphically, and what forms of media are made available in a course website. Graphic design styles, images, and media used in commercial websites are not viewed as formal for Web-based learning. However, symbols and signs in the form of icons and interactive elements common on many Web pages do transfer to Web-based learning. Use of these symbols has evolved since the beginning of the World Wide Web, and have developed into a new visual language understood by most individuals, either through the use of the Internet or because these symbols have also been adopted by other forms of mass media.

Images, media, and design styles commonly seen in visual culture are associated with specific commercial contexts, making them culturally relative and difficult to use in an educational context. Web-based education is designed and developed using design standards and guidelines set in the 1990s. Aesthetic and structure for education created according to usability guidelines results in students having expectations for how these sites look based on established visual codes and rules. Using graphics and symbols whose connotations are attributed to commercial and entertainment websites in an educational context disrupts how students visually recognize and interpret either their transferred meanings or their new meanings. Web-based courses share similar images, sounds, diagrams, icons, etc. with commercial sites—only these forms take on different meanings in a learning context. Graphic signs in one context are not automatically transferred to representing learning due to education's formal discourse and accepted visual aesthetic.

Online spaces provide for a powerful and extensive learning environment when incorporating multiple media. Students' lives today are vast, complex, and predominately visual. The activity and context in which learning occurs is situated within socio-cultural and political

issues. Learning environments, influenced by our visual culture, have a profound impact on how we see what we see (Dondis, 1973). Familiarity with visual and online learning conventions is gained through exposure and understanding of our social and visual culture, plus current technology.

Interactive design of Web-based courses is used to establish context for subject matter. Visual representations are viewed and codes are read based on individual's knowledge and past experiences. Students' experiences using digital technologies have resulted in the production of new symbols, words, and images, which take on distinctive meanings in specific contexts, and meanings change depending on context and individual interpretations. Signs and their connotations are not fixed by cultural codes and can be used for a multitude of purposes in different learning environments. For example, students who described one website shown as "feeling like" an "archeological dig" understood the symbols used based on their association of visual and textual knowledge of archeology. Their knowledge about archeology is most likely constructed from learning in school, and contact with various visual media about the topic outside of formal education (television documentaries, educational videos, feature films, etc.) Specific color choices made—color as symbol—were attributed to the feeling of "archeology" and "old" because of the relationship of the color to the titles, images, content, and subject matter of the website. These elements serving as signs indicate the kind of experiences that are associated with a certain subject, and knowledge of this may be attributed to how visual culture influences Web-based learning.

Differences between words and images for understanding the world dissolve according to visual culture theory, yet, images used in Web-based courses still function as supportive content for literary texts. The historical text-image relationship remains in Web-based learning. Students live their lives constantly exposed to and interpreting visual imagery presenting a vast display of

meanings and messages. They are self-described as preferring pictures to images and as “visual” learners. However, when learning in a Web-based course, students rely on reading text to learn, and rely on images to support what is written. In addition, Web-based course subjects determine if students learn using images and media. The use of images for learning in the Arts and Humanities is more accepted, necessary, and expected.

Postmodern design treatments placing text within images or on top of images transfer to Web for many purposes but is not as easily used in Web-based learning—overlapping text and image making reading difficult, and disrupts the use of images as supportive media. Visuals do not carry meaning independent of texts: Students expect the images to mean something and that meaning is found in the written material. This is in part the result of students’ concepts for reading in a Web-based learning that is based on the rules of traditional education.

Knowledge is created from different ways of seeing the world including different modes of representation—the combination of word and image (Mitchell, 1986). An important way students experience visual culture is by the way images and text share online Web spaces framed within the computer screen. Mixed media online inherits the image-text problem because the forms that make up new media are historically ground in print and cinema (cultural forms), and dominance of one over the other changes depending on interface design decisions. Decisions result in how images and text are juxtaposed to shape or change the meaning of the other and what is learned. Learners’ awareness and understanding of the ways text or media can alter the meanings of images and vice versa overrides the separation of the verbal and visual disciplines (Mitchell, 1986). Being visually literate makes them critically aware of the relationships between multiple forms of media, connections that can be made, and how meaning is constructed.

Visual culture experiences and exposure to television, film, and video do not strongly influence student use of certain media forms provided in course websites. Students do not watch

videos to learn unless video makes up a significant portion of the online content, and/or it is a requirement set by the professor. Videos used in education are not made up of short clips that are designed in the disjointed style, popularized by MTV and now a common style used in television commercials and programs. The short clips and fast moving images almost ask students to create their own stories and meanings from what they see (Freedman, 2004), even when the main message is obvious. Students are more interested in watching videos that are from popular media or music, for example, which exhibit aesthetic qualities they see everyday.

Students' experience of visual culture influencing Web-based learning involves skills and knowledge for interacting with visual media. Knowing how to use Internet technologies further develops visual literacy skills to include understanding multiple forms of media and screen literacy. Screen literacy is the understanding of visual and textual icons and metaphors on the computer screen that have been established to provide easy interaction with the computer (Johnson, 1997). Screen literacy also includes the understanding of the icons and metaphors used in interface design. Visual culture influences online learning through interactivity by creating and constructing visual experiences. Graphic design directs students' approaches to reading and how they read in a Web-based learning environment. Yet, learning and experiencing visual culture and its media is dependent upon the individual learner, their interpretation, and meaning making. Not all students will experience Web-based learning in the same way, just as experiences of visual culture are not experienced exactly the same. Students' abilities to read multimedia texts in multiple formats within Web pages for a variety of academic disciplines combined with their knowledge of how to use the Internet increases their comfort when learning online.

Experiences of visual culture influence Web-based learning across most academic disciplines. Individual and combined visual culture characteristics impact Web-based learning for different subjects at different times and for different purposes. The degree with which student

experiences are brought into learning online is dependent on pedagogies specific to many disciplines. Visual culture has the most significant impact on subjects taught in Humanities, Arts, and Biological and Medical sciences<sup>34</sup>, and less in Business, Engineering, and Chemical sciences. This is not to say that students' everyday experiences do not influence Web-based learning in these subjects, only that what is learned from this study indicates greater visual culture influences of Web-based courses in those disciplines which use multiple forms of visual media that require student interpretation based on individual knowledge and experience, and the context in which media is used.

#### Mass Media Aesthetic and Learning

Computer imaging, animation, and other forms of media are “altering the conditions under which human vision articulates itself...” (Mitchell, 1994, p. 24). The Internet has become a common component in our daily lives, being used for both work and leisure activities: “Work and leisure activities not only increasingly involve computer use, but they also converge around the same interfaces” (Manovich, 2001, p. 65). It has evolved into a universal technology used to create, store, distribute, and access many forms of media. The user experience with the computer interface involves retrieving, viewing, and thinking about digital media that maintain an aesthetic which defines websites more as art objects (in the forms of video, images, or audio). Multiple interfaces can be constructed in graphically distinct styles using the same content. The interface creates a unique user experience. To change the graphic interface can change the individual's experience and how content is perceived and interpreted on the screen (Manovich, 2001).

#### *Interactive Design and Cultural Forms*

Web interactive design graphically mimics magazine, newspaper, and book layouts. The virtual pages are dominated by text (blocks of text, headlines, and hyperlinks), and include media

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<sup>34</sup> A chapter discussing medical visualization and visual culture can be read in *Practices in Looking: An introduction to visual culture* (Sturken & Cartwright, 2001).

elements (graphics, photographs, and digital video). In addition, pull-down menus, navigation bars, radio buttons, and metaphors for table of contents and indices, are added features. Interface elements consist of existing and familiar cultural forms—cinema, print, and the traditional human computer interface. These represent not just media but larger cultural traditions which have developed into systems for organizing information, presenting it to the user, and determining the experience when using the Internet.

Print and cinema can be thought of as having their own interfaces. The book is a physical object with separate pages, linear in format. Print is typically vertically or horizontally rectangular, and contains a table of contents, photographs and other illustrations, and an index. Cinema is arranged for the theatre space with the metaphor of a “window opening up into a virtual 3-D space” (p. 73). The conventions of film have historical roots that have developed over time—narrative, editing, and camera techniques. These are also found in today’s television and video media. The format is rectangular, inherited from Western painting, and the image proportion is perceived to be larger than the visible area. Similar to how film is perceived, content within a computer screen exists beyond the frame and is accessible using scrolling or “panning<sup>35</sup>”. Cinema is increasingly dominating the influence of the interface and its aesthetic forms are becoming the principles of the human computer interface and the Web.

A website and its interface is a space for the manipulation of objects on the screen, overlapping of windows and use of multiple windows, use of iconic representations, and contains hyperlink menus. Interactive design is defined and talked about using a cultural language representing the individual’s Internet experience combined with, and sometimes separate from established cultural traditions. And, the cinema (image) aesthetic does not completely interrupt print’s influence on interface design. The interface continues to be designed and constructed

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<sup>35</sup> “Panning” is a common term used in cinema to describe the camera movement across a scene (Manovich, 2001).

using hierarchical menus, linear presentations, and grid-like structures; it borrows from previous media forms using VCR menus and the desktop metaphor (Johnson, 1997; Manovich, 2001). The Web page format remains rectangular with pages containing written and graphic content. The interface is a space made up of non-linear interactivity while still formatted using traditional, print page layout, whether mimicking a book, magazine, or newspaper genre. “Scrolling” through content is reminiscent of the papyrus roll. Multiple forms of media are placed in these culturally influenced online spaces, and in Web-based learning sites, where content in the form of images, video, and audio play primary and secondary roles to information presented verbally or textually.

*How do the aesthetics of Web design influenced by mass media impact learning?*

Visuals, presented in many forms, can be used as motivational strategies for students learning in Web-based courses. Book genres used to design and create interactive online learning spaces can symbolize the tradition of reading—opening and turning pages, reading in a linear manner based on the construction of consecutive hierarchies. Hypertext can expand upon this format to create multidirectional possibilities, adapting learning experiences to students’ personal preferences.

Prior experience using the Internet makes navigating within Web-based courses easy and intuitive. This is, in part, a result of students’ experience using the Web for personal reasons. Familiarity with layout of books, news, and magazine genres, as examples, helps students navigate through course websites that integrate similar design and navigation structures. Web pages can be organized using content categories similar to headlines on news websites. Visual and textual content can be chunked and organized in columns making skimming and reading material easier, versus all the content in one Web page that the student has to scroll through to read. Working in a format in which students are comfortable and find appealing, has a positive impact on learning experiences; they are working in a format they find motivating.

Students do not expect Web-based courses to be influenced by mass media. In some cases, students' perceptions about this possibility are projected as having a negative impact on their learning; it breaks from the traditional interactive design and value systems established for online learning. However, when mass media design styles used in commercial, entertainment, and news websites are proposed when discussing online courses, students develop an interest in the possibilities of mass media aesthetics positively influencing Web-based instruction. The anticipated results include students spending more time using a course website, more time studying, and there is a greater potential the overall aesthetic and use of media would help students make visual and textual associations when learning. This can be more successfully accomplished when (pre)established interactive interface elements found in other graphic genres used in Web-based courses follow the same cognitive guidelines they have always had, and new ones are allowed to evolve (Tapia, 2003). Design makes it possible for students to imagine new graphic forms and situations used in learning. Mass media's aesthetic influences can replace the traditional online learning experience and extend its potential to positively impact learning by improving what students can do in a traditional classroom.

Web design influenced by mass media factors in cultural considerations—identity and behavior of a particular group. We can better anticipate the successful integration and acceptance of mass media aesthetic in Web-based learning when students are able to enter into a relationship with the content and the image system (Ellsworth, 1997). Understanding and acknowledging the subject position of students forces us to consider the appropriate media genre that can be used for learning. How quickly students begin to identify the use of symbols associated with mass media to Web-based learning, and how long it will take to accept new visual forms of communication influenced by media genres has to be considered (Roberts, 2001).

Comic book forms, combining words and pictures, have been used for presenting historical information online and to motivate students to learn (Minnesota Historical Society, 2002). This particular style is not liked by all students and is considered too informal for learning in higher education. College-level students do not take this media genre seriously when it is put in the context of higher education. When we break the rules of design for online learning, it disrupts students' expectation for what they perceive to be formal and educational. I see the comic genre as a polar extreme from the semiotic domain of online learning, based on standard guidelines established from usability studies and published research (Nielsen, 2000; Lynch & Horton, 1999). However, integrating elements from mass media genres and more conservative aesthetics, such as news and magazine styles that incorporate more images and graphics, are viewed as appropriate for Web-based learning at the college level.

Modern and postmodern design, Internet technology tools, and course content can be combined requiring students learning online to construct and negotiate meaning in multimodal spaces. The use of multiple media when constructing knowledge in online spaces promotes comparison through non-linear thinking, the multi-layering of numerous forms of content using multiple forms of media, and the examination of concepts through different perspectives increasing learning. Constructive pedagogical approaches combined with effective uses of graphic design principles can support non-linear layering of storytelling over a period of time. An alternative approach to sequential presentation of course material, interplay between different forms of representation, and how a website is formatted gives viewers opportunities to revisit topics and construct connections, resulting in metacognitive learning experiences.

Instead of adhering to the role of supportive content, images can be utilized to create visual narratives that influence the way content is told and read. Postmodern treatments of images and text in an online space contribute to learning using a design and structure that encourages

students to create their own patterns and construct meanings. Learning requires more interpretive strategies through exploration. Websites can provide spaces for students to construct stories and experiences.

### Design Forms and Principles for Web-based Instruction

Combining the website analysis and student interviews, descriptive information can be discussed for developing graphic design and interactive design concepts for Web-based instruction. These concepts are not limited to art education instruction; they can be applied to support constructivist theory, and reflect ways students experience visual culture. What I discovered from the research is that how learning through visual culture informs the design of Web-based instruction is influenced by a combination of graphic styles and elements from media genres (magazine, news, film, and music), mass media aesthetics, and both postmodern and modern design principles. Interactive design for Web-based instruction can be informed by specific descriptive and graphic features from all of these theories and website examples used during this study.

#### *Web-based course design style and structure*

Web-based course design is structured according to usability guidelines established in the 1990s. Nielsen (2000) and Lynch and Horton (1999) are among many authors whose publications dictated how to and how not to design for the Web. These authors provided valuable information for educators embarking on the journey of developing a Web presence for their course(s) and distance learning. Usability standards and guidelines continue to influence the design and navigation structure of most Web-based courses developed using course management software (CMS). Because of this, students have expectations for how course websites should look:

- Opening login page
- Listing of courses
- Colors used represent university
- Course number on homepage

- Links to course resources (syllabus, assignments, quizzes, etc.)
- Clip-art icons
- Navigation bar on left side of browser window
- Bread-crum trail at top of browser window
- Black text on a white background
- Use of frames

Students have a difficult time imagining design styles that are not similar to what they are accustomed to seeing in the Web-based courses in which they are enrolled. When looking at website designs using media genre, and modern and postmodern design principles, a combination of descriptive characteristics can be applied to design online course Web pages. Most of these characteristics represent what students see in print, music download stores, film websites, online news, and magazine media. The interactive design developed for these sites share common features, and do not wander too far from the standard design students interact with for education. I have used subsection titles as a means to organize the information and to establish relationships among descriptions used in previous chapters in this dissertation and students' suggestions:

#### *Student Suggestions*

The following student suggestions were indicated when looking at website examples during the interviews:

- Organized
- Simple
- Common graphic symbols, icons, and metaphors
- Chunking text and images
- Appropriate for target audience
- Typeface easy to read, legible, browser compatible
- Type size relates to importance, consistent
- Navigation
  - Linear
  - Non-linear
  - Checklist/building blocks
  - Multiple browser windows
  - Thumbnail images
  - Rollover graphics and images

### *Modern Design*

- Images easily read
- Underlying grid structure
- Pictorial content supported by written text
- Systematic use of type styles, sizes, and weights

### *Postmodern Design*

- Visually dynamic
- Multilayering of photos and text for emphasizing key points
- Vernacular, pastiche—combining old and new
- Encourage proactive role of reader in constructing meaning
- Viewers are active participants
- Type—inconsistent baseline

### *Mass Media*

- Narrative
- “Atmosphere” for learning
- Animation limited; used for narrowing topic
- Content sectioned into columns
- “Featured stories” at right and bottom of browser window
- Navigation placed left or top of browser window
- Large bold text for headings
- Cinema display format
- Rollover images
- Symbols representing VCR controls
- Interactive

### *Section Summary*

In order to combine descriptive information with how constructivist theory contributions to student learning online, I summarize each section. I use bulleted lists of key concepts from this chapter. The summary will also serve as a guideline to the example I create and describe in the following section.

### **Constructivist Theoretical Contributions to Web-based Learning:**

- Learning is historically, culturally, and socially influenced
- Emphasis on student efforts toward understanding
- Technology supports constructivist classroom practices
- Inquiry-based learning structured around ideas central to students’ lives
- Teacher’s role is interactive

- Attention to real-life issues impacting students
- Allows for cognitive flexibility within ill-structured domains
- Learning is self-motivated
- Learning leads to higher-level thinking skills
- Metacognitive strategies used to construct connections and negotiate meanings
- Learning is facilitated through dialogic interactions
- Learning is collaborative
- Active use of multiple media forms

### **Student Learning and Visual Culture:**

- Teaching and understanding visual culture within social, cultural, and political contexts
- Art, images, and media represent daily life
- Context of visual culture extends meaning to promote learning
- Viewing the world is a social practice through reflection
- Learning results in better understanding of human experience
- Learning experiences reflect student cultural experiences
- Learning is approached from student point of view
- Visual culture is interdisciplinary
- Learning requires negotiation of images in many forms
- All types of sign systems are “read” and considered “language”
- Includes the study of art, popular culture, artifacts, media, etc.

### **Visual Culture and Web-based Learning:**

- Students experience visual culture through the use of modern technologies
- How students interface with the world is impacted by the visual
- Students acquire knowledge in visually-rich websites
- Students have expectations for website design based on media genre
- Web-based education is designed using standards not in keeping with media genres
- Websites provide for powerful and extensive multimedia learning environments
- Visuals and design can establish context for learning
- Historical text-image dynamic remains in Web-based learning
- Video media do not strongly influence student learning
- Knowledge is created through different modes of representation
- Visual aesthetics expected for Web-based Arts and Humanities courses

### **Media Aesthetics and Learning:**

- Interactive design is influenced by cultural forms (print and cinema)
- Web design draws from media genres
- Images can be used to motivate students
- Technology proficiency benefits learning experience
- Limitation for how mass media aesthetic can influence Web-based course design
- Design should be appropriate for student audience
- Extreme postmodern design disrupts student expectations for education design
- Modern and postmodern design best for interactive Web-based course design
- Design elements can be used to create an “atmosphere”/context for learning

### Concept for Interactive Web-based Art Education Instruction

Through the use and application of descriptive information, what is known about students’ experiences of visual culture, the influence of mass media aesthetics, and constructivist theoretical contributions to Web-based learning, I have created an interactive design example for one unit in a blended course in art education. The student audience for this unit reflects the student demographics from this study: undergraduate students between the age of 18 and 23, freshman to senior rank, use the Internet on a daily basis, have enrolled in at least one course that was online or had some form of Web presences. These students are art and/or non-art majors, and I make the assumption that they meet in a classroom setting. The instructional approach adopts principles from constructivist theory. The purpose of the website is to be used as a resource for supplemental course materials, access to materials for completing assignments, and informative collaborative learning among students and with the teacher.

This unit is a part of a course teaching visual culture influences in contemporary art. The goal of this particular unit is to help students learn about individual artists, their artwork, and the complex themes that persist throughout the body of artists’ work as a whole. Students gain knowledge about contemporary art and the social and cultural contexts in which artwork is created.

Three artists are represented in this unit: Carrie Mae Weems, Barbara Kruger, and Keith Haring. These artists serve as examples of artists whose work is influenced overall by the concept of “power.” Students use the course website to learn to identify “power” as the main theme through reading about the artists, studying their works individually, and by comparing themes (historical, social, political, racial, gender, religious) that are expressed in individual works by each artist. In doing this, students are encouraged to think beyond formal aesthetic and critical approaches to learning about art, to find social, cultural, and personal views and information that increases their understanding, and relate what they learn to real-life issues they experience today.

Below I have provided brief descriptions of the artists, their work, and the social and cultural issues that motivate(d) them to create art:

Born in Portland, Oregon in 1953 to a working class family, Carrie Mae Weems is an African-American female photographer who uses written texts, banners, sound, and sculpture to describe aspects of American culture through visual and textual media. Her use of text is described as central to her art in that they accompany her photographs (see Figure 23). She uses her photography as a weapon toward political and social change, and to make visible forms of oppression, both historical and contemporary (Piché, 1998). She is described as pursuing arts as a cultural worker, committed to racial social change (see Figure 24). She explores the issue of power relationships, identity, gender, class and focuses on black subjectivity (see Figure 25). Power is the big idea that encompasses her body of work. Her works ask for the viewer to take part in a shared experience and dialogue to acknowledge injustices and promote change. Her use of narrative addresses formal and political issues encircling African-American culture. It focuses on the ways in which images shape our perception of color, gender and class.

Barbara Kruger was born in Newark, New Jersey, in 1945. Her artworks are described as appropriating photographic images with type written slogans placed over them. The combined

media calls attention to an imbalance of power in the male-dominated Western culture. Her work is strongly influenced by her background as a graphic designer and art editor. She borrows images and text from mass media genres and popular culture, and returns the borrowed visuals to popular media by reproducing them on billboards, matchbooks, shopping bags, tee-shirts, to name a few (see Figure 26). Her work is described as having a “hallmark style” that dates back to 1981 (Baudrillard, 2001, p. 267). The style consists of black and white photographic images that are superimposed with printed phrases framed in a red background, with recognizable slogans, “Your body is a battleground” and “I shop therefore I am” (see Figure 27). She creates art that actively engages the viewer as a cultural critic, disrupting the *power* imbalance that is associated with the male gaze in Western culture. “Kruger extends her analysis of the imbalance of power to an examination of its abuse by white males in the culture at large” (p. 269).

Keith Haring was born in Reading, Pennsylvania in 1958. His work is well known and easily recognizable because of its cartoon-like, animated style. He studied at the School of Visual Arts in New York City until he dropped out and began creating chalk drawings on black paper covered advertisement boards in the subways of the city. Many forms of mass media, its content, and the social issues of the 1980s influenced the content of his work. His subject matter was made up of images including “radiant baby,” “barking dog,” non-gendered human figures, spaceships, etc. (see Figure 28). These symbols and many more were used in his works, either together or independently, to create different images with multiple connotations. The meanings that are connoted by the symbols within the work, and the work as a whole was to be constructed by the viewer, which explains why a majority of his artwork is “untitled.” He used iconic symbols as subject matter to depict topics that ranged from racial issues, to animal rights, AIDS awareness, apartheid, etc. His body of work over the short period of time Haring lived was based on the idea of power. Specific themes were used to express the oppression and injustices caused by

government and religion, the pervasiveness of mass media, and human rights issues regarding homosexuality, race, and gender. As much of the subject matter of his work was borrowed from popular culture, Haring gave it back to the public through the opening of the Pop Shop. His work was seen on tee-shirts, buttons, handbags, baby bibs, not to mention on billboards, as murals, and in art museums. Haring died in 1990 after succumbing to complications as a result of AIDS (Gruen, 1991).

### *The Role of Visual Culture*

Student knowledge and experience of visual culture and their ability to interpret the meanings of images they come in contact with everyday—visual literacy—helps her/him negotiate the meanings of the elements that make up an individual art piece, and the work as a whole. In addition, their knowledge of media and information technologies adds to their understanding of the themes used by the artists. When they are allowed to share what they know about how visual culture affects human experience and their daily lives, they are better able to make connections between the subject matter in an artist's work and the role images play in society, and how and why artists borrow images from popular culture, history, and Western and non-Western societies and cultures. When students are able to contemplate the transfer of an image and its meanings between contexts—popular culture, contemporary art, history—students are able to begin determining the main idea spanning an artist's body of work. For example, Keith Haring used symbols he created to express political, racial, religious, etc. themes in his paintings. These images served as a form of text, creating visual narratives and telling stories from Haring's perspective. For example, the non-gender specific figure seen in a majority of his work is used to represent the celebration of women and babies. A similar symbol changed meaning in another work when it was painted black and juxtaposed with other figures connoting protest against apartheid in South Africa during the 1980s (see Figure 29). Haring, Weems, and Kruger used

images as language and language as symbols, both forms serving as representation and communication. Symbols, images, and text were used to represent a combination of meaning to expose the idea of power.

### *Unit Website design*

The vast number of visual and interactive experiences students come in contact with when using the Web has resulted in expectations for how Web-based courses are designed. My awareness of this had a significant impact on the decisions I made when creating the interactive design. At the same time, I wanted to break away from the “cookie cutter,” one-size-fits-all approach to designing online experiences. Based on student feedback and what I discovered about mass media aesthetic and interface design, I relied on two forms of mass media genre to inform the design of the website example, magazine and newspaper. I wanted to maintain similarities to cultural forms students were accustomed to seeing, I did not want to veer too far from the style they are familiar with for Web-based courses.

Instruction in this blended course increases professor-student and student-content interaction. The website provides multiple sources of information and resources for students to think more critically about art. The organization of the main Web page represents the complex structure of art education courses that do not teach art based on chronological orders. Instead, the overall layout and structure makes way for flexible learning and content comparisons. Students can choose their direction of learning by selecting to know more about the artists, or beginning with a review of the issues and influences attributed to the artists’ paintings, photographs, and collages (Figure 30). Course material can be approached in different ways, reviewed at different times, and for more than one purpose. This leads to improved metacognitive strategies to construct connections between artists, themes, issues, art works, and students’ lives (see Figure 32). Learners can search for similarities and differences among the artists and how each has a

unique way of presenting and criticizing the idea of power in their work. Structuring the site using multiple windows to view individual works provides a means for students to compare more than one artwork. Individual windows can be opened, scaled, and positioned on the screen according to a student's preference for seeing the images. For example, art work by Haring and Kruger can be juxtaposed for students to contemplate similarities and differences in the way each artist uses symbols and text to conceptualize issues of media, religion, and power (Figure 32).

I understood that drawing from newspaper and magazine formats also ensured students would understand how to navigate through the website. I used columns to organize and “chunk” information (see Figures 30 and 35). Larger bold type was used for the headlines, and the navigation was placed at the left of the browser window, keeping with the standard of online magazines. In addition, the navigation served as an outline for the course material. I used symbols commonly found in many commercial and information websites. For example, I used the “+” sign to visually indicate a hyperlink to “additional” information (Figure 34). My goal was to maintain some cognitive guidelines students are accustomed to seeing and interacting with when using the Web, while at the same time I wanted visual and textual experience to be disjointed. The content is presented in a non-linear format, asking students to make connections among the content.

The idea of interface design creating an “atmosphere” for a Web-based course and its subject matter was found to be valid based on student responses and research. Aware of this and the potential to help students establish visual associations increasing retention and transfer, I chose to appropriate artwork from Weems and Kruger to create an identity and context for the site. I chose to use graphics for the Web page backgrounds as a way to connect the design with content used for this unit (see Figure 33 and 35). (I did not select a piece by Haring because of the style of his work—bright colors, high contrast, and active—which had the potential to make the content difficult to see and read.) I could have selected a “gallery” metaphor for the overall

aesthetic style, but I did not believe a gallery metaphor would best represent the goal of the unit and how student learning is characterized through visual culture. Added, I did not see the metaphor representing the artists' work. A majority of the artwork by each artist was not created for a gallery space or displayed in a gallery space. Using the metaphor would continue the idea that art was formally viewed and critiqued, versus the concept of teaching and learning about big ideas and art was to study art outside the context of a formal gallery, within more social, cultural and personal contexts.

I wanted to limit the level of discovery in response to student suggestions. Students use course websites to learn and want immediate access to information. I relied on text for headlines and interactive indicators, knowing that students preferred learning using text. The content for the unit is inherently visual, making it easier for me to use text to specify topics and give short one and two word descriptions of sections in the unit website. A checklist is provided for students to keep track of their progress through the content (Figure 34). Small thumbnail graphics of details from individual pieces are available for students to select. When clicked, larger images of individual artist's works are displayed allowing the viewer to see more detail. Use of thumbnail graphics is a better use of screen space when organizing the amount of content students interact with online. In addition, smaller graphics make printing easier and are economic in regards to the number of pages a student may print for studying. In Figure 25, thumbnails are placed in a column in the right section of the screen, and when selected a larger image of Weems' work opens in the center of the Web page.

This example was created to help students develop knowledge and understanding of art based on their experiences, artists' works, and the social influences and experiences of others (see Figure 30). Learning is dialogic (in class and online) and takes place within a community made up of students and teachers. Face-to-face communication is extended in the blended course when

students can use computer-mediated communication tools to talk with students and teachers outside of the formal classroom meeting time. What is discussed in class can be built upon to further discuss difficult concepts. I created an example of a space for blogging, for use by students and teachers participating in asynchronous discussions (see Figure 31). As an example, the activity serves as a means for talking about how the idea of power as a negative concept is displayed, criticized, and protested through the use of art. Learning is successfully accomplished when students use blogging to connect their ideas with those of their peers and their teacher, encouraging self-reflective practices.

One point that needs to be made is I purposely designed the example with individual professors' design abilities in mind. Results from this study show that students do not expect their professors to be professional designers. What is most important to the student is the quality of content and access to course materials. Faculty and graduate students who possess basic design and Web publishing knowledge can (re)create this example, or one that is similar. The design and structure does not rely on Macromedia Flash animation or interactivity; it can be built using basic HTML and style sheets.

#### Chapter summary

Contemporary approaches to teaching art education can be effectively influenced by visual culture. Constructivist theory and visual culture theory share similar principles: Inquiry-based learning is promoted; what is taught is made relevant to student knowledge and prior experiences; and knowledge and understanding is constructed through the access of information that is meaningful in social, cultural, and personal contexts. Learning experiences reflect student lives, and in today's media and information saturated world these experiences are dominated by visual culture.

Technology contributes to student experiences of visual culture. Since the early integration of computers and the Internet in education, technological advancements have made it possible to design dynamic interfaces for interacting with Web content. Print and cinema cultural forms have contributed to the characteristic use and design of online spaces, mimicking the organization, structure, and functions of the media forms. Additionally, mass media genres are shared among television, print, and video media, and the Web. Design styles, visual symbols, and layout formats characteristic of news and magazine genre are shared online and in traditional print. The familiarity of these forms makes it possible to transfer sign systems—developed as a result of the pervasiveness of communication and Internet technology—to interactive design for online learning. Students have the ability to transfer graphics, symbols, and meanings for use in educational contexts. How visual culture informs the design of Web-based art education instruction involves altering perceptions and expectations for online course aesthetics.

It is not necessary to restrict design aesthetics of Web-based courses to usability design standards, which were first established for making Web development and use easier for everyone. Today, student knowledge of online Web spaces, their purpose, and how to navigate through websites by reading both text and images makes it possible to begin changing expectations. Web-based courses can utilize styles and elements from media genres, modern and postmodern design, and commercial and entertainment sites to positively influence and impact learning.

## CHAPTER 7

### CONCLUSION

The purpose of this research was to expand upon contributions of constructivist theory to discover new potentials for curriculum and instruction by applying practical criteria for expanding user-centered design strategies and guidelines for Web-based instruction. Through content analysis of published scholarship, website reviews, and student interviews I was able to make recommendations for the design of online learning spaces that are influenced by visual culture, mass media, modern and postmodern design. This research establishes a dialogue for change, moving toward the creation and development of authentic interactive Web-based learning that is positively influenced by print and cinema cultural forms and genres.

#### Project Overview

This dissertation is a case study of how the way students learn through visual culture can inform the design of Web-based art education focused around four related topics: constructivist theory, art education, technology and learning, and graphic design. These topics directly relate to instructional methods for online learning in higher education, and to contemporary approaches to teaching art in art education, including visual culture. Content analysis and grounded theory were the methodologies I determine appropriate for identifying emerging categories and theories for this study. I employed the strategy of case study, and utilized a combination of empirical methods for the data collection: literature review, website reviews, and semi-structure, open-ended interviews with undergraduate students. I describe the processes I used to develop general

categories needed to organize the data in order to interpret and analyze the findings. The objective for using a triangulation of the methods was to look at what is common across the data, and to develop an understanding through interpretation and description. I used the information gathered to develop suggestions for faculty, university support staff, and graduate students creating and teaching Web-based courses in art education and in other academic disciplines.

My initial expectations when forming this study was not to assume it would be generally applied across all academic disciplines. Throughout the research process I was reminded of this and (re)assured of its validity after talking to students. I do believe there are elements from this study that can be applied to online courses in Science, Business, Engineering, and other subjects, having a positive impact on learning. I did have an expectation that the end result would lead to more dynamically designed Web pages similar to disjointed image styles commonly seen in postmodern music video and television media. Instead, I learned that mass media has the potential to impact online learning using influences from media students interact with on a daily basis—news and magazines either online or in print. Designing Web-based courses that combine effective teaching and learning strategies with aesthetically unique interface design is possible and desired by many students. For it to be successful, it will involve altering students' expectations for online course design aesthetics.

#### Significance of the Research

Graphic and interactive design research has become more critical of the user-centered design standards calling for the end of the usability paradigm. Research has discovered that individuals place more emphasis on the “look” of websites than on the content, and design is what is remembered most. Many websites, either for commercial or educational uses, have little visual differentiation and sense of creativity, resulting in many websites looking the same—same use of colors, layout, graphics, aesthetic, etc. (Kneymeyer, 2004). This study contributes to the

existing research by presenting findings and justifications for the use of interactive design influenced by mass media aesthetics to improve Web-based instruction.

#### *Implications for Constructive Theory*

Interactive Web-based instruction places an emphasis on the student and the construction of knowledge based on past experiences. Design and structure of an online course website can only function well when the course content is carefully prepared in a way that is appropriate for Web-based learning. Content should be organized and the amount controlled and appropriate for delivering “chunks” of information to students.

It is my opinion and the opinion of others that blended learning combines the best of traditional and Web-based learning. Blended courses give students the opportunity to access course materials and communicate with students outside of class. It combines the flexibility wanted by many students with a combination of many resources often available only in class. Students can revisit material at a time convenient to them and as often as needed. In combination with face-to-face instruction, design and structure of a course website can organize content in a way that promotes metacognitive learning strategies and higher order thinking skills. Students are more motivated to learn in these Web spaces and foresee design aesthetic as contributing to their motivation. For this to happen, and for Web-based instruction to be successful for any subject, the design and content consisting of multiple forms of media has to be relevant to the course subject. Faculty must be careful when using presentation media, such as PowerPoint software, that limits teaching and learning to a list of bullet points or a talking-head display of information. Instead, giving students control over how they interact with the media, and combining narrative voice-over with images and graphics has the potential to improve student interest, increase the amount of time studying, and improve learning outcomes.

### *Implications for Art Education*

Blended and Web-based learning is conducive to integrated, inquiry-based learning in art education. Material can be structured in non-linear, multidimensional ways, allowing students to build connections and make connections between artists, their works, and the social and cultural themes that are expressed through art. Students can contribute to what they learn using their own experiences and life. Instead of presenting artworks in a specific order often characteristic of slide projectors and simple slide-show presentation software, design and structure of a course website can draw students attention to issues and ways of viewing art outside of the framework of formalist rules, critiques, and aesthetics traditionally used to teach about art.

Art education requires informative and opinionated discussions about artists, artworks, and social issues that drive contemporary artists to create. Computer-mediated forms of communication in a blended learning course expand upon face-to-face discussions outside of class. Students can use blogs to reflect on their thoughts and on the opinions of others. It is important that these discussions are made relevant to the course of study, and professors keep students on track when talking about a specific topic. If extraneous, irrelevant information is contributed in online forums students become frustrated limiting the positive impact teacher-student and student-student communication has on learning.

Contemporary art education emphasizes research and teaching visual culture. Students develop visual literacy needed to interpret the amount of visual information they come in contact with on a daily basis. Interface design for Web-based learning can be created using what we know about how students experience visual culture, and it can be used to facilitate teaching visual culture. Materials can be made available for students to make comparisons among information, and they can have immediate access to additional information on other websites. It is

recommended that students are instructed to view the material on Web pages not contained with the course site, otherwise students will skip additional material.

How professors develop the course, the content they select, and the medium in which it is presented determines if students rely on images and/or text to learn. Students continue to rely on textual descriptions to inform them of the meanings contained in images; it is their search for the “right answer” that limits the reliance of images for information. Blended learning can alleviate some dependence on text by limiting the amount of written content placed in a course website. Organization and presentation of images and other media can promote connection and comparison of concepts using multiple forms of media. Use of multiple forms of media needs careful consideration when developing Web-based learning. For example, because of its characteristic linear presentation of material, students do not watch video. Video has to be short in length, the content has to be relevant to the topic, and if it is important for students to see the video it has to be a requirement set by the instructor.

#### *Implications for Technology and Learning*

To expand the use of media influenced design in Web-based education newer computer technologies will be needed by faculty who are creating graphics and by students enrolled in courses. University computing facilities offer these resources. Access is made easier when administrative policy decisions do not get in the way of student use of computers, and when funding is allocated to maintain state-of-the-art equipment. Professors need to outline the minimum computing and networking capacities needed to access course websites from home computers, or handheld devices. If not, students will limit their use of Web-based courses to only when absolutely necessary and required.

I have talked about the importance of organizing course content when using the Internet for teaching. This is also relevant to the issue of accessibility for a couple of reasons, bandwidth

and printing materials for studying. The amount of information on a Web page can make downloading different media difficult when students are using older computers and network connections that are slow. Limiting the size of images and understanding how to use image and media compression software is vital. If not, students will forego downloading media and rely on text to study. Added, the amount of information is directly related to how long it takes for students to print notes and the amount pages that are printed. Students prefer to study from printouts. Limiting large images will reduce the number of pages students will print, making them more likely to have copies of the information they need to successfully complete course requirements. Interface designs created for course websites present similar issues. Because of the limited scope of this research specific suggestions cannot be made. However, the example presented does represent an interface design that is accessible and printable. Added, seeking advice from university staff and designers who are aware of these issues can give faculty suggestions for designs that do not impede access.

### *Implications for Graphic Design*

Visual design has been equally important to usability and accessibility standards. The visual interface has served as the main communication between the function of the website and the user. But still today, Web pages are comprised of mostly content placed within traditional formats. As professors using instructional methods in art education and other disciplines have started to construct student-centered learning environments, interactive design researchers are paying attention to individuals who are using the Internet. Design processes have taken a reflective approach that is sensitive to social and cultural diversity.

This study contributes to interactive design research by calling upon students to offer feedback about their experiences learning using Web-based courses, and pays attention to their opinions and expectations of Web design aesthetics currently and in the future. User-centered

structures standard for online course design can stay the same. However, there is a potential for the influence of modern and postmodern design, and media genres to mimic the daily experiences students have online, and can lead to improved student motivation and learning. Professors and designers can use this research to create and build course websites using visuals that represent the course subject and establish a context for learning. In combination with constructive, situated learning theory, professors are able to move beyond concerns with the use of technology, and focus on sound pedagogy and teaching philosophy.

#### Limitations of the Study

It is important to discuss the limitations that are factored into the process I used to understand how the way students learn through visual culture can inform the design of Web-based art education. Students participating in the study were representative of the undergraduate student population at a large public university. Their feedback was used to inform the research, and may not be representative of every student enrolled in a Web-based course or students from small and/or private universities. I relied on the honesty of their feedback and understand that their opinions may change over time.

I depended on previously published research for the literature review, which I analyzed and used in comparison with student feedback. Research articles about technology and the use of technology in education can become outdated very quickly. I was aware of this reality and attempted to use the most recent literature I could find, from reputable academic and research journals, and online resources. Authors whose biases and research reflect the positive and constructive research paradigms in which they are situated were included in this study. I realize that these biases may have influenced my findings. In the attempt to minimize influences, I relied on comparisons with additional research and comparisons with student responses to form my interpretations and analysis.

I was the only researcher involved in the analysis and interpretation of the literature, websites, and interview transcripts. I presented my personal biases related to this study in chapter 3, and noted throughout the study when I believed my opinions added to the discussion or had an impact on the results. Any opinions I added were based on my professional experience as a graphic designer and as support staff for faculty creating Web-based courses. When negative cases in the research were discovered, I returned to the literature to seek out information that either supported or negated the cases, and made note of it in the dissertation.

#### Suggestions for Future Research

With the continuous advancements and upgrades of computer and visual communication technology, future research is necessary to expand the concepts and ideas developed from this study. My findings are limited to the use of the Internet on desktop and laptop computers with larger monitors. With advances in handheld technology and capability of storing photo print quality pictures, investigating graphics on small screen displays is possible. As a form of media delivery for personal and educational uses, how these devices will be used to advance constructivist theory should continue to be investigated.

Anytime/anywhere access has been made a characteristic of distance learning because of the immediate availability of online course resources through the Internet. However, I believe researchers, faculty, and university technology support staff should (re)consider how anytime/anywhere access is defined based on realistic Internet uses and access to online course resources by traditional college students. College-level undergraduate students attending on-campus classes are not always included in the demographic which describes the typical student enrolling in distance learning courses and earning degrees on the Internet, therefore, anytime/anywhere access is more applicable to non-traditional students whose main connection with education is through their computer.

University surveys for incoming students now measure the number of desktop and laptops brought to college. Ninety to one hundred percent of students attending traditional, lecture-based classes report having some form of technology with Internet access. What is not measured is the compatibility of student computers based on age of the systems, platform, networking capabilities, etc. What resources do traditional college students rely on for access to Web-based learning that includes computer and information technology, and traditional media resources, such as prints, books, and other material? Interviews with students attending “brick and mortar” classes can be conducted to discover when, where, and how they access course materials for blended or online learning. Comparisons can be made between student feedback and the statistical information provided for measuring the number of students taking online courses.

Implications of this study can lead to collaborative approaches to research. Experience designers, engineers, usability information architects, and others can come together to discover innovative approaches that push the boundaries of interactive Web design for online courses. Combined, knowledge shared by these experts can be used to focus on taking advantage of the power of the Internet to create Web-based courses that not only work better, but also have visual distinction. Research observing student use of online course prototypes created using unique graphic interfaces can be conducted to discover qualitative information about online experiences. Two distinct graphic styles used for a Web-based course can be compared through research of student attitudes, opinions, and abilities to study. Future studies combining quantitative and qualitative methods have the potential to discover if experience design impacts learning outcomes by the comparing online courses using standard Web design and course management software, and online courses using interface design that is influenced by how students experience visual culture today.

Because of the cost constraints of technology and limitations for human support systems at the university level, faculty are often left to create Web-based courses. Most university resources for faculty wanting to learn how to develop online courses are limited to workshops teaching course management software. Understandably, this results in faculty placing traditional lecture-based course materials into preformatted Web pages. The findings show that this has resulted in student expectations for how course websites appear graphically, and students understand the limited design abilities of most professors. I do not claim to have expectations that faculty will use this research to become skilled graphic designers. In fact, some professors may even object to the need for designs other than what is available through the use of course management software. This may be in part due to their hectic schedules and time constraints. Being sensitive to professional factors limiting interest in online experiences beyond the traditional, professors can learn basic design techniques to improve Web-based courses. Combined with the understanding that students' perceptions of the effort faculty have dedicated to online courses, which has an impact on their respect for a course and motivation to learn, designers and university staff can pursue research to determine the knowledge, design skills, and resources faculty need for creating well-designed course websites.

#### Closing Thoughts

My motivation for initiating this research was based on my professional experiences as a graphic designer, and working with faculty developing Web-based courses. I began this project with the assumption that students' experiences with television, video, and computer media consisted of exposure to postmodern aesthetics that were applicable to interactive design for online learning. This inquiry centered around the idea that the way students learn through visual culture had the potential to improve the design standards of Web-based art education. I understood it was important to talk to students directly, and as a result I was able to discover that

visual culture and mass media aesthetics are transferable to Web-based courses. The extent to which these are applied was discovered to be within the boundaries of familiarity with magazine and news genres, created using of a combination of modern and postmodern design principles. This knowledge has helped me form realistic expectations for interactive design in higher education, while continuing to support the notion that postmodern visual forms, sign systems, and aesthetics can be applied to Web-based instruction. I have emphasized that not every aspect of the findings and discussion is applicable to every course, nor should it be used as a model for developing and designing Web-based courses. If that were the case, I would be contributing to the concerns I have for the continuous use of usability standards and guidelines. Instead, I believe professors, university staff, graduate students, and designers can use this research to inform interface design for blended and distance learning. By doing this, students expectations for online course design aesthetics can be expanded to include alterative design style influenced by visual culture and mass media.

APPENDIX

FIGURES

**Do you love online classes?  
Miss going to lectures?**

**I'd like to hear what you have to say!**

---

**All you have to do is look at some web sites and tell me what you think. The interviews will be used for my dissertation research, and your feedback will remain confidential. In exchange for a less than an hour of your time, you get choice of a free Blockbuster rental or Chipotle burrito. You need to be 18 years or older to participate in this study.**

**Interested? Willing to help?**

**Please contact Traci Temple, temple.16@osu.edu or 638-7307.**

*Figure 1:* Advertisement posted in course website asking for student volunteers to be interviewed.

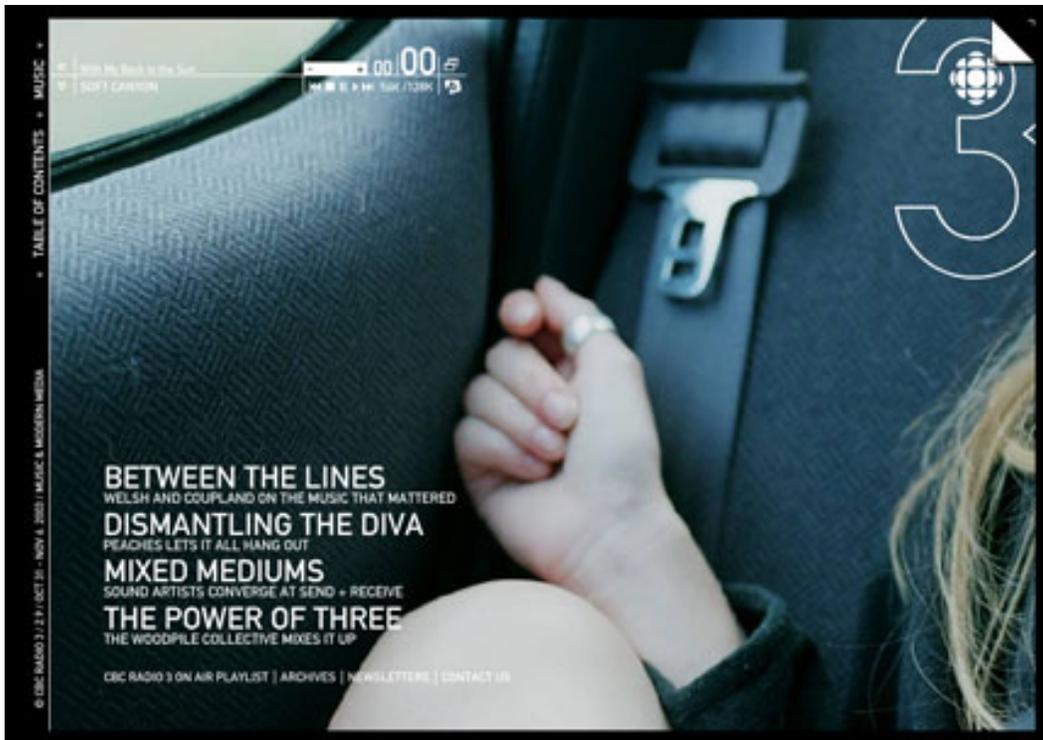


Figure 2: CBC Radio 3: Music and Modern Media website.



Figure 3: CBC Radio 3: Music and Modern Media internal Web page.



Figure 4: Minnesota Historical Society's *Forests, Fields, and the Falls: Connecting Minnesota* website demonstrating comic genre.



Figure 5: Minnesota Historical Society's *Forests, Fields, and the Falls: Connecting Minnesota* website showing internal content.



*Figure 6: Theban Mapping Project's home page. This project demonstrated what I consider to be an exemplar design and use of a color palette, which established a context for the educational content, and used non-linear ways in which the viewer could access the content.*



*Figure 7: Animation focusing the viewer on the geographic location specific to the Valley of the Kings, Theban Mapping Project.*



Figure 8: Internal Web page with rollover interaction juxtaposed with video and text, *Theban Mapping Project*.

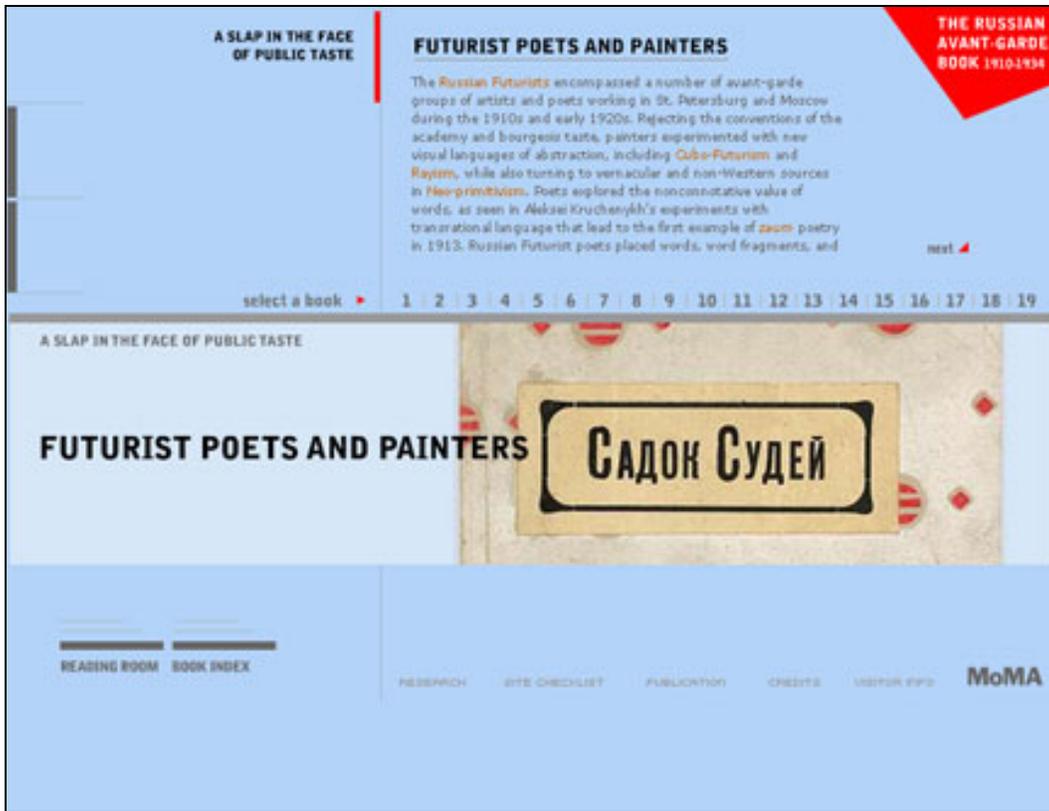
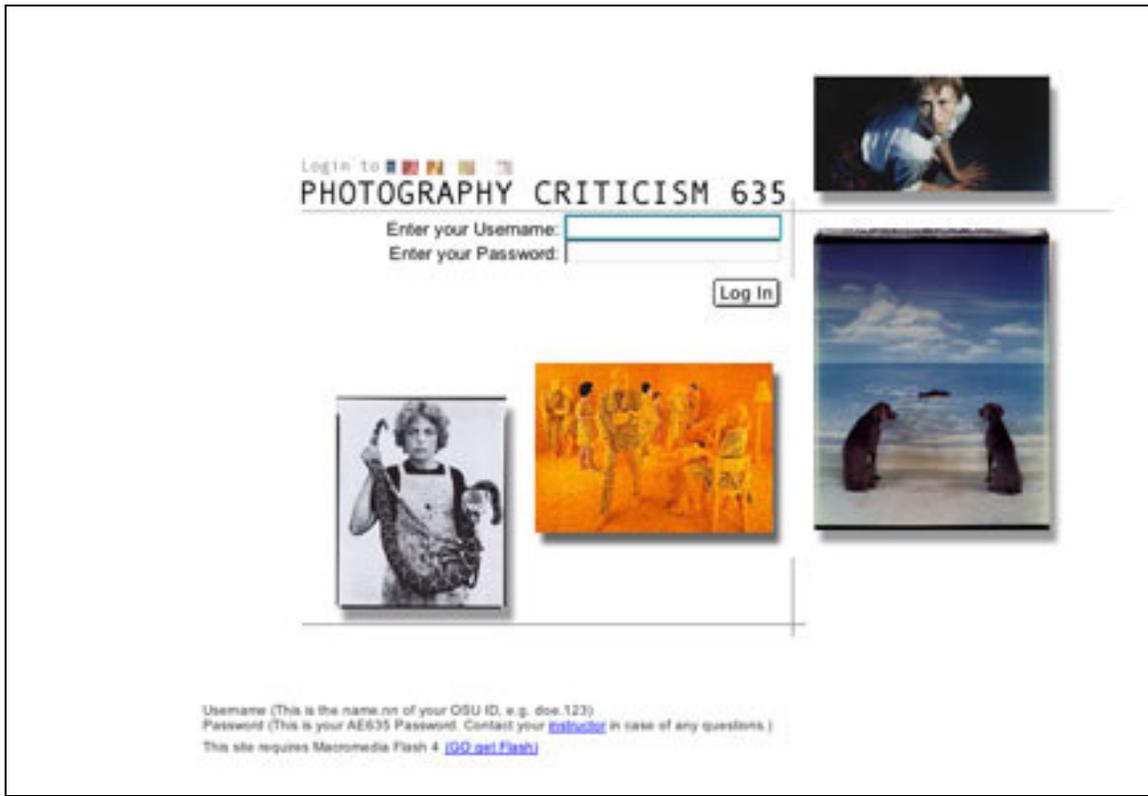


Figure 9: Museum of Modern Art's *The Russian Avant-Garde Book, 1910-1934* Web pages demonstrating postmodern design influenced by book media.



*Figure 10: Art Education 635: Photography Criticism: Web site selected for its unique aesthetic style that breaks-away from the traditional design of online courses.*

## Group Discussions

Please Choose A Group Discussion: [1] [2] [3] [4]

PHOTOGRAPHY CRITICISM 635  
Dr. Terry Barrett

<b>1</b>	2	3	4
5	6	7	8

---

### CHAPTER 1

## Quick-Write



Sandy Skoglund, FOX GAMES.  
Installation and photograph, 1989.

### Quick-Write 1: Sandy Skoglund, WALKING ON EGGSHELLS, 1997.

---

Look at the images by Sandy Skoglund reproduced here. When you feel you've looked at them long enough, open a word-processing program and answer these two questions about WALKING ON EGGSHELLS: What do you see? What do you think it is about? Answer the questions by writing quickly and without censoring your thoughts. Let your reactions flow. What you write will not be graded, but you will be credited for having done it. Write for 5-10 minutes without stopping. Then spell-check what you have written. Save a copy for yourself. Paste a copy into the space provided and submit it.

**Name :** Terry Barrett

*Figure 11: Art Education 635: Photography Criticism: Internal screen demonstrating layout, and the use of rollover images.*

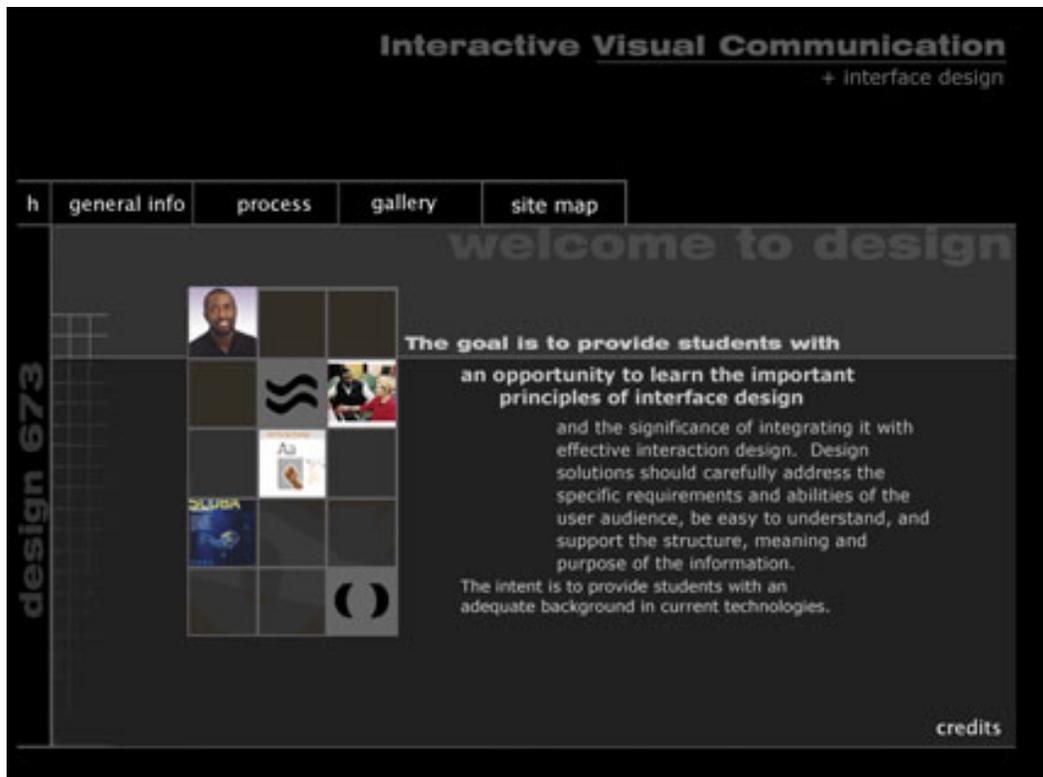


Figure 12: Art Education 635: Photography Criticism : Education website example with unique aesthetic style that breaks-away from the traditional design of online courses.

jcomm  
**850c** Digital Learning Objects:  
The building blocks of on-line course design



Instructors: Steve Acker and Jim Bracken | Room: Baker Systems Engineering 580

Class meeting times: Tuesday, Thursday 4:30-6:20 pm

Class Limit: 15 (graduate students/interdisciplinary mix)

**Course Description:** Working as an interdisciplinary design group, seminar participants will explore the practices of producing, indexing, retrieving, and using rich media across traditional academic disciplines by creating "learning objects." Learning objects are content modules that are (1) digital, (2) small, (3) self-contained, and (4) re-usable in different contexts. Issues common to all communities working with learning objects include searchability, universal access, portability, and scalability. Particular attention will be given to evaluating and applying emerging e-learning standards (IMS and SCORM) and the XML/metadata structures underlying these specifications.

A variety of national and local experts will participate in the seminar, joining us in person or via videoconference, representing various academic disciplines and organizations such as the Online Computer Library Consortia (OCLC), Macromedia, and Apple Computer. An additional challenge for seminar participants will be importing the group-designed digital content into course management systems (CMS) developed by CyberLearningLabs, WebCT, and Blackboard. We will evaluate the usability of these CMS in the context of this new approach to building and delivering on-line course content. We also will focus on "putting the library on the front page of every web-enabled course." This will require developing single sign-on procedures to reach the course and the extensive database collections held in our library, along with building a reference tool to make compiling personal libraries easy and manageable.

Please contact Steve Acker (acker.1@osu.edu) or  
Jim Bracken (bracken.1@osu.edu) prior to registering for the course.

on-line course versions:  
[WebCT 3.6 version](#)  
[Angel 5.0 version](#)  
[Blackboard 6.0](#)  
[Blackboard 5.5](#)  
[WebCT Vista](#)  
[Syllabus](#)  
[Course Reference List](#)

Figure 13: JCOMM 850c: Digital Learning Objects: The building blocks of online course design: Example of a website traditionally designed based on usability guidelines.



Figure 14: ESPN: Website represents the influential media design, layout, and navigation found on most popular news, television, and entertainment Web pages.

**EARLY RENAISSANCE  
THROUGH THE 20TH CENTURY**  
ARTS 1304 – AN ART HISTORY SURVEY II INTERNET COURSE  
SAN ANTONIO COLLEGE



*Welcome to Arts 1304 – Art History Survey II.  
Soon after registering, please contact Marleen Hoover, instructor for this course at  
[mhoover@accd.edu](mailto:mhoover@accd.edu)*

Arts 1304 – Art History Survey II – explores art from the early Renaissance, approximately 1350, to the 20th century. This course examines style and trends of world art with a focus on the art of the western world, along with contemporary aesthetic issues in a multicultural world.

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*Page Updated 6/5/02* *Copyright M. Hoover and San Antonio College, 1999. All rights reserved.*

Figure 15: *Early Renaissance Through the 20<sup>th</sup> Century: Arts 1304—An Art History Survey II Internet Course*: Website selected for the simple layout.



*Figure 16: Francais Interactif: Example of a course website using many images and layout does not represent standard Web-based education design.*

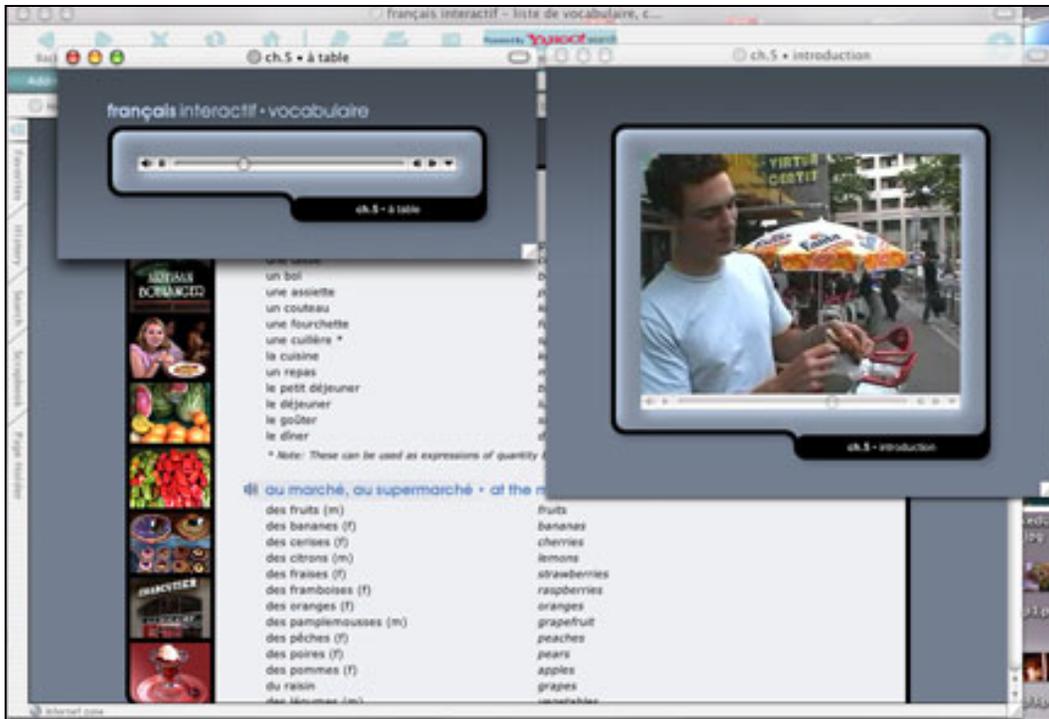


Figure 17: *Français Interactif*: Example the layout of multiple browser windows.



Figure 18: ABC News website representing news media genre online.



Figure 19: Monocraft website representative of cinema genre and cultural form.

**The Seattle Times** | **THE TERRORIST WITHIN**  
*The story behind one man's holy war against America*

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A special report by Hal Berrton, Mike Carter, David Heath and James Neff - June 23 - July 7, 2002

**T**his is the tale of how a footloose, unfocused Algerian boy, son of a war hero, evolved into a terrorist. How he planned an attack against Americans on the eve of the new millennium. How he nearly got away with it. And how, since Sept. 11, he has been one of the U.S. government's best resources in the war on terror. [BEGIN >>](#)

**THE MAIN CHARACTERS**  
 Several people in this story are key to understanding the roots of terror and the challenges in fighting it.



**JEAN-LOUIS BRUGIERE**  
 Ressaam's chief stalker



**ABU ZUBAYDAH**  
 One of Ressaam's mentors



**FRED HUMPHRIES**  
 FBI agent based in Seattle



**THE SETTING**



This story takes place around the

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Figure 20: The *Seattle Times: The Terrorist Within* is a hybrid news publication made up of layered storytelling over a period of time.

STORY MAP ◊ IDENTIFY IMAGES ◊ ADD A STORY ◊ THE BOOK ◊ THE SITE ◊ COMMENTS

What I recall most dearly and vividly is  
the land,  
the mountains,  
the winding roads,  
and the thrilling bumpy rides  
in my dad's jeep...

I remember the fruit trees  
and how I would climb them  
up and down,  
and all the picnic outings  
in the rolling fields,  
and my mother with all her  
fierce independence...

It is the land I desire to see  
and to touch...  
The land brings us together  
and it separates us.  
In essence we are all aliens...

Looking at these photographs  
from long ago



My mother and I in Kurdish  
costumes on the roadstop by the  
mountains in Kurdistan, 1960.



Ladder to the roof, Bija,  
1958



In Kurdish costume,  
Baghdad, 1960.

Pre-1900 | 1910 | 1920 | 1930 | 1940 | 1950 | 1960 | 1970 | 1980 | 1990 | 2000

Face  
Mary

Figure 21: Screen shot from akaKurdistan website.

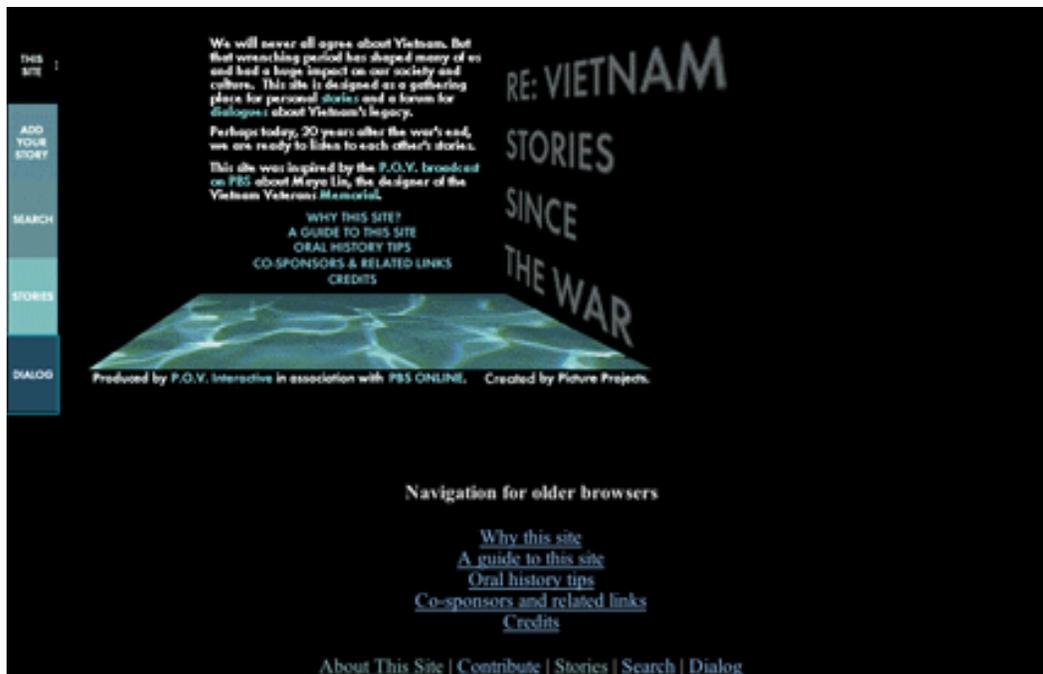
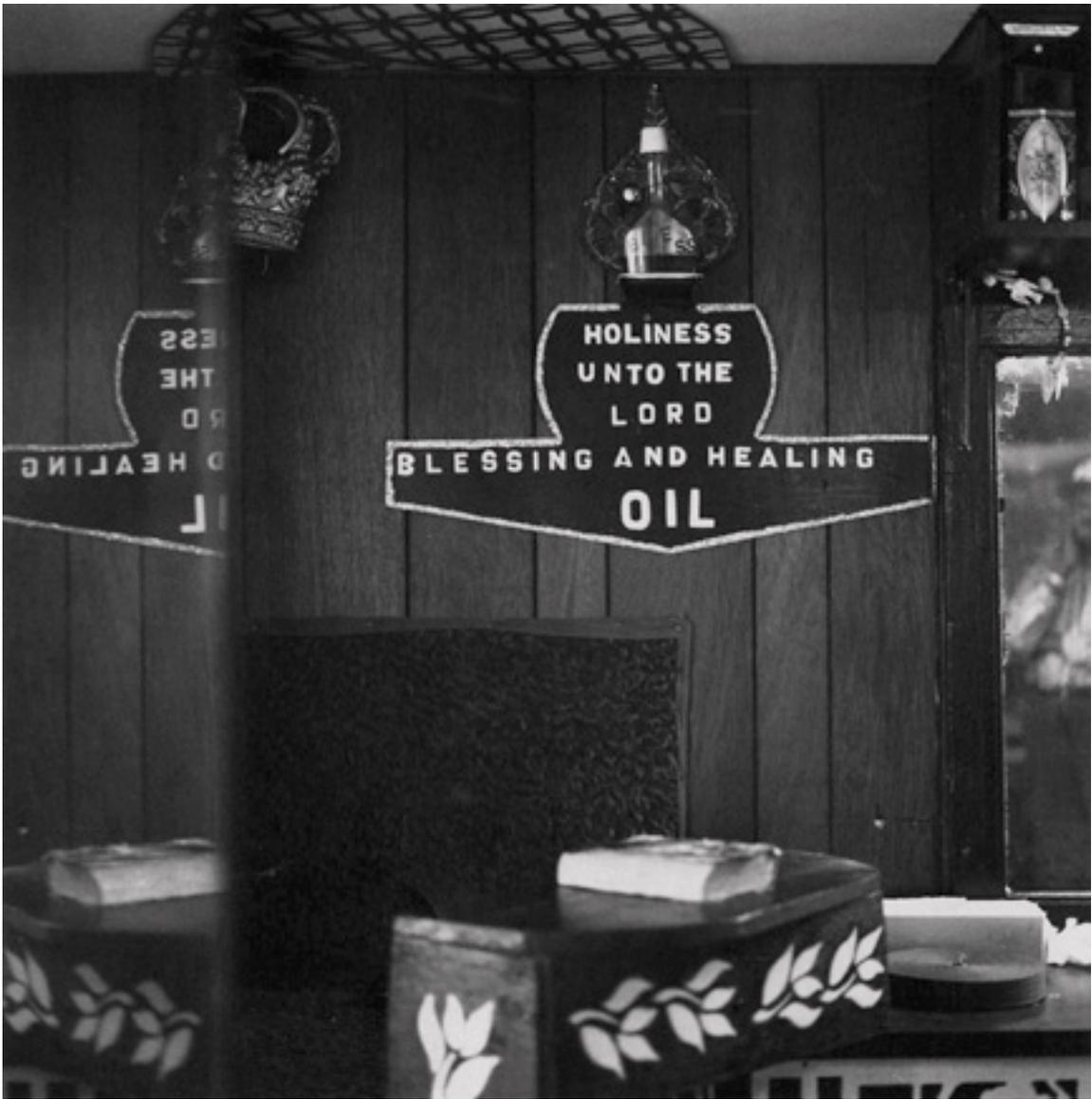
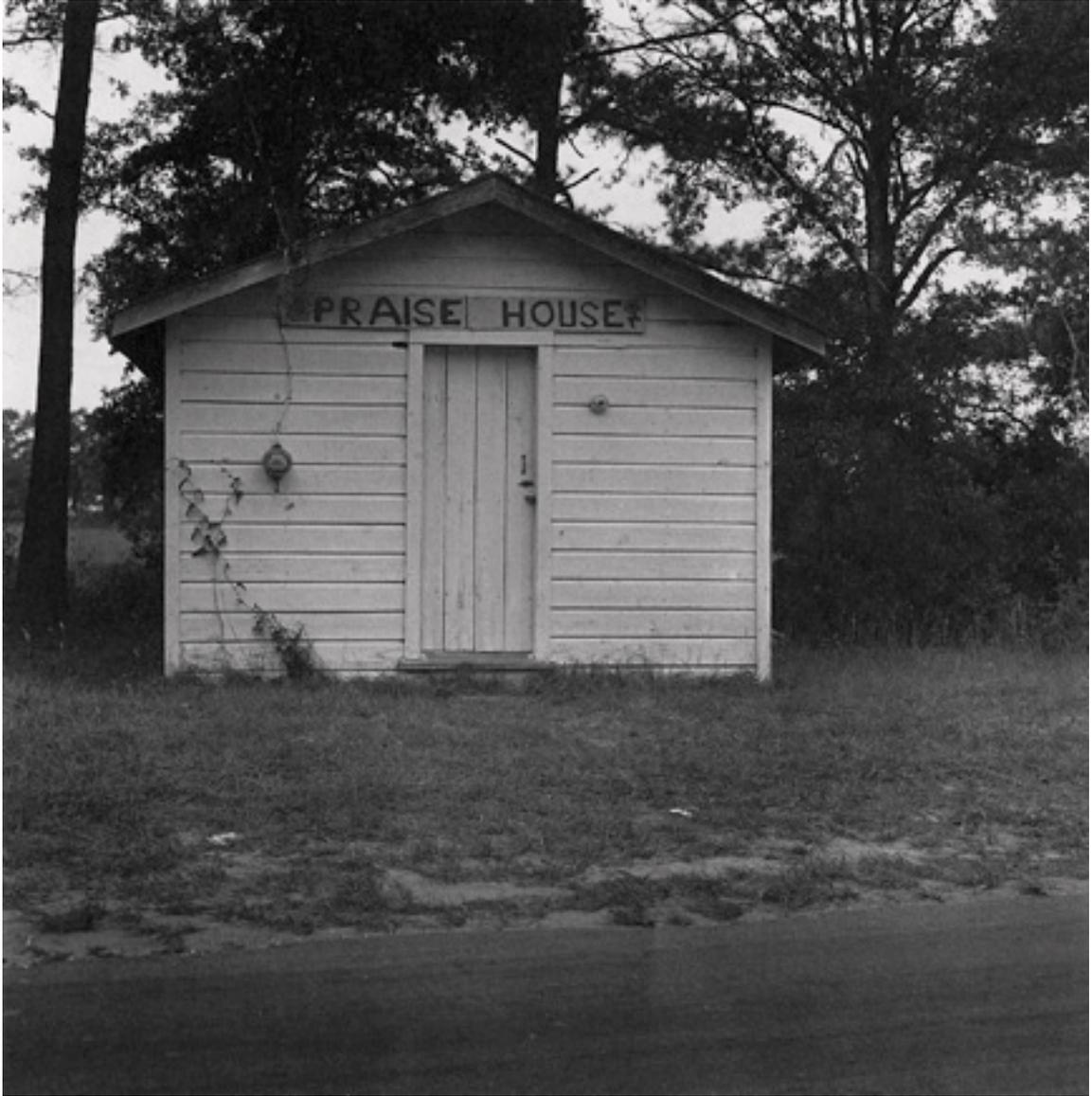


Figure 22: *RE: Vietnam Stories Since the War*: An online interactive documentary.



*Figure 23: Carrie Mae Weems, Sea Island Series 1992 (Praise House), 2 silver prints  
edition of 10.*



*Figure 24:* Carrie Mae Weems, Sea Island Series 1992 (Praise House), 2 silver prints  
edition of 10.



*Figure 25: Carrie Mae Weems, Sea Island Series, 1992, (Woman in White/Pan of Water).*

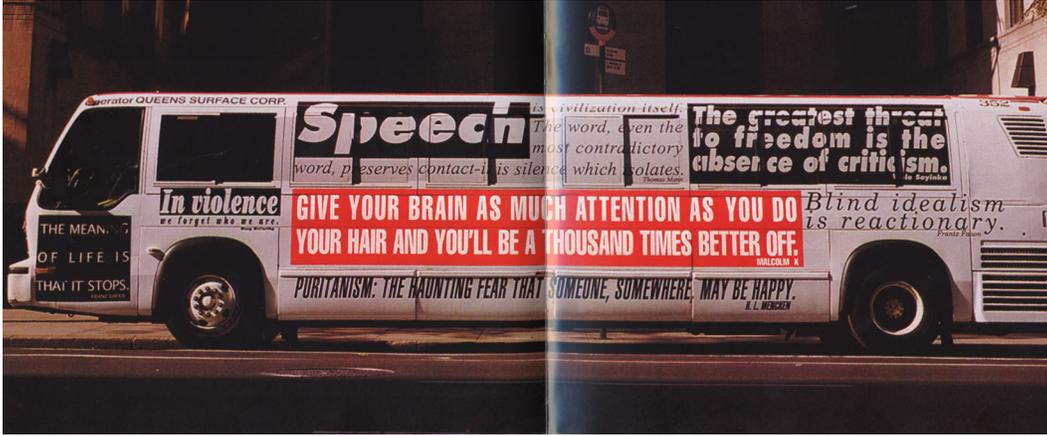


Figure 26: Barbara Kruger, *Bus*, a project for the Public Art Fund, Inc., New York, November 1-30, 1997.



*Figure 27:* Barbara Kruger, Untitled (I shop therefore I am), 1987.

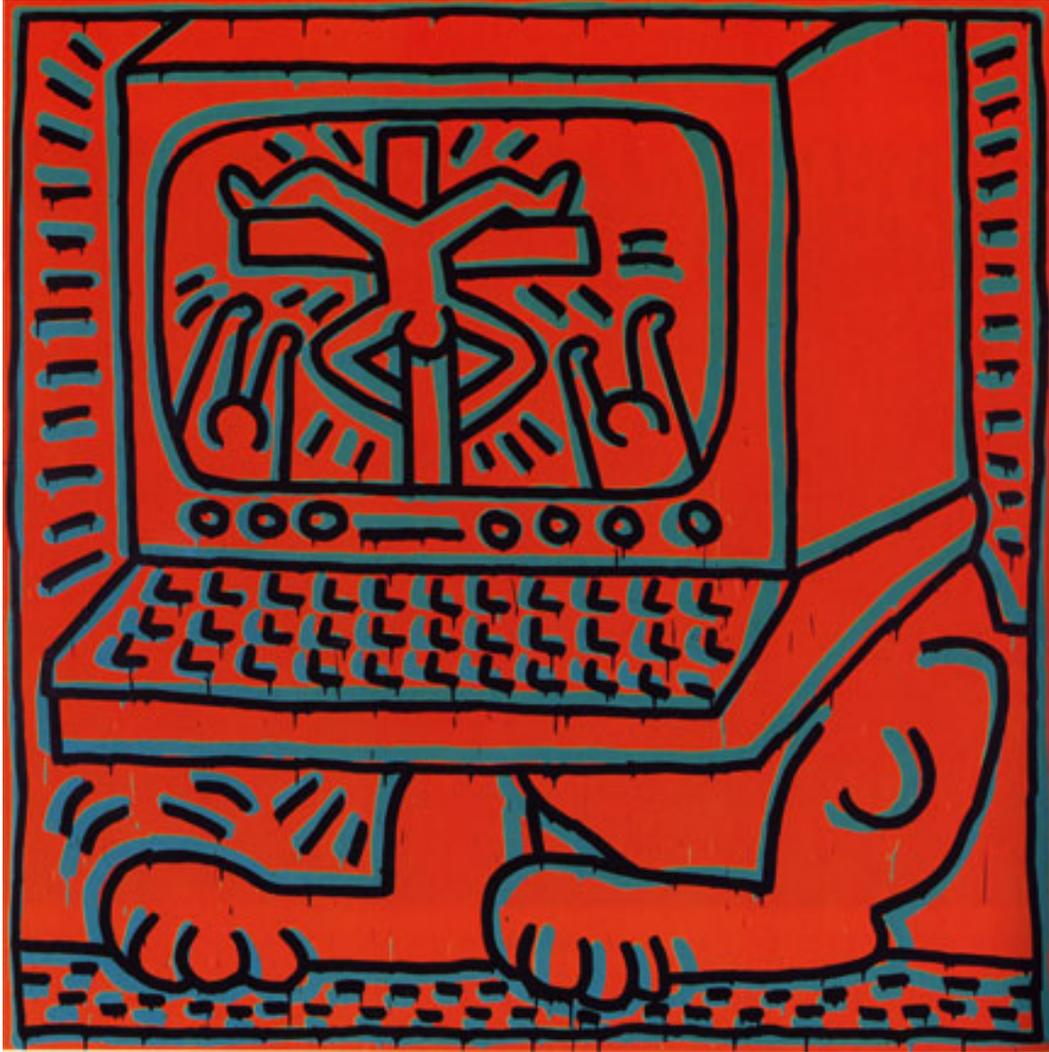


Figure 28: Keith Haring, *Untitled*, 1984.



*Figure 29: Keith Haring, South Africa, 1985.*

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unit 5: Art & Influences

COURSE LINKS	ARTISTS	ISSUES & INFLUENCES	PROGRESS CHECK
<ul style="list-style-type: none"> <li>SYLLABUS</li> <li>ASSIGNMENTS</li> <li>CALENDAR</li> <li>ARTIST INDEX</li> <li>IMAGE INDEX</li> <li>READINGS</li> <li>BIOGRAPHIES</li> <li>ISSUES/INFLUENCES</li> <li>UNIT 5 ARTISTS</li> <li>HARING</li> <li>KRUGER</li> <li>WEEMS</li> <li>FEATURED ARTISTS</li> <li>BLOG</li> </ul>	 Keith Haring [+]  Barbara Kruger [+]  Carrie Mae Weems [+]	<ul style="list-style-type: none"> <li>historical [+]</li> <li>social [+]</li> <li>cultural [+]</li> <li>political [+]</li> <li>religious [+]</li> <li>racial [+]</li> <li>gender [+]</li> <li>sexual orientation [+]</li> </ul>	<ul style="list-style-type: none"> <li>artists' bios</li> <li>issues</li> <li>comparisons</li> <li>historical refs</li> <li>today's artists</li> <li>artist one</li> <li>artist two</li> <li>news reports</li> <li>blog</li> <li>midterm</li> <li>gallery report</li> </ul> <p>Update</p>
	<p>FEATURED ARTIST</p>  <p>First Lastname [+] submitted by: Katie C.</p> <p>Submit new artist:</p> <p>Submit</p>	<p>FEATURED LINKS</p> <ul style="list-style-type: none"> <li>www.moma.org</li> <li>www.whitney.org</li> <li>www.museum.org</li> <li>www.haring.com</li> <li>www.moma.org</li> <li>www.whitney.org</li> <li>www.museum.org</li> <li>www.haring.com</li> </ul>	

Figure 30: Design example, main screen.

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Main | Blog

235: Blog

FEBRUARY 2005

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28					

SEARCH

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ARCHIVES

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[November 2004](#)

RECENT ENTRIES

[Opinion](#)  
[Power and Kruger](#)

FEBRUARY 10, 2005

Keith Haring was born in Reading, Pennsylvania in 1958. His work is well known and easily recognizable because of its cartoon-like, animated style. He studied at the School of Visual Arts in New York City until he dropped out and began creating chalk drawings on black paper covered advertisement board in the subways of the city. Many forms of mass media, its content, and the social issues of the 1980s influenced the content of his work. His subject matter was made up of images including "radiant baby," "barking dog," non-gendered human figures, spaceships, etc. (see Figure 29). These symbols and many more were used in many of his works, either together or independently, to create many different images with even more connotations.

The meanings that are connoted by the symbols within the work, and the work as a whole was to be constructed by the viewer, which explains why a majority of his artwork is "untitled." He used iconic symbols as subject matter to depict topics that ranged from racial issues, to animal rights, AIDS awareness, apartheid, etc. His body of work over the short period of time Haring lived was based on the idea of power. Specific themes were used to express the oppression and injustices caused by government and religion, the pervasiveness of mass media, and human rights issues regarding homosexuality, race, and gender.

As much of the subject matter of his work was borrowed from popular culture, Haring gave it back to the public through the opening of the Pop Shop. His work was seen on tee-shirts, buttons, handbags, baby bibs, not to mention on billboards, as

Figure 31: Example of course blog.



Figure 32: Screen demonstrating use of multiple windows to compare artists' works.



Figure 33: Close up of the screen background.

ISSUES & INFLUENCES	PROGRESS CHECK
<p>historical <b>[+]</b></p> <p>social <b>[+]</b></p> <p>cultural <b>[+]</b></p> <p>political <b>[+]</b></p> <p>religious <b>[+]</b></p> <p>racial <b>[+]</b></p> <p>gender <b>[+]</b></p> <p>sexual orientation <b>[+]</b></p>	<p><input type="checkbox"/> artists' bios</p> <p><input type="checkbox"/> issues</p> <p><input type="checkbox"/> comparisons</p> <p><input type="checkbox"/> historical refs</p> <p><input type="checkbox"/> today's artists</p> <p><input type="checkbox"/> artist one</p> <p><input type="checkbox"/> artist two</p> <p><input type="checkbox"/> news reports</p> <p><input type="checkbox"/> blog</p> <p><input type="checkbox"/> midterm</p> <p><input type="checkbox"/> gallery report</p>
<p><b>FEATURED LINKS</b></p> <p>www.moma.org</p> <p>www.whitney.org</p> <p>www.museum.org</p> <p>www.haring.com</p> <p>www.moma.org</p> <p>www.whitney.org</p> <p>www.museum.org</p> <p>www.haring.com</p>	<p><input type="button" value="Update"/></p>

Figure 34: Close up view of checklist for tracking student progress through course material.

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unit 5: Art & Influences

Main | Biographies | Keith Haring | Barbara Kruger | **Carrie Mae Weems**

COURSE LINKS

Carrie Mae Weems

SYLLABUS  
ASSIGNMENTS  
CALENDAR  
ARTIST INDEX  
IMAGE INDEX  
READINGS  
BIOGRAPHIES  
ISSUES/INFLUENCES  
UNIT 5 ARTISTS  
HARING  
KRUGER  
WEEMS  
FEATURED ARTISTS  
BLOG



tile of work, date



tile of work, date



tile of work, date



tile of work, date



tile of work, date



tile of work, date

Figure 35: Screen example of artwork by one artist.

## BIBLIOGRAPHY

- ABCNEWS. (2005). ABC News. *ABC Internet ventures*. Retrieved November 5, 2003 from <http://abcnews.go.com/>
- Amichai-Hamburger, Y. (2002). Internet and personality. *Computers in human behavior*, 16(1), 1-10.
- Anderson, M. D. (2001). Individual characteristics and Web-based courses. In C. R. Wolfe (Ed.), *Learning and Teaching on the World Wide Web* (pp. 45-71). San Diego, CA: Academic Press.
- Anderson, T. D., & Garrison, D. R. (1998). Learning in a networked world: New roles and responsibilities. In C. C. Gibson (Ed.), *Distance learners in higher education: Institutional responses for quality outcomes* (pp. 97-112). Madison, WI: Atwood Publishing.
- Apple Computer, Inc. (2005). iPods + iTunes for Mac and Windows. Apple Computer, Inc. Retrieved February 1, 2005, from <http://www.apple.com/itunes/>
- Arnone, M. (2002). Mixing and matching distance-education software: Evolving standards may change the way colleges plan online-learning offerings [Electronic version]. *Chronicle of Higher education*, 48(37), A33.
- Aronowitz, S. (1994). *Dead artists, live theories, and other cultural problems*. New York, NY: Routledge.
- Ausserhofer, A. (1999). Web-based teaching and learning: A panacea? *IEEE Communications Magazine*, 37(3), 92-96.
- Barnard, M. (1998). *Art, design and visual culture*. New York: NY: St. Martin's Press, Inc.
- Barthes, R. (1999). Rhetoric of the image. In J. Evans & S. Hall (Eds.), *Visual culture: the reader* (pp. 33-40). London: Sage.
- Baudrillard, J. (1999). Simulacra and simulations. In J. Wolfries (Ed.), *Literary theories: A reader and guide* (pp. 381-394). New York, NY: New York University Press.
- Baudrillard, J. (2001). *The uncollected Baudrillard*. London: SAGE Publications, Ltd.

- Beaudoin, M. F. (2002). Learning or lurking? Tracking the “invisible” online student. *Internet and Higher Education*, 5(2002), 147-155.
- Becker, H. J., & Ravitz, J. (1999). The influence of computer and Internet use of teachers’ pedagogical practices and perceptions. *Journal of Research on Computing in Education*, 31(4), 356-383.
- Berg, B. L. (1998). *Qualitative research methods for the social sciences*. Boston, MA: Allyn and Bacon.
- Bernton, H., Carter, M., Heath, D. & Neff, J. (2002). The terrorist within: The story behind one man’s holy war against America. *The Seattle Times*. Retrieved November 3, 2003, from <http://seattletimes.nwsourc.com/news/nation-world/terroristwithin/>
- Bertsch, M. (2003). The shallow end of cyberspace. *New Directions for Teaching and Learning*, 94(2003), 75-81.
- Bingham, J., Davis, T., & Moore, C. (1999). *Issues challenging education: Emerging technologies in distance learning*. Retrieved November 11, 2003, from University of North Carolina, Chapel Hill Web site: [http://horizon.unc.edu/projects/issues/papers/Distance\\_Learning.asp](http://horizon.unc.edu/projects/issues/papers/Distance_Learning.asp)
- Blackboard. (2003). Retrieved March 13, 2003, from Blackboard, Inc. site: <http://www.blackboard.com>.
- Blackwell, L., & Carson, D. (1995). *The end of print: The graphic design of David Carson*. San Francisco, CA: Chronicle Books.
- Blocher, J. M., Sujo de Montes, L., Willis, E. M., & Tucker, G. (2002). Online learning: Examining the successful student profile. *The Journal of Interactive Online Learning*, 1(2), 1-12.
- Bogdan, R. C., & Biklen, S. K. (2003). *Qualitative research for education: an introduction to theory and methods*. Boston, MA: Allen & Bacon.
- Bos, W., & Tarnai, C. (1999). Content analysis in empirical social research. *International journal of educational research*, 31(1999), 659-671.
- Bransford, J. D., Brown, A. L., & Cocking, R. R. (Eds.). (1999). *How people learn: Brain, mind, experience, and school*. Washington, D.C.: National Academy Press.
- Brown, J. S., Collins, A., & Duguid, P. (1989, January/February). Situated cognition and the culture of learning. *Educational Researcher*, 18(1), 32-42.
- Brown, J. S., and P. Duguid. (2002). *The social life of information*. Boston, MA: Harvard Business School Press.

- Bruer, J. T. (1995). *Schools for thought: A science of learning in the classroom*. Massachusetts: The MIT Press.
- Burgin, V. (1999). Art, common sense and photography. In J. Evans & S. Hall (Eds.), *Visual culture: the reader* (pp. 41-50). London: SAGE Publications, Ltd.
- Burmark, L. (2002). *Visual literacy: Learn to see, see to learn*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Campbell, A. B., & Pargas, R. P. (2003). Laptops in the classroom. *Proceedings of the 34th SIGCSE technical symposium on Computer science education*, 98-102.
- Carlson, S. (2002). Are personal digital assistants in the next must-have tool? [Electronic version]. *The Chronicle of Higher education*, 49(7), A33.
- Cavallaro, D. (2001). *Critical and cultural theory: Thematic variations*. New Brunswick, NJ: The Athlone Press.
- CBC Radio. (2003). *CBC Radio*. Retrieved November 5, 2003, from [http://www.cbcradio3.com/issues/2003\\_10\\_31/index.cfm](http://www.cbcradio3.com/issues/2003_10_31/index.cfm)
- Charmaz, K. (2000). Grounded theory: Objectivist and constructivist methods. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (2<sup>nd</sup> ed., pp. 509-535). Thousand Oaks, CA: Sage Publications, Inc.
- Clark, R. E. (1994). Media will never influence learning. *Educational Technology Research and Development*, 42(2), 21-29.
- CNN.com. (2003). *Phones, handhelds may replace laptops*. Retrieved December, 8, 2003, from: <http://www.cnn.com/TECH/>
- Coffey, A., & Atkinson, P. (1996). *Making sense of qualitative data: Complimentary research strategies*. Thousand Oaks, CA: SAGE Publications, Inc.
- Cognition and Technology Group at Vanderbilt University. (1992a). Technology and the design of generative learning environments. In T. M. Duffy & D. H. Jonassen (Eds.), *Constructivism and the technology of instruction: A conversation* (pp. 77-89). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Cognition and Technology Group at Vanderbilt University. (1992b). Some thoughts about constructivism and instructional design. In T. M. Duffy & D. H. Jonassen (Eds.), *Constructivism and the technology of instruction: A conversation* (pp. 115-119). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Cognition and Technology Group at Vanderbilt University. (1993, March). Anchored instruction and situated cognition. *Educational Technology*, 33(3), 52-70.

- Cognition and Technology Group at Vanderbilt University. (1999). *Technology for teaching and learning with understanding*. Boston, MA: Houghton Mifflin Company.
- Crowston, K., & Williams, M. (1997). Reproduced and emergent genres of communication on the World-Wide Web. *Proceedings from the Thirtieth Hawaii International Conference on System Science*, 6(7-10), 30-39.
- Cuban, L. (2001). *Oversold and underused: Computers in the classroom*. Cambridge, MA: Harvard University Press.
- Debord, G. (2002). The society of the spectacle. In N. Mirzoeff (Ed.), *The visual culture reader*, (2nd ed., pp. 142-144). New York: Routledge.
- Denzin, N. K., & Lincoln, Y. S. (2000). Introduction: The discipline and practice of qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (2<sup>nd</sup> ed., pp. 1-28). Thousand Oaks, CA: Sage Publications, Inc.
- Dey, I. (2004). Grounded theory. In C. Seale, G. Gobo, J. F. Gubrium & D. Silverman (Eds.), *Qualitative research practice* (pp. 80-93). Thousand Oaks, CA: SAGE Publications.
- Doolittle, P. E. (1999). *Constructivism and online education*. Paper presented at the 1999 online conference on teaching online in higher education. Retrieved October 5, 2003, from <http://edpsychserver.ed.vt.edu/workshops/tohe1999/tohe2.html>
- Dondis, D. A. (1973). *A primer of visual literacy*. Cambridge, MA: The MIT Press.
- Driscoll, M. P. (2000). *Psychology of learning for instruction* (2nd ed.). Massachusetts: Allyn & Bacon.
- Dreyfus, H. L. (2001). *On the Internet*. New York, NY: Routledge.
- Duffy, T. M., & Jonassen, D. H. (1992). Constructivism: New Implications for instructional technology. In T. M. Duffy & D. H. Jonassen (Eds.), *Constructivism and the technology of instruction: A conversation* (pp. 1-16). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Duke University. (2004). Duke to give Apple iPods to first-year students for educational use. *Duke News & Communications*. Retrieved August 25, 2004, from [http://www.dukenews.duke.edu/news/ipods\\_0704.html](http://www.dukenews.duke.edu/news/ipods_0704.html)
- Duncum, P. (2002). Visual culture art education: Why, what and how. *JADE*, 21(1), 14-23.
- Efland, A. D. (2002). *Art and cognition: Integrating the visual arts in the curriculum*. New York: Teachers College Press.
- Eisner, E. W. (2000). What is discipline-based art education? In R. A. Smith (Ed.), *Readings in discipline-based art education: A literature of education reform* (pp. 35-45). Reston, VA: National Art Education Association.

- Ellsworth, E. A. (1997). *Teaching positions: Difference, pedagogy, and the power of address*. New York, NY: Teachers College Press.
- ESPN Internet Ventures. (2003). *EXP*N. Retrieved November 4, 2003, from <http://expn.go.com/expn/index>
- Fallows, S., & Ahmet, K. (1999). Editors' concluding comments. In S. Fallows & K. Ahmet (Eds.), *Inspiring students: Case studies in motivating the learner* (pp. 169-173). London: Kogan Page Limited.
- Feenberg, A. (2001). Whither educational technology? *International Journal of Technology and Design Education*, 11(1), 83-91.
- Forlizzi, J., & Lebbon, C. (2002). From formalism to social significance in communication design. *Design Issues*, (18)4, 3-13.
- Freedman, K. (2003). *Teaching visual culture: Curriculum, aesthetics and the social life of art*. New York: Teachers College Press.
- Freedman, K., & P. Stuhr. (2004). Curriculum change for the 21st century: Visual culture in art education. In E. W. Eisner & M. Day (Eds.), *Handbook of research and policy studies in art education* (pp. 815-828). Mahwah, NJ: National Art Education Association: Lawrence Erlbaum Associates.
- Frow, J., & Morris, M. (2000). Cultural studies. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (2<sup>nd</sup> ed., pp. 315-346). Thousand Oaks, CA: Sage Publications, Inc.
- Gallini, J.K. (2001, Mar/Apr). A framework for the design of research in technology-mediated learning environments: a socialcultural perspective. *Educational Technology*, 41(2), 15-21.
- Garcia, T. (1995). The role of motivational strategies in self-regulated learning. In P. R. Pintrich (Ed.), *Understanding self-regulated learning* (pp. 29-42). San Francisco, CA: Jossey-Bass Publishers.
- Garoian, C. R., and Gaudelius, Y. M. (2004). The spectacle of visual culture. *Studies in art education*, 45(4), 298-312.
- Gaudelius, Y., & Speirs, P. (2002). Introduction. In Y. Gaudelius & P. Speirs (Eds.), *Contemporary issues in art education*, (pp. 1-18). Upper Saddle River, NJ: Pearson Education, Inc.
- Gee, J. P. (2003). *What video games have to teach us about learning and literacy*. New York: Palgrave Macmillan.
- Glaser, B., & Strauss, A. L. (1967). *The discovery of grounded theory: Strategies for qualitative research*. Hawthorne, NY: Aldine de Gruyter.

- Glesne, C. (1999). *Becoming qualitative researchers: An introduction* (2<sup>nd</sup> ed.). New York: Longman.
- Greene, M. (1994). Epistemology and educational research: The influence of recent approaches to knowledge. In L. D. Hammond, (Ed.), *Review of research in education* #20 (pp. 423-464). Washington, DC: AERA.
- Greene, M. (1997). A philosopher looks at qualitative research. In R. M. Jaeger (Ed.), *Complementary Methods for Research in Education* (2<sup>nd</sup> ed., pp. 189-207). Washington, D.C.: American Educational Research Association.
- Greeno, J. G., & the Middle School Mathematics Through Applications Projects Group. (1998). The situativity of knowing, learning, and research. *American Psychologist*, 53(1), 5-26.
- Grinter, R. E., & Palen, L. (2002). Instant messaging in teen life. *Proceedings of the 2002 ACM conference on computer supported cooperative work*, 21-30.
- Grossberg, L., Wartella, E., & Whitney, D. C. (1998). *MediaMaking: Mass media in a popular culture*. Thousand Oaks, CA: Sage Publications, Inc.
- Gruen, J. (1991). *Keith Haring: The authorized biography*. New York, NY: Fireside.
- Gubrium, J.F., & Holstein, J. A.. (2000). Analyzing interpretive practice. In N. Denzin & Y. Lincoln (Eds.), *Handbook of qualitative research* (pp. 487-508). Thousand Oaks, CA: Sage Publications.
- Hall, S. (1997). The works of representation. In S. Hall (Ed.), *Representation: Cultural representations and signifying practices* (pp. 13-74). Thousand Oaks, CA: SAGE Publications, Inc.
- Hannafin, M., Land, S., & Oliver, K. (1999). Open learning environments: Foundations, methods, and models. In C. Reigeluth, M. (Ed.), *Instructional-Design Theories and Models* (Vol. 2, pp. 115-140). Mahway, NJ: Lawrence Erlbaum Associates.
- Havik, J. (2000). The impact of the Internet on a television-based society. *Technology in Society*, 22(2000), 273-287.
- Hefland, J. (2001). *Screen: Essays on graphic design, new media, and visual culture*. New York, NY: Princeton Architectural Press.
- Heller, S., & Pomeroy, K. (1998). *Design literacy: Understanding graphic design*. New York, NY: Allworth Press.
- Hentea, M., Shea, M. J., & Pennington, L. (2003). A perspective on fulfilling the expectations of distance education. *Proceeding of the 4th conference on information technology curriculum on Information technology education*, 160-167.

- Hernández-Ramos, P. (2004). Web Logs and online discussions as tools to promote reflective practice. *The Journal of Interactive Online Learning*, 3(1), 1-16.
- Hicks, L. E. (2004). Infinite and finite games: Play and visual culture. *Studies in art education*, 45(4), 285-297.
- Hortin, J. A. (1994). Theoretical foundations of visual learning. In F. Moore & M. Dwyer (Eds.), *Visual literacy: A spectrum of visual learning* (pp. 5-29). Englewood Cliffs, NJ: Educational Technology Publications, Inc.
- Huffaker, D. (2004, June). The educated blogger: Using Weblogs to promote literacy in the classroom. *First Monday*. Retrieved on November 5, 2004, from [http://firstmonday.org/issues/issue9\\_6/huffaker/](http://firstmonday.org/issues/issue9_6/huffaker/)
- Hung, D. W. L., & Chen, D. (2000 May/June). Appropriating and negotiating knowledge: Technologies for a community of learners. *Educational Technology*, 40(3), 29-32.
- Hung, D. W. L., Chua, C.L., & Koh, T.S. (2000 July/Aug). Social-cultural perspectives of R&D in educational technology. *Educational Technology*, 40(4), 29-32.
- Hokanson, B. & S. Hooper. (2000). Computers as cognitive media: examining the potential of computers in education. *Computers in Human Behavior*, 16(5), 537-552.
- Hortin, J. A. (1994). Theoretical foundations of visual learning. In F. Moore & M. Dwyer (Eds.), *Visual literacy: A spectrum of visual learning* (pp. 5-29). Englewood Cliffs, NJ: Educational Technology Publications, Inc.
- Irons, L. R., Keel, R., & Bielema, C. L. (2004). Blended learning and learner satisfaction: Keys to user acceptance? *USDLA Journal*. Retrieved August 10, 2004, from [http://www.usdla.org/html/journal/DEC02\\_Issue/article04.html](http://www.usdla.org/html/journal/DEC02_Issue/article04.html)
- Jacobs, H. H. (1997). *Mapping the big picture: Integrating curriculum and assessment K-12*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Jameson, F. (1988). Postmodernism and consumer society. In E. A. Kaplan (Ed.), *Postmodernism and its discontents: Theories, practices* (pp. 13-29). New York: Verso.
- Janesick, V. J. (2000). The choreography of qualitative research design: Minuets, Improvisations, and crystallization. In N. Denzin & Y. Lincoln (Eds.), *Handbook of qualitative research* (pp. 379-399). Thousand Oaks, CA: Sage Publications.
- Jenks, C. (1995). The centrality of the eye in western culture: An introduction. In C. Jenks (Ed.), *Visual Culture*. (pp. 1-25). London: Routledge.
- Jobling, P., & D. Crowley. (1996). *Graphic design: reproduction and representation since 1800*. Manchester, England: Manchester University Press.

- Johnson, S. (1997). *Interface culture: how new technology transforms the way we create and communicate*. San Francisco, CA: Basic Books.
- Jonassen, D. H. (1993). Objectivism versus constructivism: Do we need a new philosophical paradigm. *Educational Technology Research and Development*, 39(3), 5-14.
- Jonassen, D. H. (1992). Evaluating constructivist learning. In T. M. Duffy & D. H. Jonassen (Eds.), *Constructivism and the technology of instruction: A conversation* (pp. 137-148). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Joshi, A. (2000). On proxy agents, mobility, and web access. *Mobile networks and applications*, 5(4), 233-241.
- Keller, J. M. (1987). Development and use of the ARCS model of motivational design. *Journal of Instructional Development*, 10(3), 2-10.
- Keller, J. (2003, January 5). Killing me softly with PowerPoint. *Chicago Tribune Online Edition*. Retrieved April 8, 2003, from <http://www.chicagotribune.com/news/showcase/chi-0301050396jan05.story>
- Kneymeyer, D. (2004, November 10). The end of usability culture. *Digital Web Magazine*. Retrieved December 28, 2004, from [http://www.digital-web.com/end\\_of\\_usability\\_culture](http://www.digital-web.com/end_of_usability_culture)
- Koroschik, J. S. (1996). Who ever said studying art would be easy? The growing cognitive demands of understanding works of art in the information age. *Studies in art education*, 38(1), 4-20.
- Krathwohl, D. R. (1988). *How to prepare a research proposal: Guidelines for funding and dissertations in the behavioral and social sciences* (3<sup>rd</sup> ed.). Syracuse, NY: Syracuse University Press.
- Kress, G. & van Leeuwen, T. (1996). *Reading images: The grammar of visual design*. New York: Routledge.
- Kress, G. & Van Leeuwen, T. V. (2001). *Multimodal discourse: The modes and media of contemporary communication*. New York: Oxford University Press.
- Laird, E. (2003). I'm your teacher, not your Internet service provider [Electronic version]. *The Chronicle of Higher Education*, 49(17), B5.
- Land, S. M., & Hannafin, M. J. (2000). Student-centered learning environments. In D. H. Jonassen, & S. M. Land (Eds.), *Theoretical foundations of learning environments* (pp. 1-23). Mahwah, NJ: Lawrence Erlbaum Associates.
- Laurel, B. (2001). *Utopian entrepreneur*. Cambridge, MA: The MIT Press.

- Lave, J. (1997). The culture of acquisition and the practice of understanding. In D. Kirshner & J. A. Whitson (Eds.), *Situated cognition: Social, semiotic, and psychological perspectives* (pp. 17-35). Mahwah, NJ: Lawrence Erlbaum Associates.
- Lemke, J. L. (1997). Cognition, context, and learning: A social semiotic perspective. In D. Kirshner & J. A. Whitson (Eds.), *Situated cognition: Social, semiotic, and psychological perspectives* (pp. 37-55). Mahwah, NJ: Lawrence Erlbaum Associates, Publishers.
- Levin, D. & Arafeh, S. (2002, October). *The digital disconnect: The widening gap between Internet-savvy students and their schools* (Pew Internet & American Life Project, No. 10). Retrieved October 9, 2003, from [http://www.usdla.org/html/journal/OCT02\\_Issue/article02.html](http://www.usdla.org/html/journal/OCT02_Issue/article02.html)
- Lohr, L. L. (2000). Designing the instructional interface. *Computers in human behavior*, 16(2), 161-182.
- Lynch, P. J., & S. Horton (1999). *Web style guide: basic design principles for creating web sites*. New Haven: Yale University Press.
- Lupton, E., & A. Miller. (1999). *Design writing research: Writing on graphic design*. London: Phaidon Press Limited.
- Lyotard, J. F. (1999). Answer to the question: What is Postmodern? In J. Wolfreys (Ed.), *Literary theories: A reader and guide* (pp. 371-380). New York, NY: New York University Press.
- Manovich, L. (2001). *The language of new media*. Cambridge, MA: The MIT Press.
- Marshall, C., & Rossman, G. B. (1989). *Designing qualitative research*. Newbury Park, CA: Sage Publications, Inc.
- Marshall, C., & Rossman, G. B. (1995). *Designing qualitative research*. Thousand Oaks, CA: SAGE Publications, Inc.
- Marshall, J., & Werndly, A. (2002). *The language of television*. New York, NY: Routledge.
- Mayer, R. E. (1993). Illustrations that instruct. In R. Glaser (Ed.), *Advances in instructional psychology* (Vol. 4, pp. 253-284). Hillsdale, NJ: Lawrence Earlbaum Associates, Publishers.
- Mayer, R. E., Moreno, R., Boire, M., & Vagge S. (1999). Maximizing constructivist learning from multimedia communications by minimizing cognitive load. *Journal of Educational Psychology*. 91(4), 638-643.
- McCloud, S. (1993). *Understanding comics: The invisible art*. New York, NY: HarperCollins Publishers, Inc.
- McLuhan, M. (1967). *The medium is the message: An inventory of effects*. Corte Madera, CA: Ginko Press.

- McMillan, S. (2003). Picture Project. *Design Interact*. Retrieved October 20, 2003, from <http://www.designinteract.com/features/picture/>
- Meggs, P. B. (1998). *A history of graphic design* (3rd ed.). New York, NY: John Wiley & Sons, Inc.
- Meiselas, S. (2003). *akaKurdistan: A place for collective memory and cultural exchange*. Picture Projects. Retrieved November 3, 2003, from <http://www.akakurdistan.com/>
- Messaris, P. (1994). *Visual literacy: Image, mind, and reality*. Boulder, CO: Westview Press.
- Minnesota Historical Society. (2002). Forest Fields and the Falls Connecting Minnesota. *Minnesota Historical Society*. Retrieved November 5, 2003, from <http://discovery.mnhs.org/connectingmn/>
- Merrill, M. D. (2001). Components of instruction toward a theoretical tool for instructional design, *Instructional Science*, 29 (4/5), 291-310.
- Merrill, M. D. (2002). First principles of instruction. *Educational Technology Research and Development*, 50 (3), 43-59.
- Messaris, P. (1994). *Visual literacy: Image, mind, and reality*. Boulder, CO: Westview Press.
- Mirzoeff, N. (1999). *An introduction to visual culture*. New York, NY: Routledge.
- Mirzoeff, N. (2002). The subject of visual culture. In N. Mirzoeff (Ed.), *The visual culture reader* (2nd ed., pp. 3-23). New York: Routledge.
- Mitchell, W. J. T. (1986). *Iconology: Image, text and ideology*. Chicago, IL: The University of Chicago Press.
- Mitchell, W. J. T. (1994). *Picture theory: Essays on verbal and visual representation*. Chicago: University of Chicago Press.
- Mitchell, W. J. T. (1995). What is visual culture? In I. Lavin (Ed.), *Meaning in the visual arts: Views from the outside* (pp. 207-217). Princeton, NJ: Institute for Advanced Study.
- Mitchell, W. J. T. (1996). What do pictures really want? *October*, 7(Summer 1996), 71-82.
- Mitchell, W. J. T. (2002). Showing seeing: A critique of visual culture. In N. Mirzoeff (Ed.), *The visual culture reader*, (2nd ed., pp. 86-101). New York: Routledge.
- Mitchell, W. J., Inouye, A. S., & Blunthal, M. S. (2003). *Beyond productivity: Information technology, innovation, and creativity*. Washington D.C.: The National Academic Press.
- Moore, M. G. (1998). Introduction. In C. C. Gibson (Ed.), *Distance learners in higher education: Institutional responses for quality outcomes* (pp. 1-7). Madison, WI: Atwood Publishing.

- Morley, S. (2003). *Writing on the wall: Word and image in modern art*. Berkely, CA: University of California Press.
- Mullet, K., & Sano, D. (1995). *Designing visual interfaces: Communication oriented techniques*. Mountain View, CA: SunSoft Press.
- Murray, C. (2004, November 8). Will virtual lectures vacate classrooms? *eSchool News online* Retrieved November 18, 2004, from <http://www.eschoolnews.com/news/showStory.cfm?ArticleID=5384>
- Mynatt, E. D., Adler, A., Ito, M., & O'Day, V. L. (1997). Design for network communities. *Proceedings of the SIGCHI conference on human factors in computing systems*, 210-217.
- Nakamura, Y. (1999). MONO\*crafts 3.0. *MONO\*crafts*. Retrieved, November 5, 2003, from <http://www.yugop.com/ver2/>
- Negroponte, N. (1995). *Being digital*. New York: Vintage Books.
- Neiderheman, M. (2001). For here or to go? Designing user-centered experiences. *Loop: AIGA Journal of Interaction Design Education*, August 2001(3), 1-8.
- Neperud, R. W. (1995). Transitions in Art Education: A search for meaning. In R. W. Neperud (Ed.), *Context, content, and community in art education: Beyond postmodernism* (pp. 1-22). New York, NY: Teachers College Press.
- New York Museum of Modern Art. (2002). The Russian Avant-Garde Book, 1910-1934. *New York Museum of Modern Art*. Retrieved November 5, 2003, from <http://www.moma.org/exhibitions/2002/russian/>
- NextEd Ltd. (2000, June 12-15). *Preparing information systems for global web-based education*. Retrieved November 11, 2003, from [http://www.nexted.com/news/papers/info\\_sys.html](http://www.nexted.com/news/papers/info_sys.html)
- Nielsen, J. (2000). *Designing web usability*. Indianapolis: New Riders Publishing.
- NMC. (2003). *Discovery 2002: Technologies in broad use today*. Retrieved November 11, 2003, from <http://www.nmc.net/projects/horizon/discovery1.shtml>
- Ohio State University TETAC Mentors. (2002). Integrated curriculum: Possibilities for the arts. *Art Education*, 55(3), 12-22.
- Olgren, C. H. (1998). Improving learning outcomes: The effects of learning strategies and motivation. In C. C. Gibson (Ed.), *Distance learners in higher education: Institutional responses for quality outcomes* (pp. 77-95). Madison, WI: Atwood Publishing.
- Oliver, K.M. (2000). Methods for developing constructivist learning on the web. *Educational Technology*, 40(6), 5-18.

- Olsen, F. (2003). Videoconferencing with some life to it: The University of Arizona finds that pricey technology attracts distance-education students [Electronic version]. *Chronicle of Higher Education*, 49(43), A24.
- Parsons, M. (2004). Art and integrated curriculum. In E. W. Eisner & M. Day (Eds.), *Handbook of research and policy studies in art education* (pp. 775-794). Mahwah, NJ: National Art Education Association: Lawrence Erlbaum Associates.
- Pew Internet & American Life Project. (2002). *The Internet goes to college: How students are living in the future with today's technology*. Retrieved, October 20, 2003, from <http://www.pewinternet.org/reports/toc.asp?Report=71>
- Piché, T. (1998). Reading Carrie Mae Weems. In T. Piché, Jr. & T. Golden, *Carrie Mae Weems: Recent work, 1992-1998* (pp. 9-27). New York: George Braziller Publisher.
- Poole, B. J., & Axmann, M. (2002). Education fact or fiction: Exploring the myths of online learning. *Instructional Technology Forum: A Listserve for the Instructional Technology Community*. Retrieved October 10, 2004, from <http://it.coe.uga.edu/itforum/paper62/paper62.htm>
- Prawat, R. S. (1992). Teacher's beliefs about teaching and learning: A constructivist perspective. *American Journal of Education*. *American Journal of Education* 100(3), 354-395.
- Poyner, R. (2003). *No more rules: Graphic design and postmodernism*. New Haven, CT: Yale University Press.
- Public Broadcasting System. (2003). RE: Vietnam stories since the war. *Public Broadcasting Service*. Retrieved November 3, 2003, from <http://www.pbs.org/pov/stories/>
- Raney, K. (1999). Visual literacy and the art curriculum. *Journal of Art and Design Education*, 18(1), 41-47.
- Reigeluth, C. M. (1999). What is instructional design theory and how is it changing? In C. M. Reigeluth (Ed.), *Instructional-design Theories and Models Volume II: A New Paradigm of Instructional Theory*. (pp. 163-168). Mahwah, NJ: Lawrence Erlbaum Associates.
- Resnick, L. B., & Klopfer, L. E. (1989). Toward the thinking curriculum: An overview. In L. B. Resnick & L. E. Klopfer (Eds.), *Toward the thinking curriculum: Current cognitive research* (pp. 1-18). Alexandria, VA: 1989 ASCD Yearbook.
- Reyna, V. F., Brainerd, C. J., Effken, J., Bootzin, R., & Lloyd, F. J. (2001). The psychology of human-computer mismatches. In C. R. Wolfe (Ed.), *Learning and Teaching on the World Wide Web* (pp. 23-44). San Diego, CA: Academic Press.
- Richardson, L. (1994). Writing: A method of inquiry. In N. Denzin & Y. Lincoln (Eds.), *Handbook of qualitative research* (pp. 516-529). Thousand Oaks, CA: Sage Publications.

- Richardson, L. (2000). Writing: A method of inquiry. In N. Denzin & Y. Lincoln (Eds.), *Handbook of qualitative research* (pp. 923-948). Thousand Oaks, CA: Sage Publications.
- Riva, G. (2001). From real to virtual communities: Cognition, knowledge, and intention in the World Wide Web. In C. R. Wolfe (Ed.), *Learning and Teaching on the World Wide Web* (pp. 131-151). San Diego, CA: Academic Press.
- Roberts. M. (2001). Border crossing: The role of design research in international product development. *Loop: AIGA Journal of Interaction Design Education, August 2001*(3), 1-10.
- Roblyer, M.D. (1996). Is research giving us the answers (and the questions) we need? *Learning and Leading with Technology, 23*(1), 14-18.
- Rogoff, I. (2002). Studying visual culture. In N. Mirzoeff (Ed.), *The visual culture reader* (2nd ed., pp. 24-36). New York: Routledge.
- Romanoff, S. J. (2003). A case study: Linking students across geographical and cultural distances. *New Directions for Teaching and Learning, 94*(2003), 51-59.
- Rushkoff, D. (1999). *Playing the future: What we can learn from digital kids*. New York: Riverhead Books.
- Ryan, G. W., & H. R. Bernard. (2000). Data management and analysis methods. In N. Denzin & Y. Lincoln (Eds.), *Handbook of Qualitative Research* (2<sup>nd</sup>. ed., pp. 769-797). Thousand Oaks, CA: Sage Publications.
- Saba, J. (2003, September/October). Interaction 2003: Print's digital design annual. *print: America's Graphic Design Magazine, LVII*(V), 114-177.
- Savery, J. R., & Duffy, T. M. (1995). Problem-based learning: An instructional model and its constructivist framework. *Educational Technology, 35*(Sept/Oct), 31-38.
- Schott, M., Chernish, W., Dooley, K. E., & Lindner, J. R. (2003). Innovations in distance learning program development and delivery. *Online Journal of Distance Learning Administration, VI*(II). Retrieved November 11, 2003, from <http://www.westga.edu/~distance/ojdla/summer62/schott62.html>
- Savery, J., R., & Duffy, T. M. (1995). Problem-based learning: An instructional model and its constructivist framework. *Educational Technology, 35*(Sept/Oct), 31-38.
- Schamber, L. (2000). Time-line interviews and inductive content analysis: Their effectiveness for exploring cognitive behaviors. *Journal of the American society for information science, 51*(8),734-744.

- Schott, M., Chernish, W., Dooley, K. E., & Lindner, J. R. (2003). Innovations in distance learning program development and delivery. *Online Journal of Distance Learning Administration*, VI(II). Retrieved November 11, 2003, from <http://www.westga.edu/~distance/ojdla/summer62/schott62.html>
- Schwandt, T. A. (2000). Three epistemological stances for qualitative inquiry: Interpretivism, hermeneutics, and social constructionism. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (2<sup>nd</sup> ed., pp. 189-213). Thousand Oaks, CA: Sage Publications, Inc.
- Schwandt, T. A. (2001). *Dictionary of qualitative inquiry*. Thousand Oaks, CA: Sage Publications, Inc.
- Scheurich, J. J. (1995). A postmodern critique of research interviewing. *Qualitative studies in education*, 8(3), 239-252.
- Seiter, E. (2000). Television and the Internet. In J. Thornton (Ed.), *Electronic media and technoculture* (pp. 227-243). New Brunswick, NJ: Rutgers University Press.
- Shepherd, M., & Watters, C. (2000). The functionality attribute of cybergenres. *System Sciences*, 1999. HICSS-32. *Proceedings from the 32<sup>nd</sup> Annual Hawaii International Conference on System Sciences*, 2(5-8, January 1999), 1-9.
- Silverman, D. (2000). Analyzing talk and text. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (2<sup>nd</sup> ed., pp. 821-833). Thousand Oaks, CA: Sage Publications, Inc.
- Sims, R. (1995). Interactivity: A forgotten art? *Instructional technology forum*. Retrieved October 12, 2003, from <http://it.coe.uga.edu/itforum/index.html>
- Sloan-C. (2004). Entering the mainstream: The quality and extent of online education in the United States, 2003 and 2004. *The Sloan Consortium*. Retrieved on January 5, 2005, from: <http://www.sloan-c.org>
- Spiro, R. J., Feltovich, P. J., Jacobson, M. J., & Coulson, R. L. (1992). Cognitive flexibility, constructivism, and hypertext: Random access instruction for advanced knowledge acquisition and ill-structured domains. In T. M. Duffy & D. H. Jonassen (Eds.), *Constructivism and the technology of instruction: A conversation* (pp. 57-76). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Sommer, B., & Sommer, R. (1991). *A practical guide to behavioral research: Tools and techniques* (3<sup>rd</sup> ed.). New York, NY: Oxford University Press.
- Song, S. H., & Keller, J. M., (2001). *Educational Technology Research and Development*, 49(2), 5-22.
- Sontag, S. (1999). The image-world. In J. Evans & S. Hall (Eds.), *Visual culture: the reader* (pp. 80-94). London: Sage.

- Stake, R. E. (1997). Case study methods in educational research: Seeking Sweet Water. In R. M. Jaeger (Ed.), *Complementary Methods for Research in Education* (2<sup>nd</sup> ed., pp. 401-422). Washington, D.C.: American Educational Research Association.
- Stake, R. E. (2000). Case studies. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (2<sup>nd</sup> ed., pp. 435-454). Thousand Oaks, CA: SAGE Publications, Inc.
- Strauss, A., & Corbin, J. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (2<sup>nd</sup> Ed.). Thousand Oaks, CA: SAGE Publications, Inc.
- Sturken, M., & Cartwright, L. (2001). *Practices of looking: An introduction to visual culture*. New York: Oxford University Press.
- Sullivan, G. (2002). Ideas and teaching: Making meaning from contemporary art. In Y. Gaudelius & P. Speirs (Eds.), *Contemporary issues in art education* (pp. 23-38). Upper Saddle River, NJ: Pearson Education, Inc.
- Tapia, A. (2003). Graphic design in the digital era: The rhetoric of hypertext. *Design Issues*, 19(1), 5-24.
- Tavin, K. (2001). Introduction: The impact of visual culture on art education. *Journal of Multi-cultural and Cross-cultural Research in Art Education*, 18(1), 20-23.
- Taylor, P. G. (2004). Hyperaesthetics: Making sense of our technomediated world. *Studies in art education*, 45(4), 328-342.
- The Chronicle of Higher Education. (2002). *5 students' views on hand-held computers*. Retrieved November 13, 2003, from <http://chronicle.com/weekly/v49/i07/07a03302.htm>
- Titscher, S., Meyer, M., Wodak, R., & Vetter, E. (2000). *Methods of text and discourse analysis*. London: Sage Publications.
- Toms, E. G. & Campbell, D. G. (1999). Genre as interface metaphor: Exploiting form and function in digital environments. *Proceedings from the Thirtieth Hawaii International Conference on System Sciences*, 2(January 5-8), 1-9.
- Turkle, S. (1995). *Life on the screen: identity in the age of the Internet*. New York: Simon & Schuster.
- United States Distance Learning Association. (2004). USDLA definition of distance learning. *USDLA*. Retrieved August 10, 2004, from <http://www.usdla.org/>
- Walker, K. (2002). Theoretical foundations for website design courses. *Technical Communication Quarterly*, 11(1). 61-83.
- Walker, S.R. (2005). Artmaking in an Age of Visual Culture Vision and Visualality. *The International Journal of Arts Education*, 2(3), 72-92.

- Walker, S. R. (2001). Teaching meaning in artmaking. Worcester, MA: Davis Publications.
- Walker, S.R. (2003, Nov/Dec). Designing art curriculum with big ideas. *Journal of Aesthetic Education*, 136, National Taiwan Arts Education Institute. Invited article.
- Watts, M. M. (2003a). Introduction: Technology as a catalyst. *New Directions for Teaching and Learning*, 94(2003), 3-12.
- Watts, M. M. (2003b). Interlude: A conversation with Howard Rheingold, Founder of the Well, an online community. *New Directions for Teaching and Learning*, 94(2003), 69-74.
- Web-based Education Commission. (2000, December). *The power of the Internet for learning: Moving from promise to practice*. Retrieved March 13, 2003, from the site: <http://interact.hpcnet.org/webcommission/index.htm>.
- WebCT, (2003). *WebCT.com* Retrieved March 14, 2003, from <http://www.webct.com>
- Webnox Corp. (2002-2003). HyperDictionary.com. *Webnox Corporation*. Retrieved November 5, 2003, from <http://www.hyperdictionary.com>
- Weiss, R. E., D. S. Knowlton, & G. R. Morrison. (2002). Principles for using animation in computer-based instruction: theoretical heuristics for effective design. *Computers in Human Behavior*, 18(4), 465-477.
- Weisskirch, R. S. & Milburn, S. (2003). Virtual discussion: Understanding college students' electronic bulletin board use. *Internet and Higher Education*, 6(2003), 215-225.
- Weibel, P. (1996). The world as interface: Toward the construction of context-controlled event-worlds. In T. Druckrey (Ed.), *Electronic culture: Technology and visual representation* (pp. 339-351). New York, NY: Aperture Foundation Inc.
- Wijekumar, K. (2001). What is driving web-based distance learning environments? *Instructional Technology Forum*. Retrieved October 12, 2003, from <http://it.coe.uga.edu/itforum/paper52/paper52.htm>
- Wiley, II, D. A. (2000). Connecting learning objects to instructional design theory: A definition, a metaphor, and a taxonomy. *The instructional use of learning objects*. Retrieved November 12, 2003, from <http://www.reusability.org/read>
- Wilson, B. G. & Myers, M. M. (2000). Situated cognition in theoretical and practical context. In D. H. Jonassen & S. M. Land (Eds.), *Theoretical foundations of learning environments* (pp. 57-88). Mahway, NJ: Lawrence Erlbaum Associates.
- Wolfe, C. R. (2001a). Learning and teaching on the World Wide Web. In C. R. Wolfe (Ed.), *Learning and Teaching on the World Wide Web* (pp. 1-22). San Diego, CA: Academic Press.

- Wolfe, C. R. (2001b). Creating informal learning environments on the World Wide Web. In C. R. Wolfe (Ed.), *Learning and Teaching on the World Wide Web* (pp. 91-112). San Diego, CA: Academic Press.
- World Lecture Hall. (2004). Retrieved May 3, 2004, from <http://web.austin.utexas.edu/wlh/about/index.cfm>
- Yang, S. U. (2001). Synergy of constructivism and hypermedia from three constructivism perspectives—social, semiotic, and cognitive. *Journal of Educational Computing Research*, 24 (4), 321-61.
- Zhao, Y., Pugh, K., Sheldon, S., & Byers, J. L. (2002). Conditions for classroom technology innovations. *Teachers College Record*, 104(3), 482-515.
- Zimmerman, B. J., & Paulsen, A. S. (1995). Self-monitoring during collegiate studying: An invaluable tool for academic self-regulation. In P. R. Pintrich (Ed.), *Understanding self-regulated learning* (pp. 13-27 ). San Francisco, CA: Jossey-Bass Publishers.