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UMI
CONSTRUCTIVE LEARNING IN THE DIGITAL LABYRINTH:
HYPERTEXT DESIGN EXPERIENCES
IN WEB-BASED ENVIRONMENTS

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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*****

The Ohio State University
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ABSTRACT

This study explores hypertext theory, design and development in Web-based environments. The focus of the study is the participants' experience in learning hypertext theory and designing their hypertext projects. This study describes and interprets the participants' learning processes and application of hypertext theory in their Web designs.

Writing hypertext is writing a story that waits to be unfolded differently for each reader. In hypertext, there are fewer conventional constraints on authors, and infinite possibilities for readers. This research captures some of the inspiring moments of how the participants learned hypertext and created hypertext projects. Readers of this dissertation will find different paths in which the participants in this study learned about hypertext, learned about learning and learned about themselves.

The study researches a graduate level course titled Hypermedia, the World Wide Web and Classroom Practice at a large mid-western public university. Most of the participants were K to 12 educators, and graduate students majoring in education. The data was collected through in-depth interviews, classroom/lab observation and student-created hypertext projects. The qualitative interpretive approach was used to understand students' hypertext experiences, and provide in-depth accounts of their experiences.
The study presents the process of participants' learning about hypertext/hypermedia as well as their learning about their own learning process in Web-based environments. This study examines what the implications of hypertext in education, including what students’ experiences were in exploring hypertext theory in Web design and how students incorporated hypertext for educational use.

This study found that developing hypertext web-based projects is a creative and challenging experience for educators. Hypertext theory and implementation has inspired educators to bring multiple perspectives and openness to educational settings. Hypertext also has challenged educators to rethink critical issues related to learning and teaching in technology-integration of curriculum and pedagogy.
Dedicated to my parents
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CHAPTER 1

INTRODUCTION TO THE STUDY

As in most stories a lot has happened before you got here. And, as was always true but is increasingly true in stories like this, a good deal more will happen now that you are here. Here's what I know so far. -- Michael Joyce in Twilight, A Symphony (1996a)

Hypertext author Michael Joyce was asked to describe his hypertext work in an e-mail exchange with The Atlantic Unbound's Ralph Lombreglia, Joyce (1996b) replied that like any author, he cannot really say what his story is about, but he wishes his story "to be the music of symphonies not undone but unbegun", waiting to be read. Different readers will read the text in different ways, and come away with different stories. Writing hypertext is writing a story waiting to be unfolded differently for each reader. In hypertext, there are fewer conventional constraints on authors, and infinite possibilities for readers. This research captures some of the inspiring moments of how the participants learn hypertext and create hypertext projects. The moments come alive when they are read. Readers of this dissertation will find different paths in which participants in this study learned about hypertext, learned about learning and learned about themselves.
1.1 What is Hypertext?

The concept of hypertext was originated by Vannevar Bush in 1945. The term hypertext was coined later by Theodore Nelson in 1965. Hypertext refers to systems permitting electronic representation of text to take advantage of the random access capabilities of computers in order to overcome the strictly sequential medium of print on paper. Hypermedia extends the nonlinear representation by including access to graphics, sound, animation, and other forms of information transfer (Marchionini, 1988). In this study, I will use the term hypertext to include hypermedia. I feel that the term hypertext not only acknowledges the idea that hypertext was started in written text, but also characterizes the overrun boundaries of text (Derrida, 1994, p. 256). Derrida (1994) questions the dominant notion of "text" as a finished corpus of writing. This argument echoes the very spirit of hypertext. With hypertext, writers and readers are sharing writing space. Also, the word is "spatialized" and "functions in three dimensions (subject-addressee-context) as a set of dialogical, semic elements" as described by Julia Kristeva (1986, p. 36-37). Hypertext depicts the notion of intertextuality, where the word within the space of texts intersects with text, authors and readers. It is always going to be questionable to say if a hypertext is finished, or where the boundary of a piece of hypertext is.

Michael Joyce (1997) defines hypertext is "reading and writing in an order you choose where your choices change the nature of what you read" (p. 580-1). Given the ever-changing nature of the World Wide Web and the enormous amount of information
on the Web, Joyce also describes hypertext on the Internet as "a representation of the text that escapes and surprises by turns" (1997, p. 580).

In *The Electronic Labyrinth*, a study of hypertext technology, Keep, McLaughlin, & Robin (1995) define hypertext in terms of the experiences of the authors and the readers rather than the technological features of hypertext. They view hypertext as a technology with the ability to offer multiple authorships, to blur the distinction between the author and reader functions, to provide different reading paths, and to enrich works with links to other works and media with expansive boundaries. Hypertext not only provides authors new ways of writing and interacting with readers, but also invites readers to explore new ways of reading, thus complicating the functions of the author and challenging the authority of the author.

1.2 Background to the problem

In Jonassen's 1988 article *Designing Structured Hypertext and Structuring Access to Hypertext*, he points out that hypertext design is "theory-rich, research-poor" (p. 15). He argues that there are conceptual works written about the potential use of hypertext in education and about hypertext productions based on different learning theories such as cognitive psychology. Yet, little empirical research has evaluated the use and implications of hypertext in educational settings. Jonassen (1988, p. 15) urges more research on issues relevant to hypermedia design from cognitive perspectives.
Grabowski and Curtis (1991) suggest some research issues related to users of hypermedia-based systems, such as navigational strategies, the presence of cognitive search abilities, and the motivation of the learner. Other issues like learner-control problems and issues, the potential contribution of hypertext to building cognitive structure, and the development of intelligent hypermedia all need more research (Park, 1991).

Over the last ten years, there have been numerous cognitively-based studies on hypertext theory and its applications in education (Jacobson & Spiro, 1991; Jonassen & Wang, 1993; Jacobson, Maouri, Mishra & Kolar, 1996; Chen & Rada, 1996; Yang, 1996; Dillon & Gabbard, 1998; Liao, 1999). There is some research focused on hypertext/hypermedia authoring strategies (Mendes & Hall, 1999; Nicaise & Crane, 1999) and writing/publishing on the Internet (Bos & Krajcik, 1998; Kupperman & Wallace, 1998; Stanzler, 1998; Zhao, Englert, Jones, Chen, & Ferdig, 1998). However, little attention has been paid to any in-depth studies of hypertext theory and its implications in writing and/or designing experiences in educational contexts.

The World Wide Web (WWW) is a form of hypertext application (Bolter, 1994; Engelbart, 1995). The Web contains millions and millions of hyperlinks within a network of networks. It is reportedly the leading information retrieval system in the world (Mendels, 1998). The Web makes information retrieval more accessible for people. With the advent of the Internet, the Web has become a space for self-expression and self-publishing. More and more teachers and students are designing their own Web pages as a way of expressing their thoughts and creativity on the Web. However, there is not much research being done on hypertext design experiences within the Web.
environments, and there are important questions to answer, such as: what are students' experiences in authoring/designing hypertext Web pages, and what are the implications of hypertext on reading and writing in Web environments?

While discussing the differences in reading or writing on and off the Web, Burbules (1998) argues that "... indeed, traditional text can be read hypertextually and hypertexts can be read quite traditionally" (p. 108). Following the same line of argument, hypertexts can also be designed quite traditionally, and a printed book could also be designed hypertextually. Given such diversity, how does hypertext theory influence authors/designers' design experiences, and/or how do authors/designers' experiences change what they think of hypertext?

Snyder (1998, p. xx) argues that with the shift from printed page to computer screen, new literacy spaces are emerging. The Web provides people with new spaces to create, to connect, to explore, to construct, to reflect, to examine, and to test out hypertext theory. How do hypertext authors/designers learn and explore hypertext theory during their design process? And what are their design experiences?

Western culture has valued logical and linear ways of thinking (Winner, 1986, 1995; Postman, 1979, 1992). However, hypertext theorists such as Bush (1945), Nelson (1987, 1993), and Bolter (1991) argue that people think in associations, and contend that hypertext helps people retrieve information and learn. Hypertext theorists, including Nelson (1987, 1993), Bolter (1991), Joyce (1995) and Lanham (1993), advocate the use of hypertext theory and applications in people's learning and creation. However, some of

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the cultural critics, such as Winner (1986, 1995), Postman (1979, 1992), and Tuman (1992) raise crucial questions about the implications of hypertext theory in educational contexts, and hope to preserve linear thinking and reasoning in educational settings. Due to these conflicting views on hypertext, the focus of this study is on the applications and implications of hypertext theory in Web environments. What experiences students have in designing hypertext and how students subvert the linearity of text to design nonlinear text are the main concerns of this study. This research studies the processes involved in the hypertext design experiences of students, in order to gain in-depth understanding of those experiences.

1.3 Problem Statement

Studies show that hypertext has a lot of potential for educational uses but also raises problems (Marchionini, 1988; Jonassen & Grabinger, 1993; Jonassen 1995; Burbules & Callister, 1996; Tergan, 1997). The foremost relevant issues concern reading and writing in hypertext and its implications in education. Selfe (1989) talks about the evolution and the implications of the multi-layered literacy in the computer-based environment. First of all, she points out that, "computers add several new grammars to the lists of things that individuals must learn before they become successfully literate in computer-supported communication environments" (p. 6). Secondly, "computers change the way we see text and construct meaning from written texts" (p. 6). Thus, different
literacy is multilayered over the tasks of reading and writing, and the definitions of literacy are evolving and being redefined.

With the proliferation of the Internet, new layers of literacy associated with the Internet and the Web are layered over and have a substantial impact on reading and writing. What do authors and readers need to learn in order to read and write in hypertext Web environments? How does hypertext change the roles of author and reader and their relationship? What are the implications of hypertext on reading and writing?

Bolter (1994) states that electronic writing or writing in hypertext entails “the qualities of fluidity, multiplicity, and dispersed control” (p. 8). Odin (1997) describes hypertext aesthetics as “non-linear, multivocal, open, non-hierarchical aesthetic involving active encounters” (p. 599), as opposed to the linear, univocal, closed, authoritative aesthetic. Both Bolter and Odin see reading and writing in hypertext as fluid, free and interactive. Odin further states that, “Since hypertext reading/writing involves active encounter and traversal, the reader becomes an integral part of the topological space created by the interaction of multiple texts” (p. 604). Hypertext changes the conventional ways of reading and writing, the roles of the readers and writers and the way authors and readers interact with text.

Odin (1997) states that, “The fragmentation and discontinuity that define the hypertextual environment do not lead to a fractured reading experience. In fact, the links between the nodes promote multiple narrative trajectories” (p. 605). It is the links that connect the text together, not disperse the meanings of the text. She further describes that “The multiple readings of the text finally lie not so much in what the lexias say, but rather in the relationship they forge with one another. These relations come into existence and
dissolve with each reading and unfold into different versions of the text" (p. 612). Hypertext provides a great flexibility in writing, and enables multiple readings of the text. In the hypertextual space, authors are able to write text with nonlinear or multilinear paths; readers are invited to interact with text from multiple perspectives, and weave together text and meanings in each reading of the text.

However, hypertext aesthetics could be of fragmentation and discontinuity. The hypertextual experience may be temporal, deferring and constantly changing. For some that are accustomed to linear text, and/or value linear, logical thinking, the hypertextual experience seems precarious and disrupting. Therefore, this research focuses on in-depth study on hypertext and its implications on reading and writing, the roles of author and reader and their relationship, their interactions with each other and the text.

1.4 Description of the Course,
"Hypertext, the WWW and Classroom Practice"

The research setting was a graduate level course at a large mid-western public university: Hypertext, the World Wide Web and Classroom Practice. It is stated in the course syllabus\(^2\) that the course is intended to "[explore] the multi-linear and non-narrative of the World Wide Web and other hypermedia technologies in the context of

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\(^2\) This statement is from the course syllabus. See Appendix C.
curriculum, literacy and pedagogy." The research participants were graduate students enrolled in the class, mostly M.A. students in the College of Education.

The course was one quarter in length (eleven weeks) with an emphasis on lectures/discussions and hands-on workshops. The class met once a week for four hours, usually two hours for class discussion and two hours for hands-on workshop. The students were required to read the assigned hypertext theory, attend each class, and participate in the class discussions. They were also required to attend the workshops, which took place in an Apple Macintosh computer lab. The students were required to read one published hypertext and to complete three hypertext production assignments. Each week, there were class discussions on the readings and assignments, as well as workshop sections on learning to use a Web editor [Microsoft FrontPage]; open lab time was allocated in every class for working on the course assignments. The students were expected to work outside the class in order to complete their assignments as well.

The main reason that I studied this particular course as a research site was that it was one of the few classes on campus that emphasized both theory and applications of hypertext. The students enrolled in this course were given time to learn both hypertext theory and applications. By examining this course, I had regular access to student research participants, and had invaluable opportunities to understand their experiences in learning hypertext theory and designing hypertext Web pages.

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3 Its Name was Penelope (1992) by Judy Malloy, published by Eastgate Systems, Inc.
4 Microsoft FrontPage is a WYSIWYG Web editor that was used in the course. The students can design their Web pages using Microsoft FrontPage without learning HyperText Markup Language (HTML).
1.5 Purpose of the Study

The main purpose of the study is to interpret and describe students' experiences in designing hypertext in Web environments, so as to help educators and students of hypertext to understand their own learning/designing process. The study is also intended to examine issues pertaining to hypertext theory and applications from the perspectives of hands-on experiences, and the implications of hypertext on reading and writing.

1.6 Research Questions

As stated before, students' experiences in designing hypertext have not yet been fully researched. Therefore, the focus of this study is the examination of hypertext theory and their impact on students' design process.

My primary question is:

What are the experiences of students in a graduate course on hypertext theory, design and development?
More specifically, the underlying questions I explore in-depth are:

How do students come to understand hypertext in the process of writing/designing hypertext?

What are the students' experiences in subverting linearity?

What are students' experiences in the shifting of author/reader relationship and/or power relationships?

How do students subvert the narrative nature of story telling and design hypertext that requires non-linearity or multi-linearity?

How do students consider the issues pertaining to interactivity in their design?

The research questions are designed to examine the participants' learning experience and how they have learned. In the interviews, the participants talked about their learning process and their learning about hypertext. In the process of constructing three different hypertext projects, the participants learned about their own learning process. The participants also learned to incorporate hypertext in their projects by challenging linearity, exploring multiple perspectives and intertextuality, questioning their roles as author and reader, and reflecting on the author-reader relationship. [Note: See more in Appendix A: the Interview Guide]
1.7 Significance of the Study

Hypertext design in Web environments is an essential part of Web implementation in educational settings. The study of hypertext design in Web environments helps teachers and students better understand the Web technology. It also contributes to understanding of hypertext design experiences and hypertext theory. This study thus helps educators and students understand the relation between hypertext theory and hypertext experiences. Furthermore, this study provides valuable detailed descriptions of the design process and insight into how people think of hypertext and understand hypertext through hypertext design experiences.

1.8 Summary

Hypertext is a complex concept. This study aims to study students' hypertext experiences, and provide in-depth accounts of their experiences. This study also aims to examine the implications of hypertext, including what students' experiences are in exploring hypertext theory in Web design; how students subvert the linearity of text to design nonlinear text; what students' understandings are in the changing relationship between hypertext readers and authors, and how students incorporate hypertext for educational use.
The following chapter of the dissertation provides reviews of related literature. Chapter three provides a description of the research methodology, including research design, methods of data collection, and data analysis. Chapter four and five are data presentation, and data analysis. Chapter six is the conclusion.
CHAPTER 2

REVIEW OF RELATED LITERATURE

This literature review provides background information about hypertext technology, including its potential, and its implications for education, and discusses issues pertaining to hypertext design within WWW environments. First, the concepts and characteristics of hypertext are explained. Second, different views on how hypertext is redefining literacy are discussed. Third, hypertext literacy and its implications are addressed in the context of Web design. Fourth, the impact of hypertext on culture and the shifting power relationships between authors and readers are discussed. Finally, tentative criteria for evaluating hypertext Web design are suggested.

2.1 What is Hypertext?

Hypertext is a computer-based technology that supports non-linear reading and writing (Nelson, 1987; Bolter, 1991). Landow and Delany (1991) define hypertext as "the use of the computer to transcend the linear, bounded and fixed qualities of the
traditional written text" (p. 3). Unlike most conventional printed books, hypertext allows an author to construct his/her text non-linearly. Thus, a reader can read the text non-sequentially, or more accurately, a reader creates her/his own sequential reading.

Michael Joyce (1995) explains, "... hypertext, before anything else, is a visual form. Hypertext embodies information and communications, artistic and affective constructs, and conceptual abstractions alike into symbolic structures made visible on a computer-control display" (p. 19). The structure of hypertext usually consists of nodes and links. A node contains blocks of text, graphics, sounds, animation, movies, and so on. Links connect the nodes and enable the user to navigate around the text.

Hypermedia is a term that describes the combination of images, sounds, and videos used with the written text in computer-based applications (Bolter, 1991, p. 26; Kommers, 1996, p. 6). Multimedia is another term that refers to the use of text, graphics, audio, video, animation and other computer-based applications (Kommers, 1996, p. 6). According to Tolhurst (1995, p. 25), the terms hypertext, hypermedia, and multimedia have in fact been used interchangeably by various authors who have written in the field of educational technology. However, some multimedia applications are not necessarily nonlinear (Tolhurst, 1995, p. 25). Bolter (1991) also asserts, "a hypermedia display is still a text, a weaving together of elements treated symbolically" (p. 27). Since the term multimedia does not emphasize the nonlinearity of hypertext structures, and hypermedia just extends some features of hypertext, the term hypertext will be used in this study.

The concept of hypertext was originated by Vannevar Bush, who was a faculty member in the M. I. T. Engineering Department for 25 years, and the director of the Office of Scientific Research and Development after W.W.II (Hughes, 1997). Bush
published his influential article *As We May Think* in the *Atlantic Monthly* in 1945. In his article, he envisioned a mechanized information storing and retrieving machine called *memex*. According to Bush:

> A memex is a device in which an individual stores all his books, records, and communications, and which is mechanized so that it may be consulted with exceeding speed and flexibility. It is an enlarged intimate supplement to his memory. (Bush, 1945, p. 106-7)

Bush further describes the ability to retrieve any item, and then select another by association as the essential feature of memex. Bush (1945) points out that "the process of tying two items together is the important thing" (p. 107). For Bush, memex is an information retrieval device. Although memex was never built, Bush's vision of memex has inspired several computer pioneers, including Theodore Nelson (1987, 1993, 1995) and Douglas Engelbart (1995).

Theodore Nelson, who coined the term "hypertext" in 1965, has defined hypertext as "non-sequential writing" (Nelson, 1987, p. 29). Nelson (1993, p. 14) points out that both spoken language and conventional writing are a series of words, so people have come to think of writing as sequential. Nelson (1993, p. 14) argues, however, that writing is not intrinsically sequential. First of all, Nelson contends that a structure of thought is not itself sequential. Ideas are usually connected, but do not always come in sequences. The same sequence does not work for each individual, either. Thus, it would be ideal if a writer could create different paths for different readers. Therefore, Nelson proposes the notion of nonsequential writing generated by using computer technology.
Nelson is a hypertext enthusiast. When Nelson (1987) speaks of hypertext for learning, he accentuates the point that "the student is in control and may use his initiative dynamically; the subject is not artificially processed into a presentational sequence" (p. 31). Nelson sees the student as having control over what s/he is learning in a hypertext learning environment. The role of the learner in the learning process is therefore more dynamic and active than in conventional print-based environments.

2.2 Hypertext and Literacy

Nancy Kaplan (1995), in her on-line article E-Literacies: Politexts, Hypertexts, and Other Cultural Formations in the Late Age of Print, describes the World-Wide Web as a new hypertext environment and as Nelson's hypertextual dream come-true. However, Kaplan (1995) notes that the new Web environments and hypertext technology have caused some academic disputes in terms of the future of literacy, and its social origins and effects. According to Kaplan (1995), the hypertext theorists, who welcome change, include Jay Bolter and Richard Lanham. On the other hand, the critics of hypertext, who respond to the change with despair, include Neil Postman, a social critic, and Myron Tuman, an English professor. Certainly, there are other voices on both sides of the debate, and in the middle ground of the continuum. I will refer to them later in the chapter.
Kaplan (1995) states that both groups in the dispute agree that technology, especially computer technology, will have a great impact on various cultures. However, the hypertext theorists hold positive attitudes toward technology, while the critics of hypertext see technology as threatening. Kaplan (1995) points out though, that the dispute goes beyond just differences in attitudes toward technology. Kaplan (1995) states, "All of them forecast cultural changes based on cultural ideals, not simply on the logics of the technologies they describe." The hypertext theorists and the critics of hypertext foresee the cultural changes technologies bring, especially the changes in the way students learn, and the implications for literacy. However, the two groups differ on the question of whether the changes are better, or what the ideal mode of learning should be.

Hypertext Theorists

Jay Bolter, in his book *Writing Space* (1991), predicts, "computer technology (in the form of word processing, databases, electronic bulletin boards and mail) is beginning to displace the printed book" (p. 2). Bolter observes that computers are being used for all kinds of writing in all kinds of professions. Furthermore major U. S. publishers have changed the way they publish their texts by using computerized publishing techniques. Bolter (1991) predicts that someday the publishers will distribute some or most of their texts in an electronic form instead of the printed form. We are at what Bolter calls "the late age of print" (Bolter, 1991, p. 1).
However, Bolter (1991, p. 2) points out that the issue is not whether printed books will be replaced by electronic books. It is the idea that what we think of as a book will be changed. Bolter (1991) contends, "print will no longer define the organization and presentation of knowledge" (p. 2). A printed book presents its text in a fixed form. Computer technology, on the other hand, makes electronic text more flexible. Hypertext is a technology that can present text in a nonsequential, non-linear, and non-hierarchical form. Bolter (1991) argues that "the goal of conventional writing is to create a perfect hierarchy, but it is not always easy to maintain the discipline of such a structure" (p. 21). Bolter (1991) further comments that a writer cannot help but write associatively even if s/he does not intend to. Hypertext technology, on the other hand, allows a writer to subvert the hierarchy imposed by the printing techniques and the conventional rules of organizing and presenting information. Bolter (1991) explains, "in a world of hypertext, to write is to make connections" (p. 23). To Bolter, computer technology not only offers new space for writing, but also enables writers to use more fully associative instincts in thinking and writing. Hypertext technology also challenges the conventional notion of "good writing". Bolter (1991) states that "writing is the creative play of signs, and the computer offers us a new field for that play" (p. 10). Hypertext gives writers a more playful and creative way to experiment with writing. Hypertext also allows readers to experience new ways of reading. According to Bolter (1991, p. 108), lego, the Latin word for reading, means "to gather, to collect", or "to make one's way, to traverse". Thus, Bolter defines reading as "the process of gathering up signs while moving over the writing surface" (p. 108). This description depicts reading in hypertext as travel in hyperspace, choosing one's paths, and gathering one's own meanings.
In Bolter's view, the shift from print to the computer will bring a new definition of literacy (Bolter, 1991, p. 2). While computer technology provides people with new concepts and formats for books, it also offers people new ways to read and write. In an electronic environment, text is no longer stable and permanent. Reading and writing electronic text will pose new possibilities and/or challenges for both readers and writers. Because of it is changeable and impermanent; an electronic text no longer presents its author in an unchallenged position. Readers also face challenges in reading unstable text. Computer technology enables readers to have a more active role in reading electronic texts. Readers are presented with a web of choices. Since the text is nonlinear and nonhierarchical, sometimes there is no indication of a beginning, as often there is no closure. Some electronic environments also encourage readers to participate and become writers. According to Bolter, then, hypertext technology is not only bringing about a new definition of literacy, but also changing the relationship between the author, the text, and the reader.

Richard Lanham, in his book *The Electronic Word* (1993), echoes Bolter's belief in hypertext technology. Lanham comments, "electronic text creates not only a new writing space but a new educational space as well" (p. xii). Lanham (1993) thinks that electronic text will have positive effects on the text-book-based Western education, along with the written culture. Electronic text will challenge the conventional concept of literacy, and the culture that supports the notion of print literacy.

Lanham (1993) draws on Eric Havelock's pioneering study of the Greek alphabet and uses it to make comments on Western culture. According to Lanham (1993), Havelock's work emphasizes the idea that an alphabet has to be as simple as possible so a
child can learn it and internalize it. It will then become a transparent tool for conceptual thought. When a literate person reads, s/he does not think of the shapes of letters aesthetically because the letters have been internalized and become transparent. Lanham (1993) summarizes the situation by saying that "except in its learning stages, [reading is not] a self-conscious, rule-governed, re-creative act but an intuitive skill, a literate compact exercised on the way to thought" (p. 4). It is the meanings of the words, not the shapes of the letters, which are being attended to when a literate person reads.

However, it is the effect of the transparency that Lanham questions. Lanham (1993) points out that the print technology has contributed to making printed letters transparent. Western culture has been working toward this ideal of transparent styles, which emphasizes nonintrusive, nonreflexive, and "non-style" styles. However, the transparency of the tool gives people the illusion that their thoughts are not mediated by the tools or media they use. Lanham (1993) argues that people should question such a notion of "unintermediated" thoughts.

Lanham (1993) points out that an electronic environment, which has the capability to incorporate text, sound, graphics, and video into presentations also has the potential to help us "look at" the text rather than just "looking through" the text. "Looking through" the text means reading the text, and moving around the text without any awareness of the text structure. As a result, an author's presence and the dominance of structures of text are not questioned. In contrast, "looking at" the text allows people to examine the text, the structure and the media. The dynamics of digital technology such as hypertext enable both writers and readers to have more degrees of control than are allowed by the static printed text. Authors have more access to the text and structure; they
can change fonts, manipulate graphics, incorporate audio and video in their text, and edit the structure, sequences and presentation of the text. Readers can also become more active in the environment, and actually participate in some of the activities, creating their own reading paths, exploring different paths, and responding to the author, or adding text to the existing text if these features are implemented in the environment. Lanham (1993) emphasizes that it is the process of working with the texts that makes people aware of the existence of a mediated process, and enables them to become reflexive. Therefore, both writers and readers acquire a new literacy to interact with the environment and with each other. And in the process, the boundary between readers and authors becomes blurred.

Kaplan (1994) points out that both Bolter and Lanham see "the logic of electronic technology as a liberating and democratizing one". Bolter and Lanham both believe hypertext will free people from the old print literacy and reach out to people who are less privileged and left out of the literate world. These hypertext theorists believe that electronic technology can help people see clearly the limits of print literacy imposed upon them, and offer them alternative features.

Critics of Hypertext

Neil Postman (1992), in his book *Technopoly*, tells us "it is inescapable that every culture must negotiate with technology" (p. 5). Postman (1992) describes technophiles as people who have enormous zeal for new technology, but only see what the new technology can do, and are not able to see what technology will "undo". On the other
hand, there are people who only think of technology as a burden. Postman (1992) sees himself in the latter group.

To Postman (1992), the introduction of personal computers to the classroom has posed threats to classroom culture (Postman, 1992, p. 17). He points out that there is a delicate balance between orality and print culture in the classroom. In a primarily oral culture, people tend to be additive, aggregative, and participatory in their thought and expression (Ong, 1982, pp. 37-57). Since the introduction of print technology, print culture has fostered a sense of introspection and isolation in learning. However, teachers have been compensating for these in learning situations by encouraging cooperative learning and socialization among students. In Postman's (1992) opinion, the use of personal computers in classrooms will promote individualized learning and problem-solving. As a result, openness and gregariousness among students in the classroom will be forever lost.

Furthermore, Postman is "a defender of the word" (Strate, 1994, p. 163), criticizing electronic media for shifting Western culture from linguistic to image-based discourse (Strate, 1994, p. 164). Electronic media tend to fill people with sensory experiences, such as images and sounds. On the other hand, print culture fosters an entirely different mode of intellectual activity. To Postman (1979, p. 73), the demonstration of analytic and sequential thinking, and the ability to argue from a fixed point, are the qualities of intelligence. However, for hypertext enthusiasts, it is such linear and logical presentation in print culture that hypertext is set to subvert.

Myron Tuman (1992, p. 90), in his book *Word Perfect: Literacy in the Computer Age*, points out that those who attack print literacy "reject the status of texts as higher or
more logical expressions of symbolic knowledge" (p. 104). The notion of texts as the embodiment of history, philosophy, literature, science, and other ways of understanding the world is also challenged in the writings of Eric Havelock, Jack Goody, David Olson, & Walter Ong (Tuman, 1992, p. 43). In Tuman's view, writing technology holds a superior status over other technology because writing presents itself in a logical, structured, and linear manner. Tuman also treats texts as unchallengeable because they are embedded in the context of history, philosophy, literature, science and other traditions. In contrast, hypertext literacy encourages people to explore new ways of writing and reading about the world, especially in non-linear and nonhierarchical ways. Thus, hypertext literacy is viewed as by Tuman (1992, p. 104) as de-centered and non-authoritarian.

Tuman (1992) points out that the basic problem of hypertext "lies in the fervor of its champions, many of whom for all their deconstructive, postmodern rhetoric, seem beguiled by their own nostalgia for print literacy" (p. 78). Tuman argues that most contemporary hypertext readers and writers have been trained in print literacy. Therefore, these readers and writers both hang on to what they have already known, and at the same time are trying to destroy it. "[A]s a result hypertext is oversold as a new kind of text (although it is not really a text at all) that allows for a new kind of open-ended author (who turns out to be not really an author)" (p. 78). Tuman posits a conventional definition of text, and of author as well. To Tuman, a non-linear text is not a text; an author who does not follow a linear hierarchical structure is not a real author.
As to the nostalgia for print literacy, for hypertext theorists, this is just part of the reflexive process, so they can understand both the new and the old literacy better. However, to a critic like Tuman, the refusal to explore the new comes much easier than questioning the old. Hypertext is still a new technology and a new concept. There is still a lot for hypertext authors and readers to learn both conceptually and technically. The quality of hypertext authors creates, and the frustration and discontent readers experience in reading hypertext, all contribute to issues pertaining to the resistance toward hypertext.

Tuman (1992) also comments that the educational application of the networked computer has shifted the focus of literacy from "the self-contained text and toward a new kind of interactive discourse" (p. 90). This kind of interactive discourse has not been emphasized in the traditional classroom, where the teacher and print books have been viewed as the authorities. Again, Tuman contends the new literacy will decenter the text and teacher. Power and authority will be shifted in the discursive process. To Tuman, the new literacy (if it is literacy) generates and directs a destructive energy toward the authority of text and teachers.

Postman and Tuman both address the threats, which they believe hypertext presents to print literacy. However, Postman and Tuman see technology differently. Postman predicts the use of personal computers will result in an overemphasis on individualized learning. Tuman, on the contrary, sees computers as a networking and discourse enabler. I will argue, as Ong (1982, 79) has noted, that these different remarks about writing, hypertext and computer technology can be traced back to people's opinions about oral culture, writing culture, print culture, and electronic cultures.
2.3 Orality, Writing and Hypertext

Ong (1982, p. 79) in *Orality and Literacy* has made some insightful observations regarding writing and computers. When writing had just been introduced to Western culture, Plato quoted Socrates as commenting in *the Phaedrus* and in *the Seventh Letter*, against writing (Ong, 1982). Interestingly, these critiques against writing could also be applied to critiques computers have received.

First of all, writing is said to be inhuman, "pretending to establish outside the mind what in reality can be only in the mind" (Ong, 1982, p. 79). The same critique also applies to computers. Computer engineers and scientists have tried to model computers after human minds. However, some people (e.g., Searle, 1984, 1998) have argued that computers will always be inhuman, regardless of progress made on artificial intelligence and virtual reality.

Secondly, Plato says writing destroys memory. With the use of writing, people rely on written resources, and do not exercise their mind for memorization. In Plato's view, "writing weakens the mind" (Ong, 1982, p. 79). Some teachers and parents have the same worry about students' use of calculators in class. They fear that calculators weaken the mind because the students rely on the calculators to perform multiplication and division tasks for them instead of doing the work themselves. Spell checkers and other computer tools raise similar fears.
Thirdly, as Ong (1982) has observed, a written text is unresponsive. A written text cannot provide people with the same level of interaction, compared to human-to-human interaction. The same complaints are made about computers. Ong (1982) uses a "garbage in, garbage out" (p. 79) analogy to illustrate computer interaction with humans.

Fourthly, Ong (1982) also points out that writing is passive. In oral cultures, people can converse, debate, and argue. Unlike human speakers, written text cannot defend itself. Neither can computers.

Ong (1982) reminds us, however, "writing and print and the computer are all ways of technologizing the word. Once the word is technologized, there is no effective way to criticize what technology has done with it, without the aid of the highest technology available. Moreover, the new technology is not merely used to convey the critique: in fact, it brought the critique into existence" (p. 80). It is interesting to note that Plato's philosophical critique of writing was made possible for us only because of the effects of writing on us. Ironically, Plato felt nostalgic about oral cultures because he possessed the technology of writing.

Ong (1982) states that "the reason for the tantalizing involutions here is obviously that intelligence is relentlessly reflexive, so that even the external tools that it uses to implement its workings become 'internalized', that is, part of its own reflexive process" (p. 81). People do not usually think of writing as technology like we think of computers in that sense because we have internalized the writing technology. Ong (1982, p. 2-3) explains that print culture brought writing to its prevalence, and electronic culture is built on writing and print culture. Understanding of the contrast between electronic and print cultures makes it possible to see the differences between oral and print culture.
Furthermore, the critiques of computers are being made because electronic culture is now becoming part of the larger culture.

The debate over whether hypertext will redefine literacy arises from the fact that people are internalizing the new hypertext technology. It is in the reflexive process that people are becoming aware that they are losing something to hypertext, and yet gaining something from hypertext. Hypertext theorists like Bolter and Lanham certainly welcome the change, but critics of hypertext like Postman and Tuman do not see it as positive change.

2.4 Exploratory Hypertexts and Constructive Hypertexts

Michael Joyce, who is one of the creators of StorySpace, a pioneer hypertext writing software system, describes two types of uses for hypertext as a learning tool (Joyce, 1988, p. 11): exploratory hypertext and constructive hypertext. According to Joyce (1988), "exploratory hypertexts encourage and enable an audience (users and readers are inadequate terms here) to control the transformation of a body of information to meet its needs and interests" (p. 11). Exploratory hypertexts allow the reader to explore the information, inspect the structure, and create their own paths. On the other hand, constructive hypertexts enable users/authors/designers to "develop a body of information that they map according to their needs, their interests, and the transformations they discover as they invent, gather, and act upon that information. More than with exploratory hypertexts, constructive hypertexts require a capability to act: to
create change and recover particular encounters within the developing body of knowledge (Joyce 1988, p. 11). Constructive hypertexts emphasize the constructive essence of hypertext experiences. The users (also writers/designers) are able to create or to write their own hypertext in constructive hypertexts. This is more than just browsing and navigating existing links and making sense of the given information. Users can add new information to the existing hypertext, or create new hypertexts in constructive hypertexts. Joyce describes constructive hypertexts as "topographic writing".

In exploratory hypertexts, readers are allowed to explore the information, but are not able to add new information to the existing hypertexts. Exploratory hypertext thus requires some degree of passivity similar to reading printed texts (Moulthrop & Kaplan, 1994, p. 221). On the other hand, constructive hypertexts give life to the idea of "open work" (Eco, 1990, cited in Moulthrop & Kaplan, 1994, p. 221). Constructive hypertexts are never finished or closed to their readers. In the process of creating or writing constructive hypertexts, users can experience and/or challenge the role of authors, causing the boundary between the author and reader to be questioned. The power relationship between the author and the reader can then be shifted to more reciprocal as opposed to the traditional domination of the author.

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1 Jay Bolter (1991) uses the word "topographic" to describe hypertextual writing in Writing Space. Bolter explains:

Electronic writing is both a visual and verbal description. It is not the writing of a place, but rather a writing with places, spatially realized topics. Topographic writing challenges the idea that writing should be merely the servant of spoken language. The writer and reader can create and examine signs and structures on the computer screen that have no easy equivalent in speech. The point is obvious when the text is a collection of images stored on a videodisk, but is equally true for a purely verbal text that has been fashioned as a tree or a network of topics and connections (Jay Bolter, Writing Space, 1991, p. 25).
Hypertext authors need to work towards creating constructive hypertext and promoting interactivity and dialogue in their creative space (Bolter, 1991, Snyder, 1996). However, this is still an ideal vision of hypertext. Concerning the issue of whether constructive hypertexts can fulfill all the promises being made, the first point is that this has a lot to do with an author's intention and design. Authors of constructive hypertexts have to give up some degree of control over the texts and leave some space for the readers. After an author has created a space for the reader in his/her writing, it then depends on the reader's ability and/or desire to participate in the discourse, and/or to claim that space. Moulthrop (1995) talks about the complexity of the desire for resistance to hypertext. He argues that one type of resistance comes from the critics who defend print culture. Another type comes from the reader's experience of frustration and fear of randomness. Problems of disorientation and cognitive overload also cause resistance to hypertext (Charney, 1994, p. 260). Coover (1992) also talks about the reader's desire for coherence and closure. These are issues in hypertext environments that not only challenge authors' approaches toward hypertext structures, but also require both authors and readers to rethink their relationships. In the meantime, hypertext also poses some challenges in educational contexts.

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2 Disorientation and cognitive overload describe readers who are overwhelmed by the amount of contents in the hypertext, and the amount of links they can select.
3 Closure refers to the sense of ending in hypertext, especially in hypertext fiction.
2.5 Hypertext Literacy and the WWW

Hypertext entails a new kind of reading/writing space; the World-Wide Web (WWW) is the largest and most well-known space embodying hypertext concepts. The nonlinear nature of hypertext creates a new type of interactive reading and writing environment on the Web.

Reading Hypertext

Burbules (1998) refers to reading on the Web as "hyperreading" which "... involves the reader making connections within and across texts, sometimes in ways that are structured by the designer/author, but often in ways determined by the reader" (p. 105). Reading hypertext is thus essentially different from reading conventional printed text. Heim (1993) points out that "hypertext fosters a literacy that is prompted by jumps of intuition and association" (p. 30). The clicking of links embedded in the text and graphics in order to jump from one document to another by intuition and/or association is one of the main features of reading on the Web.

Although hypertext offers readers new ways of reading, it poses barriers for readers as well. Barnes (1994) explains that reading hypertext is fundamentally different from reading printed books in three ways. First, reading hypertext requires readers to be familiar with computer technology as well as hypertext features. Second, readers of hypertext need to be able to interpret symbols other than texts such as icons, graphics,
and animation. Third, hypertext readers need to interact with nonlinear information and make sense of pieces of information. Disorientation and cognitive overload are the most common weaknesses in reading hypertext, due to the complexity of the hypertext structures, the large amount of information in most hypertext documents, and readers' discrepancies in hypertext literacy (Conklin, 1987; Marchionini, 1988; Jonassen & Grabinger, 1993).

Writing Hypertext

Slatin (1990) points out that hypertext, or non-linear writing, means "writing in which the logical connections between elements are primarily associative rather than syllogistic, as in conventional text" (p. 876). Since it is writing by associations, the process of creating hypertext is thus inclusive. Writing in hypertext involves creating an open and dynamic writing space.

Hypertext challenges "the fixity of the text" (Bolter, 1994, p. 10). Bolter (1994) states writing in hypertext works to subvert linearity and the hierarchy of structure imposed by conventional texts. By using links and nodes, an author undermines the linear structure and weaves a web of information together. As a result, writing in hypertext provides possibility for presenting information in multiple ways and questioning the conventional singular way of reading and writing text.

Barnes (1994) observes that writing hypertext requires more than just writing skills. In addition to traditional writing skills, hypertext writers need to develop hypermedia design skills, interactive design skills, and computer authoring skills. A
WWW environment usually incorporates different media including graphics, sounds, music, movies and animation. A hypertext author needs to produce and/or edit different media for the Web pages. Interactivity is also an important aspect of writing Web pages. A hypertext writer needs to consider the openness and branching characteristics of the Web in order to design Web pages that will engage readers' participation. A hypertext writer also needs to master the technical aspects of the Web technology, such as authoring and programming.

Reading and writing the Web is different conceptually and technologically from reading and writing traditional printed text. As stated by Selfe (1989), students are required to learn new skills in order to be literate in computer environments. The skills students need in order to read and write in Web environments are multi-layered over traditional literacy and computer literacy. Students need to have basic reading and writing skills, computer skills and familiarity in Web related technology in order to be literate in Web environments. In addition, in order to write/design hypertext projects, students also need to be familiar with hypertext theory, such as reading and writing nonlinearly, and/or and in multiple perspectives. Students’ experiences in using and designing hypertext rely largely on their mastery of multi-layer literacy. Thus, the students’ experiences in exploring hypertext theory and writing/designing hypertext projects in Web environments are the main focus of this study.
2.6 Hypertext Design

Lanham (1993, p. 5) describes that two modes when we interact with text/hypertext; "looking at" and "looking through". Lanham argues that we are always looking at, then looking through. When we are looking through a text, we are reading the meaning of the text. When we are looking at, we are reading the structure of the text. Lanham states that we always oscillate between these two modes. Bolter (1991) points out that "a good hypertext is constructed so that the movement between these two kinds of reading is almost effortless. The oscillation between looking through and looking at can become so rapid that the two experiences merge: the structure of the hypertext is then always present to the reader as he or she reads" (p. 167-8). Although a well-designed hypertext lets the reader oscillate between looking at and through without much effort, it is the same effortlessness Lanham wants to warn the reader about. The transparency of a technology will let the reader fall under the illusion of intermediated thought. We need a delicate balance between the danger and comfort of the transparent technology.

Johnson-Eilola (1993) points out that "the hypertext writer's task is not to provide a narrow, fixed product but something closer to a space for conversation with other texts, readers, and writers" (p. 382). It is a space a writer can invite his/her reader into, or other writers into, to converse, to exchange, or to create their own writing. It is a space full of discursive practices, and it is also a space full of dispersed power. Borrowing from literacy and cultural theorist Mary Louis Pratt's concept of "contact zones" (p. 383), Johnson-Eilola sees the new hypertext space (or cyberspace) as our new contact zones. Johnson-Eilola (1993, p. 383) points out that although these new contact zones are not similar to the once-colonized Central Africa (as described in Mary Louis Pratt's studies),

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4 "Social spaces where disparate cultures meet, clash, and grapple with each other, often in highly asymmetrical relations of domination and subordination" (Pratt, Imperial, p. 4. quoted in Johnson-Eilola, 1993).
we are still facing the issues relating to intellectual and/or material colonization. We are still challenged by the concept of subject/object, knower/known, and self/other as long as we are writing and/or being written.

I would like to use the concept of rhizome used by Deleuze and Guattari (1987) in their book *A Thousand Plateaus: Capitalism and Schizophrenia*, to guide hypertextual writing/design. Deleuze and Guattari describe a rhizome:

"... as a subterranean stem is absolutely different from roots and radicles. Bulbs and tubers are rhizomes. Plants with roots or radicles may be rhizomorph in other respects altogether. ... Burrows are too, in all their functions of shelter, supply, movement, evasion, and breakout. The rhizome itself assumes very diverse forms, from ramified surface extension in all directions to concretion into bulbs and tubers. ... The rhizome includes the best and the worst: potato and couchgrass, or the weed" (Deleuze and Guattari, 1987, p. 6-7).

Deleuze and Guattari (1987) accentuate that "a rhizome has no beginning or end; it is always in the middle, between things, interbeing, intermezzo" (p. 25). When commenting on hypertext and culture, Moulthrop (1994) points out that the Deleuze and Guattari's rhizome-book "may itself be considered an incunabular hypertext. Though the text arrives as a print artifact, it was designed as a matrix of independent but cross-referential discourses which the reader is invited to enter more or less at random" (1994, p. 300). Burnett (1993) also argues that the discursive principles of rhizome will help establish a theory of hypertextual design. With its non-linear and non-hierarchical characteristics, hypertext is like a rhizome with no beginning, no end, and always in the middle.

Deleuze and Guattari (1987) describe some characteristics of the rhizome. The first two principles of the rhizome are "Principles of connection and heterogeneity: any point of a rhizome system can be connected to any other point, and must be" (p. 7).
These two principles characterize the relationship between links and nodes in hypertext.

A method of rhizome is decentering and never closed, so is hypertext.

The third principle of the rhizome is "Principle of multiplicity" (Deleuze and Guattari, 1987, p. 8). The quality of multiplicity makes a rhizome or a hypertext cease to have neither subject nor object, or to be overcoded without changing itself. An open space in hypertext entails neither writers nor readers because the roles of writers and readers are constantly shifting.

The fourth principle of the rhizome is "Principle of asignifying rupture: against the oversignifying breaks separating structures or cutting across a single structure" (Deleuze and Guattari, 1987, p. 9). Any spot of a rhizome can break away, and start up again; so does any text in a hypertext, which can be broken away, and linked to other text.

The fifth and sixth principles of the rhizome are "Principles of cartography and decalcomania: a rhizome is not amenable to any structural or generative model" (Deleuze and Guattari, 1987, p. 12). Deleuze and Guattari emphasize that a rhizome is "a map and not tracing. ... it is entirely oriented toward an experimentation in contact with the real. ... it always has multiple entryways" (Deleuze and Guattari, 1987, p. 12). A rhizome or a hypertext constructs and grows in its own structure. A rhizome or a hypertext models nothing but life itself. A rhizome or a hypertext can be broken away at any given spot, and it can be reentered at multiple points as well.

A rhizome and a hypertext are both acentered, nonhierarchical, and nonsignifying (Deleuze & Guattari, 1987, p. 21). I believe that if hypertext writers/designers keep the principles of rhizomes in mind while writing/designing hypertext, hypertext can be a space shared by writers/designers/readers/users. Hypertext can also be a place where people come to understand themselves (or ourselves) and others better. It will be a space...
full of promises and challenges. It is a space that exists in cyberspace, but it is also a
space closer enough within our reach, and still new enough for us to make it useful for
learning.

2.7 Hypertext and Web Design

The Web in an educational context can be viewed as an information resource, a
space for expression and creativity (Duchastel & Spahn, 1996), and a dialogical space
(Wild & Omari, 1996).

In Designing Web-based Learning, Duchastel and Spahn (1996, p. 528) point out
that designers can view the Web from two perspectives: the Web as a medium for
distribution of resources, and the Web as a medium of expression-representation. The
distribution perspective takes advantage of the Web as an information network. The
expression-representation perspective uses the Web as a space for publishing, and for
expressing ideas and creativity.

Another way of looking at the Web is to think of it as a space for dialogue (Wild
and Omari, 1996). Wild and Omari see dialogue as "a mediation between the known and
the unknown or between the learner (reader) and the object of learning".
Authors/designers need to provide space for readers to participate in the learning
discourse, and to invite readers to contribute and become (co)authors.

5 Space is used as a concept in design here. On a technical level, forms, e-mail and Listserv can be
used for asynchronous dialogue. For synchronous dialogue, MUD, Chat Room, teleconferencing,
etc., can be incorporated into the Web.
Bolter (1991, p. 207) describes the act of writing as writing the mind. Each particular technology of writing suggests "a somewhat different relationship between the written word and the mind" (Bolter, 1991, p. 207). Hypertext offers writers a new way of writing and reflecting their mind. Hypertext also offers readers different paths to read a text, and thus different ways of interacting with and interpreting a text. With the interactive features of the Web, authors and readers are blurring their functions and refining cultures.

Drawing from McLuhan's notion of media defined culture, Webb (1996) argues that the Web technology is re/defining cultures. Readers use the Web to construct individual narratives (Webb, 1996). Authors use the Web space to explore the mind. It is in this dialogic space that authors and readers are constructing their own individual narratives, interacting with and blurring the lines of their roles, and thus shifting the power relationship between author and reader.

There is a complex and reciprocal relationship between technology and culture. Hypertext Web design influences people's experiences in many aspects, and so designers need to make use of the openness of the Web. Furthermore, designers need to be aware of the non-neutrality of the space. De Kerckhove (1991) criticizes the myth of "neutral" space in Western culture. De Kerckhove (1991, p. 132) notes that Western culture tends to think of communicative space as an empty stage for human activities. Therefore, the space in and of itself is neutral. However, De Kerckhove (1991, p. 132) argues that the space is now full of electronic networks, and so it can no longer be neutral.
2.8 Criteria for Evaluating Hypertext Design

Evaluating design requires a multidisciplinary range of the criteria (Kerne, 1998; Alben, 1996). Marc Rettig (1996, p. 64) points out:

There is a quality about a great design that is difficult to put into words. It's always tempting to focus on just a few aspects of a design, separate from the whole problem. Good looks, good flow, good content—all those things are important, but how do you pin down that feeling of satisfaction you get when you encounter a tool or toy that clicks with you on a deep level?

Since hypertext is a multidisciplinary field (Unsworth, 1997), criteria for evaluating hypertext design require considerations from multidisciplinary approaches/perspectives [a multidisciplinary range of the criteria], including interactivity (Kristof & Satran, 1995), aesthetics (Alben, 1996; Weiman, 1999), navigation (Harpold, 1991; Jacobson & Spiro, 1995; Lawless & Brown, 1997), human-computer interface (HCI) design (Shneiderman, 1998, 2000; Kerne, 1998) and usability (Alben, 1996; Nielsen, 1995, 2000). It also depends on the purpose of the text/design and the intended audience.

Since the main focus of this research is the study of writing/designing hypertext in Web environments, criteria for evaluating hypertext design focus on the applications of hypertext theory in Web design. How do the students read and write nonlinearly or subvert conventions of reading and writing hypertext or even challenge the theory of hypertext will be the main criteria to evaluate their hypertext design.

It is beyond the scope of this study to list all the design criteria for evaluating hypertext design. However, this study works to explore criteria that are situated in the
context of hypertext design created by the students and the hypertext experiences the students have as both writers/designers and readers.

2.8 Summary

In this literature review, hypertext theory and applications in the context of Web design are discussed. Issues related to hypertext literacy and its implications for web environments and cultures are examined. It is noted that hypertext is a complex theory with little research conducted on the experiences of the users and designers (Jonassen, 1988; Horney, 1991). Hypertext theorists have drawn a promising future for the use of hypertext. On the other hand, critics of hypertext have raised more concerns than confidence in hypertext. This study will provide insight into students' Web design experiences, and in turn, how hypertext theory influences students' experiences in designing hypertext.

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6 See Chapter 5 for more detailed discussions.
CHAPTER 3

METHODOLOGY

In this methodology section, I will discuss the design of this study and methods of data collection and data analysis. First, paradigm shifts and the rationale for using qualitative research are discussed. Second, the research design and methods of data collection are explained. Third, methods of data analysis are provided. Finally, issues pertaining to validity and ethics are examined.

3.1 Paradigm Shift

There are different research paradigms emerging for conducting educational research. Denzin and Lincoln (1994) define a paradigm as "a basic set of beliefs that guide action" (p. 99). Denzin and Lincoln point out that a paradigm addresses three key elements: epistemology, ontology, and methodology. Epistemology is the study of how people know the world; it also describes the relationship between the researcher and the researched. Ontology is the study of the nature of reality. Methodology focuses on how
people obtain knowledge about the world. Guba & Lincoln (1994) also point out that a paradigm "represents a worldview that defines, for its holder, the nature of the 'world,' the individual's place in it, and the range of possible relationships to that world and its parts (p. 107)." Positivist paradigms are those that believe in naive realism, objectivism, and empiricism. Positivist paradigms are used to control and predict behaviors and situations. They used to be the "standard" way of approaching science and/or social science.

On the other hand, postpositivist paradigms offer researchers different ways of conducting research and approaching the researched. Postpositivists include interpretivists, critical theorists, and deconstructivists. They are other "voices" that speak against positivists and offer alternative approaches. Each of these paradigms has its strengths, intentions, and interests based on its knowledge claim (Lather, 1994). For example, interpretive paradigms work toward understanding the phenomenon under study. Critical theories are extended to emancipate the researched. Poststructuralist paradigms try to deconstruct, to disrupt and to "keep things in process" (Lather, 1994. p. 113). Each study needs to start with understanding; then, depending on the intention of the researcher, an appropriate paradigm will be selected for taking the research to the next step. This study started with an attempt to interpret and understand the researched and then examined the research process and findings from poststructuralist perspectives.
3.2 Characteristics of Qualitative/Postpositivist Research

Eisner (1991, p. 33-40) describes six features of qualitative studies. First of all, qualitative studies tend to be field focused. The self as an instrument is the second characteristic of qualitative studies. A third feature is their interpretive character. The use of expressive language and the presence of voice in text are the fourth feature. A fifth feature is attention to particulars. The last feature is reliance on coherence, insight, and instrumental utility as the criteria for evaluation.

In addition, qualitative research is also described as naturalistic inquiry (Guba & Lincoln, 1989, p. 88-90). A qualitative researcher has more freedom and/or obligations to modify a research design according to the situations at hand in the process of collecting data. A qualitative researcher also needs to take the differences of participants into account, and adjust the research design as research proceeds. This is a process of iteration (Maxwell, 1996, p. 4).

Eisner (1991) states, "the most important test of any qualitative study is its usefulness" (p. 58). To Eisner, the usefulness of qualitative research is comprehension and anticipation. The qualitative, narrative data help researchers and readers understand a situation, and paint a big picture with the pieces of information collected. Qualitative studies also take the researcher and the reader to the center of the experience of the participant and allow them to immerse themselves in the experience; thus, they can anticipate more of the study and the future direction of the study.

Therefore, this study took a qualitative approach in an attempt to understand the researched and the research situation more thoroughly. A quantitative study tends to
focus on the results of a study instead of the process, and maintains a distance between the researcher and the researched. A qualitative approach, on the other hand, will situate a researcher in a research setting, enable the researcher to converse with the researched, and bring the researcher closer to the experiences of the researched. This study enabled the researcher to better understand the process of designing hypertext by interacting with the participants and gaining qualitative /descriptive data, rather than a summary of quantitative results. Furthermore, this study presented the voices of the researched better by using the participants' own narratives and multiple descriptive data sources.

3.3 Research Design

According to Yin (1989), different research requires different designs to obtain data that are most valuable for the purposes of the research. Different research designs include experiments, quasi-experiments, surveys, histories, case studies, and so on. This study was designed as a series of case studies aimed at examining each individual participant's hypertext design experience. I also looked at data across cases to search for emerging themes and relations.
3.4 Case Studies

Patton (1990) points out that "The desire to evaluate individualized client outcomes is one major reason why case studies may be conducted" (p. 99). The purpose of the case study approach within qualitative research is to collect comprehensive, systematic, and in-depth data from each individual participant (Patton, 1990, p. 384). In this research, I studied each participant's hypertext design experience and gathered data from each participant during his/her design process. Therefore, case studies were appropriate for this study because the case study approach enabled the researcher to examine each participant individually with multiple methods, and to provide "thick description" (Denzin, 1989, p. 83, cited in Patton, 1990, p. 430) of their hands-on experiences. "Thick description" offers readers meanings within the context, and connects meanings to a larger context (Patton, 1990, p. 430). Yin (1989) also stresses, "the case study allows an investigation to retain the holistic and meaningful characteristics of real-life events" (p. 14). The use of case studies allowed this study to present each participant's experience in hypertext design from every important aspect. Case study analysis enabled the researcher to search for themes within and across cases (Patton, 1990, p. 384). The readers are provided with in-depth information within a particular case and/or across cases, and thus are provided with more room in which to construct a larger picture.
3.5 The Participants and the Research Settings

The research setting was a graduate course entitled *Hypermedia, The World Wide Web and Classroom Practice* in the School of Educational Policy and Leadership at a large mid-Western university. The class took place on the university campus in Winter Quarter, 1999. Each week, there was a regular class meeting for discussions, and a hands-on computer workshop for introducing and practicing Web design software applications. There were eleven students enrolled in this course.

At the beginning of the course, I distributed a consent form and a Preliminary Questionnaire (PQ) to collect background information and information about students' computer skills. I also described the study and asked for volunteers for full participation. All eleven students agreed to participate in my study.

Among the eleven participants, five were doctoral students, four were Master students, and two were taking non-degree credits. The students had different kinds and levels of computer skills and different levels of hypertext literacy. Some students had never browsed the Web, and some had designed Web pages before. Six of them were full-time graduate students, and five were either full time teachers or other professionals.
3.6 Gaining Access

Eisner (1991) explains, "Access is a delicate matter" (P. 172). Researchers need to obtain the consent of the researched and inform them of what will be observed and what kind of data will be collected. Eisner also points out that "Keeping access is as delicate as getting it" (p. 174). Eisner reminds researchers to be "students of the situation" (p. 174) at all times, and to see anything as possible data.

Prior to the study, I obtained the agreement and support from the professor, who taught the course. At the beginning of my study, I introduced my research project to the students enrolled in the course, and every one of them agreed to participate in my research. Throughout the process, I communicated with the participants about my research project. I also had some discussions with some of the participants who were interested in the details of my project. Overall, I had built a good rapport with the participants. I also obtained a signed consent form from each participant.

3.7 Role of the Researcher

In this study, I was a participant observer (Glesne and Peshkin, 1992, p. 54). Although I was not enrolled in the class, I participated in the classroom activities and discussions, and I observed and interviewed the students for my research.
In the process of data collection, I communicated with the participants and tried to understand the participants' thoughts and their design experiences. The participants and I have learned from one another. The relationship between the participants and myself was discursive. In the process of data analysis and representing the data, I presented the participants through their own voices first, and then gave my own interpretations. As a researcher, my role was to gather the data, to provide a descriptive account of the participants' experiences, to present the emerging theories from this study and to reflect my thoughts on the whole process.

3.8 Methods of Data Collection

Qualitative research situates a researcher in a research setting. The researcher needs to decide upon the most appropriate strategies to interact with the participants. Combinations of methods including observation, interviews, videotaping, and document analysis are often used in qualitative research (Janesick, 1994, p. 211). Multiple methods (triangulation) will help the researcher achieve the validity of the research as well. This study employed mainly three different methods of data collection: observation, interviews, and document analysis.
Observation

Atkinson and Hammersley (1994, p. 248) discuss the various degrees of participation in participant observation, ranging from complete observer, observer as participant, participant as observer, and complete participant. I was more like an observer as participant since I was not enrolled in the class.

I participated in every discussion and lab section and observed the participants in these settings. I observed each participant's design process. I asked some questions as informal interviews while observing the participants. I also kept field notes as part of the data collecting process. In each section, I tried to observe and talk to every participant. I also kept field notes during and after each class.

Interviews

Maso and Wester (1996) see an interview as a dialogue between the researcher and the participant. It is a conversation with a specific purpose, i.e. for the researcher to obtain information from the participant.

Kvale (1996) explains that a researcher needs to specify the topic/content, purpose, and techniques of interviewing while thematizing interviews.

While designing interview questions, a researcher needs to consider what should be asked, and why they should be asked, and how they should be asked in order to conduct a good interview.
A researcher needs to consider what should be asked, and why it should be asked, and to design appropriate interview questions, and how they should be asked in order to conduct a good interview.

I interviewed each of the participants near the end of the quarter after they had completed the first two hypertext projects, and started their third project. I conducted semi-structured interviews (Fontana and Frey, 1994), which contained a set of core interview questions and other questions where necessary. The interview questions were drawn from class observations, informal interviews, and preliminary analysis of the participants’ hypertext projects. I asked questions about the participants’ experiences during their design processes, their thoughts on the projects, and any comments and/or difficulties they had related to their design experiences. Everyone in the class participated in the interviews, meaning eleven interviews were conducted. Each interview lasted between one hour and one and a half hours. The interview was both video taped and audio taped.

Document Analysis

Marshall and Rossman (1995, p. 85) point out that document analysis is an "unobtrusive" method to obtain data. It is also non-reactive compared to interviews. Content analysis is one of the common approaches to document analysis, and in its original versions it was also thought of as a more objectivist and quantitative approach (Marshall and Rossman, 1995, p. 85). Critical discourse analysis is another approach that puts document analysis in a broader social-cultural context (Fairclough, 1995, p. 131).
Other ways of analyzing documentation include narrative analysis of lived experiences, with an emphasis on the perspective of the narrator, and semiotic analysis which applies systematic analysis of symbolic systems (Manning & Cullum-Swan, 1994, p. 465-466).

In addition to data collected from observations and interviews, I also collected the students' design projects (student-produced hypertext Web pages) for document analysis. In this study, I adopted mainly narrative analysis approaches for the document analysis. Manning & Cullum-Swan (1994) state that narrative analysis "takes the perspectives of the teller, rather than that of the society" (p. 465). In this study, the participants talked about their experiences of creating their own projects, and of reading other participants' projects in the interviews. I relied on the participants' perspectives and comments to interpret the projects, plus my own interpretation, since any tale is interpretive in part (Denzin, 1994, p. 502). However, this document analysis is not as linear and sequenced as in most narrative analysis (Riesman, 1993; Mishler, 1995) due to the hypertextual nature of the study. The hypertext projects created by the participants provided tangible and invaluable materials for in-depth analysis of the participants' design experiences.

Reflexive Journal

I kept a reflexive journal of this research process. I wrote in my journal after every class/lab section and every interview. The reflexive journal and field notes were used to help analyze the data.
3.9 Validity/Trustworthiness

The essential meaning of "original" validity can be referred to as "the warrant of trustworthiness" (Lincoln & Guba, 1985, p. 2 cited in Scheurich, 1996). However, the concept of validity in qualitative inquiry is a social construct, and does not stay the same over time (Lather, 1986).

Guba & Lincoln (1989, p. 233-243) propose different criteria for evaluating trustworthiness/validity in qualitative research. These are credibility, which refers to how well researchers present the "realities" of the researched, transferability, dependability and confirmability. Lather, in Issues of Validity in Openly Ideological Research (1986, p. 67), proposes another set of criteria to evaluate the validity of qualitative research. They include triangulation, construct validity, face validity and catalytic validity. I used the criteria from both Guba and Lincoln (1989) and Lather (1986) to examine the validity of my study.

Credibility refers to how well researchers present the "realities" of the researched. I applied the following techniques to increase the credibility of my study: prolonged engagement, persistent observation, peer debriefing, negative case analysis, member checks and triangulation. These techniques are discussed in more detail below.

i. Prolonged engagement is the time and effort the researcher spends in the environment she/he wishes to study. I spent one quarter (11 weeks) following the class from the beginning of the course to the end. I attended
the class every week, including both the lecture/discussion and the lab sections.

ii. Persistent observation is a way to pursue the relevant issues in-depth. I observed both the lecture/discussion and lab sections weekly. The lecture/discussion section usually lasted two hours, and the lab usually lasted another two hours. I took notes on discussions between the professor and the participants in the lecture/discussion section. In the lab section, I observed how the participants worked with the computers.

iii. Peer debriefing, which is done by a disinterested peer. The writing and data analysis was shown to other Educational Technology (EdTech) researchers for peer debriefing. The EdTech researchers were Ph.D. candidates at OSU who had taken the required series of qualitative research courses in Educational Policy & Leadership, ensuring that we spoke the same "language". The EdTech researchers provided feedback on my data analysis and writing.

iv. Negative case analysis as a way to refine the hypotheses. I looked for data that were very different from the emerging pattern. The data came from class observations and interviews. I analyzed the data and displayed them in the data analysis to show different perspectives.

v. Member checks allow the individuals researched opportunities to contribute more input and to correct the researcher. I constantly checked the interviewees' opinions about the researcher's thoughts on what they were thinking, doing, or saying during the observations. At the end of the
semi-structured interviews, I also checked if I had understood what they have said in the interviews.

vi. Triangulation: Multiple methods, including observations, interviews, and document analysis were applied in this study in order to triangulate the data.

3.10 Methods of Data Analysis

Huberman and Miles (1994, p. 428-429) point out that data analysis includes three "linked subprocesses": data reduction, data display, and conclusion drawing/verification. Data reduction can be done in the process of coding and finding emerging themes of data. Data display is defined as "organized, compressed assembly of information that permits conclusion drawing and/or action taking" (Huberman and Miles, 1994, p. 428-429). Conclusion drawing/verification requires the researcher to construct meanings from the displayed data.

A researcher needs to develop categories from the data, and to look for emerging themes, although the process has usually been in progress while collecting data. Janesick (1994) points out "there is a continual reassessment and refining of concepts as the fieldwork proceeds" (p. 214). A researcher needs to analyze the data and reduce them to a manageable form.

Scheurich (1996) describes coding as "a procedure that disaggregates the data, breaks it down into manageable segments and identifies or names those segments" (p.
16). For this study, I developed a coding system in the process of analyzing data from observation notes, interview transcripts, documents [the hypertext design projects developed by the participants], field notes, and reflexive journals. Scheurich (1996) also stresses, "coding requires constantly comparing and contrasting various successive segments of the data and subsequently categorizing them" (p. 16). I also constantly compared and contrasted categories, key terms, and key concepts from the data in order to develop a coding system.

This study was interpretive in nature, that is, it tells an interpretive tale. However, I tried to deconstruct/disrupt/question the data and findings from different perspectives [e.g. poststructuralist and narrative analysis]. Jackson (1998) points out "structuralist and post-structuralist insights provide further reasons for doubting the possibility of a definitive reading of a text." Due to the hypertextual nature of the study, reading/analyzing data from multiple perspectives enable the researcher to show the intertwined relationship between the participants, hypertext theory and their design experience. The researcher's positioning was also part of the analysis through the practice of self-reflexivity.

3.11 The Place of Theory

Denzin and Lincoln (1994) point out that "all research is interpretive, guided by a set of beliefs and feelings" (p. 13). The researcher needs to find a place to state her/his
own beliefs and see the connections between theories and findings. Depending on the researcher's approach, theory could be grounded in the data, or a priori.

For this study, I reviewed the related literature about hypertext theory, looked for emerging themes from the data, and examined the relations between hypertext theory and real-life hands-on experiences as recorded in the data. In addition, I examined my own beliefs about hypertext theory while analyzing data and writing up data analysis.

3.12 Politics and Ethics Issues

Punch (1994) defines politics as "everything from the micropolitics of personal relations to the cultures and resources of research units and universities, and the powers and policies of government research departments, and ultimately even the hand of the central state itself" (p. 84). Ethics, in a few words, is to decide what is the right thing to do (Schwandt, 1997, p. 41). Schwandt (1997) also posits the importance of some new concepts of moral theory based on feminist philosophers, including trust, care, and normative attention. I dealt with the issues of politics and ethics regarding my research topic mostly on an individual level, and then expanded them to societal levels.

The most basic ethical issue is that a researcher needs to gain the consent for research procedures from the researched. I had obtained the written consent form from each participant in the beginning of the study. I had scheduled the interviews at each participant's convenience as well. To express my gratitude, I gave each participant a ten-
dollar gift certificate to Barnes & Noble Bookstores at the end of the study. The participants were surprised and delighted to receive the gift.

Furthermore, Janesick (1994) points out that "qualitative researchers accept the fact that research is ideologically driven. There is no value-free or bias-free design" (p. 212). Researchers need to recognize and state their own biases and openly discuss their underlying ideology. Researchers should deal with ethical concerns and issues from the beginning of the research, and be aware of recurring ethical dilemmas and problems throughout the process (Janesick, 1994, p. 212).

Through the practice of reflexivity in my research process, I examined my research approach according to my own stand on hypertext technology. Science is not neutral, and technology is far from value-free as well. Although I have my own beliefs about hypertext technology, I have tried to present the participants' voices from their own perspectives and beliefs.

3.13 Issues of Representation

Representation is related to the issues of "voice", the voice of the writer and the voice of the "Other", and the reflexive task of the writer (Denzin, 1994, p. 503). In the midst of "a crisis of representation" (Marcus & Fischer, 1986, p. 8), writing and representation of others has become a difficult task. The researchers need to be aware of the issues of "writing of the Other" (Lincoln & Denzin, 1994, p. 578) and the danger of
the power/knowledge structure, and find places both for the author and for the Other in
the text.

The issues of representation made me think through my own position as a
researcher, and made me question my ways of presenting my participants.
Richardson (1994, p. 516) states that writing is a method of inquiry, a way of knowing,
and a way of discovery. For me, writing is a way of knowing. It is also a space for
contesting voices: the participants' voices, the researcher's voice, the professor's voice,
and the theorists' voices. It is a space open to multiple voices. It is also a way for
reflexivity. Through writing I have come to know myself and understand my research
better.

Denzin (1994) points out that "meaning, interpretation, and representation are
deeply intertwined in one another in the writing" (p. 504). The writer is working with
"moments of experience". In writing, the writer relives and reinscribes those moments of
experience, and discovers new meanings through representations and interpretations, and
brings those new meanings to the reader.

I have tried to construct a world full of the meanings from my interpretations. I
have also tried to portray my participants and find my own positioning. I can not help
wondering or questioning how I could have told a different story of the participants'
experiences, or of my own experiences in the study, just by taking a different path of
interpretations, or a different position.

When writing in a postmodernist context, Richardson (1994, p. 518) points out
that poststructuralism offers two important insights for qualitative writers. One is that
poststructuralism "directs us to understand ourselves reflexively as persons writing from
particular positions at specific times”; and the other is that poststructuralism "frees us from trying to write a single text in which everything is said to everyone." These poststructuralist perspectives helped me reflect on my own position, and also gave my own little narrative some space.

3.14 Summary

This study used multiple methods of data collection to obtain qualitative data about the participants' design experiences. This study provided thick descriptions and thorough data analysis to illustrate the relationship between hypertext theory and hands-on design experiences, thus enabling readers to understand better issues related to hypertext theory and hypertext design experiences.
CHAPTER 4

DATA PRESENTATION AND ANALYSIS (I)

4.1 Introduction

This chapter contains data presentation, data analysis and discussion. In the data presentation, the hypertext course and the projects are explained. The participants' profiles which include their demographic and background information, and the "main page" of their hypertext projects are presented. The data analysis of participants' hypertext design experiences are presented in two parts: Learning about Hypertext focuses on students talking about their projects in terms of hypertext theories; Learning about Learning describes students talking about their learning and designing experience. These two parts are not exclusive of each other. In Learning about Hypertext, students talked about their experiences in working on their design projects based on hypertext theories. Under Learning about Learning, which is investigated from a meta-cognitive approach, students were encouraged to talk about their learning experience and reflect on what they learned. It is mainly about the students' reflections on how they have learned throughout the course and how they have progressed over the process of designing three projects.
This chapter is part one of the data representation and analysis, which is mainly based on the participants’ interpretations and applications of hypertext theory and my analysis of their projects. The next chapter, part two of the data representation and analysis, was drawn mainly from the interviews I conducted with the participants and their comments on hypertext theory and the projects they designed.

4.2 Data Presentation

The Course

The class met once a week for about three months in the winter of 1999. It was a graduate level course. There were two hours for class discussion and two hours for hands-on workshops. The required readings were its name was Penelope (1992), a hypertext fiction by Judy Malloy, and Hypertext: The Electronic Labyrinth (1996), a printed book by Ilana Snyder. The students were introduced to Microsoft FrontPage, a WYSIWYG editor for creating and editing web pages. Some students were also using Adobe PhotoShop for creating and manipulating graphics, and Adobe Premiere for importing and editing audio and video. The computer lab was a Macintosh-based environment. Each student was expected to finish three hypertext projects.
The Hypertext Projects

The students in this course were required to design three hypertext projects. Each project assignment was designed with a unique purpose [and objectives]. The first project was to subvert a linear text. Since it was the first project, most of the students were still learning about hypertext, both theoretically and technically, so the nature of the first project was experimental. Some participants learned from the projects; some learned from the mistakes they made in the projects. The second project was to create hypertext. Most of the students created something that was either familiar to them or of in intent, their personal interest so most of these projects were either personal or educational. The third project was to find an existing text, critique its linearity and redesign the text into a hypertext. Here are the original descriptions from the course syllabus [See Appendix C for more details]:

Hypertext I

The intention of Hypertext I is to use FrontPage software to re-consider and subvert the structured form of a linear text. Select a brief linear text (fiction or non-fiction) perhaps a news story, a picture book, a letter, a comic strip, a section from a history book... Attempt to displace the structure of its hierarchy and/or its dependence on a linear, unfolding narrative -- re-construct this text.

Prepare to discuss your experiences re-constructing your text and to present the hypertext you constructed.

Hypertext II

The intention of Hypertext II is to use FrontPage software to author a brief hypertext (fiction/non-fiction) for the... home page. Not necessarily dependent on hierarchy, strict narrative or linear causality, this hypertext is to be topographic in structure. Such a structure might refer to a visual, associative, or metaphor
text while it might also describe a history that refuses any singular or definitive account of events or a telling that challenges its readers by making explicit its own artifice.

For this assignment, choose to work independently or to collaborate in small groups.

Prepare to discuss the hypertext you authored and its topography. (1250 words maximum).

Hypertext III

The intention of Hypertext III is to explore the possibilities of hypertext for challenging reader/text relations implicit in a work of fiction / non-fiction.

Use FrontPage software to construct Hypertext III as a linked document for the ... home page. With references to course readings, discussions, viewings, and so forth:

analyze and critique a work of fiction / non-fiction.
design a hypertext document which reconstructs this work of fiction / non-fiction.

Produce a brief study of your design. Prepare to present and discuss your work in class. (2500 words maximum).

The Participants

The participants' demographic and background information was collected from the Preliminary Questionnaire (See Appendix B), which was distributed in the first class meeting. There were eleven students enrolled in this course, nine females and two males. Their ages ranged from 27 to 56 years old. Four of them were studying for their Masters, two of them were taking non-degree credits, and five of them were in doctoral programs. Their majors were in a variety of fields in education including Cultural Studies in
Education, Educational Technology, English Education, Art Education, General Studies in Education, and Special Education. All of them have had some teaching experience at either K to 12 levels or college level. Most of them are currently teaching at either K to 12 settings or college. Most of the participants described themselves as intermediate computer users and had intermediate Web browsing experience. None of them had studied hypertext prior to this class, but some of them had some experience in creating Web pages. Most participants stated that they would like to learn to be proficient with the Web design software, with a few of the participants expressing their interests in hypertext or hypermedia. More than half of them also addressed that they would like to learn how to use Web technology in educational contexts. For more detailed information on each participant's demographic and background information see Appendices D, E and F.
Participants' Profiles and their Projects

**Project I: How to Sew an Ohio Star Block**

**Project II: Jonathan's Flight through Ohio**

**Project III: A Woman's Place: The Life history of a Rural Ohio Grandmother**

Emily is an Instructional Development Specialist at a university and is working on her Masters in Instructional Design & Technology. Her projects centered around Quilt and Ohio history, a project as part of her Masters degree. The projects she has designed were How to quilt, Jonathan's Flight through Ohio, and a critique of *A Woman's Place: The Life History of a Rural Ohio Grandmother* by Rosemary O. Joyce, published in 1983.

Table 4.1: Emily's three hypertext projects.
Lisa is a doctoral student in English Education. She taught in a middle school in North Carolina for five years. Her projects were drawn from the poems she wrote while she was traveling along the North Carolina coast, photographing lighthouses, and a critique of the sixth grade proficiency test. She was excited about how she could use technology such as the World-Wide Web and email in the classroom.

Table 4.2: Lisa’s three hypertext projects.
Claire is a middle school Wellness teacher. She had spent 20 years in Sierra Leon. As she stated "five years as Peace Corps. volunteer and the next 15 years, living the weather." She has returned to the states after the death of her husband and has been back for five years. Her projects were Celebrate Martin Luther King, Jr.; 40-day death ceremony in Sierra Leone; and a critique of the Food Pyramid in a health textbook by Merki (1996) used in the sixth grade at the school where she teaches. She is mainly interested in using hypertext to teach in the classroom and integrating hypertext in her curriculum.

Table 4.3: Claire's three hypertext projects.
Don is a retired teacher and school administrator with 25 years of experience with his own Montessori School. He is now a doctoral student in General Studies in Education. He is interested in philosophy of education and educational psychology. He believes in hands-on experience in learning and that experience comes before theory. He likes the innovative aspects of the Web and likes to explore its use in education. His projects were Rules of a card game, SPEAK: An Introduction to Self-efficacy Theory, and a critique of a science fiction, *The End of the Beginning* by Ray Bradbury.

Table 4.4: Don’s three hypertext projects.
Richard is a doctoral student in English Education. He taught high school English for eight years. His hypertext projects topics include traveling, short stories and a critique of mystery genre. He thinks that hypertext is an example of extension of reader-response theory.

Table 4.5: Richard's three hypertext projects
Sandy wants to teach again so she is working on renewing her teaching certificate. She appreciates humor in hypertext as well as in life. Her projects were based on the comic strips of Calvin and Hobbs, a family vacation on Cayman Islands and a critique of *Twas the Night Before Christmas*. This course was her first course in educational technology.

Table 4.6: Sandy’s three hypertext projects.
June is a doctoral student in Art Education. She came from Taiwan and studied graphic design and Art Education in the states. She is interested in integrating technology in Art Education. She viewed this course as her turning point in using technology, adopting it for more personal and artistic uses. Her projects were Poems/Diary, Change of Seasons, and Folk Art.

Table 4.7: June's three hypertext projects.
Julia is a doctoral student in Cultural Studies with a focus on Educational Technology. She has a background in Photography and taught a few years in an Elementary school. Her projects were based on her personal experience in having major surgery, and an exploration of hypertext possibilities in Light in the Shadow, an art book on Holocaust, by Barbara Milman.
Renee is a middle school teacher in charge of a computer lab. She teaches computer literacy and computer applications. Her projects were based on a story about Christmas told by Robert Fulghum in *All I Really Need to Know I Learned in Kindergarten*, her college experience at Kent State and a critique of a "factual science fiction" titled *Space* by James A. Michener.

Table 4.9: Renee’s three hypertext projects.
Kristi is a High School English teacher. She has been teaching for seven years. She teaches at an inner city school with African American students as the majority of the student population. Her teaching experience has made her more aware of the diversity in American education. Her projects were based on *The Giving Tree* by Shel Silverstein, a compilation of her own poems and her students' poems, and a critique of a novel, *Their Eyes Were Watching God* by Zora Neale Hurston.

Table 4.10: Kristi’s three hypertext projects.
Elena is a Fulbright scholar from Venezuela studying in Early Childhood Special Education for her Master Degree. Her hypertext projects were based on a children's book; a hypertextual tale of her family and her life journey, and a critique of a chapter in a science textbook for the first grade, titled *Science* by Silver, Burdett and Ginn. She is mainly interested in using the Web in Special Education.

Table 4.11: Elena’s three hypertext projects.
4.3 Data Analysis

This data analysis includes two sections: Learning about Hypertext and Learning about Learning. Learning about Hypertext shows how the participants learned about hypertext theory, interpreted hypertext theory through their projects, and/or reflected on their design experience in terms of hypertext. Learning about Learning illustrates how the participants learned from constructing their projects and thought about their own learning process.

4.4 Learning about Hypertext

Most of the participants said that they had not read any hypertext theory and did not know of hypertext before coming to the course. Before this course, they related the conception of hypertext mostly to the World-Wide Web. Most of them said that studying hypertext broadened their understanding of hypertext. Hypertext is more than what they thought. In this section, I will explore what hypertext theory encompasses and challenges and what the participants' hypertext design experiences were.
4.4.1 What is Hypertext?

...to understand hypertext, you must experience it. — Snyder (1996, p. xi)

The participants talked about hypertext in different contexts and thought of hypertext in many different ways from their design experiences. For instance, one participant thought of hypertext as an aesthetic medium to tell stories, another thought of hypertext as a different mode of writing and expressing self. The following is a nonlinear pot-pourri of what the participants said about what they have learned about hypertext.

I think hypertext is kind of unique. Each hypertext could be really unique. It's like pottery, flowers. And it depends on the outlook of that text, some could be more linear, others could be messier. -- Elena

... So I learned about hypertext was a new perspective, a new writing mode, with advantages and disadvantages to traditional writing. -- Renee

And to me, as soon as you're using the Internet, you're talking about hypertext. -- Emily

[In] the beginning, my idea of hypertext was still pretty very linear. Like from the first page then link to the second page, then link to the third page. That's how I started. ... I think I became more creative, more nonlinear. -- June

... For me, hypertext is really abstract. Somehow it doesn't have to be related to each other, I mean in terms of each link. - June
Before going into it, my experience with hypertext is pretty much the World Wide Web. When you said hypertext to me, all that meant was hot text. You click on it; it takes you some place. And I really didn't even consider the creative and aesthetic aspect of it. Nor did I consider it could take you to a new mode of writing or expressing yourself. -- Renee

It [hypertext] is a mode of creative expression, just like poetry is a mode, or narrative form is a mode, writing a play is a form. I think hypertext is a mode. -- Renee

I think the main thing I have learned from this course is that it [hypertext] can be an aesthetic medium. -- Don

... hypertext is a way creating things that is unique, like I was thinking about the artistic possibility as far as representing reality or telling a story. -- Don

... hypertext is a nonlinear form of experiencing something not necessary just fiction or nonfiction but even photographs and design ... Julia

Hypertext gives [me] more flexibility to organize different ideas or even put all different things together. -- June

HH: Tell me what you have learned about hypertext?  
Kristi: What have I learned? See and be aware more of linearity because of it.

... hypertext is like an alternative, a possibility, and an option to create different ways of reading a text. -- Elena

Hypertext is ... I wish this dissertation were ... -- HH
4.4.2 Hypertext Theory

Hypertext challenges conventional ways of reading and writing, such as linearity, narrative and closure. Instead hypertext supports non-linearity, multiple perspectives, decentering, randomness, openness, and intertextuality. Some aspects of hypertext theory were more important and inspiring for some particular participants. In this section, I will discuss some hypertext theory and how the participants took on the theory in their hypertext design. Non-linearity and/or multi-linearity is the essence of hypertext, and most participants' projects worked to subvert the linearity of text. With non-linearity or multi-linearity, multiple perspectives were fostered. Issues surrounding multiple voices and points of views were also raised.

It is ironic to talk or write about hypertext in a linear manner. It is difficult to discuss one aspect of hypertext without the presence of other characteristics of hypertext. By the end of this course, participants were fully immersed in hypertextual thinking. They could not go back to writing linearly anymore, especially when they were writing about hypertext. Even the interviews I conducted were not in linear format. Some participants even commented that the interview was hypertext when they saw me jumping around the interview guide and trying to follow their thoughts. Despite all this, this dissertation still needs to be written in linear form, although, the reader does not have to read this dissertation linearly.

In this chapter, I will take the participants' projects that illustrate some aspects of hypertext such as nonlinearity, multiple perspectives and randomness, and discuss the participants' experience in working with those aspects of hypertext theory. Then in the
next chapter, I will discuss the conversations I had with the participants about their experience in reading and writing hypertext, their roles as authors and readers, their thoughts on the author and reader relationship, the issues related to reader control and author control, and Barthes' concept of readerly and writerly text.

In addition, issues pertaining to interactivity versus narrative (immersion) and closure are discussed. The implications of hypertext in education are addressed as well. Issues regarding criteria and concerns for access issues are also addressed. Somewhere in the end of the data discussion hypertext "moments" are sparked!

4.4.3 Non-linearity

Hypertext is defined as non-linear, non-sequential writing (Nelson, 1980). Students of hypertext usually realize quickly that they can either really speak through non-linearity and find their voices, or they loathe the non-linearity and long for the clarity and the comfort of linear narrative. The following examples are some voices found and lost.
4.4.4 Writing Nonlinear:
Julia's Projects -- Untitled

...there were too many insignificant points in between. – Julia

...It would do in-justice to write about these insignificant moments in between. -- Julia

Julia's projects were all untitled, and it seemed that the text could start with any page, no particular page as beginning, or end. It is this particular nonlinear feature of hypertext that captured Julia's sense of time and space. Julia had cancer and had an operation a few years ago. Julia said that she had tried and failed several times in attempt to write about the operation day in poetry and other media. The non-linearity of hypertext allowed Julia to express what she experienced with her operation.

... ever since I read its name was Penelope, I had cancer a few years ago, and I tried a number of times writing about it. Ever since I read its name was Penelope, I just sort of profoundly felt this is the way to do it. Because basically my whole experience can be surrounded by one day I had the operation. And hypertext just seems like a perfect way to get it. I'm really attached to that.

Julia started with her first project separating the dictation from her operation and challenged the chronological procedure of it. For her second hypertext project, she had images and short paragraphs with each image that described some important moments for her on that day. She incorporated four different voices — her surgeon's, her friend's, her mother's and hers. Readers can read the short paragraphs, look at the images, and touch
those moments. It was a beautifully done piece. Julia explained why the nonlinearity of hypertext worked for her projects:

…in the form of hypertext, you got just these small pages that can communicate a profound idea or experience with just a short paragraph. To me, that’s the best way to capture the day. Because that’s what defines the day with these, it’s just small moments. It would do in-justice to write about these insignificant moments in between.

For Julia, time was those moments that matter! Nonlinearity of hypertext helped her separate out those insignificant moments and distill the moments that matter. Nonlinearity jumped over the "insignificant" moments and let the readers experience the day in a nonlinear way that connected those moments of the day.

Here is an example of a page from Julia's project II:

As I wandered through the resting grounds of John Quincy Adams and Paul Revere, I felt the cool August breeze brush past me. I watched as people read the history of these monuments. The cars rushed by and I slowly walked with no where to go.

Figure 4.1: Sample screen from Julia’s second project.
For her third hypertext project, Julia considered "the opportunities of hypertext and their implications for the education of the Holocaust" based on the linear, printed text of *Light in the Shadows* by Barbara Milman (1997), which is a printmaking art book on the Holocaust. Julia again used hypertext to challenge the concept of time. She argued that "What creates the profoundness of that specific historical event is not the boundaries of time, but rather those individual moments experienced by those individuals." Here is an example from her project III.

Through the process of removing text [in the broadest sense, images, words, etc.] from the confines of the bound book, it is possible to experience literature from a perspective not bound by time. Importance is placed on the authority of a bound book and this is misplaced. "In many cases we are trying to tie them to a way of seeing the world." (Johnson-Eilola, p. 186) As a result of both technology and natural qualities of youth, young students are more accustomed to thinking in a multi-linear mode, than their older counterparts. It is through the introduction of linear text that students view the world in a linear way.

Figure 4.2: Sample screen from Julia’s third project.
Julia further explained that:

With text we are so used to living life and thinking about life in terms of what happened yesterday, what happened today, what's going to happen tomorrow, and that hypertext allows you to look at things in short increments in that. Yesterday was just as profound as last year, or it can be just as profound as next year. That's sort of what I'm doing with the Holocaust. -- Julia

What Julia wanted to get across was that time for her is not linear. What happened in the beginning of the Holocaust was as important as at the last day of the Holocaust.

Nonlinearity of hypertext seemed to lend itself perfectly to Julia's experience in time and moments in life.

4.4.5 Writing Hypertext Narrative

Claire's Project -- 40 Days

Hypertext works with it because it is just one thought at a time. -- Claire

...but within each text, this wasn't beginning and end to me, it was just an endless period of time, putting it together, back and forth time. -- Claire [from class discussion II]

Claire was another participant who wrote about her experience during a certain period of time in hypertext. One of her projects was about the 40-day ceremony of her husband's death in Sierra Leone. She used nonlinearity of hypertext to express the time around the ceremony for her.
On a cold winter afternoon, over tea, Claire and I were talking about her experience in learning hypertext and designing hypertext projects. Claire talked about her second project softly and slowly:

The project we just did, we had to write hypertext, fiction or nonfiction, so actually I was drawing to write about something that I had planned to write about. I was going to write about riding horses. ... But I found myself writing about my husband's death. That's what it was; it was my husband's death, which was 5 or 6 years ago. And I wrote before the preparation for the ceremony of death, then I wrote about the ceremony of the death, and then the after the ceremony. So I divided. Um, I enjoyed doing it because I just focus on one specific aspect like one of my things is the curtains because we had to put white curtains on all the windows, so I wrote about that and I had the pictures of the curtains. And people cooking, and how do they prepare the food, and then what we actually ate at different ceremonies that took place, preparing the grave. So I like being able to jump around and write in that way for my project.

The project was written in a nonlinear way; however, it held together a story that was told in hypertextual narrative.

Narrative is a ... doubly temporal sequence ... : There is the time of the thing told and the time of the narrative. -- Christian Metz

Telling stories in hypertext, narrative lives in hypertext, in lexiass and in moments. Hypertextual stories are shorter, scattered, but linked by readers. There is the

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time of things told, and there is time of narrative in hypertext. Hypertext turns narrative into lexias and links, and lets the author write her story the way she wants to tell it and the reader reads the story her own way.

Hypertext narrative asserts the authority of the individual reader, no longer privileged and centralized by the text but, rather, by her reading itself. (Joyce, 1995, p. 194). – quoted by Richard

If the time was an endless period of time for Claire, how would readers read her hypertext narrative? Here is how Claire discussed her writing process in the class discussion:

Claire: I did a forty day period from ...the death, before the death, and forty days after the death, ceremony, and ... I tried to do it in third person because otherwise it would be too much, so I just, basically, I sat down I wrote it down, and tried to find pictures that related to the [text]...

Professor: Is there anything particular about the sequence of the event?
Claire: There is, but it is not important, I didn't do it that way.

Professor: Can you discuss that choice?
Claire: ... in not doing it linearly?

Professor: Yes, I mean...

Claire: ...

Professor: It's a question about... the suitability of medium, to how it is that you were constructing your presentation?

Claire: It just seemed to be no need to go linear. Um, because of things happening, continuously overtime, like people are constantly over for days, so there is always someone at the house. The actual ceremony is almost preparation of the food, eat, and after ...but within each text, this wasn't beginning and end, to me, it was just an ending period of time, putting it together, back and forth time.
40-days was about writing hypertext for Claire, a therapeutic, cleansing experience for her. 40-days was also about hypertext reading. Many readers were very moved by it. The readers were struck by its profoundness, exotics, and the personal narrative about it. One of the participants said about reading Claire's project*

I like her projects because she [Claire] is taking what could be an impersonal medium and made it very personal. -- Don

It is an author's voice, that tells the story, which is important in creating a great work. Otherwise, if it's only technology, it won't go far, or come close to people's hearts.

[*Note: The example of Claire's project II will not be used in this text. Claire did not have the permission to use the photos from the people she photographed. She did not publish her project on the Internet, due to her respect for her friends in Sierra Leone.]

4.4.6 Multiple Perspectives / Voices / Multi-linearity

Multiple perspectives and voices are one of the distinguishing characteristics of hypertext. Nonlinearity and/or multi-linearity of hypertext supports and encourages multiple perspective and voices. In constructing hypertext, there are always contesting voices and perspectives in the text. Authors can include different voices and perspectives through links, paths, multiple sequences, and juxtaposition. Here are some projects that illustrate multiple perspectives.
Renee's Projects -- Kent State & A Critique of Space

I hid my voice in that project -- Renee

And when I looked at it, it just looked like flashbacks, kind of looked like Deer Hunter [the movie]. ... My voice [was] coming out really just too strong. -- Renee

Renee's Kent State project was based on her college experience in Kent State and the shooting incident that happened on the Kent State campus in 1970. Renee narrated the text in different voices that represented different perspectives. She said that:

I hid my voice in that project. I started out trying to convince people that was not right, then I decided that ... no I didn't really want to do that. I just wanted to present a lot of what happened.

In fact, there were two versions of Renee's project. In her first attempt, Renee had voiced her opinions about the incident, but she felt that her voice was too strong. She decided not to present her project in order to persuade people with her opinions. In her second attempt, she put a lot of voices and perspectives and hid her own voice. Through multiple perspectives, she presented what had actually happened and let her readers make their own judgments.
Here's an example of Renee's Project II.

The hill was a place to make out.

Now it's a memorial to the Kent State Shootings.

Over 58,000 daffodils have been planted.

"The hill, the hill—yes I guess I will
Meet her there—Greet her there
On the moonless side of the hill."

Figure 4.3: Sample screen from Renee second project.

Renee further explained that:

... one of the narrative conventions, that you have a narrator's voice, so I tried to present mine without. And I don't think you are ever totally successful at that. But I'm trying to present it without a big bias in the narrator's point of view. I'm trying to present a lot of different voices and de-structure the conventions of having a narrator's point of view in mine.

Renee tried to present her project based on different perspectives and hid her own voices. However, she realized that it was not possible for an author to completely hide her voice. She felt that her own opinion came through anyway. Here is what one of the participants thought about Renee's project:
I really like Renee's. I felt it was really powerful. It didn't matter who said those, or even that from one picture to the next, if it were the same person's perspective on that or different person's perspective. It didn't matter to me, but having multiple perspectives about that image, I thought it was very powerful. And I don't care whose, and I think not saying who they are allowing them to be people of equal importance. — Emily

A Critique of *Space*

Renee's third project was based on the novel, *Space* by James A. Michener. It is a factual fiction about the U.S. space program that gave shelters to Nazi scientists around World War II. Renee focused her critique on the narrative voice and perspectives in the novel. She was bothered by the strong defense given in the book for sheltering the Nazi scientists. She said that:

...I read the book and say, wait a minute; you're saying because we need scientists, it's ok to forget what they did. I'm having my voice by adding links to... I have a link to Dachau, which is a concentration camp in Germany, which is really powerful. And I guess I'm seeing my voice in there. I'm trying to balance out what he said.

So Renee used links to add some opposing voices to the author. She pointed out that "Through the links I will add a lot different voices. I think it's the one that needs to be heard". Renee also juxtaposed some text in the novel with other voices to present resistance to "the ideologies supporting the basis of the novel's plot. Readers would assume an interactive role in creating their own knowledge from a variety of voices."
An example of juxtaposition in Renee's project III:

<table>
<thead>
<tr>
<th>Original Text</th>
<th>Additional Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Includes links to associated web sites)</td>
<td></td>
</tr>
<tr>
<td>&quot;We have reason to believe he's not a Nazi, just a technical wizard who could move our program ahead by generations.&quot;</td>
<td>&quot;They came for the communists. . . . and I did not speak up because I wasn't a communist;</td>
</tr>
<tr>
<td></td>
<td>They came for the socialists. . . . and I did not speak up because I was not a socialist;</td>
</tr>
<tr>
<td></td>
<td>They came for the union leaders. . . . and I did not speak up because I wasn't a union leader;</td>
</tr>
<tr>
<td></td>
<td>They came for the Jews. . . . . . . . and I didn't speak up because I wasn't a Jew.</td>
</tr>
<tr>
<td></td>
<td>Then they came for me, and there was no one left to speak up for me.&quot;</td>
</tr>
</tbody>
</table>

Martin Niemoller, 1892-1984

Figure 4.4: Sample screen from Renee third project.

Both Renee's projects on Kent State and the critique of *Space* challenged the voices in the text. She challenged her own voice and judgments in the Kent State project, and the voice of the author of *Space*. Hypertext allows different voices to be heard and challenged. With links and juxtaposition, images, text and other media can be presented in the text; multiple perspectives and voices can be conveyed through the text.
I tried to connect to work or thoughts or stories of my students. So I was trying to incorporate the ideas of many voices and I was trying to challenge the linearity of what or how my poem looked. Or how you can view it, read it, or encounter it. -- Kristi

In her teaching, Kristi often modeled what she teaches. When Kristi shared her thoughts and feelings, her students would share theirs, too. Two of her projects were based on the activities she did with her students. She was reading a poem on winter that symbolized the hardship in life with her students. So for her second hypertext project, Kristi incorporated the poem she wrote about her parents' divorce and her personal journals with the poems her students wrote.

I tried to connect to work or thoughts or stories of my students. ... And I wasn't afraid in hypertext to put all that in. It's a lot to me, student samples, student journals, student voice, poetry, other people's poetry, my own journal and I sucked it all into one, but that was ok. And that's what I like about it. -- Kristi

Kristi used her poem as a main text and branched out to her students' poems by concepts. It was a wonderful way of using hypertext, expressing emotions and feelings, and connecting students together. It would be a great opportunity for students to collaborate and do a project as such in the classroom.

For the third project, Kristi incorporated different voices in her text. Her project was based on Zora Neale Hurston's *Their Eyes Were Watching God*. She incorporated two book reviews published in 1937 by prominent authors Sheila Hibben and Richard Wright. She put in her students' book reviews and poems as well. She also introduced

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some other voices of the characters in Hurston's other novel *Sweat*. Inevitably, she had her own voice by giving her readers some basic information about Hurston's life and work as well. Kristi explained:

Not only will the reader or user encounter the voice of Zora Neale Hurston through the development of characters in *Their Eyes Were Watching God*, but he or she will simultaneously be able to preview, scan, link to voices of literary critics of old and new and have access to student responses and work relating to the text.

Kristi's projects not only provided multiple voices in the text, but also encouraged the readers to participate in the conversation of the authors.

**Emily's Project -- A Woman's Place**

The notion of giving voice is so charged because you have to be in such a position that you can "give voice" to other people. And also the illusion that you "give voice", whereas the film is very much the voice of the filmmaker - the term "voice" meaning here the place from which meaning is produced..." -- Trinh T. Minh-ha (1992), quoted by Emily

Emily's third project was based on a book, *A Woman's Place: The Life History of a Rural Ohio Grandmother* by Rosemary O. Joyce. Emily described the book as "A life history. It actually spans longer than one lifetime proceeding chronologically from 1880 to 1983, over one hundred years and three generations." The book is written chronologically about the life history of three generations in rural Ohio. Emily subverted the life history "by breaking with the traditional linear flow of events in a chronological order."
Emily challenged the linearity of the text and juxtaposed the leading character Sarah's voice with other modern feminists' voices. Emily explained Sarah's thoughts about a woman's place:

She asserts that the place of a woman is at home and also discussed the idea of having a woman in the White House. It is seen by Sarah as a positive and a possibility. Throughout the book, the interview problematizes itself, ambivalence can be seen in her contradictory statements. By juxtaposing her comments with other more feminist positions, and with each other, the response to a woman's place refuses to be answered.

Emily also challenged the concept of "giving voice" as if an author or film producer in Trinh's case can "give voice" to make meanings for others. It is dangerous for an author to assume she has such power.

Therefore, in the context of her project, a woman's place, Emily stated that "The design used in this project gives voice to women and at the same time realizes that there is no one voice for women, but a multiplicity of voices all representing women and none representing women fully." In hypertext, women have opportunities to have their voices heard. Women do not have to have a collective voice in hypertext. Multiple perspectives and voices can co-exist and be heard in hypertext.

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4.4.7 Randomness

I learned from some of the hypertext that I read that it can be just, well the hypertext I read is just, purely random. — Sandy

I was trying to think how I could do this that it is so random that it would be difficult to put the pictures together. The choices would be totally reader choice, I mean as much as possible. — Sandy

Randomness is another feature of hypertext. Hypertext provides readers with random access to information and enables authors to present text, information and stories in a random order. Here is what Sandy expressed on her thoughts on randomness:

HH: How has hypertext theory influenced your design?

Sandy: It probably kept it more random than I would probably use it on a day-to-day basis.

Sandy took randomness in hypertext to heart and created her three projects in a very random fashion. For her first project, she put Calvin and Hobbs comic strip in a random order and let her reader read the comic strip randomly. For her second project, she designed her vacation with an "imagemap" with one centered image surrounded by 20 small images. Every image contained one of the characters (a sea turtle, or her brother, or Sandy herself) talking about the vacation. Her reader could randomly select any image to view a monologue from any of the characters she portrayed. She also presented part of her third project, which was about the story of Twas the night before Christmas, in a random fashion. It was purely random just as she described. However, this left her feeling she would like to have something that is less random.
4.5 Learning about Learning

In the process of talking about their design experiences, several students have come to examine their own learning processes. The students not only reflected on what they have learned, but also how they have learned during the learning process. Flavell (1976) has described the process of knowing one's own learning process as metacognition.

4.5.1 Metacognition

... I think if I hadn't done the way I did it, I wouldn't have reflected... It reflected that I learned something. – Kristi

Flavell (1976) states "Metacognition refers to one's knowledge concerning one's own cognitive processes or anything related to them, e.g., the learning-relevant properties of information or data (p 232)". Hacker (1998) explains that "What is basic to the concept of metacognition is the notion of thinking about one's own thoughts. Those thoughts can be of what one knows (i.e., metacognitive knowledge), what one is currently doing (i.e., metacognitive skill), or what one's current cognitive or affective state is (i.e., metacognitive experience)" (p. 3).

In the interviews, the participants talked about how they had learned, and reflected on their own learning processes in terms of doing three different projects throughout the course. The interviews with the participants were conducted towards the
end of the course when they had already designed the first two projects and had been working on the third project. Most of the participants had talked about their own learning experience in doing the three different projects and how they had learned in the process. The interview conversations illustrate how the participants were thinking about their own learning and were aware of their own learning process. The following conversation occurred at the end of the interview with Kristi while she was trying to make sense of her own learning process:

Kristi: ...I really felt the first one [project]... was somehow frustrating. The second one was completely confusing. You worked through that confusion. The third one was really..., I'm really liberated. I really let go of the conventions. ... So I would say that hypertext just challenged me to be different kind of learner. ... I think that the way I approached my [third] project was a critique within itself.

HH (Hsi-chi Huang): It's more like ... it's even bigger than learning. You are looking at the whole learning process, like META-learning...

Kristi: Right! Exactly! Absolutely! So hypertext III is exactly it. I really thought about how I learned and how I presented my knowledge and I really broke through a lot of deep and grand conventions and traditions to do it.

4.5.2 Learning by Doing

... if you are talking about doing something in hypertext, it's easier just to do it and kind of model what you are doing than talk about doing something. It's non-linear in a linear fashion. -- Renee
In light of learning about learning, some of the participants talked of hands-on learning, learning by doing, the advantages of putting theory into applications. Although some students expressed both the confusion and inspiration they got from the course readings and discussions of hypertext theory, most students benefited from the hands-on workshops. In reflecting on the participants' learning process, learning by doing seemed to be the heart of learning.

Hypertext challenges a lot of reading and writing conventions. It is difficult to discuss non-linearity in a linear way. It is also easier to understand non-linearity if there are opportunities to work against linearity and demonstrate how non-linearity works.

HH: How do you think hypertext, as a form is appropriate for your project?

Renee: I think it's appropriate because I think if you can show... if you are talking about doing something in hypertext, it's easier just do it and kind of model what you are doing than talk about doing something. It's non-linear in a linear fashion. It doesn't make sense. You can kind of show it as you do it as what you mean. Like you talk about juxtaposing text, putting text side by side

HH: Visually you can do it.

Renee: Yes, it helps you if you're trying to learn about it. It helps you more to learn about it by using it than simply learn the theory and not use it. And I think in using it, you see some of the problems that come up, and you see some of the things that work really well.

Renee believed that using and trying out some aspects of the theory is a better way to learn than just reading it. On the other hand, hands-on experience could also test the strength or weakness of the theory.
...I really feel that the application of the concepts help [people] learn, the idea that you are learning about theory and then you are creating or you are working with the application that helps reinforce this concept. -- Emily

Emily also saw the importance of putting theory into applications. Renee and Emily both thought that they learned better when they were learning by doing, or learning by applying theory in constructing their own projects.

4.5.3 Exploratory vs. Constructive Hypertext

Whereas exploratory hypertexts are designed for audiences, constructive hypertexts are designed for writer-operators. (Snyder, 1996, p. 31)

Michael Joyce (1995, p. 41-2) discusses the differences between exploratory and constructive hypertext. Exploratory hypertext lets a reader explore the text and build a path or a web of knowledge of her own. Constructive hypertext encourages a reader to construct their own learning paths, and has the capacity to represent visually the paths a reader creates. Snyder (1996) argues that constructive hypertext is meant for authors and designers to develop. Constructive hypertext is also a great means for students who learn by doing or constructing. In this class, the participants not only worked with exploratory hypertext, but also constructed constructive hypertext.
4.5.4 Constructive Hypertext Projects

The projects the participants constructed illustrated how they learned from the hands-on experience and the design processes. Through the three projects, they went from knowing almost nothing about hypertext and never designing hypertext to creating, critiquing and (re)designing hypertext.

4.5.5 Project I - Subverting Linearity

The purpose of the first project was to subvert linearity of a text. None of the participants had been exposed to the theory of hypertext before this course. Most participants experimented with subverting linearity by disrupting the sequence of the text, branching the main text with links, presenting text in a random order, or mixing two different pieces of text. The participants found it refreshing to read and create text non-linearly. However, it was a little confusing for some as well.

In Sandy's first project, she subverted the linearity of the comic strips of Calvin and Hobbs. One of the comic strips was Calvin talking about decisions and consequences while taking a sled ride with Hobbs. Calvin states:

Take this fork in the road for instance, which way should we go?
Arbitrarily I choose left.

-- Calvin and Hobbs [from Sandy's first project]

This depicts the decision-making in the sled ride; it could also refer to designing and/or reading hypertext in choosing the paths to click on. In creating the forking path, an
author could arbitrarily branch the paths, as some of the participants experimented with their first project.

Project I was mainly an experiment of subverting linearity. Some participants found voices in nonlinearity; some commented that they actually learned what not to do in hypertext from their first project.

To me what the knowledge that I learned in the first project was more what not to do. — Emily

Yes, the first project I did; I went against everything I ever believe in. I made this maze that made no sense at all. And it bothers me. I don't think you should read the ending first. — Renee

Overall, the participants subverted linearity by disrupting the sequence to tell different kinds of stories, and/or adding forking paths to present either more in-depth or broader information. The participants also learned what to do and what not to do while designing hypertext.
4.5.6  Project II - Creating Hypertext

I thought it was so interesting to see the second project because it was something you have to create, fiction or non-fiction. I think if you have to create something, usually you have to put in a little bit of your own intimacy. — Elena

In the second project, each participant had to create some nonlinear text by herself/himself. Most participants chose something they were familiar with such as their interests or field of study, or something that had to do with their experience or feelings such as poems or journals. Some participants have enjoyed the artistic and expressive aspects of hypertext; some appreciated the therapeutic process of creating something that was very personal.

The second one I was very involved in, very personal... — Claire

What I really care about [is] the overall feelings, I’m thinking, did I give these Web pages artistic and personal feelings? -- June

The process of creating hypertext allowed the participants to construct their personal narratives. Although a purpose of hypertext is to subvert linearity, somehow, in these projects, the participants as hypertext authors were able to weave their personal experiences into hypertext narrative that was neither linear nor sequential, yet told stories that conveyed a sense of personal feelings. The participants as hypertext readers, on the other hand, also were able to read from nonlinear text and weave together stories and construct individual narrative from the hypertextual text.
In writing and reading hypertext, hypertext readers and writers invested themselves in the text and created their own individual narrative, even though it was not linear. Hypertext authors used non-linearity of the hypertext medium as an unconventional way for storytelling and created their own personal narrative. Hypertext readers followed the hypertextual narrative and constructed their own understanding of the stories.

### 4.5.7 Project III - Critiquing Text

I felt empowered because of the project -- Kristi

For the third hypertext project, the participants critiqued the linearity of a text they found and redesigned the text into hypertext. Some participants found the experience empowering because they could put hypertext theory to work. However, some participants found it hard to critique because they needed to understand the theory and to look at the text with a critical eye in order to critique, see the linearity, and redesign it into hypertext. Renee expressed how she felt about the task in this conversation:

Renee: ... I've battled with this project... I'm probably less happy with it. I think I like my Kent State project better.

HH: Why?
Renee: Because in the Kent State project, I paid attention to the theory, but I wasn't talking about theory. I just did it. This one I have to actually refer back to it.

HH: It's a different approach.

Renee: Yes, it's different. Doing the critique and talking about the theory I'm not sure where I am sometimes, I am just wandering around the course.

It is not uncommon to struggle in the process of learning, especially critiquing. At the end, Renee created thoughtful critique and redesign of the text. For instance, in critiquing narrative conventions, Renee proposed to challenge linearity by disrupting sequence, creating links to other web sites, introducing multiple paths, and simultaneous presentation. Although she felt she was lost sometimes, she presented a project with a great insight into hypertext theory and the subject matter in the text.

Some participants felt liberated and empowered by the third project because they were freed from the conventions and constraints of conventional linear writing. They constructed hypertext as well as critiqued other text with by referring back to the theory.

... I felt like, the third project, I feel freer to just do it. ... the whole idea of a research paper having a defined thesis, a middle, an ending, transition between your paragraphing, that's right out of the window. — Kristi

I don't think regurgitating information in a form of a research paper really proves that you learned something. I think that the way I approached my project was a critique within itself. — Kristi

For her third project, Kristi chose to critique a chapter of a novel. She started her first page with several quotes, not beginning with an introduction, nor ending with footnotes, and let the readers go wherever the reading would take them. She felt that she
had almost completely understood hypertext by now, so she threw all the conventions of term papers out of the window and let her mind and project follow wherever hypertext took her. She said that she felt completely free and actually could not be confined within the conventions of writing a term paper. Kristi challenged the concept of research papers with the hypertext theory she learned, and felt empowered by that.

Overall, the participants demonstrated their third project with sophisticated hypertext critique and design in their third project. Learning hypertext by constructing and critiquing hypertext is indeed a great way to learn hypertext and to learn about one's own learning process as well.
CHAPTER 5

DATA PRESENTATION AND ANALYSIS (II)

5.1 Reading & Writing Hypertext

In this chapter, I talk about the participants' reading and writing of hypertext. Writing hypertext foregrounds the voices of the authors, talking about their experiences. Reading hypertext foregrounds the voices of the readers. Writing and reading hypertext are presented interwovenly because it is hard to separate the voices of the authors and the readers. The participants were both writers of their own hypertext and readers of others' hypertext. Their roles were constantly shifting. They were the authors and the readers. So I let their voices intertwine with each other's, echo each other and speak to each other.

Writing hypertext is like trying to tell stories with many beginnings and endings. Reading hypertext is like trying to piece together thousands of puzzles or to find your favorite storyline to follow from countless threads. There is no one right way to write hypertext, nor one right way to read hypertext. If this were an electronic space, connections between concepts could be hyperlinked and executed. For instance, when
you are reading about Kristi's thoughts on writing hypertext, and wondering how she thinks about reading hypertext, one click on the computer can take you there. In reading this text, when your thoughts can't seem to wait and jump around the paper/space, this is one of your hypertext moments.

5.2 Writing Hypertext

Writing is a very different process for every participant. Some participants might share similar experiences; some might find completely different satisfactions. Here are some of the authors' experiences in writing hypertext.

5.2.1 Writing Hypertext as Circular Writing

For Richard, hypertext is circular writing. He stated, "You follow whatever thought leads you. Sometimes you might find inspiration, sometimes you might need to keep following that thought or just leave it and find another one." Richard further explained what circular writing was:

you are kind of just following the story, following things the way they are. Life might happen, which is not necessarily finding this line, everything falling into place, there might be more, here's the spirit, which you don't quite understand right away how they are connected, but somehow through the course of the telling, you understand, connect.
Richard was interested in writing things that were circular. He also explained how hypertext fit his personal writing style better:

So like culturally I mean particular in the academy that's not the way they do things here. I mean I tend to be somebody kind of maybe fuzzier, my mind kind of jumps around a lot.

Therefore, Richard wrote his second project as five interlocking short stories. He chose to interconnect his characters as well as words and/or phrases that connected the stories. Readers can read the stories and click on the underlined text (or hot text) and go to other stories. Richard also felt writing in hypertext is very liberating. He expressed that:

Oh, I think... it just... I found it [hypertext] to be a very free, invigorating experience. And then you are liberated just to try a lot of new things ...

While talking about writing experience, Richard also compared the difference between writing conventionally and writing for hypertext. Richard thought that things were laid out differently:

Whereas in hypertext... the writer has to set it up where I'm moving from here to here for the reader.

Because I knew people would be jumping around, I was concentrating on when I was writing my hypertext fiction, more than the writing was thinking about ways to do links.

Hypertext authors need to lay out text in a different way and image how readers would interact with the text and visualize the paths and links readers would take. When it comes to reading hypertext, Richard stated that:
Whereas in hypertext, the reader decides I want to move from here to here, and then jump back and forth and that seems to happen more. .... I guess things really in hypertext sticks out to me is the ability to move around.

5.2.2. Writing Intertextuality, Writing Decentering

Richard saw writing as circular. This could also be seen in Derrida's terms, "intertextuality" and "decentering". Hypertext is intertextualized by links. Hypertext is also decentering, or forever re-centering. Richard's second project illustrated intertextuality and decentering of hypertext. The five stories, which were connected by characters and words, did not have a central character or central story. Each story could branch out and/or link out to another story. Each link started another center, another story. Every time a reader reads a story and links the one story to another story, the center of the story and characters were recentered again. It was constantly decentering and recentering.

5.2.3 Openness

Openness indicates text with open endings, or ever revolving, never-ending stories. On the World Wide Web, readers can click a link, jump to other sites, and never
come back to the page where they start. Sometimes readers may not be aware that they have left one page and gone to pages that are made by different authors.

Several participants' projects had links to outside sources on the Internet. It is easy for readers to leave the project without noticing that it has taken them to other sites created by other people. In reading hypertext, it is also very easy to get distracted and not to come back to the project, and just go wandering or browsing on the Internet.

June's Time

June's second project contained three different sections under the theme of time and change. One section is the diary, another provided scientific facts, and the other is her photo journal. With the scientific section, June made links to outside sources on the Internet. Some of her readers had navigated and read the pages without noticing that they had left June's site and gone off to the other sites. One of her readers commented:

She [June] was doing things about the weather and about time and linked to another site. I hadn’t realized that until two or three reads into it. This is no longer June’s work, but this was another site. -- Emily

The World-Wide Web presents readers with a bountiful resource for information; it can also cause disorientation and distraction for some of the readers. There are less clear borders and the borders are also constantly shifting.
5.2.4 Writing Hypertext as Therapy

Creative processes such as writing in hypertext sometimes bring out people's most honest and reflexive feelings. Authors usually put in part if not the whole of themselves in order to create, and to write about life. Here are some participants' thoughts on how creating hypertext helped them in some way:

The second one I was very involved in, very personal, um; it's almost a cleansing experience because the things I had not thought about for a long time. I had to get it out of my mind. I was almost forced to do that second project, simply because I feel the need to write that information, so it's very, very personal. -- Claire

The second one I decided to talk about my family because I have been homesick for almost a month. ... I'm so proud of that project because I think it's a healing process for me. I'm more at peace with me. And I'm happier to be here. -- Elena

Just consider the nature of the project I chose. For me it's almost therapeutic. It was very nice.... I can't draw; I can't paint; so those wouldn't have been therapeutic types of experiences for me. Writing in poetry in the past has been frustrating. Hypertext... it's the only one that I had success with, and I tried the other three times. -- Julia

5.2.5 Hypertext as Art ... is to Confuse

I think I am trying to make people confused. ...Nonlinear would be chaotic, ambiguous. That's what I tried to do. I don't want to give instruction or directions or even a title. -- June
For June, hypertext was like a genre of art, which was to confuse its readers with its abstract thoughts and sublime representation. June used a diary as her first hypertext. She thought of hypertext as another medium for creating art. In June's words, "art is to make people contemplate and invoke their imagination." She did it exactly that way. Her project opened like a diary with a few dated poems or conversation. They were beautifully illustrated and designed. However, there were no titles or authors. Readers can only use their own imagination to carve out the characters that were having the conversation, or the scenes or stories those poems were about.

5.2.6 Writing With or Without the Audience

I mean I wrote it specifically that. I mean I was probably spoke [speaking] to my audience. -- Richard

I honestly did not even think about you all reading this. -- Lisa

…I was selfish. I was doing it for myself. But at the same time it's not altogether true because I was thinking who was going to be reading it. - Julia

Do authors write with or without an audience in mind? Some do, some don't. While Richard was speaking to his audience when he wrote, Lisa did not write her poems
for anyone but herself. In the process of putting her poems in hypertext, Lisa was not at all aware of the reader.

Lisa: ... When I was doing the project, I guess I knew in the back of my mind it was eventually going to be posted, but it didn't hit me until I was sharing it with the rest of the class. I thought, oh, wait a minute, these poems I wrote I think were good are going to be out there for everybody to look at, that's scary.

HH: Because...

Lisa: Because it's personal, because I think they are good, and somebody else might think they are really bad, that's always a risk, you know when you put any sort of art out for public view, you run the risk of being laughed at.

Lisa's poem collection was titled Naked Reflection. She wrote these poems while she was traveling, waiting for her flights at the airport. She wrote these poems just for herself. In the process of putting her poems into hypertext form, she didn't think too much of the audience, although she kind of knew. Not until the day she was presenting her project in class, did she fully realize that everyone could read these poems. Richard, on the other hand, wrote his five stories specifically for hypertext, so he was thinking how to interconnect the characters and imagining how the readers would jump or click between the characters and stories.

These are two very different processes and mindsets. Richard was practically talking to his reader when he wrote. Lisa realized that only when she was face to face with her readers. Do authors write with or without readers in mind? Writing is for self as
well as for the imagined audience (Ong, 1975). Just as Julia said, she was mostly doing
the project for herself, but she was also thinking who would be reading it.

5.2.7 Writing Narrative

Emily's Project -- Jonathan's Flight through Ohio

...I wanted it to be very user-friendly and that you could click on any of them.
But I also wanted to tell a story. So it has some linearity to it. -- Emily

Emily's second project was Jonathan's Flight through Ohio. It was a story about a
boy named Jonathan and his journey to freedom through the Underground Railroad.
Although Emily wrote the story in hypertext, she did want her readers to go through the
story and travel to the "end" of Jonathan's journey. She used links to provide different
paths on the journey; she also used links to lead her readers back to the main story line
and keep the story moving forward.

Emily used hypertext to tell a story, a story about an individual at a certain period
of time. Although there were links within text that presented the story with multi-linear
story lines, Emily managed to keep the story moving forward and let her readers
accompany Jonathan to reach the end of his journey. Most of her readers (other
participants in the class) were impressed and moved by her efforts of combining the story
of freedom trail and quilt to tell the story.

Often nonlinearity of hypertext decreases the intensity or the narrative aspects of a
story. Hypertext readers often navigate or wander through different paths with a sense of
disorientation or an unfinished story. Snyder (1996) argued that "One's experience of hypertext is not so much non-linear as multi-linear or multi-sequential" (16). Multi-linearity is part of non-linearity, but emphasizes the multiple-linear approaches and de-emphasizes the randomness in hypertext. It opens up the limits of linearity, and connects the randomness of hypertext with some coherence, and provides different possibilities and different perspectives. Just like Renee argued:

HH: So within the Web, you have your linearity.

Renee: Yes, it is still linear in a way. It still connects. One of the authors [Snyder] says hypertext is not non-linear; it's multi-linear. And I'm going: Yes! And it makes sense to me.

5.2.8 Writing Authoritarian

To proceed, please follow these steps: -- Don

Don's project was about self-efficacy theory. He presented a scenario about self-efficacy with keywords linked to theoretical definition and explanation. He wanted to present a lived experience first, then let his readers read the theory after they were exposed to the examples from real life.
He also had rules and instruction on his page. E.g.,

To proceed, please follow these steps:
1. Read the whole short scenario, "Speak."
2. Re-read it. This time read the commentary and link to pages for further explanation.

There were two columns on the page. The column on the right was a scenario. Readers were instructed to read the column on the left first, and they were supposed to read the left column twice, then read the right column. For the column on the right side of the page, it started with:

Read this stuff later.

Then within the text, it had (Check out the Link) by some of the words.

The author's intention was for his reader to read the column on the left once without reading the column on the right. Then read the text on the left again, but this time, click on the links to read further information about the words he chose to underline. Then read the column on the right. It was very clear for readers what the author wanted them to do and not to do. These were rules, commands, and authority. Here are some of his readers' comments:

I like the two texts side by side. I found it very interesting. I kept wanting to jump over the right side to see what he was really thinking. — Renee

I love the rule though. I started reading the comment, like no, no, no, not yet. -- Professor
Although it is not known how many readers actually followed the instructions, it is clear that this was an author that would like his readers to read a certain way.

For the third project, Don chose to rework *The end of the beginning*, a short science fiction by Ray Bradbury. In writing his experience in designing hypertext, Don said:

In my reworking of the story, I find myself wanting to both subvert and strengthen the role of author.

Don further explained:

By separating texts and repeating them, I attempt to force the reader to slow down and "pay attention here." By the use of links I want to invite the reader to quickly navigate around in the story, or leave it for a poetry break, or to look at pictures, do research, and come back (his/her choice).

Yet, just as Bradbury anchors his story on the lawn, I want to have the story and its narrative as my anchor.

Don designed his project by breaking the story into paragraphs or dialogue and putting them on separate pages. His readers would advance the story by clicking on "next". Some of his pages also had links to other text that was not part of the original story. Don felt that he wanted to be the author of his text and told the story and controlled where his reader would go. At the same time, he also felt like giving his readers more choices (links) and freedom to go explore or leave the text. It was a dilemma for most authors. It is not easy for an author to give up control or the intactness of the story; it is also very challenging for an author to let readers wander and discover the hidden treasure themselves.
5.2.9 Writing Interactivity

June: Well, for my project, I don't need interaction.

Sandy: Two projects that I have done, I don't know if they could be interactive in any way. Unless they want to pretend they are puzzles, and put them in linear order.

Interactivity is another promise of hypertext. Hypertext is said to encourage interactivity. What is interactivity? Do authors and readers interact? How do readers interact with text? There are different levels of interactions between authors, readers and text. Some authors use links to add voices, possibilities and depth, some use network connectivity such as email to connect and/or interact with readers. Some authors hope to let readers interact with the text by having the ability to add and/or change the text / content freely. Some of the participants' expectations of interactivity from the readers are just as Lisa stated "like the way any author would, to reflect upon or draw in personal experiences as they were reading and to connect to the text in a meaningful way."

Interactions between readers, authors, and the text are highly expected, but hard to achieve. Jay Bolter (1991) argues "readers cannot avoid writing the text itself, since every choice they make is an act of writing" (p. 144). While some authors agree with Bolter and think that while readers are making links, they are already (re)writing the text. Some authors and readers would only consider real time conversation in cyberspace as interactions.
5.2.10 Links as Interactions

Links are one of the most prominent features in hypertext. What is a link? It is "a relationship between two anchors." Or it is just as Elena described:

The links in hypertext will be the doors that the student can decide to open or not. If they decide to open one door, they can discover and explore other options.

Some participants have thought of using links for readers to interact with the text.

HH: What are some ways you want your reader to interact with your project?

Renee: I'm going to in my project build in a couple of places where you link to other web site...

HH: You're going to use the links as interaction?

Renee: uh-huh

Claire also considered using links as interactions:

HH: How have you considered the issues pertaining to interactivity in your design?

Claire: You do that by the links you use.

HH: Links?

Claire: ... a number of links. If your links are direct, only one link to one page, and you have to follow along page by page, there's no interactivity.

HH: Um, so if you give them ...

Claire: If you give them two or three links to each page, then there is more interactivity, because you can go back and try the different links each time in the different places

1 See http://www.w3.org/History/19921103-hypertext/hypertext/WWW/ Terms.html#link
Links foster multilinearity and connect text and readers. In the act of reading and clicking, a reader is interacting with the text. However, as Claire argued, if links only function as page turning mechanisms, they are not interactive. Links interrupt the sequence, linearity of the text. Links also weave the text together. Is a link meant to interrupt or to weave? Is a link meant to connect or to distract?

Although the readers are given more choices in the reading, some participants questioned if hypertext authors create opportunities of imagination for readers or take away creativity from readers by creating the links for them. As Kristi said, "... Do we create imagination through linking? ... Does that crush creativity?"

5.3 Reading Hypertext

The reading experience in the hypertextual environment is best described in terms of itineraries that the reader traces through a weave of texts. (Jaishree K. Odin²)

In this class, the participants not only learned to be hypertext authors but also hypertext readers. What were their reading experiences? Here is a conversation in which Claire described her experience as a hypertext author and a reader.

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5.3.1 Reading & Writing Hypertext

HH: Tell me what you have learned about hypertext?

Claire: It's confusing! [laugh]

HH: A lot of people said that.

Claire: Um, I like it!

HH: OK.

Claire: I like the fact that with proper hypertext you can jump from a page to a Web site. I enjoy that part of it; I don't like the book we read.

HH: Which one?

Claire: its name was Penelope, whatever its name was, because I couldn't follow a string of thought, I didn't like jumping from thought to thought.

HH: uh-huh

Claire: I like to actually read linear, and know where I'm going and where I'm going to end up. [If] there's no beginning, there's no end, I don't like that.

HH: uh-huh

Claire: I like hypertext when it comes to non-fiction.

HH: uh-huh

Claire: Because you have a fact, they could either go somewhere else to find out more information about that fact, or continue with that fact. I think it would be very useful that way.

HH: Non-fiction

Claire: Yes, but I don't like fiction with this no beginning, no end, no middle, uh-uh. I like to write in hypertext though. Because you can write one thought, you don't have to worry about the beginning, the middle or the end, that was fun.

HH: So as a reader, you don't like it, but as a writer
Claire: I like it. [laugh]

HH: Why? How is that?

Claire: Because I don't have to think through beginning, middle and end. I don't have to follow a line of thought as writer. As a writer, I can write a small body of thought.

HH: uh-huh

Claire: And then go to different body of thought, without worrying about the connection.

HH: You like that.

Claire: I like writing that way.

HH: And you are not worrying about your reader reading...

Claire: uh-uh [no] they want to read hypertext, that's their problem.

HH: [laugh]

Claire: [laugh]

Reading hypertext could be inspiring, confusing, or frustrating, but apparently not as much fun as writing hypertext. Claire enjoyed writing and jumping from thoughts to thoughts, without worrying about beginning, middle or end. However, she loathed reading hypertext, especially hypertext fiction that tends to jump from thought to thought without a beginning, middle and ending. This actually depicts a lot of people's experience in reading and writing hypertext. Hypertext could be a writer's dream, but a reader's nightmare.
I think it [hypertext] increases the difficulty in terms of reading. -- June

June also thought that hypertext made reading more difficult. There are so many paths, links, and choices. Readers can easily get distracted or disoriented while navigating in hypertext. However, June thought it was a different experience for hypertext authors:

When you are doing the design you really want to have fun. ... Besides since you are the designer, you know the content very well, so you don't have the problem. - - June

Designing hypertext for authors/designers is potentially great fun. Hypertext authors/designers can experiment, and be creative. In addition, authors and designers often are more familiar with the content than the potential readers so they are less likely to be lost in their own text/task.

5.3.2 Reading Hypertext - Narrative

Non-linear, the way we think
Linear, the way we try to understand others -- Renee

I would like hypertext because it is just like the way I think. -- Elena

As hypertext readers navigate through the text, they are sometimes trapped or lost in the hypertext maze. Writing and/or designing hypertext thus becomes an art of story
telling, or meaning making, depending on authors' take-on hypertext. Richard explained the essential of narrative in the process of learning and understanding:

I think to some extent, the way you understand the story has to do with ordering and sequencing, the way the events are taking place in the narrative. -- Richard

Don enjoyed the aesthetic aspects of hypertext which would broaden the possibilities of telling a story or representation of reality (information). Don was fond of the artistic and narrative aspects of hypertext. It might explain why he particularly liked two of the projects, which were Claire's 40-days and Emily's Jonathan's Flight through Ohio. He liked Claire's project because:

I was interested in it because how she has used this medium to, which can be impersonal, like I said, to tell a personal story.

Don also enjoyed Emily's quilt projects and how she used quilts to tell a story. Don explained:

I was interested in the stories and the history behind it, but I was [also] interested in how she told the story. … I just thought that was very clever and what she was talking about and how she was talking about it all fit together.

Renee also enjoyed Emily's quilt project. She praised it as such a unique project that "she is tying so many neat things into it, of history and feelings." Renee enjoyed reading Julia's project as well. She stated:

I even like the design… she [Julia] has neat pictures and I think she blends the pictures and text very well. I thought her design was just exceptional… she managed to carry through meanings, moods, and a lot of different things coherently.
5.3.3 Reading Hypertext - Immersion vs. Interactivity

As a reader, when I read a text, particularly when I'm reading a novel, I kind of want them laid out. You know, I kind of want to go into the writer's world ... -- Richard

When Richard is reading a text, especially a novel, he would like to be immersed in the world that a writer worked to create. He wanted to see what choices were made by the author. He liked to be led into the story, follow a story line and be immersed in the story for a while, not constantly having to make choices or getting interrupted by having to make decisions. However, hypertext reading is a different kind of reading. In reading hypertext, readers are presented with different links and paths in the text. Readers have the freedom and/or responsibility to "interact" with the text. In the process of "interacting" with the text, hypertext readers are to build their own understanding of the text, and their own world. To link or not to link? To stay in the author's world, or to build your own world? This seemed to be some of the readers' dilemma in reading hypertext. One of the participants commented on Richard's second project, which was an interactive five-story hypertext:

He's a good writer, I wanted to finish what I was reading before I clicked the links to go somewhere else. I think that is a sign of holding your attention. -- Renee
Since Richard was such a good writer, it was hard for Renee to leave the story and go
explore other links or other story lines. It is a challenge for hypertext authors to decide to
write for interactivity or to create a world for readers to immerse themselves in.

5.3.4 Reading Hypertext [Fiction]

Readers in hypertext are said to have more freedom to choose different paths to
explore. The role of reader thus is changed. Here are some of the participants’
experiences in reading a hyperfiction, its name was Penelope:

its name was Penelope ... I couldn’t follow a string of thoughts. I didn’t like
jumping from thought to thought. -- Claire

Lisa: ... Like its name was Penelope, I hated that. It was so boring! And I didn’t
spend a lot of time with it, either. I tell you. And I think now maybe I should have
given it some more time and followed some different routes because the ones I
took were just really boring ones.

HH: Was it because of the hypertext form or the content?

Lisa: I guess with its name was Penelope, perhaps it was somewhat the form. It
was so disjointed. I was just unable to see the connections if there were any
connections. I didn't stick with it long enough to find out.

For Lisa and Claire, its name was Penelope was “disjointed” and full of fragmentary
thoughts Sandy felt that she was going in circles when she was reading:
For instance, its name was Penelope ... I spent an hour and a half. I mean going in circles. I mean I come to a text that I can almost quote it for you because I have seen it so many times. ... I didn’t enjoy it. I don’t know why I spent that much time. Well that was the first hypertext fiction I looked at. I was determined to get all the way through. And I had no idea, I might have got through it 3 or 5 times without knowing it, but ...

However, its name was Penelope also received different kinds of reviews from other participants:

I liked it [its name was Penelope], but it takes a lot of work. I looked at it, this is interesting, it’s neat, I like to put pieces together. But would I want to sit down and do 3 or 4 its name was Penelope for two hours? No! -- Renee

Reading hypertext requires more involvement from the readers. For printed books, there are certain conventions that authors are to follow. In hypertext, authors are not following conventions closely, some even work to subvert those conventions. Here is another participant's reading of Penelope:

What I think I was engaged with was a lot of the concepts; I mean I like the notion of hypertext more than necessarily I like the fiction. So with the exception of, once you went, you have to go through a lot to get engaged. I feel I had to go through and read a lot, and kind of go through a lot of cycles, go through the cycle a least a couple of times before I got engaged with it. Whereas often time a novel or a piece of nonfiction... you know, a page or two, you know whether you're interested or not. -- Richard

In reading hypertext, especially hypertext fiction, readers seem to need to invest more time and energy to engage themselves in it. Take its name was Penelope for instance, Julia was inspired by it; Claire and Lisa turned away from it, and Sandy and Richard tried to invest themselves in it. It is ironic that hypertext is supposed to help
people gather information faster and understand things better. When it comes to hyperfiction, readers just can't snuggle their laptop under the warm blanket with them yet.

5.3.5 Reading Hypertext - Closure

I had what might be considered a concluding or an ending, but it wasn't at the end.
– Kristi

I think I'm still at a point that I like closure of some sort. ... But most of the hypertext fiction I read they are going somewhere, but they never get there. – Sandy

I like to know where I'm going and where I have been. If you just throw in a lot of links and end up with a hodge-podge. ... I look for coherence. And I look for closure too. -- Renee

Kristi was an author who was liberated by hypertext. She was not trapped by the conventions of writing with closure. Hypertext is often written without closure. However, readers like Sandy and Renee had different thoughts on closure. They had expressed their discontent and discomfort with open-endings and lack of closure. In reading hypertext, they preferred closure and actually looked for closure. In writing hypertext, Sandy and Renee argued that there should be closure as well. There could even be multiple ways to closure.

... the hypertext that I read, where there are multiple stories happening in random order, sometimes are frustrating, because I love reading literature. I love getting involved with the characters, I like conflict being resolved, and I like happy endings. And with hypertext literature, you don't get that. – Sandy
I don't think it has to be never ending, ongoing. I think they could be like the labyrinth (the term taken from a novel titled Labyrinths by J. Borges), the forking paths, there could be multiple endings. But there is ending, there is somewhere to go. — Sandy

... You can work against closure, but in the back of my mind, I go: Why? I like closure! -- Renee

For Renee and Sandy, hypertext did not have to always be open-ended. They did not expect hypertext with only one ending, but would prefer hypertext with some sort of ending, such as multiple endings or multiple ways to an ending. Just as different authors write different kinds of hypertext, different readers offer different kinds of readings. Different readers also look for different features. Some readers look for interactivity; some prefer hypertext narrative; some insist on having closure. Isn't this hypertext?

5.4 Readerly and Writerly Text

When Roland Barthes proclaims "the death of the author" (1977, p. 142), he wants to remove the attention the author attracts, and emphasize the text. Barthes wants to give the reader more freedom to interpret (produce) the meaning of a text instead of researching what the author's intention is. While talking about readerly and writerly text, Barthes (1974) states that

the writerly text is a perpetual present, upon which no consequence language (which would inevitably make it past) can be superimposed; the writerly text is ourselves writing, before the infinite play of the world (the world as function) is traversed, intersected, stopped, plasticized by some singular system (Ideology, Genus, Criticism) which reduces the plurality of entrances, the opening of networks, the infinity of languages (Barthes, 1974, p. 5).
The significance of writerly text is that it makes a reader a producer of the text, instead of a consumer (Barthes, 1974, p. 4). On the contrary, the readerly text puts the reader in a state of idleness. To Barthes, a reader who reads a readerly text is no more than a "referendum" (Barthes, 1974, p. 4).

In Roland Barthes' terms, readerly and writerly distinguish text that just presents itself and text that invites readers to interact with it and bring in their own perspectives. Hypertext is writerly in that it enables authors to create text that is interactive and lets readers be part of the text / story exploration. How does hypertext make authors feel while writing interactive text?

I think hypertext makes you aware of the readers more than any other form of communications I work with. – Renee

I think being a little bit more sensitive of the reader and also being likely more creative, uh, one of the things that I never have felt comfortable with was graphic design. And now I'm much more willing to get into that and do that. And because I see there is possibility and you can make something looks really good. -- Don

Hypertext redefines the roles of author and reader. The authors and readers are not performing the traditional roles. Hypertext can make authors more aware of readers, and invites authors to be more creative. Authors have more choices and flexibility in the ways they want to write. When the authors are writing / designing, they tend to think or imagine what and how their readers would interact with their text.

It's more than just writing down words. It becomes more what I would call art, in using not just graphics and colors but in putting things together. – Renee

It's mainly in collecting, organizing, and providing existing resources. And providing a framework for school resources, and doing a little bit of some
interactivity to show how resources can be used or what context might help them teach about or help students to learn, kind of author, but ... -- Emily

Hypertext, with the capacity for integrating media such as images, graphics, audio and video into writing, made some of the participants feel like they were more competent designers or artists, or at least, hypertext offered them opportunities to be designers and artists. With its capacity to incorporate links to other documents and information besides the authors’ own text, some participants also felt they were more like editors or people that collect and provide information as opposed to authors or creators.

As a reader, it kind of gives you power to determine where you are going to spend your time and where you are not. -- Renee

Um, [hypertext] makes me more active. -- Don

I think that what hypertext allows for the reader to, myself included, is my freedom to choose the path and the information, and also sort of the flip side is, the ability to drill down into different sites to lose sight of where the permission is coming from. -- Emily

I think hypertext, when I'm reading, seems to me that it gives me a lot more control over the text, allows me to interact with it in a different way, allows me to make some choices. -- Richard

As hypertext readers, most participants felt they became more active and had more control over how they read. They felt more powerful. Some participants also felt more responsibility as readers when given the freedom to choose.

[Hypertext] gives you more responsibility. Because you are responsible for choosing the path that you take. So say you didn't get much out of the reading, perhaps it was because you didn't make the right choices. I don't want to say do it right or wrong thing, perhaps you would get more satisfaction taking another route. -- Lisa
Hypertext readers are given more freedom to choose, but at the same time, readers are also given more responsibility for their own reading. If the reader did not like any piece of hypertext, they might think they did not read it the right way or they missed something good or they did not try hard enough or it was just their fault. Just as Lisa thought, maybe if she had only taken a different path, then she might have enjoyed the piece. Hypertext readers are constantly wondering about the road not taken or the road less travelled. Readers have to be responsible for their own reading; they even have to find an excuse for their own failure of reading. Freedom comes with responsibility.

Since there are enormous amounts of information and endless links in the text, readers sometimes feel they are not reading the same way they are reading books. They feel more like surfers or browsers, or even tourists when it comes to facing the information. As Kristi states:

I do feel though that when you encounter text on the Web, I tend to skim and scan and I do question reading for, not really reading for comprehension. I just found myself skimming and scanning more than intently reading. I'd say.

5.4.1 Author-Reader Relationship

HH: How do you think hypertext changes the author/reader relationship?

Kristi: Well the author is multi-phasic, the author is not a person who just writes words any longer and the reader isn't simply someone who has to read what exactly is written in a linear fashion any longer I mean the reader has more choices most likely.
With the changing roles of authors and readers, hypertext changes the author-reader relationship as well. The relationship becomes dynamic, multiphasic, interactive, complicated and personal. Richard thought “it makes it more interactive. ….” Don described that when he was reading hypertext, he was “looking at not just ideas, but looking at this person’s ideas at this time”. The interactive process has made the author more aware of the reader, and the reader more aware of the author.

5.4.2 Illusion of Control

Barthes has argued about writerly and readerly text and the death of the author. Is hypertext a writerly text that invites readers to have input in the text? Does hypertext offer more reader control than author control?

As an author it changes your role because you lose ownership of your writing. -- Claire

I think in some way the author has more control than the traditional form because the author does give the illusion of getting some reader control. -- Renee

Where you are going is kind of illusion because the writer is controlling and all your links are going to lead to somewhere. So you are going to end up where the writer wants you anyway. -- Renee

Ideally, hypertext promotes writerly text and gives readers more control. However, hypertext, sometimes, can provide more author control than does conventional printed text. Some participants argued that the power or control given to readers was an illusion because ultimately, authors still made all the pre-determined links, paths, and nodes. Readers just follow the paths authors create.

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5.4.3 Author Control — Forced Links

...And to get them started in the right direction, I did say, start here, so that they could proceed along the path I wanted them to go. -- Emily

I wanted to give decision points where the person reading the story can decide what happened next. And yet, I wanted them always to progress forwards. So there is sort of a false sense of you are directing it because you do end up with the next stop, no matter what you pick. -- Emily

For her quilt project, Emily used links to exercise her author control. Although she designed her story in hypertext, she still wanted the story to progress in the "right" direction. She had Start Here, on the bottom of a map of Ohio, and some marked locations on the map going linearly from the south to the north as the Underground Railroad. She also used links to push the story forward. Although she presented different paths at some decision points, they all eventually linked to the next point of the story that led to the end of journey, Canada, which symbolized freedom. It was an illusion that she gave her readers freedom at the decision points. There were some forced links and a false sense of empowering.

5.4.4 Author Control — Uncertain ones

There is a thesis; I don't know when you will get to that.
There are resources; I don't know when you will access those.
There are references; I don't know when you will go to those. -- Kristi
The above sentences show an author who was uncertain about the action of her readers. Kristi had presented her project in a nonlinear way. Hypertext readers can follow any links presented by Kristi. However, Kristi wouldn't have known how exactly her readers would be reading her text.

On the other hand, Lisa still liked her writing organized with introduction and conclusion, and everything in place. She was not ready to give up author control and linearity yet. She spoke as an author embracing her author's voice and author control.

I have a lot of control issues. I can't give it up yet. I like things to be organized. I like to know where everything is. Everything has its place. I'm not ready for that [hypertext] yet. -- Lisa

In my reworking of the story, I find myself wanting to both subvert and strengthen the role of author. By separating texts and repeating them, I attempt to force the reader to slow down and "pay attention here." -- Don

Here is an author talking about his dilemma as a hypertext author. The role of author is easily reinforced with the use of links, nodes, and other hypertext elements. The text is in the author's hand. The power of author is thus enhanced by hypertext technology. Perhaps the relationship between author and reader in hypertext is far more complicated than just who has more control over the text or who has more freedom to create and/or read text. It is an ever-evolving relationship.

In constructing hypertext, different authors experimented with the intensity of the authority and the degrees of freedom they were willing or able to give away. Is hypertext author controlled or reader controlled? Maybe it is neither. It is about how hypertext...
authors work out all the possibilities or all the best possibilities for the readers. It is about hypertext readers who are interested in reading the text and following their own interests or understanding the texts and links.

5.4.5 Readers as Authors

I have not seen anything where whatever we read that readers can become writers and interact. So I'm not sure how that works. -- Sandy

Like its name was Penelope, I couldn’t go in there and change it. -- Lisa

Sandy and Lisa described their experience in reading hypertext, particularly exploratory hypertext. Under a more rigid definition of interactivity, true interactive hypertext only happens when readers literally become authors. When a reader is not only exploring the paths, but also creating text in constructive hypertext, interactivity becomes optimal.

5.5 Criteria for Evaluating Hypertext

In the interviews, the participants were asked what their criteria were for evaluating hypertext and/or the Web pages. The following is what they said about what they were looking for while reading hypertext:
June: Visually, it has to be visually attractive. And I like personal feelings, Web sites that have personal feelings.

Renee: I think she [Julia] blends the pictures and text very well ... she managed to carry through meanings, moods, and a lot of different things coherently. It wasn't totally traditional, it had meanings...

Don: It is about something I'm interested in. And I have to be able to feel somewhat in control. I want to be able to make sense out of it.

Emily: I guess because of my work with faculty that learns online instruction, I look for interactivity.

Claire: Easy to work with, you know, clear instruction, when you get there, you know exactly what to do to get where you want to go, links that work.... Doesn't need music, animation, to me, that's distracting,

Julia: I think the most important thing for design is aesthetics.

Kristi: I've encountered some Web design and Web pages ... Sometimes I'm annoyed by too many photos and graphics that to me makes things take longer [to download]. ... I look at links, sometimes I question why is one here, why isn't one here, or how do I get back there, things like that.

Lisa: Uh, if it makes me tense, I don't like it, like too many, too many things to look at. I looked for simplicity.

Elena: Well, I think something has to be kind of harmony. And it has to be kind of clear, you can take different roads.

Richard: I want to have something that is visually interesting, but something that is very easy to navigate and move back and froth... something is engaging and attractive to look at, doesn't overpower you, doesn't overpower you with either too many graphics or too much information.

Sandy: One is the ease of finding it; the other would be the ease of manipulating within the Web site. ... And let people choose from where they want to go when you can expand. And organization. Maybe. And color. Can you tell that I like color?
In sum, navigation plays an important role for the participants. Most readers would appreciate well-designed navigation. Due to the bandwidth on the Internet, the practice of simplicity in design is a virtue that cannot be over-emphasized. Most readers appreciate the visually pleasant. Interactivity and personal interests are among most readers' criteria as well.

5.6 Educational Uses and Implications

I'm very practical. I always think of hypertext in terms of how I can use it in the classroom. -- Claire

I'm very practical. I'm thinking how students can use hypertext. -- Lisa

Many of the participants were interested in how they can use hypertext in the classroom and how hypertext can help their students learn.

Elena said, "I always think like a special education teacher." She thought that hypertext could help students, especially her special education students. For instance, hypertext could help her students with learning disabilities learn associatively. She believed that if a student could do a lot association [branching], s/he could learn better:

... One of the big things has been association. When they start to be really good at associations, the other things come along. ... And I think with hypertext, you can do it in more wonderful ways. And I have always noticed that. -- Elena

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This is one of the many ways that participants thought they could make use of hypertext in classroom pedagogy. In addition, some participants also think hypertext can help students construct their learning. For instance, here are what Renee and Don thought of hypertext and learning:

The fact that knowledge is constructed ... Nothing is totally objective, but if you look on people constructing knowledge, hypertext is an ideal medium for that. Again because it allows you so much leeway and presenting so many different points of views about things. And when you're constructing knowledge, every little piece goes in somewhere or balances something else. Hypertext really gives you with the web particularly all the linking available; it gives you an array of pieces to draw on, to build a really strong knowledge foundation. As opposed to just building it based on one or two things that could be off-sided. -- Renee

Oh, I think it [hypertext] will invite people to, knowing something isn't step one, step two, step three, step four, step five. -- Don

In addition to using hypertext as pedagogy, hypertext as the World Wide Web has a lot of potential for education. The Web in the educational context can be used as a resource for information, a medium for expressing ideas and representing, and a space for dialogue.

5.6.1 The Web as a medium for distribution of resources

The Web is a space full of information and resources. If teachers and educators can carefully select and evaluate the information for the students, the Web can be used as a medium for information and resources. Emily pointed out that:
I like the idea of having choices and giving some of the power to the user or to the reader so that they can decide what they want to see next. ... Which even go beyond your space that you created and tie in other things. I guess I see that big benefit is providing links to other resources that are out there.

Emily also thought the ability to link to other resources created by others was a great strength of the Internet because:

You don't have to create everything. All you need to do is create a space where people can come to find out what's out there. And just link them to the things that are already there.

Some of the participants used links to connect their text to other web sites on the Internet. For instance, in Renee’s third project, a critique of the novel *Space*, she had a link to Dachau, which is a site about the Holocaust, to bring in different perspectives to balance out the sympathetic view the author had for Nazi scientists. Renee explained that:

I put some sites on concentration camps and on Nazism and some Dachau. Think of a little bit of the ethics and morality of the position this book is taking and for that reason it’s important that we do not forget stuff like that I’m putting these sites in or I’m going to.

In Julia’s third project about the Holocaust, she provided links to Holocaust Center and A Teacher’s Guide to the Holocaust as a way to use the Web as resources and to broaden students' viewpoints. Teachers and students have the opportunities to look at The Holocaust Memorial Center (HMC) [http://holocaustcenter.com/about.shtml] online and teachers can use the activities and resources, including photographs, documents, art, music, and literature from A Teacher’s Guide to the Holocaust [http://fcit.coedu.usf.edu/holocaust/default.htm] to help students understand the people and events of the Holocaust.
In Claire's project on critiquing the food pyramid in the Wellness textbook, she argued, "The pictures used in the food pyramid represents the dominant culture in America." She wanted her students to look at the food pyramid and how knowledge was constructed, represented through text and images. She made links to outside sources as alternative ways to look at food pyramid and nutrition. She provided a list of online resources on food pyramid and nutrition including a link to online newspaper [http://www.dispatch.com] articles, and links to other web sites on the food pyramid to give students different views on food, people and culture.

5.6.2 The Web as a medium of expression-representation

Some of participants used hypertext as a way to express themselves. For instance, for Elena's second project, My Family, she shared her family photos and her life journey with her readers. Her readers can read about her parents' 50-year marriage and view the photos dated 1967 through the present of her with her ten siblings.

In Kristi's projects, she incorporated her students' work with her own writing. It would be a wonderful medium for students to learn and present what they have learned on the Web. With the increased ease of web publishing, teachers can encourage students to use hypertext as a medium for expressing ideas. Teachers can encourage their students to be authors and to write about what they learn and/or to express their creativity. It also has the potential for students to build multimedia portfolios (Lemke, 1988, p. 288) and promoting different kinds of learning and assessment process.
5.6.3 The Web as a medium for dialogue

Kristi's project not only encouraged students to express and present what they learned, but also provided a dialogue space to invite different voices to express, to converse, to interact, and to learn from others. Snyder (1996) states "Students become correspondingly more independent as active shapers of the knowledge they acquire. Using hypertext, teachers are encouraged to present themselves in 'polylogic rather than monologic roles' (McDaid, 1991:218). The writing classroom becomes more like 'a transactional space' (ibid.)" (p. 103).

The dialogue space provides possibilities for students to converse and exchange learning experience. Kristi described her intention as:

... to create a hypertext environment that allows for and encourages the reader or user of the opportunity to encounter many voices, create voices, contribute to the current and past discourse, critiques, criticisms, and choose direction of interest and learning.

June also provided space to invite readers to participate in the dialogue with her and other experts and authors:

I’m going to make a page that includes different voices, including scholar’s voices, these ordinary people’s voices, and also my own interpretation. And I thought if it’s possible I would like my audience to give me some responses. How they think about who artists are, or what kind of work is art. I’d like to have a discussion about it if it’s possible.

The Web is a space full of multiple perspectives, multiple voices and endless learning opportunities if educators and students use it appropriately.
5.7 The Critical Turn

How can I truly know this perspective? The best I can do is to share what my perspective is with the reader so they know where I am coming from and why things are the way they are. -- Emily

Their faces never leave. -- Kristi

Technology is not neutral; neither is hypertext. Hypertext and the information in hypertext are as constructed and mediated as other media.

As an author, Emily challenged herself and asked herself how she could truly know that what she wrote was truly and honestly representing the people, knowledge, history she wanted to represent. Hers was an author's self critique.

Kristi stated that she always read or looked at things through her students' eyes. She said that her students' faces never leave. She pointed out that hypertext is not completely unbiased as many people assume. In hypertext, there are decisions to be made (by the authors); there are still biases. Kristi argued that in the midst of challenging linearity of text, educators should not let hypertext go unchallenged:

Kristi: And I think though there are a lot of assumptions made about hypertext that are dangerous, I think.

HH: Oh?
Kristi: Just assumptions that it doesn't do some of the things maybe traditional text does. I wrote in my final project, there are choices to be made, there are still designers; there are still issues of power and decision-making that are not the users alone. And I think there's an assumption that there's very little potential for bias and misrepresentation. And there still is.

HH: uh-huh

Kristi... I chose the font, I chose the color, I chose the link, I chose the information that you interact with once you link to someplace else. I still chose. ... I still made choices for my reader or user.

Kristi reflected her experience as an author and questioned the myth of the "neutrality" of hypertext technology. Hypertext authors need to reflect on their roles as authors authoring and presenting different perspectives. Readers need to question how information is presented and how knowledge is constructed in hypertext. On another level, educators also need to examine the kind of learning hypertext promotes. With the capacity to link to bountiful resources in hypertext on the web, learning with hypertext on the web could be on the surface and/or engulfing. Here are some of the participants' concerns:

It is surface, not depth, and that seems to be a trend, more of the surface information, versus the real deep information, and hypertext makes that easy to do. -- Emily

It definitely would change people's way of knowing. It becomes more superficial to know something. A lot of times, you had an idea about something, but you couldn't really explain or describe it, because you didn't read enough to describe it. That's my experience. -- June

Internet could be exceptionally engulfing to children. It could definitely change or alter extra curricula activities that children engage in. They could spend hours and hours after school doing that instead of playing soccer or something. -- Julia
On one hand, hypertext supports nonlinear thinking, encourages students to construct their own learning, and exploring every possibility. On the other hand, students could “live on the surface” (Johnson-Eilola, 1998). Johnson-Eilola argues that hypertext tends to support surface learning and ignore the depth of the information. In addition, the information on the Internet could be engulfing, distracting, or false, so students need to use the Internet carefully. Educators need to use hypertext critically and teach students to read critically as well. As to learning on the surface, Emily echoed Johnson-Eilola’s suggestion:

... to find ways to provide the surface then go into depth and then come back to the surface, kind of interweave the two together, not to choose one or the other, but to provide that experience both, so you can get benefits from both types of learning.

Using the web, not only encourages students to broaden their view, also encourages them to explore information/knowledge in depth and read and think critically and ultimately students as authors can write critically and reflexively.

5.8 Access

... the only good thing with hypertext, I have a feeling that any of my students would benefit, could learn, could create, could be authors, writers, designers and everything, but my heart may go back into access. And it's not there. -- Kristi
Access remains a big concern for most of the participants, especially educators like Kristi who teaches at an inner city school. Kristi commented “Most of my students will never experience hypertext or the hypertext through the World Wide Web or the Internet with me. We’re still at word processing.” There has been a great digital divide between the have and have-nots. However, Kristi provided a wonderful example of doing hypertext without the technology.

Hypertext without the Technology

Hearing some of these ideas [about hypertext], I really felt like exactly I was doing hypertext without a computer. — Kristi

... And I question that will my students ever be producers? Will they ever be the authors? Or will they simply always be the readers or the users? I just think there is a potential to cause greater gaps. And that's my big fear. That's why I tend to teach my kind of hypertext. Because the ideas are still there, it's not technology-based. — Kristi

Some aspects of hypertext, especially multiple perspectives and non-linearity, helped Kristi personally in her everyday classroom teaching. She teaches at an inner city school, facing challenges everyday. She thinks about what would work for her students and sometimes wonders if she is doing the right things. Kristi stated:
What have I learned? See and be more aware of linearity because of it. ... even the way of I teach, In my practices or pedagogy, I am even challenging the order in which I do things... challenging ways of reading something, or importing multiple or various voices within a piece. And I think you can do all that without technology.

So she did hypertext without technology. She taught high school English. In her practice, she often challenged the order she taught. She often encouraged her students to explore different ways of reading text, and to look at things with different perspectives. She taught at a predominantly African-American school, so she always tried to understand her students from their perspectives and encouraged the students to explore different ways of learning. Kristi described some of the "hypertext" activities she did with her students:

... in my class, I try to do this a lot, we take something and try to present it from various voices and in various forms. So we will read a short story, they have to present it in Rap form, or a poetic form. They have to become a voice that someone that was not heard or maybe not the narrator, first person voice or the character that is not speaking in the first person voice and they become that character. So in those ways, I have been ... some of the things we discussed in class reaffirm the things I was doing in my class currently, so that's good.

Kristi thought that exposure to hypertext helped her have more confidence while dealing with unconventional ways of approaching teaching. She felt that she got reassurance and felt that she was doing something right with her students.
At the end of the interview, I asked my participants to describe a hypertext moment for me. Some of them had a defining hypertext moment; some pondered on the question, and found one; and some were just silenced by this question. Here are the hypertext moments experienced by the participants:

This whole project [III] is a hypertext moment for me. -- Kristi

When I watched that film (Sur Name Viet Given Name Nam by Trinh T. Minh-ha), I think that's hypertext. -- June

My hypertext moment was when I wanted to, when I was seriously thinking of throwing the computer out of the window. ... I have an idea in my head, but I couldn't get that idea on the screen. -- Don

I think I just described that ... how I watch TV. [laugh] -- Emily

... where I was totally lost, totally confused, no idea where I was looking at, and no idea where I was going [laugh] -- Claire

Well, when it comes mostly when I'm reading, you know, something for another class, you know, the footnote things come, and oh, there is a hypertext moment. Or I think about something else that I read, or god, this will connect to this article really well, or, I think it comes more in those kinds of terms. -- Lisa

The film [by Trinh]. -- Elena

The film "Sur Name Viet Given Name Nam" by Trinh T. Minh-ha was shown in the class along with Trinh's writing, "Why a fish pond?"
HH: Describe your hypertext moment?

Renee: You know, I don't right now. No. ... Other people have hypertext moments?

HH: Some do, some don't.

Renee: Gee! Am I missing something?

Hearing some of these ideas [about hypertext], I really felt like exactly I was doing hypertext without a computer. – Kristi

Richard: A hypertext moment ... I think once I just saw the Seattle story that was ... hypertext

HH: Seattle story?

Richard: This story where the characters jump back and forth between stories, that kind of connection, I thought that kind of clicked with me as an interesting way to write, ...the ability to connect people through the events and stories, probably the biggest thing that strikes me.

HH: Like your own story...

Richard: Yea, my own story, but reading it from somebody else's story and find that's how they are doing, that's hypertext

I mean my project is a whole hypertext moment, but in one moment? --Julia

Hypertext moments could be the little moments that inspired people. Hypertext moments could also be the moments that were lost or went unnoticed. A hypertext moment could be the whole project like Julia said, or the blank moment that Renee had. The most profound and inspiring moment came when Kristi described her teaching
hypertext without the technology. I hope there will be more hypertext moments in
everyone’s life that will inspire educators and students to learn, with or without hypertext
technology.
CHAPTER 6

DISCUSSIONS AND CONCLUSIONS

6.1 Hypertext Narratives, Closure, and Openness

Renee: ... I look for coherence. And I look for closure too. Most of the traditional text has closure. You can work against closure, but in the back of my mind; I go: Why? I like closure!

HH: Everything has to have closure?

Renee: Well, not everything, but books that I read I like to have definite endings.

HH: So you don’t like open endings?

Renee: No, not particularly.

While writing conclusions of this research on hypertext, it is intriguing to ponder upon narrative and closure within hypertext, as well as the openness that hypertext brings to education.
6.2 Hypertext Narratives

As this study concludes, some of the participants as hypertext readers still look for narrative and coherence in hypertext. However, as hypertext authors, most of the participants are fond of non-linearity, and embrace hypertext narratives when it comes to writing without definitive beginnings or endings. Some of the participants even express that it is difficult for them to go back to writing linearly.

“Hypertext is new; narrative is old” says Michael Joyce (1995, p. 194). Narrative or storytelling is as old as time (Calvino, 1986). According to Douglas, “When we read print narratives, we arrive already equipped with a full repertoire of reactions and strategies” (1991, p. 121). We know that when we open a book, we can expect some sort of an introduction or a beginning, and when we turn to the last chapter, we will find a conclusion or an ending of some sort waiting for us.

For the participants who seek for narrative and closure, reading hypertext fiction such as its name was Penelope is somehow frustrating. Most hypertext fiction contains pieces of story that are read randomly or multi-linearly. Some readers can’t help feeling lost and frustrated because hypertext fiction discards the conventions of fiction and “narrative is how we explain the world to ourselves.” (Gibson, 1996, p. 7)

Reading nonfiction (informational and/or instructional texts) seems to require less narrative structure for understanding. Readers feel more comfortable clicking around, browsing around, and reading whatever makes sense to or interests to them. Readers seem to demand fewer linear conventions and are more willing to explore and construct different kinds of coherence for themselves. As Gibson points out, hypertext coherence is
"in part anchored in associative, linked structures" (Gibson, 1996, p. 7). In the act of clicking and linking, readers weave together a somewhat coherent reading of the text.

On the other hand, most of the participants enjoy writing in hypertext, both in fiction and/or non-fiction. They feel they have more freedom to explore different ways of presenting their information or telling their stories. For the participants who are fascinated and inspired by reading and writing hypertext, different kinds of narratives emerge through hypertext.

Hypertext narratives challenge the interactive aspect of narratives, and are redefining/expanding the concept of narratives. According to Douglas, "interactive narratives typically represent a spectrum of dialogues between reader and author anticipated in advance by the author, eliminating any possibility of graceful degradation (2000, p. 45)." Most of the participants as hypertext authors in this study enjoy creating different paths for readers to explore. Although some of participants as hypertext readers find interactive narratives discontinuous and fragmenty, some of the participants embrace the freedom to wander through hypertextual space, and weave together their own hypertext stories with interactive narratives.

Slatin (1994) explains that "Reading, in hypertext, is understood as a discontinuous or non-linear process which, like thinking, is associative in nature, as opposed to the sequential process envisioned by conventional text" (p. 158). Slatin further comments that "We regard a conventional text as coherent to the extent that all the material it contains strikes us being (a) related in an appropriately direct way to the subject and to the author's thesis; and arranged in the appropriate sequence" (p. 165). Hypertext authors and readers are exploring different kinds of narratives and coherence.
that value relevant connections among lexias through links, rather than relying on the sequentiability of text in traditional print (Gibson, 1996, p. 18).

Working in hypertext fosters different kinds of writing as well as different kinds of reading, which are associative and connected. The moment a reader clicks a text or an image is the moment that associations and connections occur.

Slatin (1994) points to “hypertext coherence as appearing at the metatextual level — that is, at the level where the reader perceives what Gregory Bateson calls ‘the pattern which connects.’ The ‘pattern which connects’ is the organizing notion around which all the disparate elements of the hyperdocuments revolve” (p. 166). The moments between text when an author branches out and connects are the hypertext moments that hypertext authors write, and readers read. Hypertext writers write to connect with the readers; just as the reader would like to connect with the author.

6.3 Openness

HH: You cannot find any other media that would do as good as hypertext!?

June: I don’t find any other media that you could include different ideas and different forms in terms of sounds, animation, images, and text, and you can link to other people’s work in terms of web pages.

HH: uh-uh!
June: I don't see any other media have this kind of capacity if you consider the time and the working space.

HH: What do you mean?

June: Like a computer, you just need this small place. If I'm doing my design in my traditional watercolor or oil painting ...

HH: Oh!

June: I need a canvas.

HH: I see!

Every painter needs a canvas. Hypertext is a virtual canvas for the participants who try to paint either their personal stories or thoughts on education, literature, history, or other topics. As June says, hypertext has the capacity and flexibility to include different forms of creativity. With its nonlinearity, intertextuality, and plurality, hypertext also provokes some unique projects in this study.

Some of the projects created by the participants are particularly personal and emotionally laden. Some of the projects focus on connecting and conversing/dialoguing between teachers and students, students and students, and/or between time in the past, present, and future. Some of the participants' projects and their ways of using and interpreting hypertext open up many possibilities of how we can use hypertext in education.

For instance, in Kristin's second project, she uses her own diary as a starting point and branches out to her students' poems. By reading the diary and poems, readers come to know the young poets and their thoughts. The project presents a wonderful opportunity
for students to work with hypertext and opens up new space for different kinds of learning, creating, expressing, connecting, and dialoguing.

In Renee's second project, which is about her experience at Kent State, she connects her personal experience with a historical event. She shares her own personal experience/view, and opens up a space for readers to reflect and to form their own opinions. In Renee's third projects, which is a critique of the novel *Space* by James A. Michener, she questions the (political) stand the established author takes and opens up new possibilities for reading stories and history.

In Emily's quilt projects, she used her grandmother's quilt as her background graphic. By using the quilt as the background, she feels the personal connections with her grandmother, and women's life history. She also used quilt as a theme that weaves through a story about a slave boy's flight to freedom and the history of Ohio. The quilt theme helps her show the connections between her research and the history that is rooted in women, history, and quilt making.

In Julia's third project, which is based on a children's book about the Holocaust, she presents the history and explores possibilities for critical reading of the history, information and power in relation to hypertext. Within an education context, Julia questions, "Do you teach subject matter content? Or do you teach "the whole child"? (Damarin, [1994], p. 54) Do you teach memorization of facts or moments of history?" She comments, "It is within this spiral dance that hypertext can find its place." Julia gives education great hope by bringing hypertext to teach the whole child with openness and flexibility.
In Julia's second project, which surrounds her experience on her operation day, and Claire's second project, which is about her experience on the 40-day ceremony of her husband's death in Sierra Leone, readers see a great deal of personal narratives/stories in hypertextual prose that move them, and are gratuitous towards a great deal of openness the authors have in sharing their stories.

Why are there so many personal projects? Why is it so inviting for authors to share their personal experiences and stories in hypertext? Is it so spacious for authors to present a piece of literature or history that has so much impact on people? Or is it because they are in hypertext so it is so enchanting for readers to see and feel? Is it hypertext that inspires these authors? Is it hypertext that affords these connections, openness and dialogue?

For some of the participants, linearity has been the way they were taught, thus find comfort with it. However, for some of the participants, who find hypertext inspiring and liberating, the world is full of hypertext and possibilities. Barthes states, "To interpret a text is not to give it a meaning, but on the contrary to appreciate what plural constitutes it" (1974, p. 5). In reading and writing hypertext, readers and writers see both openness and connections; they branch out and weave together experiences and stories. As Jane Yellowlees Douglas describes, each reading of hypertext "breathes life into a narrative of possibilities. (1991, p. 181)." Reading and writing hypertext open up a world of possibilities to us. In writing hypertext, authors construct texts without beginning, end or linearity to the story. In reading hypertext, readers experience openness, intertextuality/connections and dialogue in text and between author and reader.
Michael Joyce (1996) writes about Robert Coover, who is a writer and literary critic, "for all his writing life he has worked against the narrative line and suggests that with the onset of hyperfiction he would now have to work against infinite possibility."

Coover (1992) describes himself as a writer who is interested in subverting linearity, but somehow is overwhelmed by the indefinite possibilities that hypertext authors face. Coover views hypertext as an exciting and provocative, but also frequently frustrating medium for creating new narratives. Hypertext authors are invited or sometimes forced to create links in their creating process. He contemplates that the infinity or endless expansion which hypertext affords would lose the story, and maybe more. He worries for readers' desire for coherence and closure and their getting lost in cyberspace.

What if there is no linearity to subvert? What if there is no definite possibility to work against? For some of the participants that find hypertext as their creative and inspiring media, there is no linearity to subvert, and there is no closure to work against. It is the openness, intertextuality, and plurality in hypertext that invites authors and readers to walk in the world of possibilities, to explore and experience the fluid space that hypertext opens up to them.
6.4 Future Research

Return to the research question of this study: What are the experiences of students in a graduate course on hypertext theory, design and development?

In the midst of learning hypertext theory, design and development, the participants in this study were inspired as well as challenged by hypertext theory, and explored the possibilities of hypertext design and development. Their projects and comments present wonderful examples of how hypertext can be used in education, and how hypertext will challenge and inspire educators and students to rethink how they learn.

Hypertext not only brings openness, connections, intertextuality, and plurality to the text; it also brings new levels of openness, connections, and dialoguing to education, if not to life.

Bringing hypertext to different levels of students and teachers will be one of the recommendations for future research. Using hypertext as pedagogical media is one of ways to introduce hypertext in learning. Exploratory hypertext lets students explore the world of knowledge with its flexibility. Since hypertext is extremely open and encompassing, the greatest potential of hypertext is constructive hypertext for learning in education. Students can construct their learning by using constructive hypertext and even construct learning processes collaboratively. By reading and writing hypertext, students can be writers, artists, explorers, and weave together learning and life. On another level, different kinds of learning hypertext opens up for students is another area for future research.
6.5 Reflections

This study has been full of contesting voices: the authors, the readers, the theorists, the participants and the researcher. Hypertext projects represent the participants, or part of them, or some moments they experienced.

This study has showed me how hypertext can inspire people and open up indefinite possibilities for education. I have researched hypertext and learned about hypertext through my participants as authors and readers, their text, and their learning of hypertext theory, design and development. Through hypertext, I have learned what openness and connections technology can bring to education. With hypertext, we will see the world in different perspectives and learn to interact with the world and people differently. With hypertext, we can show students different kinds of learning, and in turn they will show the world what they can do. Reflecting upon my experience of researching hypertext, I would like to link to a passage of Georgia O'Keeffe in *The Poetry of Things*, and leave (or restart) a Zen koan for all the hypertext authors and readers:

When asked whether the flower or the color was her focus, O'Keeffe refused to say. Instead she spoke of the primacy of aesthetics. "What is my experience of the flower if not color?" she declared.

What is my experience of hypertext if not ...?
REFERENCES


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APPENDIX A

INTERVIEW GUIDE

Self
Please tell me about yourself.

Pedagogy
What kind of teaching experiences do you have?

Hypertext
Tell me what you learned about hypertext?

Projects
Tell me about your projects.
Why did you choose “poetry” as a topic/form of your project?
How do you think hypertext [as a form] is appropriate for your project?
How do you think Internet [as a tool] is appropriate for your project?

The Experience
What do you like most/least about the hypertext design experience?
How has your hypertext design experience changed the way you think of hypertext?
How has hypertext theories influenced your design?
What are some ways would you want your reader to interact with your project?
What makes it different from other media?
Hypertext Theories

How do you think about the relationship between the hypertext theories we read and the design you did?
How do your design experiences help you understand hypertext theories?
How has hypertext theories influenced your design?

Criteria

Which is your favorite Web site?
What are the criteria of good Web design?

Hypertext literacy

What do you think are the implications of hypertext for reading/writing?

Aesthetics

How have you considered aesthetic issues in your design?

Author/Reader Relationship

How do you see you and your project?
How do you see yourself in your project?
How do you see yourself as [an author]?
As an author, what do you expect from your reader?
How does hypertext change your role as an author?
How does hypertext change your role as a reader?
How do you think hypertext changes the author/reader relationship?

Interactivity

How have you considered the issues pertaining to interactivity in your design?
What are the features you implemented in your project for interactivity?

Culture

How do you think your [cultural/personal] background affect the way you design?
What do you think are the implications of hypertext for [Western/other] culture?
How do you think hypertext technology would change people's way of knowing?
Gender

As a woman, how do you feel working with hypertext technology?

Access

What do you think about equity or access issues related to the WWW technology?

Hypertext moment

Describe your hypertext moment.

Others

Is there anything you would like to say that I have not asked?

Reflexivity
APPENDIX B

PRELIMINARY QUESTIONNAIRE

The Ohio State University

Hypertext Design Experiences
in WWW Environments

Preliminary Questionnaire (PQ)

Directions

Please answer the questions contained in this questionnaire based on your personal information. I hope to gather some basic information in order to select volunteers for my study. Thank you!

Winter, 1999
Name: ___________________________ Phone no: __________________________
E-mail: ___________________________ Age: ________ Gender: ____________
Highest degree earned: ___________ Major: ____________________________
Degree sought: ________________ Program area: ________________________

1. Have you designed/authored Web pages before?  ___ Yes  ___ No

2. What is your preferred way to learn to use a new piece of software?  
(Please choose one.)
   ___ group demonstration  ___ self-guided tutorial
   ___ one-on-one instruction  ___ self-exploration
   ___ other; please specify ________________

3. What type of computer user are you?  (Please circle one.)
   |beginner |intermediate  |advanced |expert |

4. For what purposes do you use a computer?  (Please check all that apply.)
   ___ word processing ___ graphics ___ database
   ___ e-mail ___ browse the Web
   ___ games ___ school assignments
   ___ teaching preparation ___ programming
   ___ other; please specify: _________________________

5. Have you used the World Wide Web before?  ___ Yes  ___ No

6. What level of World Wide Web browsing skills do you have?  
(Please circle one)
   |beginner |intermediate  |advanced |expert |

7. For what purposes do you use the Web?  (Please check all that apply.)
   ___ information resources ___ entertainment
   ___ communications ___ academic research
   ___ other; please specify: _________________________

8. What are your expectations for this course?
If you are presently a teacher, please continue the following questions.

Years of experience: _______________
Grade level: _____________________
Subject area: _____________________

9. How many computers do you have in your classroom? _____

10. Do the computers have Web access?   __ Yes   __ No

11. Does your school have a computer lab?   __ Yes   __ No

12. Do the computers have Web access?   __ Yes   __ No

13. Does your school have a home page?   __ Yes   __ No
url: _________________________________

14. Does your classroom have a home page?   __ Yes   __ No
url: _________________________________

15. Have you used the Web in your teaching?   __ Yes   __ No

16. How do you use the Web for in your teaching?

17. Have your students used the Web in school?   __ Yes __ No __ Some

18. For what purpose do your students use the Web?  (Please check all that apply.)
   ___creating their own home page
   ___searching information
   ___browsing
   ___other; please specify: ___________________________
APPENDIX C

COURSE SYLLABUS

EDUCATION, HYPERMEDIA & THE WORLD WIDE WEB

Educational Policy & Leadership 692.46
Instructional Design Workshop
Winter 1999

Lecture/Discussion
4:30 - 7:00P Thursday

Workshop
7:00-10:00 P Thursday

Level & Credit Hours
Grad4

Welcome! This course explores the multi-linear and non-narrative form of the World Wide Web and other hypermedia technologies in the context of curriculum, literacy and pedagogy. Theory, design and production of hypertext are each considered. Through hands-on workshops, hypertext authoring tools enable students to combine audio, visual and textual media. In the context of post-colonial thought and cultural theory, the multi-linear and non-narrative form of hypertext is compared with ethnographic film, classic animation and experimental fiction writing.

Some familiarity with computers is helpful but NOT required.

Course Goals
- Navigating the multi-linear and non-narrative form of the World Wide Web and other hypertext technologies.
- Exploring the integration of hypertext into classroom practice.
- Questioning and reconceptualizing the aesthetic and formal qualities of educational materials.
- Designing and producing educational materials in an hypertext environment.
- Analyzing cultural and political issues that relate hypertext technology to education.
Practical Technique
HyperMedia production
World Wide Web development

Required Books
Malloy, J. (1992) *It's name was Penelope.* Cambridge, MA: Eastgate Systems, Inc. [Macintosh or Windows]


Software
Microsoft *FrontPage* [Macintosh or Windows]

Suggested Materials
Two zip disk (100MB) formatted for Macintosh computers. Expect your disks to fail so backup your work! Depending on the form and trajectory of your work, additional materials/resources might be necessary. Laser copies are $0.10/page.

Reader On Reserve


Calendar

Hypertext I: Form & Formation

January 07   Introduction
January 21   Snyder (1996) Ch. 2 & Ch. 3. / Malloy (1992)

Hypertext II: Curriculum Theory

February 04  Snyder (1996) Ch. 5 / Borges (1964)

Hypertext III: Pedagogy & Literacy

February 25  Snyder (1996) Ch. 6  Due: Hypertext II
March 18     Presentations/ Exam Week  Due: Hypertext III
Assignments

1. **Hypertext I** -- due in class January 28 ------------------(12 pts.)
The intention of *Hypertext I* is to use *FrontPage* software to re-consider and subvert the hierarchical form of a structured linear text. Select a brief hierarchically structured linear text (fiction or non-fiction) perhaps a news story, a picture book, a letter, a comic strip, a section from a history book... Attempt to displace the structure of its hierarchy and/or its dependence on a linear, unfolding narrative -- re-construct this text.

In class, be prepared to discuss your experiences re-constructing your text and to present the hypertext you constructed.

2. **Hypertext II** -- due in class February 25 -------------------(16 pts.)
The intention of *Hypertext II* is to use *FrontPage* software to author a brief hypertext (fiction/non-fiction) for the 692W99 home page. Not necessarily dependent on hierarchy, strict narrative or linear causality, this hypertext is to be topographic in structure. Such a structure might refer to a visual, associative, or metaphoric text while it might also describe a history that refuses any singular or definitive account of events or a telling that challenges its readers by making explicit its own artifice.

For this assignment, you can work independently or collaborate in small groups.

Participation counts for 50% of collaborative hypertext grade. Each person will evaluate the participation of fellow group members on a 4 point scale where 4 is the highest and 0 is the lowest.

In class, be prepared to discuss the hypertext you authored and the structure of its topography.

3. **Hypertext III**-- due in class March 18 ----------------------(20 pts.)
The intention of *Hypertext III* is to use *FrontPage* software to critique the form and content of an educational text (fiction/non-fiction) for the 692W99 home page. (1500 words).

I hate this... it is all wrong... there needs to be something about realism here and the contraction of truth... knowledge/power... regimes of truth...

1. Critique the content of the text:
   - What knowledge is included?
   - Whose knowledge is it?
   - What knowledge is excluded?
   - Whose knowledge is excluded?

   Who is the implied reader(s)?
   How is the reader(s) addressed?
   What readers are marginalized, excluded, not addressed?

   Who is speaking; who is the author(s)?
   What is the perspective of the author(s)?
   Who is not speaking; what authors are marginalized, excluded, not addressed?

2. Critique the topography (form/structure) of the text:
   - Hierarchical structure;
   - Narrative structure;
   - Rhetorical devices;
   - Image/text relations;
3. Consider the audience of this text? How do the form and content of the text regulate the reading experience for this audience?

4. Drawing on course readings, discussions, viewings, and so forth, discuss how you would appropriate hypertext technology to reconstruct the form, content and reading experience of this text. Provide examples.

In class, be prepared to discuss your critique and your appropriation of hypertext technology to reconstruct the text.

Assessment
Assignments are designed to merge course themes with computer technique. I am looking for evidence of serious engagement, analysis and reflection which can take many forms. I encourage you to discuss your work and your grades with me while the course is in progress. Effort and progress throughout the quarter are important subjective determinants of your final grade.

Class Participation
Class participation includes oral scholarship, peer tutoring, community building and peer review. Reflection on and development of ideas, purposes, expression, and technique are best realized in a supportive environment. Throughout the quarter, presentation and discussion of work in progress will be a regular part of the class.

Grading Points

| 4.0 | A  | 2.7 | B- |
| 3.7 | A- | 2.3 | C+ |
| 3.3 | B+ | 2.0 | C  |
| 3.0 | B  | 1.7 | C- |

Assignments

<table>
<thead>
<tr>
<th>Hypertext I</th>
<th>Points</th>
<th>Percentages</th>
<th>Due Dates</th>
</tr>
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<tbody>
<tr>
<td>Hypertext II</td>
<td>4.0(3)</td>
<td>20</td>
<td>January 28</td>
</tr>
<tr>
<td>Hypertext III</td>
<td>4.0(4)</td>
<td>27</td>
<td>February 25</td>
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<tr>
<td>Class Participation</td>
<td>4.0(5)</td>
<td>33</td>
<td>March 18</td>
</tr>
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</table>

Hypertext on the Internet

Hyperzons — bibliographic information about Hypertext
http://www.duke.edu/~mshumate/hyperfic.html

The Color Television
Hypertext fiction by:
Stuart Moulthrop and Sean Cohen
http://raven.ubalt.edu/features/media_ecology/lab/96/cotv/index.html
Professor Janet H. Murray
Interested in non-linear fiction and computing
http://web.mit.edu/jhmurray/www/

Kairos — A journal for teachers of writing in webbed environments
http://english.ttu.edu/kairos/

The 1998 Conference on College Composition and Communication
http://www.missouri.edu/~cccc/98/

Postmodern Culture — edited by Stuart Moulthrop
http://muse.jhu.edu/journals/postmodern_culture/index.html

Judy Malloy's Home Page
Hypertext fiction author
http://www.well.com/user/jmalloy/cyberagora.html

Eastgate Systems, Inc.
Publisher of hypertext titles and Storyspace software
http://www.eastgate.com/

Professor George Landow's Hypertext Home Page

Hypertext Fiction Available
its Name Was Penelope
by Judy Malloy

Patchwork Girl
by Shelley Jackson

Victory Garden
by Stuart Moulthrop

afternoon, a story
by Michael Joyce

Marble Springs
Deena Larson

Forward Anywhere
by Judy Malloy & Cathy Marshall

Electronic Mail
University Technology Services offers e-mail and network access to all OSU faculty, staff and students. To begin, you need a network username and password. This will be demonstrated in class workshops. However, if you should have problems visit 516 Baker Systems, 10 am to 4 pm, M-F; send e-mail to homenet@osu.edu; or call 292-2919 from 8 am to 8 pm M-R and 8 am to 6 pm, F.
Statement Regarding the American Disabilities Act

It is my intention as the instructor of record for this course to accommodate for full inclusion all students whose rights are protected under the American Disabilities Act. If you have questions about this, talk with me during class or arrange to meet with me during a more convenient time.
APPENDIX D

PARTICIPANTS' DEMOGRAPHIC AND BACKGROUND INFORMATION

<table>
<thead>
<tr>
<th>Name*</th>
<th>Gender</th>
<th>Age</th>
<th>Degree Sought</th>
<th>Program Area</th>
<th>Teaching Experience/Grade Levels</th>
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</thead>
<tbody>
<tr>
<td>Don</td>
<td>Male</td>
<td>56</td>
<td>Ph.D.</td>
<td>Ed P&amp;L General Studies</td>
<td>15+ years grade K-8</td>
</tr>
<tr>
<td>Sandy</td>
<td>Female</td>
<td>44</td>
<td>Non-degree (with a BA)</td>
<td>Education</td>
<td>2-3 years grade 4</td>
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<tr>
<td>Julia</td>
<td>Female</td>
<td>27</td>
<td>Ph.D.</td>
<td>Cultural Studies</td>
<td>2 years grade 1-3</td>
</tr>
<tr>
<td>Richard</td>
<td>Male</td>
<td>32</td>
<td>Ph.D.</td>
<td>Language Literacy &amp; Culture</td>
<td>8 years high school</td>
</tr>
<tr>
<td>Kristi</td>
<td>Female</td>
<td>29</td>
<td>MA</td>
<td>Cultural Studies</td>
<td>7 years grade 9-12</td>
</tr>
<tr>
<td>Renee</td>
<td>Female</td>
<td>51</td>
<td>MA</td>
<td>Instructional Design &amp; Technology</td>
<td>3 years grade 7-8</td>
</tr>
<tr>
<td>Claire</td>
<td>Female(n/a)</td>
<td>Non-degree (with a MA)</td>
<td>Education</td>
<td>25 years grade 6-8</td>
<td></td>
</tr>
<tr>
<td>Lisa</td>
<td>Female</td>
<td>30</td>
<td>Ph.D.</td>
<td>English Education</td>
<td>5 years grade 6-8</td>
</tr>
<tr>
<td>Emily</td>
<td>Female</td>
<td>38</td>
<td>MA</td>
<td>Instructional Design &amp; Technology</td>
<td>(n/a) years Continuing Education</td>
</tr>
<tr>
<td>Elena</td>
<td>Female</td>
<td>32</td>
<td>MA</td>
<td>Early Childhood Special Education</td>
<td>7 years grade K-5</td>
</tr>
<tr>
<td>June</td>
<td>Female</td>
<td>30</td>
<td>Ph.D.</td>
<td>Art Education</td>
<td>1 year college level</td>
</tr>
</tbody>
</table>

*Note: The names of the participants are pseudonyms so the identity of the participant will be protected.]
## APPENDIX E

### PARTICIPANTS' SELF-DESCRIBED COMPUTER SKILL LEVELS AND WEB BROWSING EXPERIENCE

<table>
<thead>
<tr>
<th>Name</th>
<th>Computer Operating System</th>
<th>Computer Skill Level</th>
<th>Web Browsing Experience</th>
<th>Web Design Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Don</td>
<td>Windows</td>
<td>intermediate</td>
<td>intermediate</td>
<td>yes</td>
</tr>
<tr>
<td>Sandy</td>
<td>Mac OS</td>
<td>beginner</td>
<td>intermediate</td>
<td>no</td>
</tr>
<tr>
<td>Julia</td>
<td>Windows/Mac OS</td>
<td>advanced-intermediate</td>
<td>intermediate</td>
<td>yes</td>
</tr>
<tr>
<td>Richard</td>
<td>Windows</td>
<td>intermediate</td>
<td>intermediate</td>
<td>no</td>
</tr>
<tr>
<td>Kristi</td>
<td>Mac OS</td>
<td>intermediate</td>
<td>intermediate</td>
<td>no</td>
</tr>
<tr>
<td>Renee</td>
<td>Mac OS</td>
<td>advanced</td>
<td>beginner</td>
<td>no</td>
</tr>
<tr>
<td>Claire</td>
<td>Mac OS</td>
<td>intermediate</td>
<td>intermediate</td>
<td>yes</td>
</tr>
<tr>
<td>Lisa</td>
<td>Windows</td>
<td>intermediate</td>
<td>intermediate</td>
<td>no</td>
</tr>
<tr>
<td>Emily</td>
<td>Windows/Mac OS</td>
<td>advanced</td>
<td>advanced</td>
<td>yes</td>
</tr>
<tr>
<td>Elena</td>
<td>Mac OS</td>
<td>intermediate</td>
<td>intermediate</td>
<td>no</td>
</tr>
<tr>
<td>June</td>
<td>Mac OS</td>
<td>intermediate</td>
<td>beginner</td>
<td>yes</td>
</tr>
</tbody>
</table>
# APPENDIX F

## PARTICIPANTS' EXPECTATIONS FOR THE COURSE

<table>
<thead>
<tr>
<th>Name</th>
<th>Expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Don</td>
<td>To become more proficient and knowledgeable with this tool.</td>
</tr>
<tr>
<td>Sandy</td>
<td>To learn to use the Web, create Web pages and utilize educational programs available on the Web.</td>
</tr>
<tr>
<td>Julia</td>
<td>To become more familiar with hypertext as a Web design tool.</td>
</tr>
<tr>
<td>Richard</td>
<td>To learn to develop Web pages for instructional use.</td>
</tr>
<tr>
<td>Kristi</td>
<td>To feel comfortable using / designing with certain programs / technologies.</td>
</tr>
<tr>
<td>Renee</td>
<td>I would like to learn how to improve the way I use the Web for my classes and learn how to construct Web pages so I can help my students.</td>
</tr>
<tr>
<td>Claire</td>
<td>To learn how to use software to make a web site that I maybe able to use with my classes.</td>
</tr>
<tr>
<td>Lisa</td>
<td>To learn more about how I might use hypertext in a literature / composition classroom.</td>
</tr>
<tr>
<td>Emily</td>
<td>Learn about hypertext. Learn about FrontPage.</td>
</tr>
<tr>
<td>Elena</td>
<td>To learn about hypermedia and how to design a WWW page.</td>
</tr>
<tr>
<td>June</td>
<td>Design my own page, also for teaching preparation.</td>
</tr>
</tbody>
</table>