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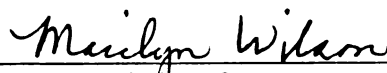
AN INVESTIGATION INTO THE HYPERTEXT COMPOSING PROCESSES OF
MIDDLE SCHOOL STUDENTS

presented by

Nancy Gail Patterson

has been accepted towards fulfillment
of the requirements for

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Marilyn Wilson
Major professor

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AN INVESTIGATION INTO THE HYPERTEXT COMPOSING PROCESSES OF
MIDDLE SCHOOL STUDENTS

By

Nancy Gail Patterson

AN ABSTRACT OF A DISSERTATION

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ABSTRACT

AN INVESTIGATION INTO THE HYPERTEXT COMPOSING PROCESSES OF MIDDLE SCHOOL SCHOOLS

by

Nancy Gail Patterson

This dissertation is a case study of three middle school students who composed hypertext webs as part of their regular language arts classroom curriculum. The study looks at not only the processes the three students used as they composed the "study project," but also at their development as hypertext authors from a beginning project in the fall of the school year, through a second project in the middle of the year, to the third project, the "study project," in the spring. The purpose of the study was to determine whether hypertext impacted student composing processes, and specifically looked at textuality, agency, and involvement.

The case studies show that each student gained more and more control over his or her composing processes as he or she gained in hypertext composing experience. The study also shows that each student strove to maintain control of the multi-linear threads in hypertext in individual ways.

This study concludes that each student used a somewhat different recursive process to create his or her hypertext documents. It also concludes that as they composed, the student-authors became aware that they needed to control their processes, and each did so in unique ways. The study shows that the student-authors were highly involved in their hypertext composing processes, often spending hours outside the school day working on their webs, that they sensed a great deal of agency as they worked, and that they used sophisticated senses of textuality in their composing.

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CHAPTER ONE

AN INTRODUCTION TO THE STUDY

The purpose of this dissertation is to question whether students, when composing hypertext, the discursive form that allows readers and writers to link to other pieces of text, develop an increasing awareness of textuality, become highly engaged in their composing tasks, exercise their sense of agency as writers. In this opening chapter I will define hypertext and provide an explanation of hypertext and the theory that surrounds it. I will also provide a brief history of hypertext and discuss some of the research that has so far been conducted on hypertext composing.

Understand that little research has been done in this area. Some teachers like Dene Grigar, in her article "What Is Seen Depends on How Everybody Is Doing Everything: Using Hypertext to Teach Gertrude Stein's Tender Buttons" (27-43) and Gretchen Lee's 1999 presentation at NCTE's fall convention, have reflected on the ways in which hypertext composing has impacted classroom practice, and Bradford Barry in his 1998 dissertation "Writer Motivation, Rhetorical Purpose and

Classroom Web Publication Projects," has researched student motivation when composing hypertext, but to date no studies have examined the process students use as they work within a hypertext environment. Although research on hypertext composing is limited, there has been research conducted regarding the impact of computers on student writing as well as theories regarding how hypertext may alter their perceptions of text.

Definition of Hypertext

Hypertext can be defined in a number of ways. Perhaps the best explanation is that of Joseph A. Feustle, Jr. who compares hypertext to a piece of woven cloth (299). The threads of the cloth allow us to reach out "by means of a computer program and connect original works, critical studies, bibliographies, and historical backgrounds" (299). The threads, the pieces of information my students wove together, evolved into a "whole cloth" that reflected their knowledge of the Holocaust and some of the literature that was written during and about it.

Hypertext has also been simply defined as the electronic linking of text (3). Jay Bolter likens hypertext to a printed book that the author has attacked

with scissors. He points out that it is an interactive format that can challenge our concept of how text should be organized (24). Hypertext links, of course, are those words, phrases, or images, often underlined or boxed, that, when clicked, allow us to jump to another document or page. Many hypertext theorists refer to those pages as "lexias," (Hypertext, 4) a term that George Landow borrowed from Roland Barthes, a French literary theorist who died in 1980. Rather than use the word "page" which suggests a place in a linear series, Landow uses the term "lexia" so that we can shake loose our notions of textual organization, our "book bound" idea that one page has to follow another, that one idea has to build upon another. The term "hypertext" was coined in the 1960's by computer visionary Theodore Nelson who described it as "non- sequential writing" (3).

Flickers of Light

William Costanzo regards the computer screen as one of the changing sites of literacy today. Costanza explains, "Anyone who has written with a computer knows that language on the screen seems different from language on the page. It seems more flexible, more fluid, more akin to the flickering of light than to the

fixity of print" (11). Costanza refers to the fact that electronic text can be changed so easily, and that the text is really nothing more than electronic flickers of light and dark. And this flicker, this fluid text that can be effortlessly changed may alter forever our concepts of text, textuality, and our explanations of how we construct meaning from and with it. Text is no longer something that belongs just on a page. It occupies new spaces. And because it occupies new spaces, and those new spaces allow text to remain in flux, to remain fluid and plastic, Ilana Snyder (1998) believes that it alters how we communicate. She is not alone.

Cynthia Selfe and Susan Hilligoss believe that technology "both physically and intellectually disrupts the ways in which we make meaning—the ways in which we communicate" (1). And though we are living through a communication revolution and tend to think that our experiences in the midst of these new communication spaces are unique, we must remember that humans have initiated such shifts before. Writing is technology. And when a new technology develops, according to Snyder the new technology does not signal the immediate death of the older technology (2). We still use hand written

notes, for example. But we no longer use it in book production. In that sense, Snyder points out, new technologies disrupt older ones, relegating the old to specific uses, and challenging readers and writers to redefine what it means to read and write text. (xxi) Aronowitz adds that writing and technology are "ineluctably intertwined," (133) and as such, affect and redefine literacy.

Educators have long seen the educational possibilities inherent in computer technology and often resort to almost utopian rhetoric when discussing the power of computer technology in the educational setting. The National Education Technology Standards published by the International Society for Technology Education, state that "Technology is a powerful tool with enormous potential for paving high-speed highways from outdated educational systems to systems capable of providing learning opportunities for all, to better serve the needs of 21st century work, communications, learning, and life" (XI). For this reason schools have embraced computer technology since personal computers became affordable and hence available in the mid 1980s. With the growth of the internet, schools have increasingly

made use of web based technology, especially in the area of information retrieval.

More Than Information Retrieval

But some teachers in some schools are also using web based technology, or hypertext, as a means of assisting students in the act of composing and for publishing. And though it does not represent the primary composing experience of most students yet, it is a growing phenomenon.

Before we go any further in this discussion, however, it is important to understand that the hypertext composing in this dissertation is situated within a school environment where, critics have observed, student writing is generally not privileged. In other words, the writing that students produce in a school setting is not particularly valued by teachers or by those outside the school community. Student writing is either used as an example of how schools are failing, or it is used as an example of how much individual students do not know about written language. It is an artifact to be graded, commented on.

Michael Joyce believes that hypertext technology specifically offers the possibility of adapting cognitive skills "that experts routinely, subtly, and

self-consciously apply in accomplishing intellectual tasks" (40). He adds that hypertext tools "promise to unlock these skills for novice learners and to empower and enfranchise their learning" (40).

Part of that power and enfranchisement comes from attending to the issues of readers. In other words, hypertext writers must write their documents in such a way as to assist readers so that they may read efficiently. To do this, the writer must think of the reader's pleasure and comfort within the web, and must give the reader some indication as to what lies beyond a link. Snyder points out that "Effective hypertext writing depends therefore on the tension between regimentation and richness, between predictability and excitement" (35).

Readability is something all writers must consider, of course. And it is one of the functions of writing instruction in schools to help students write text that others can read, to consider the needs not only of themselves as readers, but others. And so the question is, how do student writers go about the process of negotiating Snyder's "regimentation and richness, " that "predictability and excitement?" And does that tension

between those elements empower and enfranchise their learning?

This deliberation involved in hypertext, of course, involves dialogue. Hypertext is always a dialogue between the reader and the writer, and Bolter points out that both share the responsibility for the outcome of any given web environment (117). The hypertext environment brings the reader and writer into conscious dialogue. The writer invites the reader to choose paths. The reader considers the author's invitations and follows various paths through the links-as-invitation on that quest. According to Bakhtin, dialogism is the relationship between the self and an other, with the self-maintaining a relative center to the other. But in order for there to be a self, there must be an other. A user of text, then, is always in dialogue with an other, perhaps many others when the text is uttered or put into thought. Douglas Eyman, in a 1999 Kairos article, applies Bakhtin's concept of the utterance, thought which is given voice, to hypertext and calls the lexia an example of a Bakhtinian utterance. Eyman writes that Bakhtin's "description of the environment in which a given utterance is produced can be appropriated and used as a description of the

function of lexia in a hypertext"

(<http://english.ttu.edu/kairos/1.2/features/eyman/bakhtin.html>). Bakhtin explains that "the authentic environment of an utterance, the environment in which it lives and takes shape, is dialogized heteroglossia, anonymous and social as language, but simultaneously concrete, filled with specific content and accented as an individual utterance" (272). Eyman reminds us that in order for us to engage in dialogue, we must be able to apprehend, internalize, and recreate the utterances of others. Kristeva believes this is the same experience readers have. Kristeva's notion of intertextuality is perhaps the closest description we have of what happens when a reader and writer engage in a hypertext. Eyman describes Kristeva's "coordinates of dialogue" as "the writing subject, the addressee (or ideal reader), and exterior texts"

(<http://english.ttu.edu/kairos/1.2/features/eyman/julia.html>). These are important considerations when we think of the associational thinking that takes place when a reader dances through a hypertext web, and when a writer choreographs the dance a reader might perform when he or she sees the music of links. And part of that deliberation is dialogue.

In order to determine whether hypertext is able to do this, it is important to investigate the processes students appear to use in the act of composing hypertext or web-based documents. But before doing so, it is important to point out that I am not claiming that the heightened senses of agency, textuality, and engagement are elements that can only be found in hypertext composing. But I am arguing that hypertext does indeed seem to create a textual environment that allows or supports student engagement in the task of composing, that the nature of it seems to heighten students' sense of textuality, and that it places students in a textual environment where they become agents who can make decisions about their emerging texts and see the results of those decisions. Unfortunately, this does not seem to happen consistently with other composing tasks in a school environment.

Explanation of the Project

This study will investigate that site of hypertext as it is negotiated by middle school students as they write informational hypertext documents. It will pose the question as to whether hypertext impacts the composing processes of middle school writers.

Specifically, the study will address the following issues:

- How do students approach the process of composing hypertext webs?
- What role does agency play in the process?
- How do students develop and use their sense of textuality as they compose their webs?
- What role does engagement play in students' hypertext composing processes?
- In what way, if any, does a sense of audience affect decisions the student authors make?
- How do the student authors decide what their links will be?
- How do students keep track of multiple textual threads within a single hypertext web?
- How do students maintain control of their composing processes within a multi-linear domain?

Before we can look at student hypertext composing processes, however, we must examine three issues—the composing process in general, the rhetorical situation of school composing, and the impact of computers in the composing processes.

The Writing Process

Writing is a mode of expression that is unique to each individual. No two people compose a piece of writing in quite the same way. And not only is the process unique to each individual, it is unique to each composing task. However, there are some key elements or steps that individuals generally take. Generally, a writer goes through some sort of invention process where he or she decides what to write and begins organizing materials, thoughts, and strategies in order to prepare for the next step, which is drafting. During the drafting process the author writes the piece. But also during the drafting process, an author will often critically read his or her piece, may return to the invention process in order to better organize his or her thoughts and information, and may, indeed venture into the next phase of the process, which is revising. Revising involves revision of the piece. Again, during the revising process, an author may return to the invention process and may return to the drafting process. At some point in the process a writer will also edit. This means the author may go back and correct any surface errors, or he or she may substitute one word for another. During the editing stage, however, a writer

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may continue to revise, draft, or even invent. Generally, the final stage of the process involves publication, which means that the piece of writing gains a larger audience. However, that does not mean the author stops revising, drafting, inventing, or even editing. The stages of the process are fluid and recursive rather than linear and lockstep (<http://www.csuohio.edu/writingcenter/writproc.html>).

The Classroom as Rhetorical Situation

It is important to understand that this study takes place in a public school classroom, a middle school classroom. William Bigelow, when talking about his own Portland, Oregon school, points to the "hidden curriculum" of compliance, sexual stereotyping, and a reinforcement of class differences in his school, and by extension, most schools (75). Bigelow adds that students are generally powerless to effect any lasting change (78). David Bloome and Sonia Nieto point out that such literacy staples as basal readers, which two of the subjects in this study experienced in Riverton, and one subject experienced in a neighboring school district he attended before moving back to Riverton, teach students a hidden curriculum that is "less about learning to read and write and more about adapting to a

bureaucratic society" (86). And later they add that using basal readers helps young readers learn their standing in a social order and tends to marginalize some students, disconnecting them from "conditions for learning and intellectual and personal growth and development" (92). Eric Crump, in a 1999 post to an NCTE e-mail discussion list, points out that schools are really institutions of control rather than places of learning. It isn't that learning doesn't happen in a school environment, but it is designed to happen in controlled spaces by controlled people, teachers, who are charged with maintaining control of their students. Only certain kinds of knowledge can be privileged in that controlled environment, and only certain kinds of behavior can be accepted.

And though this dissertation is not about basal readers or the ways in which the culture of schools maintain a structure of control that is not conducive for all student-learning, we need to understand that when we talk about agency and engagement, we must attend first to the ways in which schools systematically keep students from feeling a high degree of agency and engagement in many of the classroom tasks they take part in.

Everything from bells to bathroom passes send messages to students that they are not in control of their learning spaces or their time. Homework assignments, project deadlines, reading lists, multiple choice tests. These all send messages to students about what should be learned and how. They signal how someone else will determine whether the material was learned and how well. And school is a place where a "good attitude" means a student has learned to comply with rules governing behavior and learning.

At Riverton Middle School students experience a number of different classroom styles that charge them with copying overhead lecture notes all hour to engaging in hands on experiences with historical artifacts. They experience a situation where they are allowed to use a bathroom pass twice within a marking period to being allowed to leave whenever they need to as long as no one else is out of the room. In some language arts classrooms they are told what to read, what projects they will do and how those projects will be designed. In other language arts classrooms students have more choice and voice regarding what they read, how they will be assessed, and what shape such things as projects will take.

In my classroom where this study was carried out, students were given choices within a pre-defined area as to what they would study. For example, they were asked to annotate a poem, but allowed to choose that poem from a collection. They were asked to create a hypertext web on a famous American, but allowed to choose which person they would study. Within those projects they were allowed to let their interests take them wherever they lead, so that if a student wanted to focus just on Harriet Tubman's life as a slave, he or she could. If a student wanted to focus just on her experiences leading slaves to Canada, he or she could. And, students had the option to switch topics if they found the one they had chosen was not working out for them.

Computers in the Classroom

Most of the research on computers in the K-12 classroom deals with word processing. Most of that research indicates that word processing enables students to write longer pieces and to revise more easily. Because hypertext composing and word processing share some similarities, and because little research has been done on hypertext composing, I will review here the literature on word processing in the classroom in the

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hope that it will provide a foundation for thinking about hypertext, a later text creation technology.

Word processing is perhaps the most apparent use of computer technology in language arts classrooms, and there is a growing body of research that indicates that word processing enables the writing process. Costanzo asserts that word processing software supports the recursive nature of the writing processes, that word processing software programs encourage writers to fluidly shift between generating ideas, editing, conceptualizing and reconceptualizing text. Costanzo goes on to say that computers give inexperienced writers "access to alternatives that might otherwise remain invisible" (17). In other words, inexperienced writers have a tool that lets them create "professional" looking text, which they can change efficiently. In short, computers allow inexperienced writers to behave like their more experienced counterparts. Certainly this is true for students who create hypertext documents as well. Not only are they able to efficiently and fluidly move back and forth through the recursive stages of the writing process, they are able to employ color and graphics, and while it is true that they can do this with word processed documents, hypertext includes links to

other documents in the web. This graphic and textual element makes hypertext different.

Ilana Snyder, in a 1994 study that examined the effect of word processing on students, concluded that word processing helped foster more student engagement in the composing process, and that, when compared to a group who used pen and paper for composing, word processing seemed to help students generate better, more complex text (157). Other studies, too, show that computers seem to impact student motivation and engagement (Baker 1987, Hawisher 1986, Lichtenstein 1992). In my general observations over a period of three years, I found that students experienced consistently higher degrees of engagement in hypertext composing than when they composed word processed documents.

Ronald Owston, in a 1992 study that compared the writing samples of 111 eighth graders who composed two pieces of writing, one "by hand" and the other using a word processing program, observed that when students used computers to write, they moved blocks of text, and continuously revised in other ways as they composed. He concluded that students created better pieces of writing when they could compose using a word processing program than when they composed "by hand" (270). This ability to

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move blocks of text is possible during hypertext composing as well. And we cannot forget that hypertext carried with it the ability to not only move text, but to hide it. This, perhaps, is the ultimate experience in "moving" text—the ability to hide it behind a link.

In 1984, Gail Womble observed that sixth grade students spent more time with their writing when they were allowed to use computers and seemed more willing to make more changes in their emerging texts. She also observed that they seemed to develop a better sense of audience when using a computer for composing as opposed to using traditional pen and paper (35). Owston, too, in his work with eighth graders who were very familiar with computers and word processing found that their pieces of writing, when scored holistically, were consistently judged higher than the works of students who wrote by hand (252). We will see in this dissertation how growing familiarity with a web editing program and the nature of hypertext itself, allowed students to create we more visually and textually complex webs.

In a 1992 study conducted in a whole-language classroom, James Strickland found that, because of the already language-rich environment, the use of computers

in writing fostered a more collaborative learning community, which, in turn, supported students in their writing (17). This collaboration was due partly to the collaboration that arises among students who are engaged in literate conversations about texts, and partly to the fact that computers screens allow for better viewing of text by more than one person. It is also due to the fact that computer text can be easily changed. When collaborating students discuss their emerging text and make decisions about that text, they can easily take action regarding those decisions.

Numerous studies also indicate that students generate more writing and better quality writing, measured in a number of different ways, when they are allowed to use word processing programs (Kurth 15, Diaute 143, Baker 117). That students generate more text indicates heightened senses of engagement and motivation. Students are more fully engaged in the act of composing and motivated to generate longer pieces. I found this to be true for hypertext composing as well. But not only did students seem to write more, they wrote using a surprisingly sophisticated sense of how to use other textual features such as images, text placement, and color.

It is important to point out that not all studies drew researchers to the conclusion that computers have such a positive effect on student writing. In a 1992 study involving thirty-two fifth graders in New Jersey, Nora Lichtenstein concluded that student use of computers for writing had no significant effect on the quality of the writing (93). Students who composed using a computer were allowed to do so once a week in a computer lab. Students were pre-tested and post-tested and their writing was evaluated holistically.

In a 1996 study involving thirty-eight sixth graders, nineteen of whom used paper and pencil, and nineteen of whom used computers for composing, researcher Lois Mayer Nichols found that the pieces composed by students using a computer did not significantly differ from those written by students using pencil and paper. However, Nichols noted that students who used a computer for composing wrote longer pieces than those who used paper and pencil. Other studies looked at the number of drafts students created using pencil and paper as opposed to a computer and concluded that there was very little difference between the number of drafts students created using a word processing program than the number created with paper and pencil. Zeni (Literacy 80) points out

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that many of the studies that look at the differences between paper and pencil composing and word processing look at the number of drafts generated. But Zeni explains that the whole concept of drafts really belongs to the paper and pencil mode of composition. It is no longer appropriate when computers are used for composing to think of first drafts and second drafts. A single draft evolves organically during the time writers begin and decide a piece is finished. Jane Zeni (Writinglands 93-94) warns that computers and the flexible programs that come with them cannot transform rigid teaching practices into process friendly results.

The differences between book culture text and electronic text may go beyond simple differences in how it is created. Or rather, those simple differences may have more profound effects on learning and composing than we initially think. Klemm and Moran stress that word processing alters the nature of text and, thus, alters the way in which we read digitized text (135). Bolter believes that electronic text is "non-print, undark, dry, unimprinted, prone to sailing off" (86) and for that reason is volatile. The reader, according to Bolter, loses track of where he or she leaves off and where the writer begins (86). Certainly this is true

for hypertext where the reader charts a path through the text, a path that no one, including the writer, anticipated. But perhaps the biggest difference isn't so much with the text itself, but with the expectations the reader brings to the text. Hypertext readers know they will have to make choices. They may go into the text with the expectation that they will be initially confused, that they will have to suspend a certain "satisfaction of knowing" until they navigate further across the docuverse. And oddly, though readers may have to suspend satisfaction, they may also feel a sense of agency, of being in control of the text. It could be that hypertext overtly invites readers to insert themselves by way of the cursor or the hand that indicates a hypertext link. Book technology seems to fix a certain notion of author as authority. Hypertext challenges us to rethink that role. But I must point out that other texts do this also. I only suggest that hypertext more overtly challenges us through the cursor, the hand icon, and the links.

There are of course, similarities between word-processing and hypertext composing. Both spaces allow for text insertion and other manipulations. Both are electronic. And both allow for the use of color and

images. But Bolter points out the differences between these environments. One, of course, is the hypertext link. Most word processing programs allow for the insertion of a hypertext link, but this speaks more to the growing use of hypertext and the world wide web as a publishing space than it does the similarities between these two electronic environments. Both allow for the insertion of images, but there is an important difference between the use of images in a word processed document and the use of images in hypertext. Bolter points out that images in word-processed text are not really part of the text. Images are "merely allowed to coexist with the verbal text" (26). Hypertext allows images, even video, "to sit among the other textual elements for the reader to examine" (26). The image becomes part of the structure of the whole text, the larger text of any given lexia. In many hypertexts these images are links to other other pieces of text, and so they are in a sense portals that lead to other spaces within a textual environment.

Evolution of Hypertext

This dissertation will assume that hypertext represents a new discursive form born partly out of the need to make associations between and among the growing

amounts of information present in the textual world. To consider the ways in which hypertext alters the nature of text, we need to look at how hypertext developed and the cultural changes that facilitated the acceptance of hypertext as a textual environment.

Many attribute the concept of machine-linked text to Vannevar Bush who, as Director of the Office of Scientific Research and Development in 1945 envisioned a Memex, a microfilm reader that would access information quickly and allow the reader to search for related information by typing a key word into the system. Bush envisioned a mechanical device built into a glass-topped desk equipped with a microfilm reader. Bush's Memex, had it been built, would have served as an interactive library or encyclopedia, much as the world wide web serves as an interactive encyclopedia today. The hypertext we see on the world wide web has its technical origins in the beginning of the computer age when people like Douglas Englebart began dreaming of the possibilities. Englebart, the inventor of the mouse, initiated the Augment Project at Stanford Research Institute. His goal was to link and cross-reference research materials, much as Bush envisioned. One aspect

of Augment, on-Line System (NLS) included a number of hypertext characteristics.

The term hypertext was coined by Theodore Nelson in 1965 to describe non-sequential electronically linked text. According to Nelson, hypertext was a means of linking documents to create a web of inter-related concepts that would allow readers to follow associative paths in much the same way that Vannevar Bush envisioned. Nelson, over the years, developed a system he called Xanadu named after the Coleridge poem. Nelson envisioned a system of documents "measureless to man" where a reader could follow his or her own interest over a network. In addition, anyone who wanted to add a document to the network could do so. Although Nelson released Xanadu to mixed reviews in August, 1999, most people recognize a version of Xanadu in the world wide web. And, actually, some of the early world wide web developers were influenced by Nelson's ideas.

Over the years Nelson developed his definition and concept of hypertext. As of 1990's he was defining it as non-sequential electronic text that contained links that are controlled by the reader (Snyder, Hypertext 24). The important elements in this definition are "electronic", "reader controlled," and "non-sequential."

These are very important elements. But at first look they are not necessarily peculiar to hypertext.

The dynamic of reader control adds the other important, indeed dramatic element to hypertext. Derrida, Bakhtin, and Barthes all allude to the shifting boundaries of text, the capacity of text to do more than sit on a page and denote only a single meaning. All three challenge the assumed linearity of writing, or text. Bakhtin, cited in Landow (Convergence 28) writes "Each passage is a node, a point of intersection or focus, on which converge lines leading from many other passages in the novel and ultimately including them all" (in Landow, Convergence, 28). Hypertext brings that challenge forward. Bolter reminds us that there is a gulf between the reader and the writer, a gap that is mediated by the technology that helped create the text. But he adds that with hypertext, the reader is "made aware of the author's simultaneous presence in and absence from the text, because the reader is constantly confronting structural choices established by the author" (30). These choices are in the form links, visual reminders that the reader can choose where to travel next.

Of course readers of book culture text have always had the option of browsing through a text, but some texts seem to forbid that more than others, and some contexts, such as classrooms, seem to discourage that. Hypertext, however, seems to invite readers to choose consciously, deliberately, which path they may follow. Again, this has always been possible, but hypertext provides an electronic means of doing this, and even textual permission to break the sequential rules of textual organization. Hypertext instantiates that breaking. It provides a deliberate multi-linear space that constantly re-centers itself as each new text block is called into being by a reader. And this overt, kinesthetic (meaning the physical moving and clicking of a mouse) means of choosing a textual path carries some interesting implications.

Michael Joyce defines hypertext as a visual form that "embodies information and communications, artistic and affective constructs, and conceptual abstractions alike into symbolic structures made visible on a computer-controlled display" (19). What is important here is that Joyce, like Bolter, identifies hypertext as a visual form. And though all written text is visual, hypertext seems to lend itself to topological rhetoric.

This rhetoric shines through in such concepts as readers "navigating" through a web, and in the fact that hypertext writers often create a "map view" of their webs. Internet readers "surf." In addition to these common terms, Joyce refers to a city of text. Nelson calls it a docuverse. Both terms refer to the collection of linked text that makes up a hypertext web, and both use the topology metaphor. These are all somewhat "navigational" terms that suggest that hypertext is a world over which a reader travels. This graphic concept of the texts within a web, whether deliberately linked by a single writer or "casually" linked by many writers who may be known to each other or unknown, is an important concept when thinking about how students negotiate writing within a webbed environment.

Hypertext Research Literature

Only a few studies have focused on hypertext composing. All of them indicate that hypertext composing fostered a great deal of intrinsic motivation on the part of students. In one study involving twenty-ninth graders enrolled in an American History class, students in the class were asked to create a hypermedia presentation that would be used to teach their peers about various topics dealing with American history.

Students had a great deal of freedom in designing their hypermedia documents. Researchers concluded that students researched and wrote in more depth when they could use hypermedia composing software as opposed to more traditional composing tools (Connell 252).

Dene Grigar notes that her Texas Woman's University students wrote more text during their hypertext project on Gertrude Stein's "Tender Buttons", where they contributed to a web that Grigar had already begun. Their work, according to Grigar, deepened their knowledge and understanding of a difficult piece of literature (39).

Gretchen Lee found the same to be true for her sixth graders when they created a hypertext web about a book they read as a class. Their knowledge and understanding of a class novel increased as they worked on their web site. Lee attributes this to increased motivation perhaps prompted by the novelty of working on documents that would be published on the world wide web (NCTE convention).

Bradford Barry concluded in his dissertation Writer Motivation, Rhetorical Purpose and Classroom Web Publication Projects that hypermedia composing nurtured a high degree of rhetorically-based, intrinsic

motivation among college freshman writers. He called this "rhetorically-based motivation" and defines it as "self-sponsored rhetorically based writing" (2).

None of these studies, however, investigated the composing processes students used. Ellen Barton and Ruth Ray point out that most of the research conducted in computers and writing has attempted to explain how or defend the ways in which technology can improve writing instruction (279). However, this dissertation is an investigation of the composing processes, an attempt to trace the ways in which three students interacted with their own emerging hypertexts. The purpose is also to argue that a hypertext composing environment enabled students to fully engage in and reflect upon their emerging texts. Other forms of writing may do that, as well; however, in the three years that I have included hypertext composing in my classroom, I did not see other forms, both electronic and non-electronic, engage students so consistently as did hypertext.

Smith and Curtin argue that because students are immersed in a time of ever-increasing technological development, it is possible that their methods of thinking and processing information differ from those of past generations. In their view, the pluralism of

identities and perspectives emerging today and the increasing domination of computer technology directly affect the structures of educational systems. They warn that the very institution of education as we know it is challenged by these cultural shifts and that the total reassessment of curriculum and schooling is necessary (xxix). This dissertation may shed some light on the ways in which that reassessment can be directed.

Theoretical Perspectives

The purpose of this section is to explore some of the theoretical foundations of hypertext and the effects it may have on our notions of text and textuality.

Hypertext as challenge

One of those notions regards the theory that hypertext challenges us to abandon conceptual systems based on the idea of center, margin, and linearity, much the way Derrida challenges us in his playful approach to text in *The Post Card*. Derrida, writing about a post card that seems to reverse the positions of Socrates and Plato, writes:

What I prefer, about post cards, is that one does not know what is in front or what is in back, or there, near or far, the Plato or the Socrates, recto or verso. Nor what is the most

important, the picture or the text, and in the text, the message or the caption, or the address. Here, in my post card apocalypse, there are proper names, S. and p., above the picture, and reversibility unleashes itself, goes mad (13).

Derrida considers text and language as the free play of signifiers and his playful speculations about a post card depicting Socrates and Plato could very easily address the non-sequentiality of hypertext and the "hidden" texts that lurk within a larger "docuverse" or collection of webbed texts. It could also address the constant shifting of visibility and invisibility of text. The whole notion is that behind a single link lurks the possibility of a docuverse that holds behind it more hidden docuverses. Or it could hold nothing, a continuance of invisibility, all there, or not there at the click of a mouse button. In hypertext, the concept of near and far fade. A block of text is as near and as visible as a click of the mouse, or as far and as hidden as the textual thread it lurks in. And that block of text may be first for one reader, and last for another. Or it may be first for a reader during one reading, and last for the same reader during another reading.

Reversibility goes mad. Reversibility is the fact that one reader can reverse the order of the text, and another can invent a whole new text. Reversibility also pushes the question as to who the author is, and who the reader is. Barthes of course pushes this issue for print text, but hypertext, because the reader can literally rewrite the text by shifting the order in which lexias are accessed and read, pushes that issue one step further.

Landow believes that electronic texts like hypertext shift textual boundaries (again we see the topological metaphor) between the reader and author and between the student and teacher, so much so that our whole concept of text, authorship, literature, and reader will be redefined (23). In her book The Electronic Labyrinth, Ilana Snyder, like Landow, believes that hypertext is changing our notions of authorship. She and Landow note that the absence of textual autonomy and centeredness disperses the author. They, like Tuman, point out that computers shape the way we think, encouraging some kinds of thinking and discouraging others. Snyder uses the example of a blackboard where text is created with the assumption that it will be erased. Paper and pen writing

encourages writers to attend to grammar and spelling and to use a more controlled type of thinking. Computers, according to Snyder, invite writers to think non-linearly and cooperatively (17). But again, this is not a new concept.

Snyder points out that "we organize our writing space in the same way we organize our thoughts, and in the ways in which we think the world itself must be organized" (69). She, like Landow, sees nothing short of significant changes in the world because of the kinds of shifts hypertext is calling us to make, shifts as profound as those that took place when a culture adopted print and slowly abandoned manuscript as a means of framing written language.

Hypertext and the Rhizome

Much of that shift comes from the notion of centeredness. An explanation of this can be taken from Deleuze and Guattari's metaphor of the rhizome, that ever recentering web of nutritious fleshy roots that spread along the surface of the soil and sprout green stalks. Each rhizome grows offshoots of itself, expanding the network of roots irregularly. The center constantly shifts and multiplies into numerous centers as the rhizomes grow. Stuart Moulthrop writes:

Seen from the viewpoint of textual theory, hypertext systems appear as the practical implementation of a conceptual movement that...rejects authoritarian, "logocentric [i.e., truth-affirming] hierarchies of language, whose modes of operation are linear and deductive, and seeks instead systems of discourse that admit a plurality of meanings where the operative modes are hypothesis and interpretive play (1).

Like the constantly shifting center of the garden rhizome, a hypertext web shifts and grows irregularly, both for the reader who discovers new textual threads, and for the writer who creates them. These textual threads, this rhizomatic growth is akin to human expression that becomes fanned by new interests and new technologies and new voices made possible by that technology. Vannevar Bush envisioned this with his Memex. But Bush was hardly the first.

Bakhtin believes that human expression is the result of a multitude of voices linked in socially constructed webs of meaning, a rhizome of voices perhaps. Bakhtin would appreciate the overtly polyphonic, multivocal aspect of hypertext, not just in

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the "hidden" ways that Bakhtin refers to as a "borrowed light" but because of the hypertext link that connects bodies of text. And perhaps Bakhtin would be most charmed by the fact that these bodies of text are not linked along a central or primary axis. Ideally, there is no center to a hypertext web, only an opening to the web. The center shifts with each reader, and with each reader's reading. The axis shifts with each new screen that is activated by a reader whose linking constantly resituates text. And in some cases a reader may add to a web, a docuverse, either by inserting an annotation, a response, a new piece of information into an existing web, or by linking to that web. This ability to add to a hypertext not only shifts the axis but it "blurs the boundaries of the metatext, and conventional notions of completion and a finished product do not apply to hypertext" (Landow, *Convergence* 58). The text becomes an instantiation of the rhizome.

Landow writes that hypertext blurs the boundaries between reader and writer and claims that, because of the nature of hypertext, the fact that the reader has to make choices and act upon those choices by clicking on a word or image, the reader becomes "active." Perhaps it is important to point out here that all reading is

active, but Landow makes an important distinction between book culture text and hypertext. Perhaps a better word to explain the role of the reader in this recenterable system is the word "deliberate." Landow sometimes refers to a hypertext reader as intrusive. Hypertext requires the reader to make deliberate decisions about which path to take within a hypertext web, to intrude upon the author's traditional domain, using the same powerful tools as the author. This blurring of reader/author roles holds important implications for writers and will be discussed later.

Hypertext as a Multi-Linear Dance

Much of this section will deal with hypertext reading, but the site of read hypertext presents important issues when we discuss the site of written hypertext. Murray regards electronic texts like hypertext as spaces where the writer becomes a choreographer, and the reader becomes a dancer. The reader and the writer collaborate to invoke the dance of text, "the thrill of exerting power over enticing and plastic materials" (153). And it is this concept of plasticity that is important. Hypertext is plastic in that it constantly re-centers itself according to the deliberate actions of the reader. No segment of the

text takes precedence over another because the hierarchy of beginning, middle, and end do not exist. Again, hypertexts open. They do not begin. Landow reminds us that hypertext linking can center any given lexia, and that each time a reader selects a new screen or lexia, the reader has selected a new center. Landow believes this creates a:

...new kind of hierarchy, in which the power of the center dominates that of the infinite periphery. But because in hypertext that center is always a transient, de-centerable virtual center—one created, in other words, only by one's act of reading that particular text—it never tyrannizes other aspects of the network in the way a print text does (Convergence 66).

Hypertext and Agency

One of the arguments this study will make is that hypertext provides an environment in which students can sense greater agency as writers. Murray believes that readers and writers of hypertext share agency. To be more precise, she believes that readers of hypertext share greater agency with the author than in book culture text. The difference may be due to the fact

that by entering a computer environment, the reader physically alters the environment of the text through his or her participation because the reader inserts himself or herself simply through the act of deliberately selecting which lexias or writing spaces he or she will read. Oddly, writers who know they will share their agency with an invoked audience seem to sense greater agency in themselves. It may be that hypertext helps writers, especially student writers, gain a sense of audience. Creating book culture text, particularly book culture text produced for an audience of one, a teacher, is less likely to encourage this sense of audience. Student hypertext writers seemed to sense a great deal of control over the choices they made as writers and they were able to see the results of those choices, and base further decisions on those results.

It is important to point out again that hypertext is not the first or only textual innovation to do this. Roland Barthes, in "Death of the Author," writes:

We know now that a text is not a line of words releasing a single 'theological' meaning but a multi-dimensional space in which a variety of

writings, none of them original, blend and clash. The text is a tissue of quotations drawn from the innumerable centers of culture (116).

Though we do not generally think of hypertext as multi-dimensional, we can think of it as a tissue of text shreds and then re-integrates as each new screen is called up by a reader. And because the reader re-orders what the author created, the reader literally rewrites the text, reforms the hierarchy of the text. Again, this is not the exclusive domain of hypertext, nor is it a new phenomena. Ilana Snyder reminds us that in manuscript days scribes often altered the work they were copying. This blurred, even then, the boundaries between author and reader. Snyder adds that the tradition of print literacy privileges the author (45), although I would point out that it does not seem to privilege the student author. And certainly we must consider the situation of students as authors in a school setting when we discuss the act of composing in that environment.

Perhaps it is the "fixed" nature of book culture text that works against student-authored text in the

school environment, an environment that often does not allow students to write in textbooks, that keeps students from inserting themselves "officially" in even this limited way. "Real" text is difficult to change in a valued way. It can be altered through graffiti. Or it can be added to a body of text after the fact, as happens with literary criticism assignments. But rarely does student text stand beside "real" text in a valued way. Once text is fixed, typeset, published in a book or journal, it is difficult to change. And certainly school culture bolsters the notion that text is fixed, both in meaning and in location. This is an illusion, of course. But it is a strong one. Hypertext composing in the classroom may change that.

Snyder points out that oral texts had many of the features that theorists claim are inherent in hypertexts. Oral texts could be revised at will by the speaker who altered stories depending on the prompts from an audience. But book culture text provided a new framing device for narrative and other forms (5-6).

Remember that Murray believes that in electronic text the "author" is procedural, like a choreographer "who supplies the rhythms, the context, and the set of steps that will be performed" (13). Murray says this

about the reader, or as Murray calls him or her, the
"interactor:"

The interactor, whether as navigator,
protagonist, explorer, or builder,
makes use of [a] repertoire of possible
steps and rhythms to improvise a particular
dance among the many, many possible dances
the author enabled. We could perhaps say
that the interactor is the author of a
particular performance within an electronic
story system, or the architect of a particular
part of the virtual world, but we must
distinguish this derivative authorship from
the original authorship of the system itself
(153).

Murray is reminding us that each time a reader
enters a hypertext web, the reader creates a "new" text,
written by the choices he or she makes as she travels
through the docuverse. This is not just the
transactions that readers engage in. This is a
heightened transaction, perhaps, a transaction
heightened by reader choices and the simple clicking of
a mouse.

Remember that collaboration is a key element in hypertext reading and writing. In a sense both the reader and the writer collaborate with the computer. But because the reader is physically required to execute some sort of command and to make a choice as to which command, the reader collaborates with the author in a deliberate and physical way. Landow believes the reader is always physically inserted in a hypertext because of the cursor that electronically marks his or her presence. We can view this as Murray does and say that the reader or dancer is collaborating with the choreographer or writer so that some version, perhaps a new one, of the author's plan flashes onto the screen. And we can view this as Bakhtin's constant centering self among the other(s) the text invokes.

The question again in this study is how middle school students negotiate the task of writing text that does not maintain an axis, a text that can be read in many different ways, text where the writer becomes the choreographer.

Research Methods

I began preparing for this study in the fall of 1999 when I announced to my eighth grade English students that they would be creating hypertext webs as

part of their language arts curriculum that year, and that later in the year I would be asking for volunteers to participate in my dissertation study. For the next few months as I taught the students how to build web sites, I watched with more than a teacher's eye for students who seemed to be able to articulate at length their reflections on the processes they used as they composed. I was particularly interested, for the purposes of this study, in students who had a high degree of metacognitive awareness. I was also initially looking for students who could build intricate webs. I will go into more detail about how I selected the subjects for this study in Chapter Two.

However, I will point out here that as part of my regular classroom practice, I ask students to reflect, in writing, on their composing processes. I generally prompt those reflections with a question. Often that question was merely "What have you accomplished today and why did you choose to work on that aspect of your project?" Sometimes I would ask "What is causing you difficulties and what do you think you need to do to ease those difficulties?" Or, I sometimes ask "What frustrations and/or successes are you experiencing and why do you think you are feeling frustrated and/or

successful?" Often toward the end of a project I would ask students what they would do differently if they had to start the same project over again.

The idea behind these questions was to help students develop a meta-discourse about their composing that would support the kind of reflections I think are important in literacy development. I also thought that such questions would help me decide which students would ultimately become part of my study, assuming they volunteered. And, as it turned out, getting students to volunteer for the study was not difficult. Again, I will go into more detail about this in Chapter Two.

But it is perhaps important to point out here that I had been observing students compose hypertext webs for the past three years, and what I had observed throughout the year in all the students in the class, including the initial volunteers, was also what I observed in the three subjects who are the topic of this dissertation.

This study, then, looks at the hypertext composing processes of three eighth graders at Riverton Middle School. It uses post work-session reflections written by the study subjects, post-project interviews and observations conducted as the students composed their webs to inform me as to the composing processes they

used. I also use the students' hypertext webs, as well as any pre-writing artifacts the students created. In addition to that I make note of each student's previous hypertext composing experiences and discuss those experiences in order to provide a context for the specific project detailed in this study. All three students in the study composed two hypertext projects prior to the study project.

Approach to Research Design

I designed this study along a "subjective-objective continuum" as discussed in LeCompte and Preissle's Ethnography and Qualitative Design in Educational Research (1993). It was necessary, of course, for me to integrate my knowledge of the classroom, the students, and the topic of the study and balance that as much as possible in order to as objectively as possible make note of the processes the students were using. LeCompte and Priessle point out that "Ethnography builds the subjective experiences of both participants and investigator into the research frame, thus providing a depth of understanding often lacking in other approaches to research" (44). I, of course, entered the research study with some initial assumptions about how students composed hypertext documents, based on my experience

teaching middle school students about hypertext composing. Those assumptions were that students would, indeed, use a process in order to compose, and that they would experience heightened engagement levels.

My research was complicated by the fact that I knew my subjects very well, and I was in charge of the curriculum in the classroom. I collected my data with LeCompte and Preissle's advice in mind, to "approach data collection as if it were the construction of a legal argument, every alternative of which had to be considered and every step and state of which had to be justified to a jury" (55). In order to do this, I observed students in the act of composing hypertext webs, I interviewed them, I initially conducted tape-recorded think-alouds that were not included in the research data on the three study subjects, and I collected student-made artifacts in the form of hypertext webs and the in-process materials that made up those webs. I also conducted informal "chats" with the study subjects as they worked. I took field notes during these brief conversations. I would ask myself "What am I seeing?" And I would also ask myself "What am I NOT seeing and what is significant about that?"

During the interviews that I set up after each study subject finished his or her study project, I made sure I asked the following questions.

- Who was your audience for the web?
- How did you decide on your topic?
- Why did you set up your lexias to look the way they did?
- What were you thinking about when you created your links?
- How did you keep track of the textual threads in your web?
- What kinds of successes and frustrations did you feel as you were composing your web?

In order to analyze the data I collected on the three study subjects, I did a simple comparison and contrast exercise where I could see both the commonalities among the three study subjects, and the areas where they different in their approaches to hypertext composing. For this, a simple three-circled venn diagram was useful in the beginning. Later, I used a table to sort out differences and similarities between the three study subjects.

In Chapter Two, I will provide further background information on the study, including why I decided to make hypertext composing part of my classroom curriculum, and I will supply more contextual information about the study and the environment in which the study was conducted.

CHAPTER TWO

THE TECHNOLOGICAL JOURNEY

The purpose of this chapter is to establish a context for Chapters Three, Four, and Five, the chapters on each of the study subjects. This chapter will discuss how I became interested in hypertext theory and how I introduced it to my classroom several years prior to the study. It will explain the curriculum that supports the hypertext projects my students do in the classroom. This chapter will also provide the theoretical framework for the study and discuss the methodology I used for the study, including why I chose some methodologies over others. In addition, it will provide some brief background information on the study subjects themselves, and introduce the chapters devoted to those students.

Riverton

Riverton Middle School is part of Riverton Public Schools, situated in a small town north west of Lansing, Michigan. The district has approximately two thousand students and the middle school, which houses grade six through eighth, has 460 students.

Riverton was settled in the early 1830's, first by pioneers from upstate New York, and then by immigrants

from the Westphalia region of Germany. Today it is largely a bedroom community because of its location on an expressway between Lansing and Grand Rapids. The largest employer in the community is Riverton Public Schools. Riverton's population has remained stable for the past twenty years, as has the school population.

Riverton Middle School is housed in the former high school, which was built in 1962. The facility was refurbished in 1989. During the refurbishing process the middle school was equipped with two Macintosh Computer labs. One lab contained twenty-five Macintosh Classic computers, and the other contained twenty-five Macintosh LC's. In the fall of 1998, the district installed a PC lab with thirty-one computers and a server. The lab was networked using Microsoft Windows 95NT. The computers came installed with a Microsoft software package that included Internet Explorer. Netscape Communicator was downloaded and Story Space, a hypertext-composing program was also installed on each of the computers.

Becoming Networked and Connected

When the PC lab was installed I was the only teacher in the building who had experience with the Windows platform and a plan to integrated computer technology into an existing curriculum. I originally planned four

hypertext projects for my eighth grade language arts students, projects designed to integrate their American history class with their language arts class. However, because I found that the web projects took much longer than more traditional approaches to the curriculum, I eliminated one of the web projects.

A year prior to the installation of the PC lab, my eighth grade students did smaller web projects. The first one was a Holocaust web. Students used the Macintosh Classic computers and the Mac version of Story Space. These computers were not networked, nor were they equipped with modems. When the eighth grade history curriculum changed its focus to a different historical period, I changed the focus of my language arts course—from twentieth century American history to the period ranging from Spanish Conquest through the Civil War. Students currently create webs that focus on Native American history, a biography project, and a project that focuses on African American history or culture.

Student Participants

Students participating in this study were part of my eighth grade language arts class. None of the students had any experience composing hypertext documents prior to entering my class. In January of 2000, after students

had completed their first project, a poetry annotation project based on Native American poetry, and were well into their second, a biography web project, I asked for student volunteers to participate in this study. Initially, fourteen students volunteered and turned in two project permission forms, one signed by the individual student, and another signed by a parent or guardian. Ultimately the study focuses on the hypertext composing processes of three of those students.

My Own Hypertext Learning

I became interested in hypertext theory when I took a graduate rhetoric course as part of my doctoral program. As part of the course requirement I composed a hypertext web on an ancient rhetorician, and though I found the experience frustrating, I sensed that, with the help of a web editor, my students might find the experience interesting. I also sensed that composing hypertext webs might immerse students in forms of textuality they hadn't encountered before, at least as authors. Few students had had any experience weaving graphics, written language, and a hypertext link to construct meaning for an audience, either an audience of just themselves as individuals, or for an audience beyond themselves. My students had used our aging Macintosh

computers for word processing, but because we only had two computers connected to the internet, their on-line reading experience, in a school environment, was minimal. And, according to an informal survey taken at the beginning of that semester (1997), few students had computers at home.

Focusing on Hypertext

Hypertext usually employs not only what we would refer to as traditional text, but it uses color and graphics, even sound and film. And, of course, it employs a textual link to other screens. This link requires readers and writers to think deliberately about the relationships between pieces of text. It was this deliberate linking that made me wonder whether hypertext composing could be a meaningful literacy event in the classroom. But I wanted to keep in mind David Barton's (1994) concept of a literacy event. He explains that a literacy event is any use of written language that people encounter in their daily lives. I sensed that hypertext was going to be something that students would encounter frequently, even though as of 1997, few had much experience with it. I wanted them to be ready for the explosion of electronic text I believed they would encounter. I was very curious about the processes they

would use in constructing meaning from multi-linear text. I believe that we learn by linking what we already know to something new, that we construct new knowledge for ourselves through connections with our prior knowledge. Hypertext brings that linking to consciousness.

But I also knew that my students, in some ways, already had a frame of reference that would help them think "hypertextually." Many of them played video games, either on a computer or on special gaming spaces like Nintendo or Playstation. Janet Murray reminds us that gaming spaces are really hypertextual spaces that allow players to jump from one gaming situation to another (98). For example, students at Riverton Middle School enjoyed playing Sim City, a simulation game that places the player in the position of being mayor to a city. This program is installed on the Machintosh computer lab and is often incorporated into the seventh grade geography curriculum. Decisions that the mayor/player makes determine how well the city functions, and the player can immediately see the results of decisions he or she has made. The mayor/player then has to make additional decisions, which place him or her in a continually changing environment.

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Sim City can be viewed as a type of hypertext fiction, fiction perhaps that does not employ traditional text, perhaps, but that allows players to become immersed in a type of storytelling environment. And it is certainly a "textual system," because the game itself is created by language, by text. And in our post-modern quest to broaden the definition of text, Sim City and other games such as Myst, Doom, and Civilization can be considered text.

But Riverton students have been exposed to hypertextual thinking in more than just electronic gaming situations. Although it does not allow the viewer to choose which scene to jump to, certainly music videos tend to leap from scene to scene asking the viewer to suspend whatever plot there may be until the end of the song and the video. And Murray points out that such television journey stories as Star Trek, where each episode provides one story in an on-going and dimension changing journey, are early attempts to use electronic media to immerse viewers in text. And the dimension-changing and time-changing inherent in such journey stories as Star Trek have built several generations of reader/viewers who can easily negotiate the jumps and turns of hypertext (111).

But television and gaming are not the only hypertextual experiences students have probably had. Choose Your Own Adventure books are popular with upper elementary students in Riverton, and many students find a similarity between those and the hypertext webs they create. Some students note a similarity between hypertext and such epic stories as Beowulf and The Odyssey. It is important to point out that "hypertextual" thinking is not new (Bolter 1991). Hypertext makes overt many associations we can make unconsciously when we read or write. Indeed, Bolter points out that the meaning we gain from any text stems, in part, from its relationship to other texts. When we read, we think of not only the experiences we have had, but the experiences we have had with other texts that share a similar structure or subject matter, or in some way connect us to the text we are currently reading.

Hypertext in My Classroom

My first hypertext web was composed using hypertext mark up language, often called html codes. Figure 2.1 is

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File Edit Search Help
<doctype html public "-//w3c//dtd html 4.0 transitional//en">
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1">
<meta name="author" content="Nancy B. Patterson">
<meta name="GENERATOR" content="Mozilla/4.73 [en] (Win98; I) [ Netscape]">
<title>mid.html</title>
</head>
<body text="FFFFFF" bgcolor="808080" link="CCCCCC" vlink="CCCCCC" alink="CCCCCC">
&nbsp;&nbsp;&nbsp;<br>
<table BORDER COLS=2 WIDTH="100%" >
<tr>
<td>
<blockquote>
<center><font size=+3>Portland Middle School</font></center>
</blockquote>
<blockquote>
<center><font face="Arial Black"><font color="FFCC99"><font size=+1>Welcome
to Nancy Patterson's classroom.</font></font></center>
</blockquote>
<blockquote><font color="FFFFFF"><font size=+1>The Big Idea Behind Integrating
Hypertext in the Classroom.</font></blockquote>
<blockquote><font face="Arial,Helvetica"><font color="FFFFFF"><font size=+1>The
resources listed below were created by students in <a href="http://www.msu.edu/user/p.
Patterson">(a) language arts classes at <a href="http://www.portlandpublicschools.cc/portla
id School"(a) as part of the regular language arts curriculum.&nbsp;&nbsp;&
writing processes.&nbsp;&nbsp;& Hypertext in the classroom literacy tool, one that enables the
writing processes.&nbsp;&nbsp;& Hypertext or web technology further enables those
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Portland Middle School

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Address: http://www.gallatin.org/mhs.html

Portland Middle School

Welcome to Nancy Patterson's classroom

The Big Idea Behind Integrating Hypertext in the Classroom

The student websites listed below were created by students in Nancy Patterson's language arts classroom as a part of the regular hypertext project. Computer technology is an important tool and one that enables the writing process. Hypertext or web technology often enables those processes by placing students in situations where they must make decisions between choices or link it to those decisions. These links subvert our concept and opinion that theory is really about

As you navigate through the student webs, please remember that these middle school students are still offered access to the literary canon. These sites will contain a great number of web sites that show students' growing development in written language. They are not adults and have not yet developed an adult literacy level. But they are getting there. And projects such as these help them grow their literacy through active involvement with language.

Chris and Adam doing their thing at the MACUL Student Technology Showcase in Grand Rapids, MI.

Student web sites

Poetry Webs	Biography Webs
Edison Web	Mark Twain
Sitting Bull	Laura Ingalls
Wilder	Robert E.

But I was hesitant to teach this to middle school students. I thought students would do best using a web editor, a program that wrote the mark up language for a writer who, rather than seeing the codes on the screen, saw the "results" of the codes, as figure 2 indicates. These web editors are often called WYSIWYG (What You See Is What You Get) programs because the computer screen displays the emerging web page as a viewer would see it on the internet or world wide web.

Initially, however, because Riverton Middle School did not have enough computers, I selected a small group of students who agreed to work on an independent web project. They used the only computer that was connected to the internet and created a hypertext story about a murder. And though students had problems with the software they used (Hyper Studio) and they could not realize many of the plans they had made for their story, the experience told me that middle school students could, indeed, engage in the kinds of thinking that hypertext seemed to demand.

By the next year the school had purchased ten copies of Story Space, a web editor published by Eastgate that allowed writers to create map views of their webs. Many of the initial articles I read about hypertext theory

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hypertext theory used Story Space map views to illustrate the various threads of meaning that hypertext enables, and I thought the program would help students engage in that kind of thinking. I thought students would be able to understand the nature of hypertext webs if they could see a map of their individual documents within the web. Figure 2.3 is an example of a Story Space map.

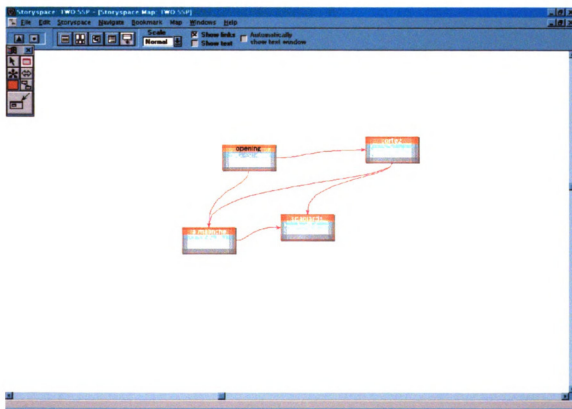


Figure 2.3. A Story Space map view showing how each lexia links to other lexias in the web. Students learned to create their hypertext webs in Story Space first, and many used the mapping feature in all of their hypertext composing.

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But because we only had ten copies of Story Space, students had to take turns using the computers where Story Space had been installed. While a third of the class worked on their webs, two thirds of the class either engaged in reading workshop or looked for information to use when it became their turn to use the Story Space computers. And, because the computers that Story Space was installed on were not connected to the internet, students could not publish their webs. This was not an ideal situation.

However, by the following fall, 1998, the school had the new computer lab with 31 computers networked with Windows NT and connected to the internet through a cable modem. Installed on the computers were two browsers, Internet Explorer and Netscape Communicator. With Netscape Communicator came Netscape Composer. With grant money from the NextDay Technology Grant sponsored by the Michigan Department of Education, the school purchased enough copies of Story Space for each computer. This meant that students had a choice as to which web editor they wanted to use. Students tended to use Netscape Composer more often than Story Space because they found they could insert graphics more easily in Composer than in Story Space.

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The Curricular Context for the Study

Throughout that 1998-1999 school year I developed an 8th grade language arts curriculum that used web composing as its primary means of negotiation. Students worked on three large web projects throughout the year.

Why Hypertext in the Classroom?

It would be easy to simply say that more and more information will be displayed on the World Wide Web and that it is thus important that students know how to find that information and write for that particular space. But hypertext has more power in the classroom than the easy prediction that students will need to know how to write hypertext for some future employment arena. That may be true, but chances are the technology will continue to change and any programs students learn today will be outmoded by the time they enter the job market.

Rather, I wanted students to experience a new role as authors. I wanted them to create documents that overtly shifted authorial power to a reader. I wanted them to experience first hand the knowledge that a document they had written would never be read the way they planned. To a certain extent this is true of all text. But hypertext, perhaps more than any other kind of text, dramatically gives the reader permission to read

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according to his or her agenda, not the author's. In traditional text the reader is bound by page numbers, chapter sequences, and the author's plan. And while the reader has always had "permission" to skip chapters, move beyond a section, and quietly thwart the author's organization, it has been more difficult. But hypertext gives us permission to read the text in any order that seems best for that particular reading situation. And the author understands this. In many ways that seemed to free up my students. They no longer had to guess how the teacher wanted their text organized. They could make decisions regarding this on their own based on the availability of information, their interests of the day, and their sense of what aspects of their web needed work. They were able to shift back and forth between looking at their web more "globally," and focusing on each "local" lexia. It proved to be wonderful training for these emergent writers.

And in a very real sense, until my students studied the information they would ultimately include in their webs, and recreated that information into a network of information, linked, negotiated, and shared, that knowledge did not exist for them. This is very much in keeping with constructivist classroom theory. Knowledge

doesn't become knowledge until it is called into being by the learner. The hypertext webs, as Snyder points out, created a fertile environment for students to call knowledge into being (103). This is true not only for the topic each student chose for the hypertext web, but for the nature of hypertext itself. Students cannot know how to call a knowledge of hypertext into being until they have had experience not only with reading hypertext, but with creating it.

The language arts curriculum at Riverton Middle School is a standards based curriculum, meaning that each teacher is free to select materials that he or she feels best helps students grow their literacy. Many of the teachers within the department use some form of the workshop approach, best outlined, perhaps, by Nancie Atwell. Students for the most part choose their own reading materials and selected their own writing topics.

As department chair I have encouraged language arts teachers to make curricular connections between language arts and other content areas. Teachers in the department found it most convenient to connect to the eighth grade history curriculum. Already in place was a joint language arts and history biography project. Students would select a biography related to a figure in American

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history and have both language arts time and history class time to read. History teachers asked students to make an oral presentation on their person, and language arts teachers asked students to make a large poster about the person they read about. Both classes coordinated lessons in note taking from the books and helped students gather additional information.

When I integrated web technology into the regular curriculum in my eighth grade classroom, I changed the poster project into a web project. So, rather than asking students to make a poster, I asked them to create a web site about the person they read. The leap from poster to web site wasn't a great one, actually. The posters were meant to be representations of what students had learned about the person they chose to read about. I added a poetry annotation project at the beginning of the year where students focused on Native American poetry. It was through this annotation project that I hoped students might learn more about the Spanish Conquest and the westward movement of white Europeans. The biography web project allowed students to create their own opening screen and divide information into chunks that seemed logical to individual students and then link those chunks of text.

The third hypertext project I added to the curriculum originally involved students writing a piece of hypertext fiction. It was designed to be part of a slavery unit we did, again in conjunction with something the history classes were doing.

Students in a middle school in Ghana researched the slave trade in West Africa and even took a field trip to a slave castle on the coast of Ghana. They then wrote the first half of a slave narrative. Our students researched the slave trade in the western hemisphere, and their task was to finish the slave narratives begun by the Ghanaian students. The first year I incorporated the hypertext projects into my curriculum, students had to first turn the Ghanaian part of the narratives into hypertext fiction, then add their own part of the story. This proved to be very time consuming and very frustrating. And so I decided to revise the project. During the year when this study took place students were asked to choose an aspect of African American history or culture and develop a website about that. They completed the slave narratives using a word processing program and organized their text in a more traditional way.

In an effort to align the language arts curriculum with the eighth grade history curriculum in hopes of

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providing a better context for student reading and writing, I planned the school year around three projects--one that centered on issues related to the Spanish Conquest, another that incorporated a biography project that was already in place, and a civil war project that actually asked students to focus on some aspect of African American culture or history.

Timeline of the Study

When this study began in the fall of 1999 and I told students in my eighth grade language arts class that I was going to be gathering research for my dissertation, they were very curious about the dissertation process and excited to think they might be a part of it. In January 2000, just after I received permission from the university to conduct my research, I asked the students in my eighth grade class if anyone would like to volunteer for the study. I explained that they could do an extra project or that I might talk to them extensively about a project that they were doing as part of their coursework. Initially fourteen students volunteered. I gave them two release forms, one for individual students to read and sign, and one for parents. All 14 students returned their release forms within the next week. I

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then had to begin the task of narrowing the field to three students.

Looking for Students Who Could Articulate Their Processes

Over the next few weeks, as I watched students build hypertext webs, I took notes, gathered copies of journal reflections and casually interviewed students who had volunteered for the project. Knowing that I would have to winnow my study subjects to three or four students, I was looking for students who could articulate their processes and who seemed enthusiastic about sharing what they were doing with me. I was not necessarily looking for students who could build "perfect" webs, but for students who could discuss the decisions they made, who could articulate those decisions. And, I was also looking for students who would not feel uncomfortable in a tape-recorded interview.

Think-Alouds

Initially I thought I wanted to record students' "think-alouds" as they composed. And, in fact, I recorded several of these. These "think-alouds" were largely procedural, which I initially thought might be helpful. Students explained that they were about to insert an image, or that they were going to make a link, but the tapes were often difficult to understand. At

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times the sound of fingers tapping on the keyboard obliterated the soft voice that spoke into the tape recorder. Students felt self-conscious talking into the recorder, and, in fact, one student dropped out of the study because she did not want to be seen in the computer lab apparently talking to herself. There is no computer in my classroom, so there was no private place for students to do their think-alouds. Ultimately, I decided to abandon that mode of data collection. I also realized that the information I had hoped to gather through the think-alouds came out in the post-project interviews I conducted. The think-alouds did not give me any more insight into students' hypertext composing processes than the post-project interviews and my own observations during their composing sessions.

Field Notes

By January of 2000, I still had thirteen students who had volunteered for the study. I had by this point taken field notes on all of those students and was beginning to narrow my field of possible study subjects. My notes were often hurried jottings that simply said "Jeff-looked for images today." Or they might say "Kay-helped new student learn to make links." I realized that if I were to get anything more meaningful than those

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hurried jottings, I would have to meet with students either during my conference period, during lunch, or after school.

Winnowing the Number of Study Subjects

But a number of the students who volunteered could not stay after school either because of sports commitments or because they lived too far away and needed to ride a school bus home. There was no other way for them to get home. I eventually began to eliminate these students as the possible study subjects. A number of other students seemed to be reluctant to be interviewed on tape, even though they initially agreed to do so when they volunteered for the study. Others didn't seem to be bothered by the tape recording process.

By the beginning of February, I had six students who I thought would be excellent study subjects, who did not mind being tape recorded, and who seemed able to work within the schedule of time that was convenient for me. They all seemed to represent what I was seeing in the classroom as a whole. These students were enthusiastic about their hypertext composing, even those who seemed to struggle with deciding what words or phrases should link to another lexia, establishing an opening screen that provided an overview of the web, and dealing with the

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mechanics of linking itself—the naming of a file and the use of that name when creating the link, a protocol that is necessary for a link to work.

I also realized that there was a student in the classroom who had not volunteered for the study, one who was initially very resistant to the whole idea of linking the eighth grade history class content to the language arts classroom. She was also very resistant to the technology. But her resistance had melted only a few weeks into her first project, and over the next several months I had had a number of interesting conversations with her about her web building. I finally asked her if she would like to volunteer for the study. She agreed, took the permission slips home and returned them signed. I was quite sure I wanted to include this student in the study because I had established a good rapport with her, and because she was able to discuss her decisions regarding her hypertext composing clearly and thoughtfully.

Several students who volunteered for the study chose to create an extra project for the purposes of the study. Throughout the next few months, I provided time for students who wanted to work on the additional project. I often got permission from other teachers to allow these

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students to work during other classroom hours. Students also chose to go to the computer lab during their lunch period.

One of the now seven students remaining in the study was not one I initially thought I would use as one of the three study subjects. It was sometimes difficult to get him to talk about his processes, and his web-building was sometimes erratic. There were days when he seemed to accomplish a great deal, but there were other days when he seemed more interested in web-surfing and talking than working. But my attitude changed when I was invited to participate in a technology showcase in Grand Rapids. Suddenly this particular student, Aaron, became very enthusiastic and hard-working. Indeed, it may have been that he was enthusiastic and hard-working before the invitation came in, but I didn't notice those qualities. However, I began to notice them, and I began to realize that though he may not be able to express why he made the decisions he did, the webs he was building were interesting in many ways, and that his processes reflected the experience that some of the students in my class were having. This student, like some of my others, had difficulties deciding what to link in his web, and seemed to have difficulties controlling all the different

textual threads that went into his web. And so, I began to realize that this student could make a valuable contribution to this study.

By the end of March I had made my final decision regarding who was going to participate in the study project. I chose a student, Susan, with whom I had an excellent rapport and who could articulate her choices regarding web-building. I chose a boy, Aaron, who had difficulties but who, as were many of the students in the class, very enthusiastic about hypertext composing. And I chose another student, Cathy, who was a very hard worker and who, simply enough, had an open hour during the school day to talk to me about her web composing. Including Cathy in the project was actually based on the fact that she was available, and, of course, willing to participate.

Collecting Data

Once I had my three participants, I collected and organized my notes from earlier in the year on their hypertext composing. I also collected their earlier hypertext webs so that I could provide a history of learning for them in the chapters I would devote to those students. I also began taking more notes about their composing. Again, these notes were quick jottings. And

though I intended to take more complex notes as I observed them composing in an empty computer lab, my notes were still just jottings. For example, one of my notes on Aaron, written during a lunch period composing session, reads, "Aaron-3/11-looking for squiggle image to put below written text on lexias."

When the three study subjects finished their study projects, I interviewed them in front of a computer with the study project on the screen. We then discussed the project and the decisions they made.

My original plan for note-taking was to interrupt the study subjects as they were making a link, or inserting an image, and ask them why they were executing that particular move. But what often happened was that my act of interruption distracted the students, and they frequently forgot why they were making a certain decision. This happened often enough that I decided middle school aged students were easily distracted and that I should simply observe their composing and hope that they would be able to reflect on their decisions when the project was finished. As it turned out, this was a good decision.

My own observations of the students as they worked turned out to be quite valuable, as were the post project

interviews. When I conducted the post project interviews, I did so in front of a computer. The student and I looked at the published project and used the various changing lexias as points of discussion. And though I went into the interviews with a set of questions, I generally let the conversation take whatever course it did, making sure the questions were asked whenever it seemed logical at the time to pose them.

Another valuable part of the study was the in-process projects. It was very valuable to have the growing drafts of the projects, from hand-written or word-processed beginnings to the on-line projects that can be viewed at <http://www.npatterson.net/mid.html>. These showed me the stages that each web went through and gave me some valuable insights into each student's composing processes.

Teaching About Hypertext

It is important to understand how I taught about hypertext in order to put this dissertation study in perspective, especially since any decisions I made as a teacher affected the decisions I made as a researcher, and, indeed, affected the research design and data analysis. Students in the class began working on their webs the second day of school. I had compiled a packet

of poems written by Native Americans and distributed it to the class. Some of the poems dealt with issues of alienation while others dealt with culture and religion. I scoured the library for materials on Native Americans and put together a reference library in my classroom. I also combed local bookstores for books dealing with Native American religions. In addition, I borrowed materials from other teachers. By that second day of school I had a sizeable classroom library. My students and I spent the next few days reading the poems in the packet and discussing them. I asked them to write journal entries about what they were learning.

When we finished reading the poems and doing a little research on the Spanish Conquest, I asked students to team up with another person in class and choose one poem from the packet. I then asked them to re-read the poem and highlight any words or phrases they didn't understand or wanted to know more about.

Two students underlined the following words in Shirley Hill Witt's poem Punto Final:

You Spaniards. You evil ones
Of the golden tongues and
Miraculous dreamweaving!
Once again a believing Malinche
Finds herself with amputated
Hands, feet, heart-like Acoma.

You never have enough, do you?
There are always the Seven Cities
Of adventure beckoning
For you to plunder, loot, rape
Always upon the horizon
Awaiting for your deflowering.

And Malinche's like me,
We always surrender, don't we?
No matter how proud we be
Always we capitulate
In the darkest night
To your cobra persuasion.

This Malinche yet stands
While the joy that had grown
Inside her bronzen body
Melts away searing her limbs
With molten streams of shame,
Of humiliation.

Someday soon I will be
Old and ugly and wear a wig
And live in a foreign hotel
Eating my meals alone.
And I too will mouth my thoughts,
No one to hear me.

It must be the daiquiri
But they all look like Navajos
And I keep dropping my bread.
I want to weep for La Vieja
Two booths away,
But I can't: she is me.

--Shirley Hill Witt

The underlined words indicate those aspects of the poem these two students either wanted to know more about or did not understand. These became the focus for their research. During the course of the next few weeks, even though we did not have access to the computer lab, these

students and their peers began a quest for information and insight into the history and literature of the Spanish Conquest. Their search for information was based on the poem they selected. Other poems in the packet included poems by N. Scott Momaday, Joy Harjo, Mary TallMountain, and Nila northSun, among others.

By mid-September our lab was finally open and students could take their quest for information on-line. Using search engines and their growing knowledge of the time period, students began sifting through the enormous amount of information available to them on the World Wide Web. This in itself was a learning experience. They were surprised at first that a search for Acoma, for example, would turn up repair shops, real estate firms and other sites they discovered would not provide the kind of information they were looking for. And though I showed them how to help determine which sites would be the most productive as far as information, it seemed that they had to truly learn this by trial and error. But it did not seem to take students very long to get a sense of which items on a search engine results page would provide the kind of information they were looking for and which ones would not. Reading a search engine results page seemed very much like reading the table of contents of a

very large magazine, and students easily gained skill in doing this.

I'm not sure I was prepared for the enthusiasm my students showed once we entered the computer lab. Generally in a middle school classroom students need to be called to order, often gently, but called nonetheless. But I suddenly found myself in the midst of students who would enter the classroom, collect their computer disks, and rush to the lab. They were logged on and working before the bell rang. I was also surprised at how willing students were to help each other. And I was almost chagrined at how quickly they outpaced me in my knowledge of Story Space. Within a week students had learned far more about the program than I had during the summer. And they were very eager to show me their new-found knowledge. Their willingness to help each other out of little technical difficulties made my job easier. My role in the classroom became that of adviser. I helped students think of ways they could expand their webs and I assisted them with many of the technology glitches they had. And when things really clicked, I often would stand back and watch them make decisions about their writing, help each other, and learn. It was almost humbling to see how self-directed they were. I no

longer had to nudge students back on task. George Landow saw the same self-directed learning taking place among his Brown University students. Hypertext may be the answer to teachers' prayers for "active independent-minded students who take more responsibility for their education..." (Convergence 163).

We know that computers can be highly motivating classroom tools. Part of this may have to do with what Lanham considers a sense of play when it comes to computers. He asserts that there is something about computers that engages us in play, even when we are intent on "hard" work (72). Certainly there are a number of studies that point out just how motivating computers can be in the classroom. Ollila concluded that even though students were working in what was potentially a distracting environment, the power of computers held their attention for sustained periods of time (17). I saw this happen throughout the school year, and on the days, for one reason or another, we couldn't be in the computer lab, students were genuinely disappointed. Even on the final day of school when the temperature in the lab was more than 90 degrees, students were still working on their projects, eager to put the finishing touches on them before the final bell rang.

The second web project students in my class did called for them to read a biography of a famous figure from American history. Students were asked to create a biography web about the person they read and continue doing research on that person using the World Wide Web. I asked students to create an opening page that would give their readers choices. Because the biography project is a joint project between the history and English departments, students were given some guidelines in their history classes regarding the kinds of information to look for (Appendix A). The history worksheets helped guide students through their reading and ultimately helped my students create categories for their opening pages of the biography webs. Students included such general topics as childhood, historical contexts, formative experiences, and family. As students progressed they were able to break these down into smaller units, so that a biography web that focused on Sacagewea included opening page categories such as "Tussaint," "Lewis," Clark," etc.

It was during this second web construction that I saw students truly thinking of themselves as hypertext writers. I saw them wrestling more deliberately with and their role in helping a reader move easily through the

web. They began considering color as a textual cue. They included more graphics, and they varied their fonts in order to add variety to their lexias. All of these were suggestions I gave them either in individual conferences or in whole class mini-lessons. I also overheard students giving advice to other students in class that mirrored this advice.

It was during the biography web project that I narrowed my field of subjects to five students. These five students seemed to be very cooperative. They consistently came in during their own free time to work on their webs. And they seemed to be able to articulate what they were doing during their web construction. Over the next several months I continued to observe these five students. I collected journal reflections from them, took notes as I observed them composing, and studied their emerging webs. I then selected three students to write about here—two girls and a boy.

I would like to point out here that I was sensitive and sometimes uncomfortable during the data collection process because I was keenly aware that I brought to the study my own authority as the teacher of the students involved. I knew that these three students were operating under my own definition of good hypertext

composing and I felt all along that I was walking a fine line between wanting a valid study and wanting to teach the study subjects about hypertext composing.

The Study Subjects and a Preview of Chapters 3, 4, 5

Aaron

At the time of the study Aaron was an 8th grader enrolled in my language arts class. He was a very active student who often made funny comments during class. He was popular with his classmates and his humor was infectious. Often, it was too infectious, and initially I had a difficult time dealing with Aaron's behavior in class. However, once we entered the computer lab, Aaron's demeanor changed. He was still humorous, but he seemed better able to focus his energies on his emerging web pages. In the classroom it was sometimes difficult to keep Aaron focused on pen and paper tasks.

Aaron lives with his mother and sisters. He began school in a neighboring community and lived there until he was in fifth grade, then moved with his mother and sisters to Riverton in the middle of the school year.

I chose Aaron for the study because he became a very enthusiastic web-author. He seemed able to talk about the decisions he made as a writer, and he was willing to put in extra hours of work on his web projects. He

seemed to approach web writing as something more than just a school assignment. In January, for example, I received an invitation to set up an exhibit of student work at the Michigan Association of Computer Users and Learners (MACUL) Technology Showcase in Grand Rapids. I was allowed to bring six students. When I announced the invitation to the class, Aaron was so excited about the showcase that he began working on a special website in hopes that he would become one of the students I ultimately took to the showcase. Aaron had been one of the 14 students who volunteered for the study, but I did not seriously consider him until I saw how enthusiastic he was about the showcase. Even then I didn't consider using him in the study, or consider taking him to Grand Rapids, until I saw his developing web. Not only was I impressed with the special web project he was doing—on the twentieth century—but I was also impressed with the way in which he could discuss his developing web and his plans for completing it. And though I saw that Aaron was having some difficulties linking his lexias in the way that I had shown the class, I sensed that the struggles he was having were reflective of those that other students who were not part of the study were having.

Susan

Susan was also an eighth grader in my language arts class. She is the youngest of three children in her family. Susan's middle brother was an exceptional student, and an exceptional writer when he was at the middle school. Susan also seemed to possess these gifts. She was an excellent student who consistently earns A's in all her classes. Getting good grades was very important to her, and, in fact, it seemed that getting A's was more important than learning. However, she worked hard to earn her A's and seemed to always make sure she understood what the requirements were in order to insure that she could always earn an A.

For that reason, Susan was initially very resistant to doing the hypertext projects. In an early journal entry she wrote that she did not understand why the class had to take history twice a day. She said she would rather do language arts related lessons rather than history. But during a conversation later in the year, Susan admitted she was worried that she wouldn't be able to fulfill the requirements of the hypertext projects and get an A.

At first I was concerned about Susan, not because of my research, but because I wanted her to enjoy the

literacy events that hypertext made possible in a classroom. I even called Susan's mother to let her know that I was aware of Susan's frustration and that, if need be, I would allow Susan to do something other than hypertext projects. I asked that we give Susan a couple of weeks to get used to the more open-ended and student-centered approach in my classroom. Two weeks into Susan's first hypertext project, she changed her mind and her resistance faded. And, in fact, she discovered that she had some talent in web design. She soon discovered that breaking a topic into smaller segments and creating individual lexias that related to each other in several ways was "fun." Once she saw that she could be successful academically in my class, she relaxed.

Susan has a great deal of poise and confidence. When she wrote about her early frustrations, she did so respectfully and honestly. And when she began enjoying her web work, she voiced those feelings also. She often was able to help other students in the class, and did so willingly, seemingly taking quiet joy in her growing expertise and her ability to help others. She was a very cooperative student. And when I announced that I was looking for volunteers for this study, Susan was one of the first to turn in her permission slips. I selected

her as one the three subjects in this study because she was so cooperative, and, perhaps because of her early resistance. I also selected her because of her ability to articulate why she made the choices she did in her web authoring.

Cathy

As were Aaron and Susan, Cathy was a student in my eighth grade language class. And as with Aaron, I did not originally believe Cathy would end up being one of the subjects of this study. But as the weeks went by, I realized that Cathy was a very hard worker. She was a good student, perhaps no so much because she is good a school work, but because she is such a hard worker. As with Susan, grades were very important to Cathy. But I sensed that they did not come as easily to Cathy as they did to Susan. But Cathy's hard work and willingness to ask questions led me to believe that she would be a good subject. She also seemed so good natured about her work. And, like Susan, Cathy seemed to be able to easily talk about the choices she made when she composed her web projects.

Cathy is the youngest of three children and the only girl. At the time of the study, she was active in sports and at home loved to garden. In fact, she helped her

father design the family flower gardens, using rocks, plant symmetry, height, and texture, as well as foliage and bloom color in her design considerations.

The next three chapters will show how these three individuals learned to compose hypertext webs and will highlight those initial web compositions as a way of foregrounding their web composing processes in the study project.

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CHAPTER THREE

AARON

Introduction

In this chapter I will discuss Aaron, who, at the time of the study was an eighth grader at Riverton Middle School and in my language arts class. This chapter will investigate how Aaron learned to compose hypertext, and will follow his composing processes through his study project on the Twentieth Century. It is important to understand how Aaron learned to compose hypertext documents in order to gain some insight into the processes he used when he composed the hypertext web that this chapter focuses on.

I will follow Aaron's accumulative learning process as he negotiates and gains control of hypertext and his own hypertext composing processes. This accumulative process involved play, exploration, attempts at controlling his processes and failures to do so, although the word "failure" is misleading. In order to gain more and more control over his hypertext composing processes, Aaron had to have less successful experiences in order to build not only his procedural knowledge of hypertext, but his conceptual knowledge. Such experiences should not be perceived as less valuable, or

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even as failures. Indeed, they became not so much failures but places upon which Aaron decided to grow as a writer. Each time Aaron composed a hypertext web he was able to increase the complexity of the new web based on his experience with the previous one.

I will will investigate whether Aaron used a heightened sense of textuality in order to compose his documents. I will also investigate whether Aaron experienced high levels of engagement and agency during the composing processes, and whether these three elements, textuality, engagement, and agency were enabled by the hypertext composing space.

As mentioned earlier, Aaron, at the time of the study, was a high spirited, popular eighth grade boy at Riverton Middle School. I chose Aaron for the study because he seemed so enthusiastic about designing web pages, and his enthusiasm never flagged, even when he had difficulties understanding the nature of linked text. He also showed a great deal of growth between his first two web experiences and his study project, and because some of his struggles continued to show up in his study project, his means of controlling his emerging text was interesting to observe and valuable, I thought, because of those struggles.

Aaron was enthusiastic about many things, actually. He played football and ran track and was considered a "spark plug" by his coaches. Aaron was inquisitive and seldom seemed afraid to ask questions. He often seemed to have difficulty sitting in one position for very long, which is not unusual for middle school students. Aaron's mother grew up in Riverton and went through the public school system. Aaron himself went to kindergarten in Riverton. Then his family moved to a neighboring district but returned when he was in fifth grade.

Aaron had used computers before and had searched for information several times on the internet, either at friends' houses or for a class project, but he did not have a computer at home. He had also done some word processing in his previous language arts classes. But it seemed to me that Aaron had had little experience reflecting on multi-linear text structure before he entered my classroom in the fall. That does not mean that he had never experienced multi-linear text. He had played computer games as well as system games like Nintendo and Playstation, (Appendix B) examples of electronic multi-linear text, as well as many films and television programs. Murray points out that these can

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all be examples of multi-linear texts, as are magazines and encyclopedia (113-125).

When I taught students in Aaron's class about hypertext, I initially showed them a program that created map views of hypertext webs. This program, Story Space, published by Eastgate Systems, allows the writer to first create a map of the documents in a hypertext web. I thought students might grasp the concept of linking better if they could create maps first. Throughout the school year some students used Story Space as to create their webs, and others used it as a way to create a graphic organizer of their lexias. This idea of a graphic organizer or hypertext map would be important in Aaron's study project web composing processes.

Previous Hypertext Composing Experiences

This section will provide a brief description of Aaron's first two hypertext projects and provide some insight into the ways in which Aaron seemed to initially negotiate hypertext composing. It will also show the growing sophistication that Aaron acquired during these two composing experiences. These early experiences can provide some insight into the processes Aaron used later during the study project.

Poetry Web

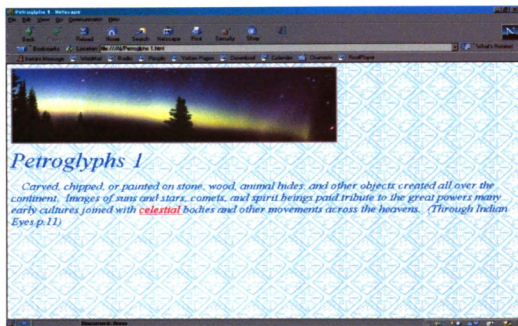


Figure 3.1. A screen shot of one of the lexias in Aaron's poetry web.

Aaron's first project was a poetry annotation project, and was the vehicle through which he learned the web editing software that was used during class—Netscape Composer. Composer is a free, simple web-editing program that is free that can be downloaded with Netscape Communicator.

Aaron chose to annotate a Nancy Wood poem entitled "Skeleton in Winter." He followed my suggestion that he use the poem as the opening screen in the hypertext web and make links from the poem to the lexias in the web. But Aaron seemed to have difficulties

understanding the concept of linking. He did not seem to struggle with the technology, the procedure of making a link. Rather, he seemed to struggle when it came to deciding which words and phrases in his poem should become links, and using those words and phrases as prompts for future lexias. In fact, this would become a major issue in Aaron's composing processes.

This is hardly surprising, however, given the fact that hypertext, according to Landow and Delany is a new rhetorical form (3). And while it is true that Aaron had played electronic games and interacted with multi-linear texts in the form of some television and print materials, he had not been called upon to create those kinds of texts and reflect on them. It is possible, of course, that Aaron wrote multi-linear texts prior to his experiences composing hypertext. But he was not necessarily aware that he was doing so, and it did not appear that he believed he had any prior experiences with multi-linear texts. Certainly he had never created any electronic multi-linear texts prior to his eighth grade year.

The forms of writing that Aaron used more often were school forms—narratives upon command, short answers to questions, practice letters to a fictional employer.

These often inauthentic writing contexts may have distanced Aaron from actively or deliberately engaging in the kind of thinking that can happen during hypertext composing. Bolter believes that hypertext "reflects the mind as a web of verbal and visual elements in a conceptual space" (25). But most school writing tasks seem more ritualized than the form of writing Bolter discusses.

Ong talks about autonomous discourse as being fixed by ritual (83). The Delphic Oracle, for example, was not speaking for himself or herself, but for the god. The order of utterances, and the utterances themselves were not the act of the speaker, but of something else. Ong reminds us that Socrates, through Plato, warns that writing is outside the mind. Ong goes on to say that computers, too, create a writing that is outside the mind. I would suggest that many school writing tasks also enable a writing that is perhaps further outside the mind, outside the realm of the authentic and the contextualized. They enable a writing that is not often so much valued by the person who creates it as much as the person who receives it—the teacher. Ong again reminds us that speech requires a give and take between participants, but he also reminds us that though writing

relies on a tool, and is thus "artificial," it does not degrade thought. It enhances it (83). That, of course, is why teachers assign writing, in hopes of enhancing student thought. The problem with most school writing tasks is that students are disengaged. The context of school makes the act of writing inauthentic or, as Ong uses the term, autonomous. The student is not in control of the writing. The teacher is. Or the institution is.

And Vygotsky, though writing about pre-school aged children, echoes something similar in his call for writing tasks that engage students. He writes:

... teaching should be organized in such a way that reading and writing are necessary for something. If they are used only to write official greetings to the staff or whatever the teacher thinks up (and clearly suggests to them), then the exercise will be purely mechanical and may soon bore the child; his activity will not be manifest in his writing and his budding personality will not grow. Reading and writing must be something the child needs ... writing must be "relevant to life" - in the same way that we require a

"relevant" arithmetic. A second conclusion, then, is that writing should be meaningful for children, that an intrinsic need should be aroused in them, and that writing should be incorporated into a task that is necessary and relevant for life. (117-8)

I believe that hypertext holds the possibility of arousing that intrinsic need. And though it is not the only discursive form that can do this, it holds the promise at least of being a form of writing that provides the student writer greater agency. But in order for that to happen, the writer needs to feel that agency. Aaron seemed to sense that agency from the very beginning, although I, as his teacher, was not initially aware of that happening in Aaron. I am afraid I did nothing to initially nurture that agency. I saw only Aaron's struggle and the times when he seemed to be off task applying for an e-mail account and then accessing his e-mail and spending what seemed to be a disproportionate amount of time searching the World Wide Web for graphics to use in his first web site.

My assumptions that Aaron was wasting time were incorrect. And my assumptions may have transferred to Aaron. For example, Aaron commented in class that he did

not like his poetry project because he did not feel he had created a very good web. I believe he "learned" that from me because I chided him for not having enough of his lexias done, for spending too much time finding graphics, and for limited his annotations to the definition of terms in the poem he chose. Those were inaccurate assumptions on my part, and it is important to briefly point those out here. The time that Aaron spent opening an e-mail account and searching for graphics provided important lessons for him in his quest to learn more about electronic text. These early experiences were nothing more than textual play, important textual play that provided an excellent and fertile space for Aaron to grow his knowledge about text in general, and hypertext specifically.

And my teacher-ish behavior perhaps prompted Aaron to delete his first project from the school server. If his teacher did not value it, then he may have believed it was value-less to him as well. Though Aaron did not believe his web was very good, it is important to point out that he learned much of the procedural knowledge necessary to make web pages in the course of composing his poetry web. He learned to find images and insert them into his lexias. He learned to use color. And he

necessary to make web pages in the course of composing his poetry web. He learned to find images and insert them into his lexias. He learned to use color. And he gained his first experience in deliberately and physically making associations between chunks of text. Below is a screen shot of a lexia Aaron included in his first web. It is a good example of the lexias Aaron composed because it provides a definition of one of the words in the Nancy Wood poem he selected to annotate. Most of Aaron's lexias contained definitions of words used in the poem.

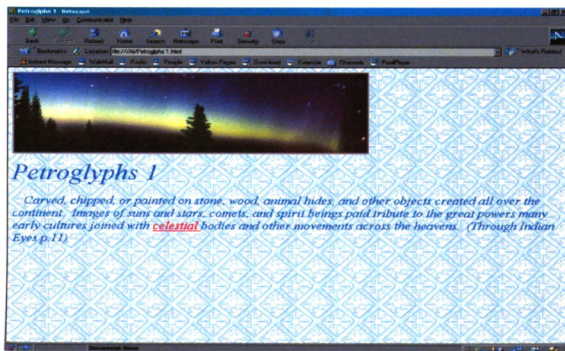


Figure 3.2. Here Aaron has defined the word "petroglyph" (sic) in his poetry annotation.

"Skeleton in Winter." We can see in this early attempt that Aaron is thinking about the relationships between images and text and that he is extending those relationships beyond the boundaries of his opening text or lexia.

Recall that Aaron spent much of his class time looking for images, checking his e-mail, and exploring the internet for topics that were not seemingly related to his project. As mentioned earlier, Aaron seemed to learn a great deal about the computer through "off task play." Initially I did not realize how valuable this play was. But play, according to Gretchen Owocki (1999) creates what Vygotsky refers to as a "zone of proximal development" where children experience a challenge that in some way allows them to restructure their schemas (12). The play that Aaron engaged in, setting up an e-mail account for himself, corresponding through that e-mail account, and skimming, diving into, and leaving internet sites that did not initially seem related to his project, ultimately seemed to help Aaron become more comfortable with electronic text.

I see this play as necessary textual play. And though it was not officially related to what we were doing in class, it provided a fertile space in which

his project, ultimately seemed to help Aaron become more comfortable with electronic text.

I see this play as necessary textual play. And though it was not officially related to what we were doing in class, it provided a fertile space in which Aaron increased his experience and expertise with electronic text.

Biography Web

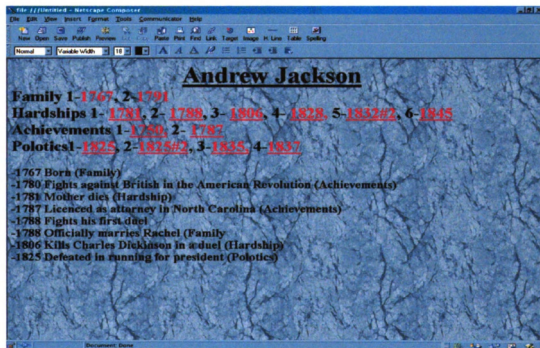


Figure 3.3. The opening screen of Aaron's biography web on Andrew Jackson.

Aaron's second project involved selecting a famous American and creating a web site about that person.

The biography project was a joint history and language arts project where students selected a

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biography to read. They were given class time to read in both their history and language arts classes. The history teachers also gave students a packet that guided them in taking notes and that helped them organize their notes. The language arts teachers all used various supports. In my classes, students responded to their reading a response journal where they reflected on what they were reading. From a set of generic questions, students chose one that was appropriate for that day's response, and wrote roughly one hand-written page. My students also responded in their journals about the processes they saw themselves using as they composed their hypertext webs.

Aaron chose to read a biography about Andrew Jackson and then create a hypertext web about him. Unlike the poetry web project where a poem provided a "jumping off place" for the reader and writer, the biography web required that students think of broad topic headings and create lexias that linked off those headings. When Aaron and I conferred about his web, I saw that he had created links to various lexias from his opening screen, and from those individual screens back to his opener. But he was having difficulties trying to determine where else he could create links. Again,

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Aaron understood the procedure for linking text, but, as with his earlier web, he did not seem to understand that hypertext allowed him greater organizational freedom.

I had told the class that their lexias needed, on average, to have three links. One of those links could return the reader to the opening screen, but the other two links should give the reader a way to move into the web. I stressed that students should look for relationships between pieces of text, and anticipate that their texts would link and to plan accordingly.

Aaron seemed to have difficulty writing pieces of text that would have to later link to either something he had already written, or something that he had yet to write. And it seemed that he had difficulties finding common threads or themes in the information he had on Jackson.

Remember that the hypertext link is a crucial element in a hypertext web. It moves the reader from one space in the web to another. It can make windows appear, disappear, or rearrange themselves so that the destination text comes to the front of the screen and captures the reader's attention" (Bolter 70). It is the link that creates what Landow refers to as "open

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bordered text" (Convergence 61). Indeed it is the link that creates and supports the network of lexias.

But it was this concept of linked text that Aaron continued to have difficulty with. The writing conference with Aaron seemed to be helpful and within the next few days he created a number of links in his individual lexias, and he was able to write more lexias that anticipated some of the links he wanted to make. But Aaron's links were organized on his opening lexia in chronological order.

It is important to point out that there is nothing wrong in organizing information in a web in chronological order. In fact, some cognitivists believe that hierarchically overviewed hypertexts allow for easier navigation (Dee-Lucas 86). But it did not seem at the time that Aaron was organizing his opening page and his web with an audience other than himself in mind. He was organizing text in a way that seemed logical to him, based on his previous experience with text, and based on his previous experience with text about the historical figure he was writing about--Andrew Jackson.

I again conferred with Aaron to discuss his progress on his biography web and realized that he was still having difficulty with the multi-linear aspect of

hypertext. He had revised his lexia or overview and added broad categories for the reader to click on: Family, Friendship, Achievements, and Politics. The screen shot below is one version of the opening lexia. Aaron continued to revise his web until all his lexias used the same background image and the same color scheme. This shows a growing sophistication on Aaron's part regarding web composing, as well as the ability to turn a single image into a background image.

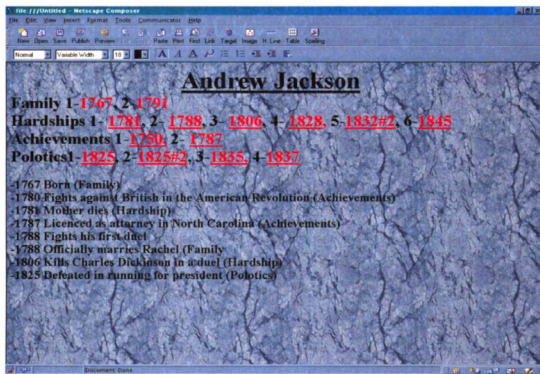


Figure 3.4. A screen shot of Aaron's opening of his Andrew Jackson web. Notice that Aaron has organized his links in chronological order, and that he has explained what can be found in his lexias in a chronological list below the links.

Aaron's journal entry reflects that growing sophistication. He wrote:

First of all I am making a big web of information about Andrew Jackson. I have lexias that link off of other lexias.

For example, I have an opening page that has 4 categories. Family, hardships, achievements, and poletics (sic). I have a number of dates after the events of his life that link off to other lexias and tell more information on it. I plan to make more lexias & make all of them have pictures and backgrounds (Appendix C).

Notice that Aaron, though he had included labels for broad categories of information, followed those labels with dates in chronological order. Aaron probably included the labels out of a desire to please me, his teacher, and out of a desire to get a good grade. Aaron ultimately took the dates off his opening lexia when I told him he did not have to provide a link to every lexia on his opening screen. This surprised him and told me that Aaron was still with the tension

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between what he instinctively knew about multi-linear text and how to represent it. Though Aaron now had an opening screen that gave an overview of particular aspects of Andrew Jackson's life, his lexias all bore the title of the year in which many of the events happened.

Though Aaron had difficulty envisioning alternative ways of organizing the texts within his hypertext web, he had learned several key elements of web design during this second web authoring experience. All his lexias had the same background and he used the same colors in his text through the web. This showed a growing sophistication in the way he composed his text and the design elements he was considering as part of his composing process.

In his final journal entry regarding his Andrew Jackson web, Aaron wrote:

Last week I did a lot of changes. I basically kept the same information but switched it all all (sic) around. I changed a lot of my links as well.

What I would do differently is I would plan all my stuff out on paper before I type any of it. And the only things I'd do different is

let you [the teacher] look over it before I
start typing (appendix C).

The Study Project

Invention and Drafting Strategies	
Topic Selection	Selected topic that would provide enough lexias to create what he had been taught was a good web.
Pre-writing	Read book about key moments in the 20 th Century.
Control	Composed first in a spiral notebook noting linking words and destinations at the bottom of the page.
Links	
Placement	At the bottom of his written text on each lexia.
Destination	To the chronologically "next" key moment in the 20 th Century, to the "previous" event, and "home" to his opening screen.
Layout and Design	
Text Placement	Written text placed between two ornamental horizontal bars—one "flag-like" and the other "leafy."
Image Placement	No images used.
Background	Used background image that included flag and Statue of Liberty.
Engagement Levels	Worked during lunch and at home. Found web composing "fun."
Home Computer Access	None.

Figure 3.5. An overview of Aaron's web composing processes.

I will divide this section of this chapter into the various stages of the writing process, but I do not want to convey the idea that the writing process is a series of lock steps. Rather it is an ever-changing recursive process that spirals back and forth upon itself according to the needs and wishes of the writer as she or he interacts with the emerging text. I will provide descriptions of the way in which Aaron used such a process to compose his Twentieth Century Web, and that his process included invention and drafting, revision, editing, and publication. And I will provide descriptions of the way in which graphics, color, and links became a vital part of Aaron's text.

Invention and drafting

As seen in Aaron's journal entry earlier, he had already begun planning his next web. It was within a few days after Aaron wrote journal entry that he finished his Andrew Jackson biography web and began a new, unassigned web that he planned to show at a student technology showcase in Grand Rapids. I had received an invitation from the Michigan Association of Computer Users and Learners (MACUL) to be part of their first Student Technology Showcase. Aaron was very excited about this invitation. I could only take eight students

to the showcase, and Aaron wanted to be one of those students. With that in mind, he decided to compose a new web.

It is important to understand that any act of composing is situated within a larger cultural and social framework. Aaron's initial hypertext composing itself was situated in a larger context that brought together all of Aaron's language learning as well as his experiences with text and his experiences using text to mediate meaning. Aaron's experiences within the culture of his eighth grade language arts classroom also provided a context for his textual negotiations with hypertext. The atmosphere in the classroom allowed students to share ideas, teach each other, celebrate successes, and share frustrations. All of this plus the on-going dialogue Aaron engaged in with his emerging texts, with himself as author and reader, provided a Vygotskian history from which Aaron could inform this new composing activity.

Aaron was very eager to participate in this student showcase, and decided to use his previous experiences with web composing to inform a new web. He was aware that linking was a problem for him in his previous webs and so he decided to choose a topic that would make it

easier for him to create links. To do this, Aaron decided he needed to pick a topic that had "events and stuff" (Appendix B). Aaron, in his post project interview, said that he thought his Andrew Jackson web was "kind of boring." He explained that for his new web he "wanted something that had more subjects and stuff" (Appendix B). And so he chose the Twentieth Century as the topic for his new web.

We could say, then, that Aaron chose a topic based on the discursive form he would be using and on his beliefs about his anticipated audience. These are important elements in any writing process, especially if we consider Aaron's previous hypertext composing experiences as rehearsals for this particular project. Donald Graves talks about "rehearsal" as preparation for composing. We could consider that Aaron's previous hypertext compositions informed him that he needed to choose a topic that he believed would allow him to link blocks of text. Graves points out that "conscious rehearsal accompanies the decision to write" (Fresh Look 75), and though Aaron did not rehearse in any of the ways that Graves illustrates (drawing, list making, outlining, etc), he nevertheless sifted through a number of possibilities before he chose his topic and, the fact

that he would be creating a hypertext web affected his decision regarding his topic.

In a brief pre-writing conversation regarding topic, I asked Aaron if he had any special interests. He first thought about a sports related topic, but quickly dismissed it. Our conversation ended without Aaron selecting a topic, but he arrived at school the next day and announced that he had found a topic he believed he could work with—the twentieth century. In his post-project interview Aaron said he had read a book about the twentieth century and made his decision based on that reading experience (Appendix B). It is also important to note that Aaron chose his topic at the beginning of the year 2000 when there was a great deal of media attention on the millennium and retrospectives on the twentieth century.

And so, Aaron chose his topic. He began giving up his lunch period to work on his new web about the twentieth century. It was Aaron's general custom to eat his lunch quickly so he could spend the rest of his lunch period playing basketball or talking with friends. But he decided that he wanted to work on his Twentieth Century Web instead, so as soon as he finished eating his lunch he would come up to the computer lab and work.

Aaron of course had the extrinsic reward of Grand Rapids working on his motivation. But he also seemed to have become more comfortable with hypertext technology. It is interesting that though Aaron seemed to have initial difficulties with the technology and the concept of hypertext, he was so engaged in the act of composing hypertext documents that he was willing to give up socializing with his friends in order to work on his web. This speaks a great deal to the powerful engagement that hypertext seemed to generate in all three of the study subjects. Recall that Dene Grigar found that her college students experienced a high degree of engagement when creating a hypertext web related to Gertrude Stein's "Tender Buttons."

Aaron had eight weeks to work on his Twentieth Web, yet he worked on his web at home, and during his lunch period at school. It is telling that this particular web project was not assigned. Aaron, rather than using his Andrew Jackson web as part of the showcase in Grand Rapids, wanted to create a new web that he thought would be better than his previous webs. Somehow, the composing of a hypertext web took on a value of its own in Aaron's eyes. In his post-project interview, Aaron said that hypertext composing was "fun" (Appendix B).

The crucial element of play had once again become part of Aaron's composing processes.

As he had indicated in the journal entry he wrote just prior to concluding his Andrew Jackson web, Aaron said he would plan future webs on paper before he began composing. "...I would plan all my stuff out on paper before I type any of it" (Appendix B). For Aaron this meant that he would hand write all of his lexias before he keyed them into a computer. But it also meant that he would create a map of his web before he began keying it in. Remember that I had taught Aaron's class to create a map in Story Space. Aaron did not use Story Space for his Twentieth Century web. He hand drew a map instead. Aaron used his hand drawn map to help him keep track of his individual lexias, the links on those lexias, and their destinations. The composing of this map is further evidence that Aaron spent considerable time planning his web.

Revising and Editing

Aaron composed his entire web first in a spiral notebook, devoting each page in the notebook to a lexia.

It is important to remember that Aaron did not have a computer at home, so all of his computer time had to be spent at school. Aaron, in his post project

interview, said that part of the reason why he wrote his lexias out by hand was so that he could use his school time for keying in his lexias (Appendix B). To him, it was more efficient to do part of his inventing and drafting at home. He did not do this with his earlier webs, however, which speaks again to Aaron's level of engagement in this web project and to his growing sophistication in hypertext composing. His previous projects were composed entirely at the keyboard. But what is significant is that as Aaron invented and drafted "by hand," he also thought about how he was going to link the lexia he was working on with future lexias. I will discuss the possible significance of composing lexias "by hand," in chapter 6.

Aaron saw the keying-in process of his lexias as a space in which he could revise. But Aaron's revision processes also involved drafting, especially when we think of images and color as elements of the hypertext composition. Aaron's hand-written lexias were all done very lightly in pencil. There was no color except for the blue horizontal lines, the red vertical line, and the white paper.

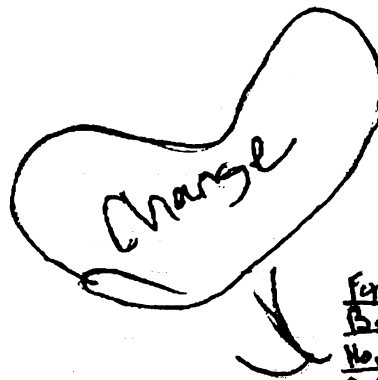
Though Aaron invented and composed his lexias "by hand," I observed that Aaron had become more comfortable with computer technology. It was beginning to disappear.

Oct. 1, 03

"The First World Series"

During October first thru thirteen of 1903 the very first World Series took place. The competing teams were the pennant winning Pittsburgh Pirates of the National League and the champions of three year old American League Boston Red Sox.

Boston ended up winning the 1903 World Series with five out of nine games won. This gave respect and bragging rights to the new league.



Dec. 17, 03
Foreword
~~Back~~-opener
~~Home~~-opener
Reference "The United States
in the 20th Century" p. 13
By: David Rubel

Figure 3.6. One of the pages in Aaron's spiral notebook where he hand-wrote his lexias before keying them into a web editor.

By this I mean that Aaron seemed to use the computer as a smart tool that could give him access to huge amounts of information and it could help him coalesce that information into something that he made his own. But he no longer had to think deliberately about the procedure of linking and procedure of harvesting pictures and inserting them into his web. These had become second nature to him. They were merely (and not so merely) part of his natural composing processes. When I observed Aaron using the keyboard during his Twentieth Century web composing, he was confident and very focused. He knew what he needed to do, and he somewhat joyfully went about the task of doing it. He no longer played with e-mail or surfed the World Wide Web. That is, he did not surf the web randomly looking for interesting sites. He surfed looking for information and graphics that could serve his purposes as a writer. The work had become meaningful play. Some of that may be because he was merging an older technology into his composing processes, but some of it can be attributed to the fact that he had simply gained in experience with electronic text.

The fact that Aaron composed his lexias by hand at first should not be interpreted as a sign that he was

moving away from the technology of electronic text and hypertext in particular. In fact, Aaron considered this aspect of his writing process necessary, but not particularly enjoyable (Appendix B). What he truly enjoyed was sitting at the computer and putting all the elements of his lexias together.

When Aaron said that web composing was fun, I asked him why. He said "Like when I think all this stuff up and actually put it together and it makes sense and stuff. I can click on something and it goes to it, a subject that relates to it" (Appendix B).

It is important to point out, again, that Aaron composed these hand-written lexias with the idea of linking in mind. At the bottom of each hand written lexia he indicated which future lexias he intended the present one to link to. So, even though Aaron was not initially composing through electronic text, he was anticipating the future hypertextuality of his work.

And one of the key elements in Aaron's processes was the way in which he linked his text. It is interesting to note how Aaron placed his links. Remember, Aaron seemed to have difficulty envisioning a multi-linear web when he worked on his Andrew Jackson biography web project. He placed all his links in

chronological order. And though he did not do that in his Twentieth Century web, he came close. For example in his opening screen to his web, Aaron provides the reader with two link choices. The reader can go to "The First World Series," or the reader can go to a lexia that provides a "jumping off place" for a number of student web sites. Aaron labels that as Ms. Patterson's website."

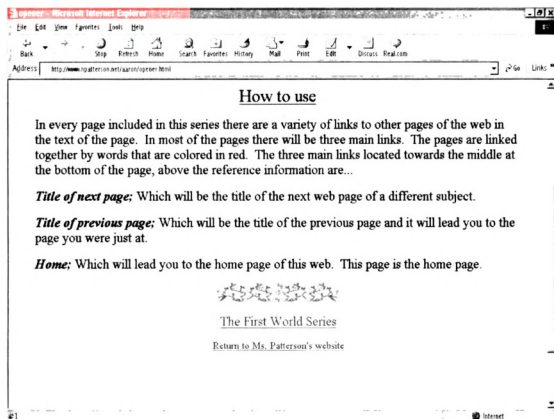


Figure 3.7. Aaron explains how to read his web. Note that he has created "next page" instructions and "previous page" instructions.

In providing only these choices, Aaron leads the reader to only one lexia within is site, a lexia that deals with what Aaron considered the first important event in the Twentieth Century—the first world series. His second screen, as shown below, gives the reader three choices. But the reader can only move ahead chronologically to the next important event—the first music, or back to the world series.

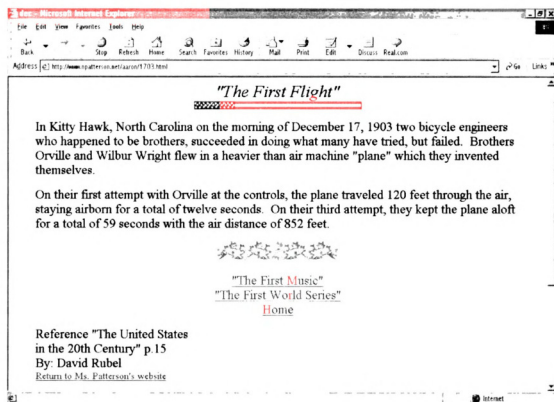


Figure 3.8. Aaron gives the reader the choice of moving to the "next" lexia, moving to the "previous" one, or going "home."

Each lexia in Aaron's Twentieth Century Web gives the reader a choice of moving up one spot chronologically,

moving back one spot, or going back to the opening screen of his website. But notice that the opening screen does not provide the reader with many choices. Going home, so to speak, in Aaron's website, does not provide the reader with much comfort or a new starting place for the reader.

So, Aaron's Twentieth Century web does not indicate that Aaron has been able to resolve the tension between what he knows about multi-linear text and what he can represent. But there are signs that he is moving in that direction.

In his Andrew Jackson biography web, Aaron treated his individual lexias as if they were sequential pages in a book. In his Twentieth Century Web, he has begun to see that a reader can go forward and backward, if such terminology can be used when discussing hypertext, and home. It is almost as if Aaron has to take small steps in his own learning processes in order to become accustomed to the multi-linear aspect of hypertext.

Remember that Aaron chose his topic with linking in mind. He wanted to make sure he had a topic that would enable him to create lexias that could be linked. But to get an idea of how Aaron went about that, we need to look again at his opening lexia.

Notice the directions that Aaron gives his readers.

He writes:

In every page included in this series there are a variety of links to other pages of the web in the text of the page. In most of the pages there will be three main links. The pages are linked together by words that are colored in red. The three main links located towards the middle at the bottom of the page, above the reference information are...

Title of next page; Which will be the title of the next web page of a different subject.

Title of previous page; Which will be the title of the previous page and it will lead you to the page you were just at.

Home; Which will lead you to the home page of this web. This page is the home page

(<http://www.npatterson.net/adam/opener.html>).

The fact that Aaron uses the words "next" and "previous" is very interesting. Aaron has the technical skills to create multi-linear text, and he can certainly negotiate another author's multi-linear text, but he is still struggling with the issue of controlling his own multi-linear text. And so he has kept his linking choices so that he can stay in control. The fact that he placed his links below the "main" text of each lexia is another indication that, though he composed his lexias with linking in mind, he believed he needed to maintain more control over the readers' choices in order to maintain control of his own composing. This is very significant because it shows Aaron's agency as a writer, his growing skills in composing through a new technology, and the pull that an older technology still has. But Aaron is ever mindful that he is in control, that he could choose how he linked his text and that he was conscious of being able to choose. When I asked him why he opted to place his links below the "main" text, he said in his post project interview, that he wanted his web to look different than the other webs in the

class. But he also said, "I'd have to go way off the subject just to link it. And I wanted to link the Model T to the First Music and stuff" (Appendix B). Aaron sensed he needed to give over control of the web to his intended readers. He chose to place his links at the bottom of the lexia so that "the reader could go to whichever [link] they were interested in" (Appendix B). Aaron added that if he had the web to do over again, he would give the reader more choices. He said:

...then the reader wouldn't have to follow a certain way to go to. They could go to something else. So they could pick on what they're interested in instead, like...what they have to go to (Appendix B).

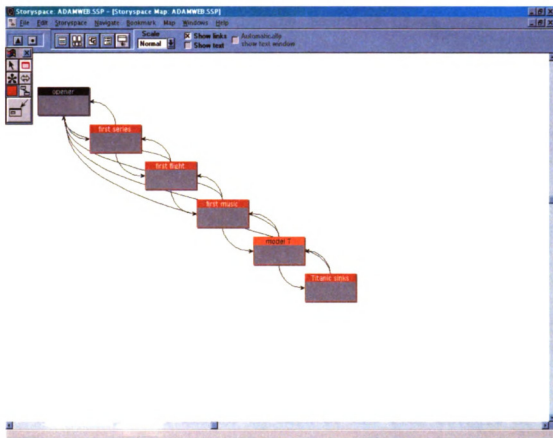


Figure 3.9. A diagram of Aaron's links in his 20th Century web that shows how he links to the next lexia, to the previous one, and to his "home" or opening screen.

In hypertext the role of the reader is enhanced. Jay Bolter believes that the volatile and dynamic nature of hypertext causes the reader to lose track of where the author has left off and the reader has begun. Remember that Murray believes hypertext readers feel a greater sense of control over their reading act because they can insert themselves into the text through a cursor, and through their abilities to click on a link that will take them to a new block of text. Aaron, as a

writer, a writer bounded by the confines of an institution and the restrictions of his earlier school related literacy experiences with sequential, seemingly author/teacher controlled text, had difficulty conceiving of the possibility that the reader would gain as much control of his text as he did as the author.

What is truly interesting here, though perhaps not relevant for this study, is the fact that when Aaron composed his last web of the school year, on the Middle Passage that brought Africans as slaves to the Western Hemisphere, he placed links within the body of his text. But he also placed images in each of the four corners of his lexia and made the images links to other lexias in the web. Plus he gave his reader the option of going "home" to the opening lexia, or "back" to the previous lexia. So, while Aaron still struggled with the multi-linear aspect of hypertext in the study project, he continued to think about that dynamic, and showed his developing awareness of it through his next web project.

It is important to discuss the role of images in Aaron's hypertext composing.

Snyder points out that hypertext merges the often separate worlds of words and pictures and, she says, "exposes our western cultural bias toward information

which can be measured by pages and paragraphs comprised of words" (18). Images, while generally considered to be valuable non-verbal conveyors of information in such media as film and video, are generally not privileged enough to accompany most scholarly text (Snyder 1996, 18). And certainly middle school students are generally not asked to draw pictures to accompany their stories or essays. Yet images are a very important part of a hypertext web. And, indeed, hypertext is considered a "more" visual form. Part of this has to do with the presence of a cursor in electronic text. But Snyder goes much further. She states that "learning how to read, produce and exploit graphics constitutes one of a number of new demands imposed on users of technology" (18). Aaron, it seems, was very willing to use graphics, to "exploit" graphics.

During the Andrew Jackson biography project, Aaron found images and backgrounds as he was composing the text that would go on each page. As mentioned earlier, he had learned from me that a single background color or pattern would make his web more visually appealing, and he took that advice and not only applied it to his Andrew Jackson biography web, but included it in his plans for his Twentieth Century web.

In his journal he wrote:

First of all at home I've written down everything that I plan to put on my web. I have my opener and acouple (sic) other pages to go with it.

Today I typed my opener & my first page that links to it. I put a background on both of them as well.

I changed a few things, as I was typing. Like stuff that didn't sound right. But I also changed the linking words I used (Appendix C).

One of the reasons Aaron wanted to write his lexias at home was because he wanted to make sure he had enough computer time at school to look for images. He spent several days, both during lunch and during class time looking for images that he thought would enhance his Twentieth Century web. In his post-project interview he talked about the role that graphics played on his lexias.

When asked why he selected the flag banner that he placed under the title on each lexia, Aaron said that he wanted

...to separate the page is why I did that,
so people knew that was the title and
that underneath that was the text and
that underneath that icon is where the
links would be, and extra information
(Appendix B).

And finding just the right image became very important to Aaron. After he had completed most of his lexias, Aaron was not quite satisfied with the way they looked. He wanted to find a graphic that would separate the main text from the text where he cited his references. Images and text took on equal importance for Aaron, and selecting the proper images were very much part of his composing processes. The placement of the images and the selection of what Aaron considered the perfect background (the Statue of Liberty and the American flag) supplied as much meaning, in his mind, as the text. Indeed, the images had become part of the text.

It is important to point out again that Aaron was using a recursive process to compose his Twentieth Century web. He planned what he wanted in his lexias, and decided what his links were going to be. He searched for and inserted graphics that he believed would enhance his lexias. And he considered the format of his text and his audience as he composed. He also continued to revise, invent, and compose throughout the process.

Janet Emig notes that a traditional approach to writing sees the process as linear, beginning with a planning stage and ending with either a final draft stage or a publishing stage. Had Aaron used a linear writing process, he simply would have keyed his information into his lexias as he had written them at home with paper and pencil—without changes. The fact that he changed his text, including his links, means that he felt comfortable as a writer, and willing to make changes as he, the writer, saw fit, and he did so within an electronic environment.

I see this as one way in which Aaron used a recursive writing process where the "stages" blur into each other. I view this as an indication that Aaron had a sense of agency regarding his web. He was no longer

writing a document for a grade or because a teacher told him to. He was writing a document for a real audience—one he anticipated would stop in the Riverton Middle School display booth at the technology showcase, and one that would view his text on the World Wide Web. In fact, Aaron envisioned that audience. He noted in his post-project interview that he saw his audience as “probably someone who likes history and who is, like younger. Not an old person” (Appendix B).

Publishing

Remember that Aaron initially composed his Twentieth Century web for a technology showcase in Grand Rapids. This showcase also featured a competition and Aaron and the other students who displayed their work hoped to receive an award for their display. With that in mind they dressed up in period costumes that reflected their webs. One boy dressed in full Native American dress, complete with head-dress. One girl dressed as a World War I nurse to reflect her project on Clara Barton. And Aaron dressed as an early twentieth century newsboy in knickers, short boots, and cap.

Upon return from Grand Rapids, after Aaron and the other students learned that they had not won an award, Aaron continued to work on his Twentieth Century Web in

anticipation of it being published on the internet. He was concerned about the size of the text he selected and concerned that all of the text be contained on the screen of the computer without the reader having to scroll down. In other words, Aaron's motivation and engagement with his web did not wane after the showcase event had ended.

In his dissertation Writer Motivation, Rhetorical Purpose and Classroom Web Publication Projects (1998), Bradford Barry found web based projects to nurture a high degree of intrinsic motivation among student writers. Aaron seemed to certainly experience some of that intrinsic motivation that Barry discovered.

Conclusions

It was that motivation that surprised me most about Aaron. I had not expected him to be so captivated by the act of composing hypertext webs. I was surprised by his attention to detail, his desire to "get it right," and by the amount of free time he was willing to give up in order to finish his web. Hypertext seemed to provide a space in which Aaron could play with text. And though Aaron had difficulties in making his 20th Century web more "hypertextual," I could see that he was on his way to being able to add that kind of control in his next

hypertext web. And, indeed, he was able to accomplish this in his next web project on American Slavery. The screen shot in Figure 3.9 is a lexia from Aaron's last web project of the year. Note the images in the corners. Aaron made these links to other lexias in his web. Notice also that he has included what I refer to as "intertextual links" in the written text of lexia. And, note, too, that he has included links below his written text.

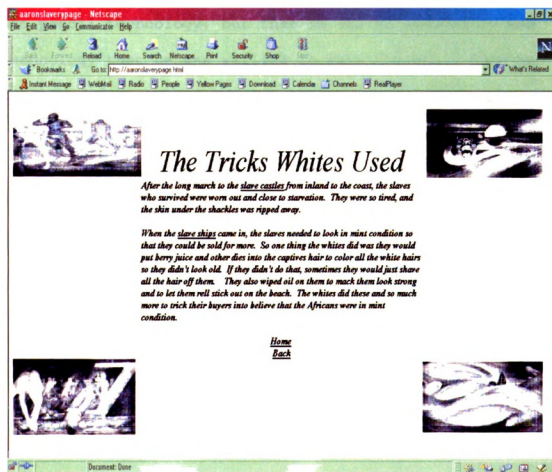


Figure 3.10. A lexia from Aaron's last web project where he use "intertextual links."

But what also surprised me about Aaron's composing processes was the fact that he wrote everything in a spiral notebook before he entered it in a web editor. This indicates to me Aaron's willingness to "get it right." He knew he had a better chance of controlling his processes if he used a more familiar technology and tracked his links and lexias "by hand." This suggests to me that Aaron was still most comfortable using paper and pencil technology, but that he was so engaged by web technology that he was willing to take the extra time he needed to take in order to control his processes.

CHAPTER FOUR

SUSAN

Introduction

In this chapter I will show how the study subject, Susan, went from resisting hypertext composing, to becoming a very efficient hypertext composer. I will investigate how her experience with book culture text to inform her decisions as she composed hypertext, and I will examine how she used text, color, and images in a meaningful way. I will also show how Susan's concern for a good grade may have influenced the decisions she made as a hypertext writer. And through this accounting of Susan's processes, I will question whether Susan's composing processes were impacted by hypertext technology. I will look at whether the process of merging text, images, color, and links opened avenues of expression that were not necessarily available to Susan. More traditional acts of school composing facilitate the assumption that writing happens through a linear process and that it is always organized into a beginning, a middle, and an end. I will also investigate whether hypertext composing provided an environment that facilitated textual play with images, color, design

elements, and links, and fostered heightened senses of textuality and engagement in the act of composing.

Susan, at the time of the study, was an eighth grader in my language arts class at Riverton Middle School. She was well liked by her teachers and considered an exceptionally hard-working student who strove to get straight A's on her report card. Grades seemed very important to Susan, and she seemed to know how to get good ones. She conscientiously did her work and reviewed for tests. She often approached teachers after class if she had a question about an assignment. She was well-behaved and good natured.

Susan was also considered a good athlete. She played on the girls' basketball team and ran for the school track team. She also had begun acting in several civic theater groups in the area. In fact, she appeared in several productions throughout her eighth grade year.

She was also considered an excellent writer by her seventh grade English teacher. The seventh grade curriculum focuses on narrative reading and writing, and Susan demonstrated that she was very good at narrative writing. She could develop a plot in an interesting and logical way and embedded her writing with interesting details that kept a reader interested. Her characters

used convincing dialogue and Susan was able to move the action of the story along through their dialogue. Her finished pieces of writing contained few surface errors.

Susan's family had lived in the community for generations. Her family name, in fact, is common to the area, but seldom found outside it. She is the younger sibling of two brothers, one of which was considered a gifted writer by his middle school teachers. Susan had access to a computer and the internet at home, and, indeed, according to her post project interview, there had been a computer in the home since Susan was eight years old.

Previous Hypertext Composing Experience

This section will show how Susan initially resisted hypertext composing. It will also highlight how she moved beyond that resistance to create her first and second hypertext projects. Again, to understand Susan's composing processes it is important to highlight her previous hypertext composing experiences. Susan was initially very resistant to doing a hypertext project. She wrote in her journal:

Well, lets just say I'm keeping myself
confused because I definetly (sic) don't like
this project at all! It doesn't make and

sense. Why do you have to link social studies to L.A.? They are two different subjects and its boring having history twice a day. I don't think that we wont(sic) use regular writing in the future like you said on Friday. I don't think that this project is as easy as you say it is. I can't find any real information on anything. The only information I have fits into pretty much one box and you need 20! I guess that's all (Appendix D).

The "boxes" that Susan mentions in her journal entry refer to the individual boxes or files that appear in a Story Space map view. Figure 4.1 is an example of such a map view.

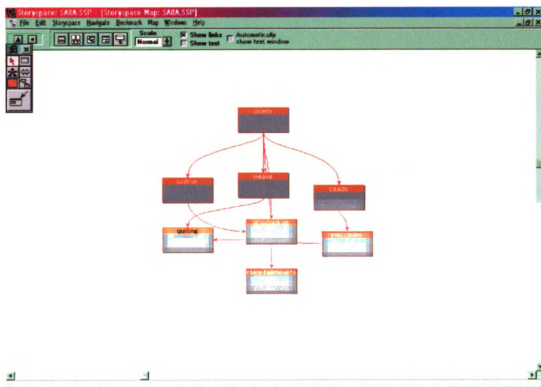


Figure 4.1. Here is an example of the “boxes” Susan refers to in her journal entry. This figure is another example of a map view in Story Space. Notice the lines which are links.

I had not told students that they would not use “regular” writing in the future, but I had told them that they would probably be called upon to use hypertext more and more and that one of the reasons we were learning about it in language arts was because hypertext would probably play a major role in their future reading and writing tasks.

In an impromptu conversation that Susan and I had months later, I asked her why she had been so frustrated in the beginning. She said:

...well here's the book where it starts at the beginning and goes through to the end, and then [hypertext is something] where you can go here, then here, then anywhere. It doesn't matter which way you go...I didn't see how that would make sense to anybody" (Appendix D).

Susan had come up against a form of writing that challenged her notion that text progressed in a defined order of beginning, middle, and end. And she was used to writing narratives that centered around a character in conflict. She was suddenly presented with the task of writing text that held no center, or more accurately, had moveable or provisional centers that shifted with the reader or the writer. Not only was Susan presented with a task where she had to create text with multiple centers, she was face with searching for information through texts with multiple centers. This included search engine results pages as well as hypertext documents on the world wide web. And though Susan indicated at the beginning of the year that she had searched for information on the world wide web, she also pointed out that she had never been faced with such a large information-gathering task as her poetry web called for. Ignacio Ramanet, editor of La Monde

Diplomatique, cited in Rollason's "Library of Babel," says:

There is ... the excess of information, which confronts all Internet users with their own ignorance as they try to find their way through an ocean of information which tends to be difficult to organise or verify; this is the syndrome of the Library of Babel as imagined by Jorge Luis Borges, which contains all the books ever written or to be written (in every language and every script) ... as in that Library of Babel, vast amounts of information are there on the Net, with all their variants and approximations; nothing guarantees the reliability of the data; rumour and fact become as one (cited in Rollason, http://www.rpg.net/quail/libyrinth/borges/borges_papers_rollason2.html).

Susan may have felt she was faced with this library of Babel. Presented with what seemed to her an infinite network of information and a task too large and too "different" from one she had ever encountered, at least in a classroom situation, she may have felt overwhelmed and ill prepared to maintain her top grades.

Had Susan been simply asked to write a paragraph about Native American beading, and another paragraph about the significance of salmon in Athabaskan Indian culture, she would have no doubt complied without complaint. But because Susan was presented with what the cognitivists call an "ill structured domain," (Spiro cited in Britt, Rouet, and Perfetti 44) she was uncomfortable. Spiro defines these ill-structured domains as situations where problems, as in learning tasks, are ill-defined and there may be no single solution (44). Susan was presented with a situation where she had to define the boundaries of the project, where she had to determine herself where she would find information, how she would find it, and which information she would choose once she found it. Plus, she had to use a composing technology she was less familiar with.

As a teacher, I was concerned when I read Susan's journal entry. Most of the students in the class seemed to enjoy working on their hypertext projects. But Susan indicated in her journal that she did not. She was compliant regarding her work, but the last thing I wanted was a merely compliant student. I wanted Susan to find hypertext composing meaningful, and even joyful.

In fact, I was so concerned that I sat down with her and asked her to give her project another two weeks. I sensed that Susan was concerned about whether she could do the work and was even more concerned about getting a good grade. Less important to her was the idea of getting caught up in a new learning experience. I wanted Susan to realize that she could do well on her project, but that she first needed to give it a chance and to get through the part of the task where she had to build her procedural knowledge regarding hypertext. So I told Susan that if, after two weeks she was still feeling frustrated, that I would let her approach the project in a different way. I also contacted Susan's mother and told her that I knew Susan was resisting, but that I wanted to give her two weeks to get used to hypertext composing. If after that Susan was still resistant, she could take a different approach to the project. Susan's mother was very supportive. She told me that she and Susan had discussed Susan's frustration and that she, her mother, told Susan she would encounter many new writing experiences, and that she was bound not to like them all.

Poetry Web

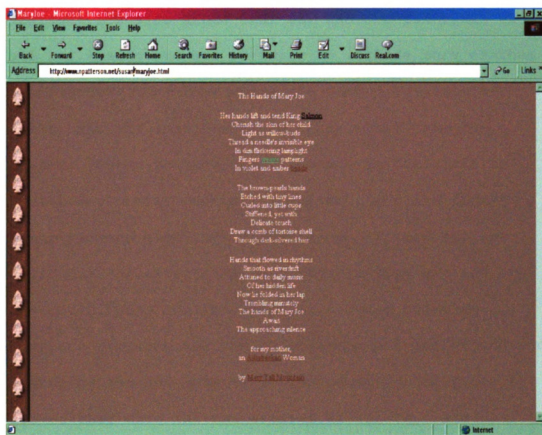


Figure 4.2. This is the opening to Susan's poetry web on Mary TallMountain's poem "The Hands of Mary Jo."

Susan chose to annotate a poem by Mary TallMountain entitled "The Hands of Mary Jo." When Susan understood that she would not lose control of her ability to earn an A on her report card, she seemed to relax and her frustration levels lessened. The two-week trial period passed and Susan did not ask to discontinue composing in hypertext. Three weeks after she wrote the above journal essay, Susan wrote that she had 21 lexias written for her poetry web project, more than the number

she needed to earn an A. And she had plans for more lexias. She also wrote that she had created links in all her lexias and was planning to include more of them (Appendix D). She knew where she wanted to place her links, and she knew where the links would take the reader. Susan was the first student in the class to finish her poetry annotation project, and she seemed quite pleased with that distinction. I told her she could use her extra time to further revise her web or she could "play" on the computer. Susan chose to continue revising her web by changing her background and searching for and inserting other graphic features. It seemed that once she was assured of her "A," she was free to play with the textual features inherent in graphics and color. It was during this point in her composing process that Susan noted to me that she was having fun. I will discuss this element of her composing processes later in this chapter.

Susan's initial frustration and the fact that she valued a grade above a new learning experience where she would be challenged to rethink textual organization seems to be a classic example of one of the ways in which grades actually interfere with learning. Alfie Kohn points out that grades often encourage students to

think more in terms of how well they are doing rather than what they are doing. Kohn writes that grades create a situation where "interest, like achievement, is usually lower when students are working for a grade" (43). He adds that "traditional grades are likely to lead to three separate results: less impressive learning, less interest in learning, and less desire to do challenging learning" (43).

Susan seemed interested in doing challenging work, but only if she could use familiar discursive forms. When she sensed that she might have difficulty using a new form, she resisted, however respectfully. Fortunately her resistance did not last long, and knowing that she could return to a more familiar discursive form if she needed to seemed to help her.

And Susan's first project, her poetry annotation, was impressive in a number of ways.

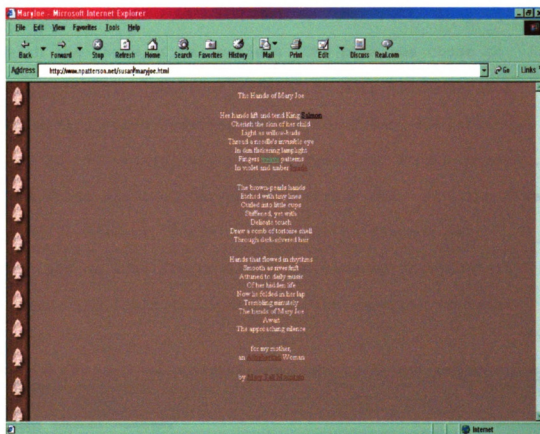


Figure 4.3. Screen shot of Susan's opening to her poetry annotation of "The Hands of MaryJo" by Mary TallMountain. Note the border that matches the theme of the project, and note, too, how the text contrasts nicely with the background color.

First, her opening screen was very attractive. The attractiveness of the page is an indication of the kind of care Susan took in constructing her web. And that care seems to have stemmed from a high level of engagement in the composing act.

During her revision process when Susan found the background that she used on all of her lexias. She commented to me that she liked the earthy-brown color

and she thought the arrow head border was in keeping with the theme of her project. The poem she chose to annotate, "The Hands of MaryJo" by Mary TallMountain, initially posed some challenges for Susan, and that was one of the reasons why she was resistant to the project. The final draft of her opening screen only contains five links. However, individual lexias within her web contain at least three links and many of them contain more. The lexia in Figure 4.4, for example, contains four.



Figure 4.4. The unifying graphic, the two items crossed over the feather, which appears on all the lexias that do not have an illustrative graphic. Also note the two horizontal bars. These appear on all the lexias within the web.

In the lexia in Figure 4.4, and in most the lexias in the poetry web, Susan used a unifying graphic—the feather with two items crossed over it. This is in keeping with the concept of a unifying graphic identity suggested by Patrick Lynch and Susan Horton in their Yale Style Guide (<http://info.med.yale.edu/caim/manual>). The only times Susan did not use this graphic were when she had a graphic that illustrated the topic of an individual lexia. For example, in the poem she uses “King Salmon” as a linking phrase. The lexia that pops up when the reader clicks on that link has a drawing of a salmon leaping out of the water.

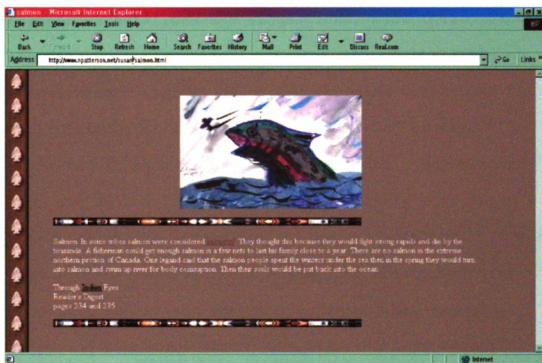


Figure 4.5. An example of a lexia that does not have the unifying feather graphic, but instead uses an image that compliments the text on the lexia.

However, the salmon lexia still has the two horizontal bars that sandwich the text. Susan told me that when she saw that horizontal bar graphic, she knew she wanted to use it in her web, and it appears at the beginning and end of the text on each of her lexias. Susan was the only student in the class to use the same background and to consistently use unifying graphics in this way in the poetry annotation project. Most of the other students in the class wanted to use different colors or different background images on each lexia, as did Adam. But Susan, accustomed perhaps to keying in on

teacher expectations and suggestions, made these graphic elements part of her revision even though there was no "requirement" that students use the same background on their lexias, or that they use a unifying graphic. But I offered it as a suggestion to students. Susan acted upon the suggestion. And it is very likely that Susan simply liked the appearance of the bar graphics. In her post project interview she noted that design was very important to her and one of the reasons she enjoyed composing hypertext webs. She said, "I love designing things, because you get your own little touch in it..." (Appendix E).

Susan continued to revise her poetry web, searching for images, and stock-piling images she thought she might need for her next project, the biography web.

Susan initially composed her poetry web using Story Space. She liked Story Space's mapping function, especially. Susan indicated in a short classroom conversation that Story Space helped her keep track of her lexias and the links she was making to other lexias. Once she finished writing her lexias in Story Space, I observed her copying and pasting them into the web editor Netscape Composer. From there she added color and graphics. Susan could have added color and graphics

in Story Space, but she liked the look of the Composer screens better, and so she did all her editing and revising in that Netscape Composer. This is significant because we see Susan making a strong effort to control her composing. She saw in Story Space a tool that could help her do that.

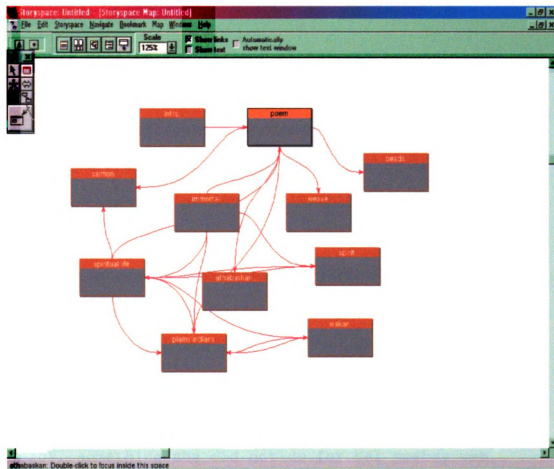


Figure 4.6. A Story Space map view showing part of Susan's "Hands of MaryJo" web.

However, her composing skills were already sophisticated enough for her to see that she had choices

in how she would compose and that she had choices regarding her tools of composition. She realized that Composer gave her more options as a writer. Like a child who discovers there is more than one way to structure a sentence, Susan had discovered there was more than one way to build a web.

Biography Web

In this section I will look at Susan's composing processes and investigate how an additional composing space—a word processing program--influenced her processes that may have added a degree of complexity to Susan's composing processes. I will also investigate whether this complexity might be seen as evidence of Susan's increased agency as a hypertext writer and whether it helped her maintain heightened involvement in the composing process task.

When Susan began working on her biography web, though, she pre-wrote her lexias in MS Word (see figure 4.10), something she did not do for her poetry web. Susan approached her biography project with a very different attitude than she did her poetry project. Her resistance was gone, and she seemed to engage eagerly in the biography web tasks. Part of this may be due to the fact that her notes were organized through the handout

packet her history teacher gave her (Appendix H). This packet helped students arrange or organize their note-taking under such categories as "Adulthood," "Achievement," etc. Many students in my class organized their hypertext webs the same way, devoting a lexia to "Adulthood," and another to "Achievements."

But much of Susan's change in attitude may have been due to the fact that she simply felt much more comfortable with electronic multi-linear text. She knew how to make links, copy and paste from one screen to another and from one program to another, and to save in the appropriate file, etc. In other words, she had developed enough procedural knowledge about the technology that she no longer had to focus on it. As with Adam, the technology had begun to disappear. Perhaps because of the note-taking support from her history teacher, she knew she would be able to write the required number of lexias to get an "A" in my class. But Susan had discovered something else.

Susan commented to me one day early in her biography web composing that hypertext mirrored "the way people think." Susan had discovered something akin to what Vannevar Bush saw when he conceived a prototype of a hypertext system ("As We May Think"

<http://www.theatlantic.com//unbound/flashbks/computer/bushf.htm>) where he envisioned a smart desk that allowed for associational data collection. Bush, after criticizing traditional modes of information retrieval, pointed out that "The human mind does not work that way" (6). Bush went on to say that the mind "snaps instantly to the next that is suggested by the association of thoughts in accordance with some intricate web of trails carried by the cells of the brain" (6).

Patricia Ann Carlson, in an early article about hypertext noted that hypertext "more closely models the deep structure of human idea processing by creating a network of nodes (modules) and links (webs)..." (95).

It is likely that Susan had discovered on her own what Vannevar Bush meant when he said that the mind snaps instantly, and what Carlson saw in the relationship between hypertext and human idea processing. Or it could be that Susan sensed what Roland Barthes, when discussing readerly and writerly text, did when he described the ideal textuality as multiple networks that interact...

...without any one of them being able to surpass the rest; this text is a galaxy of signifiers,

not a structure of signifieds; it has no beginning; it is reversible; we gain access to it by several entrances, none of which can be authoritatively declared to be the main one; the codes it mobilizes extend *as far as the eye can reach*, they are indeterminable..."

(emphasis in original) (5-6).

Susan had made a connection between how she was composing using a web editor and her perception of how her mind linked bits of information and possibly even chunks of text. And this perception is very much in keeping with Deleuze and Guattari's observation that "Many people have a tree growing in their heads, but the brain itself is much more a grass than a tree" (15). Moulthrop interprets this to mean that the brain is "not a circuit board with engraved pathways feeding through trunks to a central bus, but a self-configuring network of connections that spring up and grow spontaneously" (Promise of Hypertext 256). Whatever it was that Susan sensed, she worked on her biography web enthusiastically. She chose to read a biography about Thomas Edison, and throughout the reading process took notes using the structured note-taking procedure prompted by her history teacher's packet.

As mentioned earlier, Susan began drafting her biography web by typing each lexia as an MS Word document. But she did not create a new document for each lexia. Rather, she created one long "continuous" document, broken by cite references and the number of the lexia. Without those, her document could easily be read as a report on Thomas Edison (See Figure 4.10). Once Susan had decided what she was going to say in each lexia, she determined what her initial links would be. These she hand highlighted on her word-processed document. Once that was completed, she copied and pasted each lexia into Story Space so that she could create a map of her hypertext web (Figure 4.6).

Rather than label each lexia with a number, Susan decided to label them using an alphabetic letter. It is interesting that Susan used the "show text" option in Story Space so that she could get a small glimpse of the text in each lexia when she looked at her map view. "Show text" allows the writer to see a fragment of the

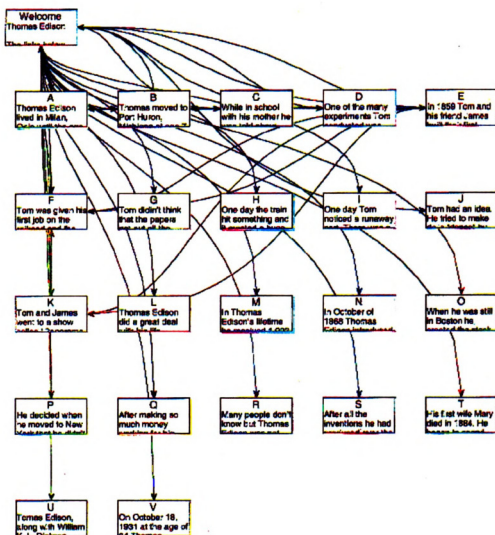


Figure 4.7. Susan's Story Space map view where she further planned her biography web. Note that used the "show text" feature in order to remind herself what each lexia discussed.

text in each lexia in the map view. This helped Susan when she made her actual links. It is also interesting that Susan chose to copy and paste into Story Space before she did yet another copy and paste into Netscape Composer. Her only explanation for this was that Story Space allowed her visualize her web.

What is important here is that from the very beginning Susan was thinking about how she would link various words and phrases in her web. When she initially composed her lexias in MS Word, she was thinking about her links. And she continued to think about them when copied and pasted into Story Space and then mapped out her web. She writes in her journal:

My opening page doesn't really have much yet. It has no images but I have the alphabet A-U for the lexias. They are links that do not have names yet. The top has the name of my person, Thomas Edison.

I prewrote every lexia and copy and pasted it onto Story Space. Now I am searching through the prewritten things and am finding things that link together through the already written lexias. I plan to go to IconBazaar and find

pictures. It should be between 20-25 lexias total (Appendix D).

But perhaps the need to think about links is born more out of the knowledge that hypertext is as much a fragmentation of text as much as it is about associations between pieces of text. Michael Heim (1987) believes this fragmentation actually decenters the author's voice. And Sven Birkerts (1994) believes hypertext, specifically hypertext fiction, is dissolving human authority. His premise is that by allowing the reader to take more control in determining which path the text will take, the author's role will be diminished. And when we diminish the author, we diminish textual authority 163). Rosenblatt, however, reminds us that meaning and authority take place when the reader and the text come together. It is the reader who brings meaning to the text (14). This does not negate the author. It simply empowers the reader.

In Susan's experience with not only her poetry annotation project, but her biography web and her slavery web, which will be discussed later in this chapter, hypertext composing does not seem did not seem to rob Susan of her control as an author. Writing text that would eventually be read by an empowered reader did

not diminish Susan's abilities to make decisions about her web, or to see the results of those decisions almost instantly. This ability hardly dissolved her human authority, or agency, a better word for our purposes here. If anything, it increased it.

Hypertext is not the only form of fragmented text, of course, and so, if we are dissolving human authority, hypertext is not the only discursive form accomplishing that feat. We have magazines, encyclopedias, and textbooks, not to mention visual texts such as music videos. In the impromptu conversation between Susan and me, Susan pointed out that Choose Your Own Adventures are a little bit like hypertext (Appendix F). But she also saw a similarity between hypertext and play rehearsals. Remember that Susan had performed in several plays during her eighth grade year. She saw a relationship between hypertext and a play rehearsal saying that a rehearsal "jumps back and forth from scene to scene..." (Appendix F).

Indeed, my observations of Susan, Aaron, and Cathy, who will be discussed in chapter five, as well as the other students in the class does not lead me to believe that they as authors were experiencing a de-centering process. In a classroom, hypertext composing placed

Susan and the others in the center of a writing environment in which they were able to create and work. They controlled the direction of their research, the design of their pages, and the words and phrases that linked their chunks of text. No one provided a format in which they had to write nor did anyone give suggestions about the sequence of information. All of these decisions belonged to Susan and the other students. They were able to make authorial decisions and see the results of those decisions. And they were aware of this. We see that in Susan's decisions about color and unifying graphics. We see it in the way she marked up her word-processed draft. Susan sensed her agency as a hypertext writer. And though Birkerts and Heim are talking more about the fact that a reader does not transact with hypertext in a way that can always be anticipated by an author, we could say that about any text, a point that Susan makes in her journal entry.

The fact that Susan was faced with creating textual links helped her make decisions about what she would write and how she would organize her text so that she could keep track of her lexias and the links she was creating to and from them. And, of course, her links

assisted readability by clearly indicating general categories of information for the reader.

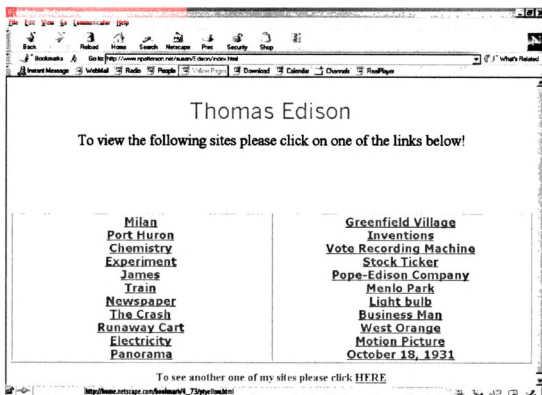


Figure 4.8. This screen shot of Susan's opening of her Thomas Edison web shows the array of links she provides the reader. Note that the links are in no particular order.

In the screen shot of Susan's opening to her Thomas Edison web in Figure 4.8, notice that Susan chose a background that repeats Edison's signature. We see here a meaningful merging of graphics and text that is repeated throughout the Edison web. It is important to point out here that Susan used a table for her opening lexia, a layout technique I taught her. Netscape Composer has a table-creating feature. Using tables for

web page layout is a common design technique, one that is used on almost all commercial websites. Susan used a two-celled, single-lined table that effectively and attractively displayed her overview of her Edison web.

As she did with her poetry web, Susan finished her biography web before other students in the class. She continued to revise her web by finding more pictures of Edison and inserting them into various lexias. When she decided that she could no longer revise her web, she decided to help other students either find graphics for their biography webs, or to help them proofread their individual lexias.

The Study Project

Invention and Drafting Strategies	
Topic Selection	Selected topic that would provide enough lexias to insure a top grade.
Pre-writing	Read a novel, used notes taken for history class.
Control	Composed first in a word processing program, labeling linking words and destinations.
Links	
Placement	In the body of the text (intertextual).
Destination	Sometimes to an "associational" lexia, sometimes to a lexia that doesn't seem to have anything to do with the linking word.
Layout and Design	
Text Placement	Written text placed between two horizontal bars
Image Placement	Image placed at top of lexia in center
Background	Used beige background with railroad track border to indicate Underground Railroad, which was in keeping with web topic of Slavery.
Engagement Levels	Worked at home using word processing program. Found web composing "fun."
Home Computer Access	Yes, with internet access

Figure 4.9. This table provides an overview of Susan's processes as she composed her study project about Slavery.

As I did when writing about Aaron's study project, I will divide this section into the various stages of the writing process I saw Susan use as she composed her study project. Unlike the other two projects highlighted in this study, Susan's study project was part of the eighth grade curriculum in my classroom and was graded. I had initially asked Susan if she wanted to create a new web for the purposes of this study, thinking that she would like the challenge and enjoy working without the pressure of a grade. However, she opted not to compose another project. Susan's study project focused on American Slavery.

Invention and drafting

Susan began her work on her slavery web by reading an historical novel, True North (1996) by Kathryn Lasky. The novel is about an escaped slave who is part way through her escape via the Underground Railroad, and a white teenaged girl who helps her. Although Susan never indicated this, it is quite likely that she began rehearsing for her future web. Remember that Graves (Fresh Look 1994) considers rehearsing a key element in the process, even though he does not consider the act of

composing to begin until the writer puts words to paper (77). Susan's history class had been studying the Civil War and Susan noted in her post project interview that she knew she would be able to find a lot of information on the topic of slavery. Once she selected her topic, she began searching for information. And, of course, we can consider Susan's previous hypertext composing as rehearsals for this act of composing. Susan used her knowledge of hypertext web conventions to inform her composing decisions.

It is important to point out here that Susan chose a rather broad topic for her web. She could have narrowed it down to just the Underground Railroad or some other aspect of the institution of slavery in America, but she chose instead to use the broader topic, probably because there was so much information available to her. In this way, Susan maintained a great deal of control over her topic and the processes she used when composing her web, as did all the students in the classroom. Whatever her motivation for selecting her topic, the fact remains that it was broad, and it seems to have been broad for a reason—so she could maintain both the freedom to go where her interests took her, and

so that she could maintain control over her potential grade (Appendix E).

Susan's composing processes may have been affected by the fact that she would be graded on her slavery project. The requirements for the project were similar to those of the other two projects she did. She needed to include twenty well-composed lexias in her web, again with an average of three links per lexia and with reference citations. In addition, she was required to use the same background and color scheme on each lexia.

What is also interesting here is that Susan not only grounded her knowledge about slavery through the reading of a novel, an opportunity she had during a few weeks when the class was not in the computer lab, but she also researched her topic by exploring encyclopedias and other traditional resources, as well as retrieving information from the internet. Other than using electronic sources, Susan's prewriting information gathering is very similar to that of a child illustrated in Graves' 1983 book Writing: Teachers and children at work. There, Graves shows that nine-year-old Brian researches by reading, and rehearses his writing through taking notes and talking about his topic (6). During those weeks when Susan was reading her novel, the whole

class was talking about the issues surrounding slavery. This was also happening in Susan's history class.

Graves notes that Brian's draft was a "patchwork of bits and pieces" (7). And although Brian used tape to merge those bits and pieces, I can well imagine Susan doing much the same thing through the technology of word processing. This is relevant when we understand that Susan drafted all of her lexias at home using a word processing program. This, of course, is similar to the process she used for her biography web. Susan perhaps sensed that she had found a successful approach to web composing and decided to continue using that approach. What Susan did not do for this project was use Story Space to map out her web before she copied and pasted in Netscape Composer. Instead, she made a number of notations on her word-processed version (See Figure 4.10).

Initially she labeled her lexias numerically: Lexia 1, Lexia 2, etc. On her word-processed draft she handwrote "Slave Trade Begins" next to "Lexia 1." She also crossed out the numerically labeled lexias as she worked through her word-processed draft, copying and pasting them into Composer. This is how she kept track of which lexias she had pasted into Composer. If a

lexia number had been crossed out, it meant that she had already pasted it into Composer.

The fact that Susan created a draft of her web using a word processor is interesting, especially when we consider what Zeni writes about the fact that drafts are no longer an aspect of electronic text composing. Here we see Susan creating a draft of her web using another form of electronic text creation--word processing (Literacy 78). Susan points out in her post-project interview that she composed her word-process draft at home on her home computer. She did have an internet connection at the time of the study, but did not have Netscape Composer on her computer. When asked whether she would have used Composer if she had had the program at home, Susan said she wasn't sure. But Susan noted that her strategy of word processing her web prior to placing it in a web editor worked "great" for her Thomas Edison project. In her post project interview she said, "Then I thought, wow, this worked great, and so I used it again" (Appendix E).

But it is also important to note that Susan composed her word-processed draft with the intention that it was just that, a draft, and that she ultimately

Donald Graves identifies the craft of writing

Q ~~later~~ Slave Trade Begins link to 2

The African American Journey: From Africa to America
World Book Retrieved April 8, 2000 from the World Wide Web:
<http://www.worldbook.com/jun/asajourney/html/bh002.html>

Q. ~~What~~ Middle Passage

The African American Journey: The Slave Trade
World Book Retrieved April 8, 2000 from the World Wide Web:
<http://www.worldbook.com/tia/aajourney/html/bb017.html>

Slave ship

Estimates for the total number of Africans lost to the slave trade range from 25 to 50 million. The journey from Africa to the Americas would take as many as 30 to 90 days.

The Middle Passage Foundation Inc.: Middle Passage History
Retrieved April 8, 2000 from the World Wide Web: <http://www.mtpf.org/history.htm>

The African American Journey: The Slave Trade
World Book Retrieved April 8, 2000 from the World Wide Web:
<http://www.worldbook.com/lin/enjourney/temk1017.htm>

First Africans in America

The first Africans to come to the colonies came on a Dutch ship, which landed in Jamestown, Virginia in 1619. The Dutch traded the 20 Africans for food and rations. They were taken as indentured servants because they suspected by their names that they had been baptized as Christians as the Spanish were. Most indentured servants had a contract to work without wages for a master for four to seven years, after which they became free. If an African was brought in as a slave, they had no chance of becoming free. They had

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as one in which the writer shapes material toward an end that the writer envisions, one that is satisfying to the writer (Fresh Look 6). And though Susan was perhaps never far from creating a piece of writing that would ultimately earn a grade, she seemed to have gained enough confidence in her processes to be able to work not only for a grade but for her own personal satisfaction. And, indeed, had she sensed any tension between those two, she would have probably reacted similarly to the way she did when she first began composing hypertext webs earlier in the school year.

What is very interesting about this draft of her web, however, is the fact that Susan planned and labeled all of her links, using hand-written notations. She underlined in pencil key words and phrases in each lexia and then made a notation, again in pencil, regarding which lexia that word or phrase would link to.

Remember that it is the link that truly sets hypertext apart from other textual forms. Snyder points out that books are essentially repositories of sequential information. And though we do not necessarily process information in a sequential or linear fashion, books give the impression that

information is arranged "according to unchanging special grids, in so far as the same information is presented in the same order in which the information is out..." (17). But hypertext disturbs that sense of linearity through the presence of links that invite the reader to chose a path. These links provide a window, which Snyder calls "the defining feature of computer writing and reading"(17). And this window takes on what Bolter claims is "a structural significance" (70) because it allows windows to appear and disappear in a multitude of arrays. This constant rearranging or re-arraying of text allows for the constant new centering of a different text, merely by the click of a mouse. Carlson (1988) believes that hypertext links add "layers of functionality and flexibility" (95) to text that cannot be achieved as easily in book culture text. And though the use of the word "layers" is problematic here, the concept of flexibility is what is important. And this flexibility calls upon hypertext writers to approach the composing task differently.

Links must enter the writer's consciousness. At some point in her invention and drafting processes Susan needed to deal with the fact that her text would contain electronic links. And she adapted her invention and

drafting strategies to include that necessity. Susan chose her topic, deliberately making it broad, so that she would be able to create as many lexias as required for a particular grade. But she also had to create lexias that would allow her enough flexibility to create other lexias. She had to have enough flexibility in her topic to allow for the associational thinking that is required to make hypertextual links. Her decision regarding topic was directly based on the form of writing she would use. And her selection of linking words and decisions about where these words would link were part of her invention and drafting processes. Susan points out in her post-project interview that she often planned her lexias because she knew that she would link from one word to a lexia.

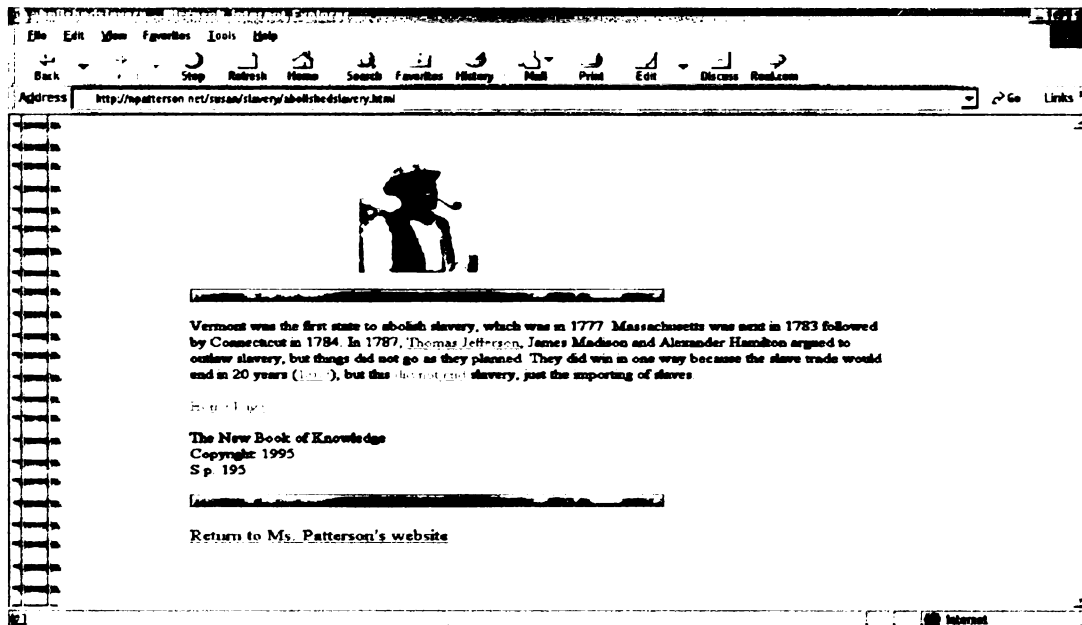


Figure 4.11. Note that "1807" is a link. Susan used this date to prompt her to create another lexia entitled "The Law of 1808," seen in Figure 4.12.

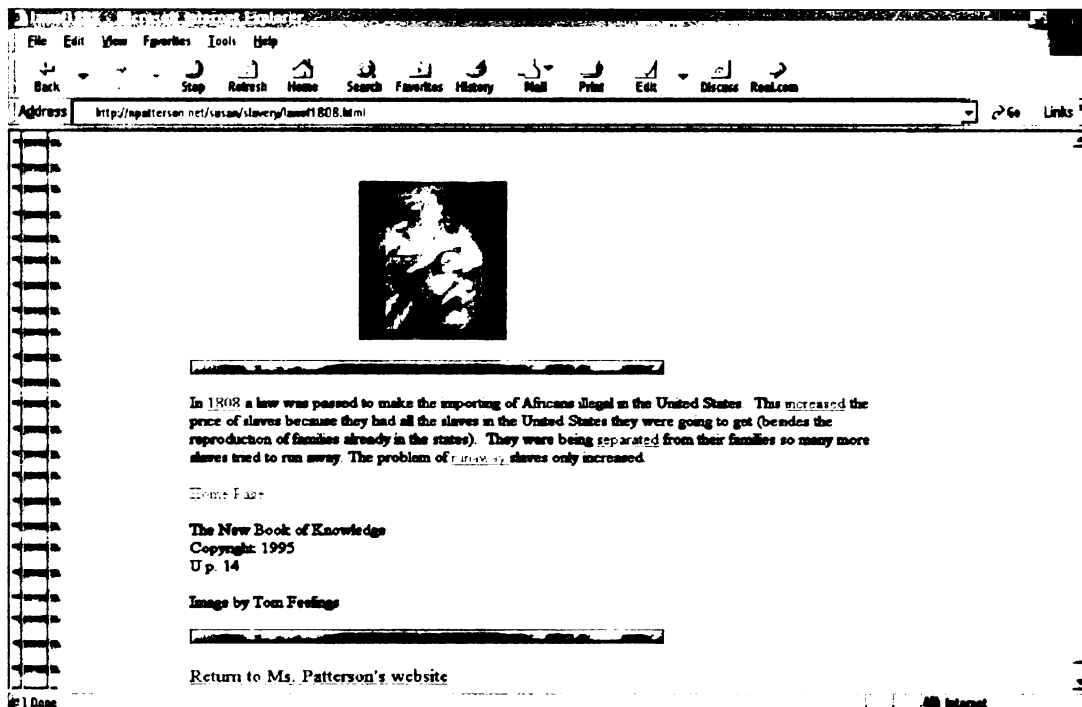


Figure 4.12. Susan's link "1807" took the reader to this lexia that talks about The Law of 1808.

So, for example, she knew that she would include a lexia entitled "The Law of 1808" because she had used another date in a lexia she wrote before she wrote "The Law of 1808." Specifically, she talks about the fact that she referred to the date "1807" in a lexia that discusses the abolishment of slavery. When I asked her if the date 1807 prompted her to create a lexia regarding the Law of 1808, she said it did. So we see here that Susan used associational thinking when she was inventing and drafting her lexias. Gregory Ulmer believes that such associational thinking is due to the technology itself. He writes, "...the change in thinking from linear indexical to network association--a shift often used to summarize the difference between alphabetic and electronic cognitive styles . . . is happening at the level of the technology itself" (36). But we have to be careful. Certainly associational thinking was taking place before computers arrived on the scene, and certainly Ulmer would agree. But the associational thinking that Susan used when she composed her slavery web was prompted, at least in part, because of the hypertext writing environment that she was working in. Because she knew she would be linking words and phrases to blocks of text, she composed in such a

way that those links, or associations, could happen, not only for her as the writer, but for her potential reader.

And so Susan was able to skillfully choose a topic and identify and take advantage of a pre-writing and drafting process that was successful for her, a process that merged two types of text creation technologies—word processing and hand writing. It is important to point out here that Susan drafted her lexias, using the word processing program, much the same way she drafted them for her biography web. That is, if the word-processed document did not have labels before each lexia and cite references below each one, it would read very much like a report on slavery. Susan commented in her post-project interview that when she felt as if she were saying too much for an individual lexia, she would break the information into two separate lexias, meaning, really, two separate paragraphs. She pointed out that she did this, for example, when she was writing about the Middle Passage. She said she did this also when she discussed slave ships. But notice that her lexias about slave ships follow her lexias about the Middle Passage (Appendix D). So we see here two approaches to associational thinking. One is the close relationship

between one paragraph and the next—the topic of slave ships and the topic of the Middle Passage. And we see the hypertextual relationship, the intertextual relationship between the idea of slave ships and the event that we refer to as the Middle Passage.

Susan deviated from this somewhat chronological order toward the end of her invention and drafting processes. Part of that might be because she discovered she did not have the right number of lexias to earn an A. Her chronological order seems to end at lexia 15 in her word processed draft (See Figure 4.10). Lexia 16 deals with Harriet Tubman. Lexia 17 deals with Olaudah Equiano. From there she talks about slave ownership, plantation jobs, and slave revolts. But note that she only devotes one lexia to slave revolts. Other students in the class devoted their entire webs to slave revolts. Others, such as Aaron, devoted their entire web to the Middle Passage.

But remember that Susan was very grade conscious, and her decisions regarding what should go into her web may have been based, to some extent, on her strong need to earn "A's." However, we also see here something akin to parataxis, what Landow defines as something "which is produced by repetition rather than sequence" (Hypertext

2.0 102). Parataxis is generally thought of as the juxtaposition of two elements or clauses without a conjunction

(<http://landow.stg.brown.edu/cspace/infotech/Beowulf/paratxis.html>). Generally paratactic structures are associated with narrative. But we might be able to see how the last five lexias that Susan composed could be viewed as paratactic. These lexias fall under the very general category of slavery, the topic of Susan's web, but they don't really have a great deal to do with her previous lexias. I use the word previous here, because Susan composed her lexias in a specific order, as seen on her word-processed draft. But Susan has found underlying associations between the last five lexias she composed and the previous ones. For example, the eighth lexia, entitled "Compromise of 1850," which deals with issues surrounding secession, is linked to her eighteenth lexia which deals with slave importation and ownership. There does not seem to be any likely link between these two lexias, yet Susan linked them through the date "1850." In other words, "1850" served as a linking word to the lexia she entitled "Owned Slaves." But in that lexia Susan has included a sentence that reads "In 1850 there were 347,000 families that owned

slaves, but only one third of them owned over 10 slaves". In that "Owned Slaves" lexia, Susan used the date "1850" as a link again, but this time it takes the reader to lexia seven entitled "First African Americans."

Remember that Susan added the last five lexias when she realized she needed more lexias to earn an "A." But it was absence of closure in a hypertext web that allowed Susan to include additional lexias. Had these been paragraphs tacked onto the end of a report, they would have been awkward. But because they were to be woven into the fabric of information about slavery, worked into the other parts of her web, they worked at the parataxic level, not immediately associational, but working together nonetheless.

Revising and Editing

As was the case with Aaron, Susan used the keying-in process as a space in which to revise her web. She had already made her decisions regarding links and lexia titles, which means she made decisions about what to name the individual files that would make up her Composer web. Remember that Susan did not use Story Space this time. Nor did she compose her lexias in school. Susan said in her post project interview that it

was easier to think in the quiet of her home than in the hubbub of a computer lab. Once her lexias were composed, she merely brought to school a computer disk where she stored her word-processed document and copied and pasted each section, which became her individual lexias, into Netscape Composer.

What is interesting is that Susan seems to have planned her layout ahead of time. That may be because she used the same layout for all three websites that she created. But that also seems to have helped her compose the text on her individual lexias. She planned each lexia to be viewed in a single screen so that the reader would not have scroll down. This, too, is suggested by the Yale Style Guide. Susan said in her post project interview:

It's easy to see everything. It's like reader friendly, definitely, because you can...read it and you won't just say, okay, too much information--because I do that a lot--and then you won't read it. And then it's easier to interpret, and you can just get everything you want out of it (Appendix E).

If we look at Susan's word-processed document, sort out the individual lexias, and then compare them to her

Netscape Composer lexias, we see that the text itself is almost always the same. Any revising in that sense that Susan did took place as she composed. However that is a rather narrow look at revision, especially when we consider the nature of hypertext and the fact that Susan had yet to add any of the graphic elements to her lexias.

I could make a strong argument here that adding graphics and color are not really part of the revision process, but part of the inventing and drafting process. Bolter points out that in what he refers to as the last era of print technology, images, text, and diagrams merge "without restraint" (79). And though Bolter is actually complaining here that modern computer graphic designers have over-done the amount of graphics that appear not only on computer screens, but in television and print advertising, he acknowledges that "alphabetic text may be anchored anywhere on the screen—beside, above, or below picture elements" (81). But whether Bolter approves of the ways in which images now become part of the "hyper-text," they are a fact of hypertext composing.

And in a sense we see with hypertext the elimination of what Foucault calls the required

subordination of either text to image or image to text. "Either the text is ruled by the image...or else the image is ruled by the text..." (32). In hypertext, however, neither text nor image takes the upper hand, especially when an image becomes a link. In a real sense, then, the image as link is part of the text. Or, we could say that a link, because it generally stands out as underlined and in a different color, becomes an image, a sign that something lurks beyond.

For Susan, image elements were very important. The images were not subordinate to the text when it came to composing. In a traditional piece of text, students will generally focus on what to say and, sometimes to a lesser extent, how to say it. How a piece of text "looks" is not very important unless "neatness" is stressed by the teacher. But how a lexia looked was very important to Susan. In fact, as with Aaron, it may have been that Susan wrote the text for her lexias at home, not only because home was quiet, but because she knew she wanted to spend school time adding the graphic elements to her lexias because adding images was fun. Graphics and images were very important to Susan, so important that she didn't want to "waste" school time with the written text of her lexias. She could compose

her written text at home. She looked for graphics and images at school where the internet connection was fast and reliable and where she could save her images and graphics to her file on the school server. Whatever the reason, the fact remains that gathering images and graphics and placing them on a lexia along with the text she had written was fun. Susan said in her post-project interview:

Well, like, I get to choose how I want my page to look. So if I were doing a report, you know, it's just typed, and has to be a certain way. Here I can change the color if I wanted to. I can put any colors I want, any pictures I want, any layout I want. I mean, what I want to make the reader get to look at. You know. It's like a paragraph here, indent here, picture, or double spacing if I had to. This way I can design it any way I want (Appendix E).

We cannot dismiss the element of play. When I asked Susan what she liked best about web composing, Susan replied:

...it's because you use creativity in it. I love designing things, because you get your

own little touch in it...My history class isn't bad, but we just have to do like these packets of stuff...And this is like a different way of learning it...I get to choose how I want my page to look. So if I were doing a report...it's just typed. Here I can change the color if I wanted to. I can put any colors I want, and pictures I want, any layout I want (Appendix E).

In other words, she can play. And she can play at school, a place where play in an academic classroom is not necessarily privileged. And though he was writing about younger children, Graves points out the importance of play in the composing, and especially the revising, process. Play, he says, allows children the freedom to explore. And we can see a type of exploration in Susan's search for the right graphics to place on her lexias.

Clearly graphics are seen as a part of hypertext webs, not only because text itself is graphical, but because images are easy to create or copy and insert into a lexia. And images are an important element in hypertext. So, I could make an argument that selecting graphics for any given lexia is part of the drafting

process, but recall that the writing process is recursive. And because Susan did not look for graphics that would accompany her text as she was creating her text at home, I have chosen to place that as part of her process here in the revising section. But I want to stress here that working with images was fun for Susan. It was part of the textual play that she engaged in.

Susan initially had chosen a different background for her slavery lexias.

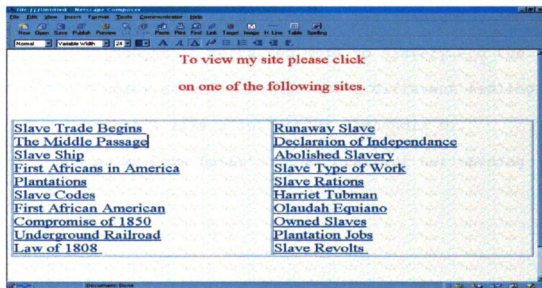


Figure 4.13. This is an earlier draft of Susan's opening lexia to her slavery web. In a later draft she used a background that contained a name, much like she did with her Edison web. However, she changed her mind because she did not want her slavery web to look like her Edison web.

Susan revised the look of her lexias several times. She initially used the mottled background in Figure

4.13, but when she found a background that used Harriet Tubman's name lightly printed, she decided to use that instead. However, she realized her lexias would like very similar to those in her biography web about Edison, and so, she used a still a different background, one that included railroad tracks as a border. Susan, in her post project interview said:

...I like this one a lot better because the other one was a lot like the one I had at another site, and this one...set it apart more, and it has an underground railroad thing and I thought it pertained more to slavery..And the color actually brings out a different feeling that I like a lot better (Appendix D).

And so we have Susan's final draft of her opening lexia.

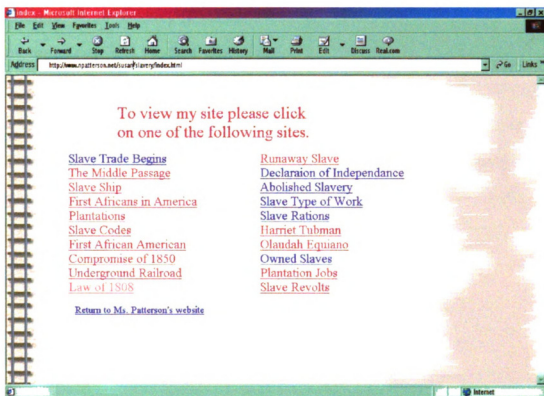


Figure 4.14. This shows Susan's final draft of her opening lexia. Notice the railroad tracks at the left.

Notice the subtle differences between the earlier draft and the later draft illustrated in Figure 4.14. In the earlier draft, Susan's table borders can be seen. But in the later draft she has configured her settings in the program so that those table borders do not show. She has also changed her background, of course, and made some subtle changes to the directions to the reader at the top of the page.

The order of her lexias on her word-processed draft is the same as the list of lexias overviewed on Susan's opening screen. It would have been easy for Susan to

change this order, but she either did not find it necessary, or it did not occur to her to do so. Whatever the reason, it is interesting to see this small window into her composing process because it shows how she uses her knowledge of book culture text to assist her in the composition of text using a new technology, a technology that can bring with it new conventions of textual organization.

Before I move on to the last stage of Susan's composing processes, I would like to discuss Susan's decisions regarding the layout of the other lexias in her web.

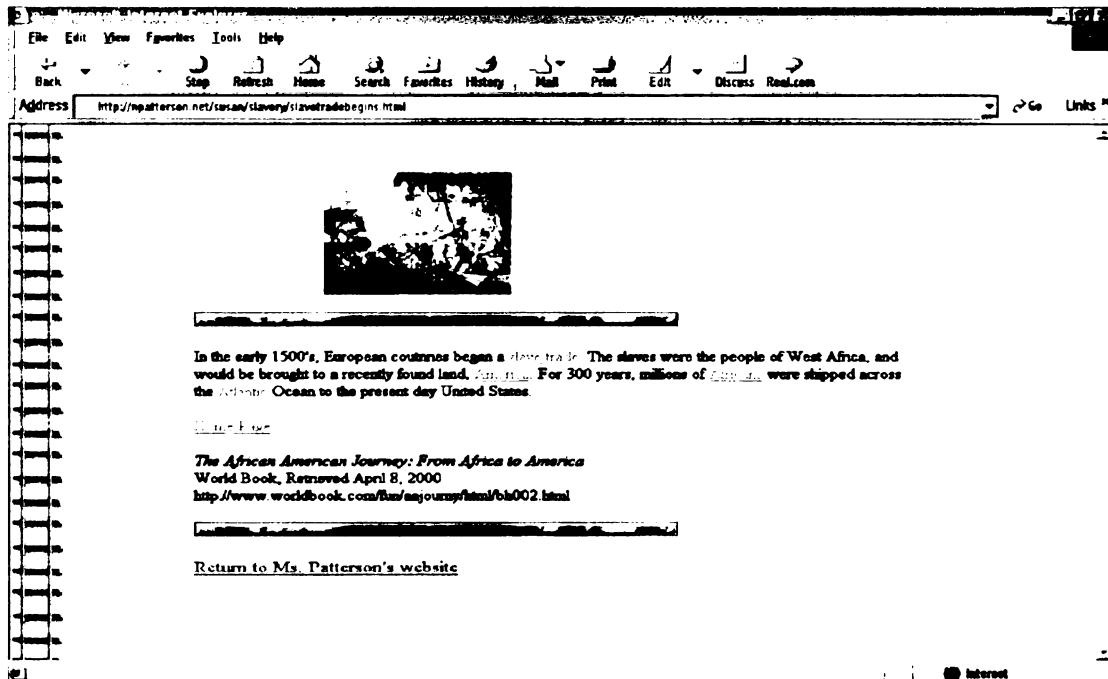


Figure 4.15. We see here that Susan has continued to use the railroad motif. But also notice the color scheme and horizontal bars that she uses.

Susan originally planned to use the same image or photograph on all her lexias. She wanted to maintain the concept of a unifying graphic and so she used the image of a slave cottage, pictured in Figure 4.16, as her unifying graphic on all her lexias.



Figure 4.16. Susan originally planned to use this image as an organizing graphic on all her lexias.

However, when Susan believed she was finished with her web, she showed it to another teacher who had wandered into the computer lab during her language arts class period. The teacher, however, thought that he was looking at the same lexia each time he clicked on a link and brought up a new screen. Susan discovered that her image, rather than unifying her web, caused confusion. What is somewhat amusing about this is the fact that I had just told her the same thing. When the other teacher came through the lab, Susan asked him to look at

her web, perhaps hoping that he would not find the repetition of the image as confusing as I had indicated. The fact that he did was Susan's signal to revise her web and use different images on each lexia.

But, as she had done with her previous webs, Susan had finished her slavery web far ahead of deadline, and so the harvesting of more images did not present a problem for her. She kept the image in Figure 4.16 on one of her lexias, however, the one labeled Slave Type of Work on her opening screen. Susan then allowed the horizontal bars and the border to become the unifying graphics in her web.

We can see in the screen shot in Figure 4.14 these graphic elements. Note how they work in the screen shot Figure 4.15 in the lexia Susan calls First African American.

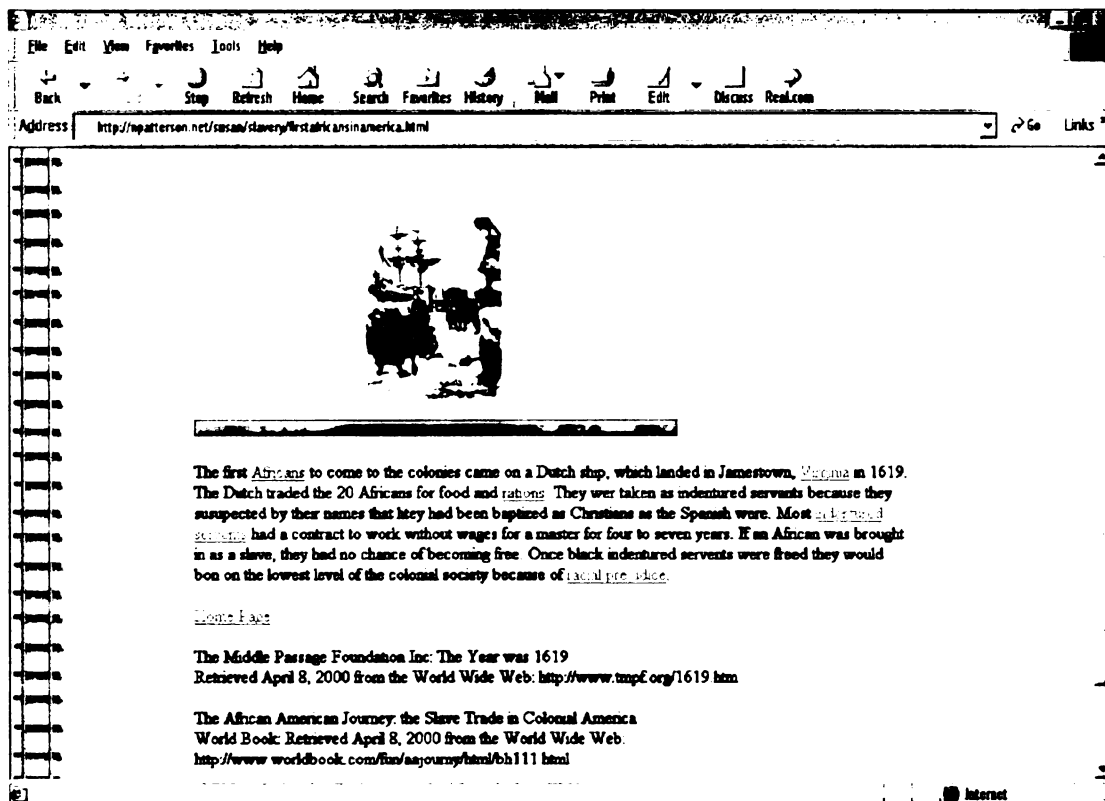


Figure 4.17. Notice how the border and the horizontal bars remind the reader that he or she is looking at another lexia within Susan's web.

What is interesting in these lexias, however, is that Susan did not provide her reader with a heading or title for each lexia. The name of the lexia appears in the file name that can be found in the "address" line on the screen, but other than the overview on the opening screen and the link the reader had to click on to move to any given lexia, the reader does not know the broad general category in which the lexia falls within the web. When asked about this during a class period, Susan merely said that she didn't think a title would look good on the page and that she thought the reader would

be able to figure out what the lexia was about by reading the text, which, she added, was short enough for the reader to take in quickly. She commented, "I couldn't...I didn't like the way it looked with the lines" (Appendix D) And though this may not have been the same decision I as a writer would make, it seemed to make sense to Susan, and to me, her teacher. It also showed that Susan was making conscious decisions regarding her text, decisions that any writer would make.

Publishing

Susan's web is published on the internet, and Susan approached her web from the very beginning with the intention of publishing it there. Indeed, her first two webs had been published. And in a real sense, when Susan showed her web to the teacher who wandered through the computer lab, she was publishing it to him. The fact that she realized she needed to make changes once she had published it, gone public with it, is an example of how recursive the writing process can be, that even after publication (even a small public showing to one other person) there is room to revise.

Remember, too, that Susan was very used to going public. She was active in civic theater, and she was an athlete, someone who competes in public. And, as a top

student, she may have been used to teachers placing her work on bulletin boards, or using her work as an example for other students. Whatever the case, publication did not seem to carry any special motivation for Susan. She did not seem to work any harder because her web would be published. But perhaps it is important here to mention that publication did not seem to trouble Susan. It was merely an expected part of her process.

It may be important to mention one final point here. All of Susan's projects looked similar. In Figure 4.18 we see sample screen shots from each of her projects. Note the similarities in the use of horizontal bars, the placement of the text between the bars, and the placement of the images.

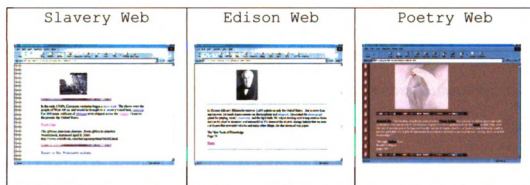


Figure 4.18. Note the similarities between these sample lexias from Susan's three web projects. The screen shot on the far left is from her slavery web. The one in the center is from her Edison biography web. And the one on the right is from her poetry web.

The only difference in these lexias, other than background and topic, is the fact that Susan linked the lexias in her final project to my website. She did this, she said, because when she was showing her Edison project to her father, she noted the difficulty she had in getting back to my website where I listed other biography projects. She said her father wanted to see what other students in the class had done, and there was no way to do travel back to that site without typing in the web address. So, Susan decided to include my web address on all her lexias.

I have included that here as a publishing decision because the address was placed there not to provide information to the reader about the subject, or to aid the reader in understanding the individual lexias, but to assist the reader in accessing other published projects by other students. Susan had enough procedural knowledge to do this, and she had enough experience with web text to know that this was an important consideration for anyone who wanted to view projects from my website.

The significance here is that Susan envisioned her web for an audience beyond the teacher and that she had engaged in writing as a social act. And the technology

of this particular writing allowed it to be viewed by far more readers than is typical of most student writing. Ted Nellen believes that students' processes are impacted when they know their writing will appear on the internet, but other than this one insertion of a hypertext link back to my page, I did not find that internet publication had any more impact on Susan's composing process any other mode of publication may have had. Nellen found that his students' motivations to write and publish increased with the prospect of internet publication. His New York City students created what Nellen calls "webfolios," or on-line portfolios of their writing. Nellen found that "the internet has eliminated many of the negative aspects of writing while providing many positive aspects" (225). For Susan, who was used to going public with a number of kinds of text—whether they were the text of athletic competition or the text of a theater production—internet publication did not seem to impact her motivation. What seemed to impact her motivation more than anything else was her belief that she could work within a new textual environment and still maintain a top grade. That she did well within this textual environment was no real surprise to me as a teacher.

Conclusion

What surprised me, of course, about Susan was that her initial resistance to hypertext composing turned into embracing the experience so joyfully. I was also surprised that she drafted her study project using a word processing program. What surprised me about this was the fact that she composed it initially as a sequential document, and "exploded" it only after she had the proper number of lexias. Susan had demonstrated that she could draft in Story Space, and I assumed that she would simply draft in either that program or Netscape Composer. It may be that Susan was concerned about getting her project finished in time. She did not have Netscape Composer on her computer at home, and she may have felt that if she composed at home using a word processing program and saving to a disk, she would be sure of finishing her project on time. But I suspect there was another reason. Grades were important to Susan. And she was willing to do whatever work was required in order to insure a good grade. But that work was often not very engaging to her. It may have been that Susan simply wanted to save the "fun" part of hypertext composing for a time during the day when she traditionally did not expect to have fun. She admitted

that she found the harvesting of images and the laying out of her lexias the most enjoyable aspect of hypertext composing. In an environment that is not often "fun," Susan may simply have saved the "fun moments" for that environment. She saved her drafting for homework. She saved her web design work for school, where, coincidentally, she had the tools at her disposal. But remember that Susan finished her project very quickly. She had more than enough time to draft at school and do her web design work.

Whatever the case, Susan's hypertext composing efforts paid off for her. Not only did she earn an "A" in her language arts class that marking period, she won first place in an international web composing contest sponsored by Computers and Writing and McGraw Hill Publishing.

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CHAPTER FIVE

CATHY

Introduction

As with the introductions in the two previous chapters, this one will provide background information about Cathy, the subject of this chapter, in order to provide a context for the hypertext composing processes she used during the study project. It will also investigate her previous hypertext composing efforts. I will examine some of the issues that presented themselves in Cathy's previous hypertext composing experiences and I will investigate the processes I saw her use when she composed her study project. I will also bring to light the ways in which she accumulated knowledge about hypertext. When discussing her study project I will look at the ways in which Cathy maintained control of her composing processes, how she integrated into her processes the insertion of elements such as hypertext links, graphics, and color, and I will seek to find out whether a hypertext writing environment facilitated a high degree of awareness of textual features, heightened engagement in the composing process, and increased writer agency in a middle school setting.

Cathy at the time of the study was an eighth grader in my language arts class at Riverton Middle School. She was considered an excellent athlete who played basketball and ran on the track team. She was also a good student. Good grades did not come easily for Cathy, but she was such a hard worker that she was able to maintain excellent grades. Cathy was well liked by many students in the school, not just her own circle of friends. She seemed kind and open, and seemed to genuinely like everyone. Essentially, Cathy appeared to be a hardworking athletic student who liked everybody and, because of that, had a lot of friends.

She could also be mischievous, taking great delight in hiding something from a friend or even a teacher, enjoying the moment when the individual realizes the item is missing, and then, before frustration and anger took over, producing the item, smiling. In other words, she had a good sense of humor and understood how essential timing is in humor.

Cathy was a good writer, though perhaps not a gifted one. She was certainly someone who listened carefully to the instructions a teacher would give and worked very hard to supply a piece of writing that met a teacher's expectations. Remember that the middle school

and elementary writing curriculum focused largely on narrative. As a seventh grader, Cathy knew how to embed detail, develop a narrative through the use of a character's voice, and bring the narrative to a logical conclusion. However, Cathy's seventh grade language arts teacher commented that Cathy's "skills" were not very good. Indeed, in her first web project, she misspelled a number of words, including the word "poem," which she spelled "peom." Cathy's seventh grade teacher specifically mentioned that Cathy had problems with such things as spelling and surface correctness issues. I saw that Cathy seemed to struggle with these correctness issues, but I also saw that she was very careful to budget enough time so that she could attend to her surface errors in her writing, although she was not always successful in catching all her errors.

Whatever her "skill" level, Cathy seemed to be a sophisticated reader. At the time of the study she had discovered Nicholas Sparks' books and was reading her way through every book of his she could find. She had also just finished Mitch Albom's 1997 book Tuesdays with Morrie and I overheard her recommending that book to several of her friends.

Cathy is the youngest in her family. She has two older brothers who were considered gifted athletes. Cathy and her family had bought a house on one of the two rivers that run through Portland and rebuilt it. Cathy told me that she helped in the process especially when it came to designing and landscaping the gardens around the house. It was this experience that led her to believe, at least at the time of the study, that she wanted to be a landscape architect someday.

Cathy had home access to a computer with internet connection.

Previous Hypertext Composing Experience

This section will show how Cathy became an increasingly sophisticated composer of hypertext webs and will highlight her first two web composing projects. Prior to entering my language arts classroom, Cathy had no hypertext composing experience. She had read hypertext documents, of course, both at home and at school. She had gone to the computer lab to do research for several classes when she was in seventh grade, and she said she had sometimes gotten on the internet when she was at home. However, the bulk of her computer time at home was spent in sending e-mail to friends and using Instant Messenger, a program that allows individuals to

converse in a simultaneous computer-mediated environment. And although this kind of computer-mediated conversation is not directly linked to hypertext, it involves bits of text scrolling across a small window on a computer screen. Cathy commented in a classroom conversation that she had been known to "IM" or engage in instant message conversations with several people at the same time. This means that several windows on her computer screen were active at the same time, and she was able to converse with several different people at once, keeping several different threads of conversation suspended. Such computer-mediated conversations are part of a larger category that includes MUD's (multi-user domains), MOOs (MUD object oriented), and chat rooms, not to mention non-synchronous computer mediated conversations like web forums and e-mail discussion lists. Mick Doherty and Sandye Thompson believe such textual environments are examples of textual play, and enable students, for example, to become accustomed to text that is not organized the way book culture text is (268). And so when we discuss Cathy's prior experience with hypertext, we need to consider the textual play she had experienced in an electronic domain such as instant messaging and e-mail.

Poetry web

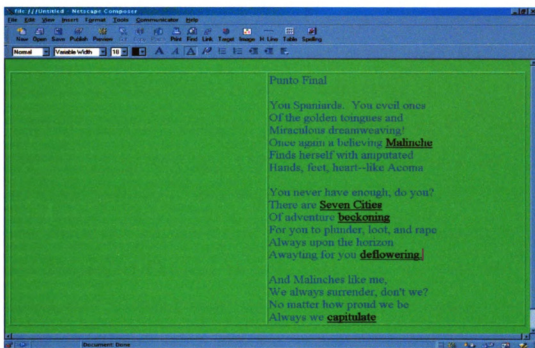


Figure 5.1. This is a screen shot of Cathy's opening to her poetry annotation web. She chose to annotate "Punto Final" by Shirley Hill Witt.

Cathy's first hypertext project was the one she did in my class, a poetry annotation. The poem she chose to annotate was Shirley Hill Witt's "Punto Final" (See Chapter One). Cathy did not seem to have any difficulty learning how to create hypertext either in Story Space or in Netscape Composer. She decided early in the process that she liked Netscape Composer better than Story Space, and composed the bulk of her web in Composer. She did not seem to be aided by Story Space's mapping feature. Plus, she seemed to enjoy creating

lexias with colored backgrounds, and although she could have done that with Story Space, she had more choices of colors in Composer. In fact, color is the most striking feature in Cathy's poetry web. Each lexia is in a different color. And what makes this even more interesting is the fact that Cathy used no images at all in her poetry web. She knew how to insert images, but she chose not to use them. There was no requirement to use images, and it may be that Cathy did not feel she could control her processes if she added too many elements to her web. She was initially concerned that she would be able to create enough lexias to get an "A" on her project, and she worried about whether she could find enough material on each of her lexias to create links.

Although it could be that Cathy believed that the individual color backgrounds of her lexias were enough, it is very possible that Cathy was challenged enough with the multi-linear aspect of her poetry web that she did not want to work with images. When I asked Cathy about this, she merely shrugged and said she liked the way her lexias looked without images.

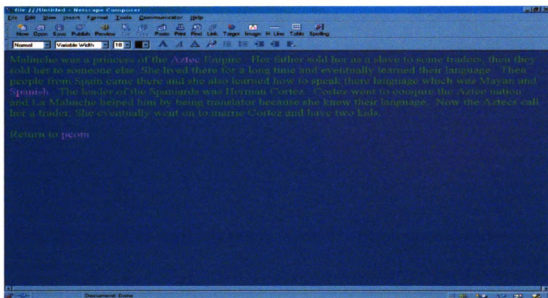


Figure 5.2. This is an example of one of Cathy's poetry web lexias. Cathy included three links on this lexia: "Aztec," "Spanish," and "peom" (sic). Note, however, how difficult this screen would be to read.

Recall that students were required to insert an average of three links in each lexias, and note that Cathy has included three links in the lexia above: Aztec, Spanish, and peom (sic). The "Aztec" link takes the reader to a lexia that reads, "The Olmec and Aztec have made many more pyramids than the Egyptians." "Olmec" is one of the links on this short lexia, but she never identified who the Olmecs were or in any way connected the Olmecs to the Aztecs or to any of the issues brought up in Shirley Hill Witt's poem. In fact, that seems to be true for many of Cathy's lexias in her first hypertext project, and it would be easy to simply

dismiss Cathy's first hypertext composing effort as disappointing. Most of Cathy's lexias were merely definitions of words that appeared in the poem, such as "deflowering," "acquiesce," and "beckoning."

But we need to keep in mind Mina Shaughnessy's insights. Shaughnessy found that students who labored over their handwriting, for example, trying to reproduce the well formed letters they were shown as children, often produced pieces of writing that were not very satisfying, mainly because they were attending to other conventions (15). This is important when we see what Cathy did in her first hypertext web. It was, of course, not handwriting that Cathy labored over. It was another writing technology, that of hypertext.

I had wanted Cathy to explore the issues in her poem in more depth than she seems to have done. For example, she did not create a link from the name "Cortez" in her poem. It is very possible that Cathy, who was attending to the conventions of a new form of writing and a new tool through which to compose that writing, could not pay close attention to the explanation of such terms as "Olmecs" and "Cortez" because she was concentrating on creating "correct" hypertext. And although the name "Cortez" appears in

Cathy's poem, and she had available to her a great deal of information about Cortez, Cathy did not devote a single lexia to Cortez, which means she did not consider the name "Cortez" as a link. But she devoted fourteen of her twenty-four lexias to definitions of words in the poem. I will discuss this further in chapter 6.

I suspect that Cathy was focusing most of her composing energies on keeping track of her links and with learning the procedures for creating hypertext documents. And, in fact, that becomes a little more apparent when we look at Cathy's second hypertext web project.

Biography web

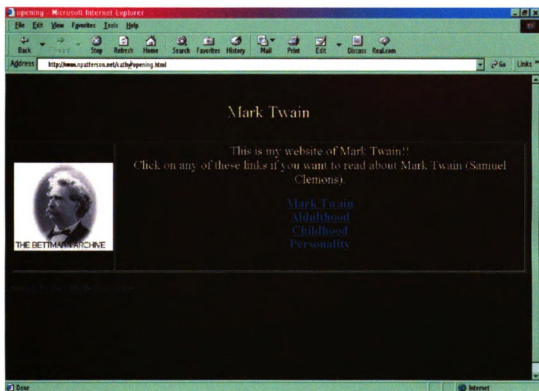


Figure 5.3. This is a screen shot of Cathy's second web project, her biography web. Note that she has used an image on her opening screen.

Cathy did her biography web on Mark Twain. She chose her book from the middle school library and took notes in the packet given to her by her history teacher (Appendix A). Cathy decided to plan her web using Story Space this time. She created all her lexias in Story Space, then copied and pasted them into Netscape Composer where she added color and images. Cathy also used the note-taking packet she received from her

history teacher guide her. For example, Cathy's opening screen to her biography web contained an overview of links. She created four links into her web, three of which were taken from the broad categories defined by her history teacher in the note-taking packet: Adulthood, Childhood, Personality. Her other link was labeled Mark Twain.

What is interesting about Cathy's biography web is that it looks very different from her poetry web. For one thing, she uses images on all her lexias. For another, she consistently used the table feature in Netscape Composer to make her lexia's visually pleasing. In her poetry web, she only used the table feature for her opening lexia, and she did not place any text or images in the table column to the left of her poem, which gave the lexia an empty look, as if something were missing. In her biography web opening, she centered the title of her web above the table, inserted an image of Mark Twain, and centered her text in the column next to the image. This gives the lexia a balanced look.

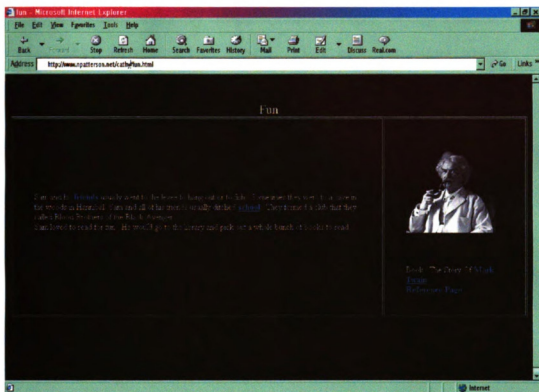


Figure 5.4. Notice the difference between the appearance of this lexia and one of the lexias in Cathy's poetry web. Her we see a title, an image in the left column, and centered text in the right column. Cathy also made her columns different widths which provides some visual interest to the lexia.

Certainly something was happening when Cathy was composing her poetry web, something that would not show up until she could put some time and distance between herself, her poetry web, and her next web composing experience. Again, this could have something to do with that rehearsal time that Graves talks about. But in this case it was a previous web composing experience that provided the rehearsal for the next composing experience.

I do not want to suggest here that Cathy learned in measurable progressive steps, that her learning about hypertext composing happened linearly. I think Cathy knew far more than she was able to demonstrate in her poetry web, but she needed the experience of doing the web, of playing with and thinking about the kinds of textuality inherent in hypertext composing with a web editor, and she needed a safe and fertile environment so that she could come to know what she knew. That Cathy's biography web was more sophisticated than her poetry web is not so much about the fact that she learned how to do more with hypertext, but that she was becoming more comfortable and playful with the technology. And with that comfort came the luxury of being able to focus more on what she wanted to convey in her web rather than on the technology itself. In other words, as was the case with Aaron, the technology was beginning to disappear.

And so, Cathy could attend to other elements of composing. A sign that she was doing this is the fact that she placed a title on each of her biography web lexias. None of her poetry web lexias contained titles. When I asked Cathy about this in a casual classroom conversation, she said she noticed that other students

were using titles on their lexias, and she thought that was a good idea.

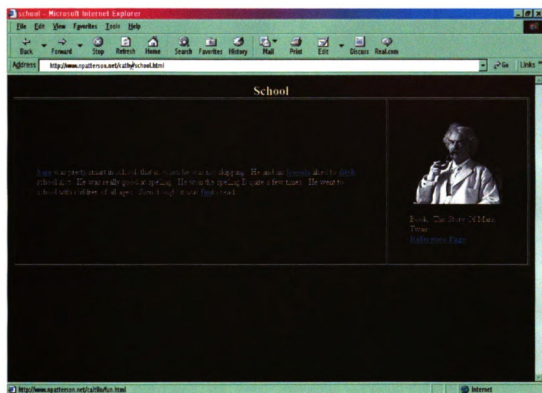


Figure 5.5. Cathy used the table feature throughout her biography web and she titled each lexia. She also used an image on all her lexias in her biography web.

We see, then, a growing sophistication or complexity in the design of Cathy's lexias, and a rather dramatic difference between her first web and her second.

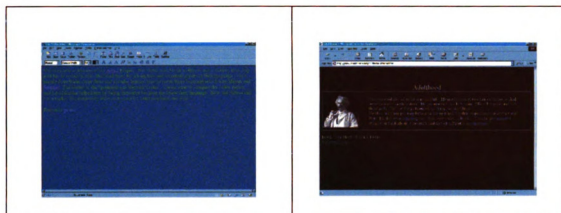


Figure 5.6. Notice the differences in layout and graphics between Cathy's first web and her second. In her biography web she has placed her text and image in a table, and she has given the lexia a title. Cathy carried the color scheme and layout throughout her biography web.

This indicates a growing sense of control over her hypertext composing processes, especially when we consider the content of her lexias in her biography web as opposed to the content of many of lexias in her poetry web. Much of this seems to be due to do her growing comfort with the technology. Remember, too, that Cathy was experienced with some forms of multi-linear text in the form of e-mail and chat. But she had not composed "formal" pieces of writing that focused on a topic at some distance from her self. She had not attempted to juggle a topic, graphics, color, text, and links throughout a larger piece of text.

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Cathy had a sense of her growing sophistication. She noted in her post project interview that her revising processes were becoming more involved. "Usually the things I change when I revise is spelling or I will add or take out a few sentences" (Appendix G). But Cathy had rearranged her text and had played with color and layout when she revised her biography web. This growing sophistication could be due to her growing competence as a writer, or it could be due to her increased engagement with her own emerging text. And, of course, her increased engagement could have intensified her composing experience. Remember that Cathy was a hard working student, willing to do what it took to get a good grade. But I saw her move beyond thinking in terms of a good grade and move into what appeared to be a greater interaction with her text, not because she had to, but because she wanted to. This could be an example of what Bradford Barry found when he saw increased motivation in students who created hypertext webs. Remember that Barry found that hypertext allows students to move beyond viewing an audience as an "invoked fiction" (144) and more as a real collaborator, thus students' interaction with their emerging hypertext became greater. Barry calls this

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"rhetrinsic motivation." Here again we see the idea of the writer and the audience creating meaning together, entering into a dialogue. This connection between reader and writer is, according to Barry, intrinsically and rehtrinsically motivating for students. Certainly Cathy knew that her work would be seen by more than just her teacher. And, indeed, because of the nature of computer screens and computer labs, her work was visible to anyone who happened to glance at her screen.

This brings up an important dynamic in Cathy's composing. If she saw that another student was doing something with the Composer program that Cathy didn't know how to do, she would ask that student to show her. And, conversely, if other students saw that Cathy was doing something that they didn't know how to do, they would ask her to teach them. This opened up a free exchange of information between and among the students who sat in Cathy's area. Boreen, who describes several middle school classes who collaborated with a college class to search the internet and build web pages, noted the same thing. Middle school students were very willing to help each other with the technology (87).

In Cathy's case, she had become adept enough at web building to make thoughtful plans for her next project.

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Interestingly enough, though, her plans included an earlier form of technology. Like Aaron, Cathy decided to use paper and pencil to control her web composing processes. In her journal she wrote:

If I could start all over I would write all my information down on paper and I would underline the words I would like to link. I would also just use Netscape and not use Story Space because that was just more time consuming (Appendix H).

Cathy perhaps sensed that she had moved beyond the need to map out her web. But she also may have sensed that in order to maintain control of her composing processes, she would need to revert to a more comfortable technology—that of paper and pencil.

Erika Lindemann notes that while she can compose short letters at a keyboard, she must draft “significant material” by hand on yellow legal pads. And she points out that Janet Emig discovered that many experienced writers choose to draft in longhand instead of at a typewriter, the most advanced composing technology of the time, because she believed handwriting allowed the writer time to think, time to develop and explore half-

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formed ideas (27). What is interesting and important in respect to Cathy is that she recognized her need to draft using paper and pencil rather than a computer program, even though she had access to a computer at home and at school. Cathy's own explanation of why she composed using paper and pencil was that it made it easier to keep track of what she was doing, and she could work on her web anywhere and anytime, whether she had access to a computer or not.

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Study Project

Invention and Drafting Strategies	
Topic Selection	Selected topic that was interesting to her and that had enough sub-topics for her to create 20 individual lexias.
Pre-writing	Looked up information on the internet.
Drafting	Wrote each lexia by hand in a spiral notebook
Control	Underlined linking words in hand written draft, noted links and where they lead to at bottom of handwritten page.
Links	
Placement	Intertextual
Destination	Associational
Layout and Design	
Text Placement	Text placed in a table opposed image.
Image Placement	Image placed in a table opposite text.
Background	Used a plain black background, no image or wallpaper
Engagement Levels	Worked during unassigned hour during school day, and at home.
Home Computer Access	Had computer at home with internet access.

Figure 5.7. An overview of Cathy's hypertext composing processes.

As was the case in the two previous chapters, I will discuss Cathy's study project composing processes by separating out the stages into prewriting and drafting, revising and editing, and publishing. In this section I will show how Cathy controlled her composing

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processes, and how she used images and color. I will also explore the decisions she made regarding links in her web, and argue that the inclusion of images, color, and links impacted Cathy's composing processes and that hypertext enabled a high degree of motivation and agency as a writer.

Inventing and Drafting

Cathy decided to do her study project web on eagles. Initially she thought she might do another biography web, but after a few days during which she thought about her topic, she decided to research the topic of bald eagles. Cathy was not sure why this topic was interesting to her, but during a home visit I noticed a number of carved wooden eagles displayed. Cathy's grandfather had been a woodworker and particularly liked carving eagles. Also, Cathy noted that just prior to her work on her eagle web, an American Bald Eagle had perched on a tree outside Cathy's home. Recall that Cathy's home was situated above a river bank and the eagle may have been drawn to the river to feed. Whatever the motivation for the topic, once Cathy settled on it, she committed herself to finding more information about eagles.

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Graves (1994) reminds us that rehearsal is very much part of the topic selection process. Cathy knew she would be creating a hypertext web on a topic of her choosing, and over the few days that she gave herself to come up with a topic, she probably rehearsed a number of possible webs. She continued this rehearsal process when she began conducting research on eagles. In her journal Cathy wrote:

The other day I got on enternet (sic) explorer and got a whole packet of information, now I am going to go through the information and highlight all the stuff I want to include in my web project. Then I will sort out my detailed information into different catagories (sic) (Appendix H).

Here we see that Cathy used her knowledge of hypertext webs to inform her about how she would maintain control of the information she would gather. The highlighting and sorting that she planned was her means of maintaining control, not only of the information she gathered, but of the possible directions her web composing would take her. In her post project interview, Cathy indicated that she sorted her information into smaller topics as she did her research.

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Well, I went through when I read it, I kinda thought of different topics in my head, and the I wrote out the different topics on separate pieces of paper, and then when I read about that topic I would write it down under the topic (Appendix G).

And Cathy wrote in her learning journal:

I'm going through the information and highlighting things that I think I want to include on my web project. Once I am done highlighting I will go through and sort out the information into different topics. Then I will write down all the information in the different topics and I will underline the words I want to link. After that I will transfer it on to Netscape (Appendix H).

We did not see this level of planning, this conscious rehearsal in Cathy's previous web composing. It may be that her rehearsal was unconscious and not very observable. But it seems more likely that Cathy was growing in her expectations for herself regarding hypertext composing, and she sensed that in order for her to lessen the tension between what she knew about

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hypertext webs and what she sensed she could produce, she had to spend more time consciously rehearsing her web in a new way. Remember that Cathy used Story Space on her biography web. Creating a Story Space map and writing her lexias within the environment of that map using Story Space software was a rehearsal, but one that Cathy ultimately believed was no longer necessary. She thought the mapping activity was too time consuming. Yet, her plan for her new web was to write all the pages by hand, certainly at least as time consuming if not more.

Which means that Cathy's next steps in the drafting process were very interesting. As indicated earlier, she wrote each broad heading that she envisioned she would use in her web in a thin spiral notebook. For example she had a page in her spiral notebook with the heading "Features," and another with the heading "Food." She had exactly twenty headings, with the intention that each heading would ultimately become the title of a lexia. Note that one of the expectations for getting an "A" on a web was to have twenty lexias. Cathy probably viewed that as a "magic" number to plan for. And she seems to have planned for it very well.

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She began her composing process by researching her topic on the internet and printing out pages of information. She then carefully read all the information she gathered and underlined information she believed important. It was during that process that she prepared her hand written headings in a spiral notebook.

But she did not stop at simply labeling each lexia and sorting her information accordingly. Cathy used the packets she had printed at school in the computer lab, highlighted information she found important, then sorted it according to the broad headings. Then she wrote in her "own words what [she] wanted to say" (Appendix G). And, according to her post project interview, she revised her text then, by hand. In Cathy's words she "kinda organized it...so it was in order" (Appendix G). By this she meant she revised and edited it so that "it sounds better" (Appendix G).

In this invention and drafting stage of Cathy's writing processes it is interesting to note that there does not seem to be an order to her lexias. She has her opening screen lexia that she labels "Bald Eagles." Her next lexia is entitled "Features," and the next is entitled "Food." The one that follows that in her notebook is "Partners," and the next one is "Nests."

[illegible]

Indeed, Cathy never seemed to have difficulties with the “lack” of sequencing when she wrote her individual lexias. Perhaps it was her gardening experience that required her to work on those parts of the garden that needed attention, but, because of the nature of the task, she did not progress down the garden plot linearly. She would have trimmed a shrub that needed attention, then moved a landscaping rock from one place to another, then returned to the shrub to deal with the cut branches, then planted annuals around the newly placed rock. And certainly Cathy’s experience with Instant Messenger and e-mail might have prepared her for separating out key concepts in her web, developing those key concepts as separate components in a larger whole, and then working with or finding the relationships between those concepts.

Whatever the case, Cathy worked on much of these stages of her web out of the classroom and by hand. And though Cathy could not articulate why she chose to write all her lexias out by hand first, it is likely that she felt more in control. Recall that both Janet Emig and Erika Lindemann admit that they draft much of their articles and books by hand because it allows them to get closer to the material (Lindemann 23). Also, as Cathy

indicates in her post project interview, working by hand allowed her to work anywhere whether she had a computer with her or not.

We see in Cathy's inventing and drafting processes that she has made deliberate decisions about how she would go about creating her web and we see that she had enough technical expertise to act upon those decisions.

Migration

By April, many of Florida's ~~eagles~~ begin to move north. They usually fly along the Atlantic coastline to as far as ~~the coast~~. Florida's eagles travel as far as Manitoba, Canada which is 2500 miles away. Eagles can travel about 100 miles a day at altitudes of one to two miles. Daily flights of up to ~~200 miles~~ have been ~~recorded~~.

Word:	Link to:	recorded → scientific
eagles	→ Bald eagle	
Canada	→ Nesting areas	
200 miles	→ Interesting facts	

Death

Discarded monofilament fishing line also kills eagles. Industrial and recreational development, and continuing urban sprawl has resulted in a loss of eagle habitat.

Word:	Link to:
eagles	→ Bald eagle
state laws	→ Protection of the bald eagles
Florida	→ Nesting Areas

Figure 5.8. A sample of one of Cathy's handwritten lexias. Note the highlighted words indicating her links, and note the notations at the bottom of the page indicating where her links would take the reader.

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Editing and Revising

It was during the editing and revising phase of the process that Cathy added images and color to her web. She spent about a week searching for images she could use. Early in that search she found a number of line drawings of eagles. She liked these drawings and hoped she could find enough scattered throughout the world wide web to use for her project. Eventually she found enough line drawings to use in her project, and because the drawings were black and white, decided to use that color scheme for her project.

But before Cathy inserted her images and added her background color, she keyed all of her lexias into Composer. On her hand written lexias she highlighted the words she wanted to use as links. When she typed her lexias in Composer, she made those words bold. She commented to me that this was how she kept track of the words she wanted to use as links so that she wouldn't have to go back and check her handwritten copy all the time. Once she finished typing her lexias, she gave them a file name, and stored them in a special folder in her space on the school server. She used the default title for the folder—New Folder. Since this was her second “new folder” (her first one being her biography

web), it was named "New Folder (2)." Cathy could have given the folder a name, like "eagles," but she was able to keep track of her files without naming the folder.

Once Cathy typed her lexias, she created her links. She kept track of which lexias she had already linked by keeping the word bolded. Composer underlines linking words and so Cathy only had to glance at individual lexias to see which words had been made into links. She pointed out in a casual classroom conversation that she worked on her links in the order that the individual lexias appeared in her folder. These were automatically arranged in alphabetical order by the program, the same way files in a word processing program are organized. But what is really interesting about Cathy's web is the associational thinking she demonstrated when she chose her links. The text in her opening lexia reads:

In 1782 the United States Congress chose the bald eagle as our national symbol. The bald eagle represents strength, conquest and freedom. Bald eagles are large, fierce and majestic birds.

The underlined words are the linking words.

"Stength" links to a lexia entitled "Personality."

"Freedom" links to a lexia called "Reintroducing" that

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talks about how difficult it is to reintroduce bald eagles into a habitat. "Majestic" links to a lexia entitle "Features." But Cathy did not write her lexias with linking in mind. She did not, according to her post project interview, consciously think that she needed to write something that dealt with an eagle's strength because she had used the word strength in one of her lexias. She found these associations after she finished hand writing her web. We see here the writer as reader.

In a way, Cathy's method of linking her text represents something similar to what Joyce refers to as constructive hypertext that allow a reader to link material to a hypertext web. Joyce writes that constructive hypertexts:

...require a capability to act: to create change, and recover particular encounters within the developing body of knowledge. These encounters...are maintained as trails, paths, webs, or notebooks, but they are versions of what they are becoming, a structure for what does not yet exist. Constructive hypertexts require visual

representations of the knowledge they develop.

(42)

And, quoting Jane Yellowlees Douglas, Joyce points out that readers of constructive hypertexts

...develop a body of information that they map according to their needs, their inetersts, and the transformations they discover as they invent, gather, and act upon that information (cited in Joyce 42).

There are few examples of constructive hypertexts on the world wide web. Sites that used constructive hypertext would constantly be in flux with readers and writers adding to and taking away from the text at any given moment. And while that was initially the ideal concept of hypertext, it is not the convention we generally see. But Cathy, who entered her hypertext as a reader looking for associations in order to consciously make links within her text, behaves in much the same way as a reader who enters a constructive hypertext where he or she can alter the text.

Remember that the link is crucial in hypertext, so crucial, in fact, that its significance is easy to overlook. Certainly we make associations when we read,

what Nicholas Burbules calls "hyper-reading." All this is part of the transaction that readers engage in. In hypertext the links define one fixed relationship between one piece of text and whatever links may appear in that text. Certainly the reader can make more associations than the author has provided, and, indeed, the reader does. But in hypertext the writer has provided one possible association that the reader can physically, deliberately, and consciously act upon. This marks a rhetorical choice for the author.

We can think of this in terms of transaction. Cathy transacted with her emerging hypertext, made associations and links between concepts in a dialogue with herself as both reader and writer. We can perhaps see in Cathy's transaction what Moulthrop calls "secondary literacy" that instigates an approach to reading and writing that "includes a self-consciousness about the technological mediations of those acts, a sensitivity to the way text-below-the-text constitute another order behind the visible" (87). Cathy read her lexias self-consciously, knowing she had to find ways to link her lexias, knowing that the technology she would ultimately be using would mediate the decisions she had to make as an author. So the "text-below-the-text,"

perhaps an unfortunate metaphor on Moulthrop's part because it conjures an image of hierarchy that is not generally used when discussing hypertext, is the unseen linked text that Cathy will ultimately have created, her "docuverse."

This becomes even more interesting if we use Bolter's metaphor for hypertext—as a topological space. Bolter describes hypertext as topologic because he believes hypertext is actually writing with space. To Bolter, writing is both a verbal and a visual form. He writes that "Whenever we divide our text into unitary topics and organize those units into a connected structure and whenever we conceive of this textual structure spatially as well as verbally, we are writing topographically" (25). In order to write topographically, Cathy needed to read topographically. She needed to read with future textual spaces in mind.

And those textual spaces needed color and graphics. The last elements that Cathy added during her revision process were color and graphics. And, she put her text and images into a table. Cathy chose to use the same black background that she used in her biography web. In fact, the only difference between the two is really the color of the text. In her biography web, the text was a

buff color. In her study project web, the text was white.

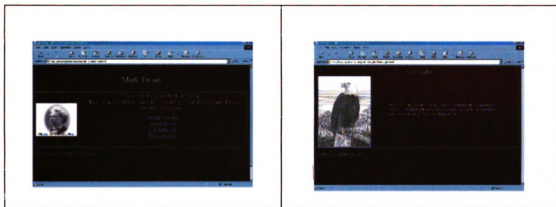


Figure 5.7. Notice the similarities between these two opening lexias.

Cathy's revisions can be seen when we compare a lexia she made before she revised and after. Figure 5.7 shows a lexia before Cathy added color, graphics, and placed her elements into a table.

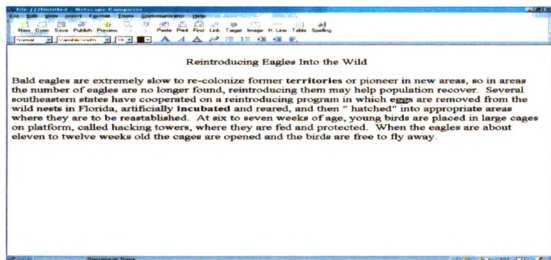


Figure 5.10. This screen shot shows one of Cathy's lexias before she added color, graphics, and a table. Notice that Cathy has indicated which words will serve as links: "territories," "eggs," and "incubated."

Figure 5.11 shows Cathy's finished lexia as it appears on the World Wide Web.

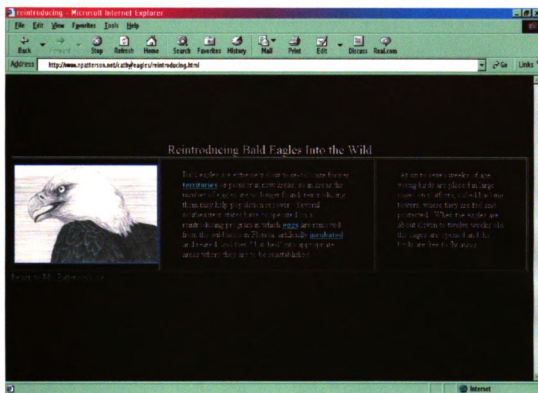


Figure 5.11. Here we see Cathy's finished lexia, complete with links that are indicated in a contrasting color.

Cathy spent a great deal of time searching for just the right images to use in her study project. She had discovered several line drawings of eagles in her search for information and decided to see if there were more drawings of a similar nature on the world wide web. Cathy spent a full week searching for just the right images of eagles. And though she continues the tradition of using images as illustration for the text

on the page, the searching for images and the placement of them on her lexias was one of the elements of hypertext composing that Cathy found "fun." And though the text on her lexias would be considered dominant, and continues the tradition of textual dominance, we see through the time-consuming search for images the power that images have not only in Cathy's composing processes, but in the larger culture. Kress points out that communication has always been carried out in a number of different modes, or what he calls "multi-semiotic" (58). But he also points out that print has assumed a cultural and political dominance over other modes. He further adds, though, that the visual is experiencing a resurgence. Cathy's eagle images are an example of the re-emergence of the visual and hypertext is an example of just one of the technologies that is making that re-emergence happen in spaces like the classroom that have traditionally been so text-bound. Hypertext technology encourages images and puts the power to insert them into the hands of emerging writers such as Cathy. And we see Cathy using her agency as a writer as she searches for the right images to accompany her text.

We see throughout Cathy's drafting and revising processes a sense of agency, a sense of control over her emerging text that is not often seen among student writers. We also see, when comparing each of Cathy's webs, a growing sophistication in the use of textual features. In her first web she used no images at all. Her lexias were generally brief. By the time she composed her study project, she was able to place her text within a table; she was able to insert images that related to the information in her lexias; and she was able to create semiotic connections between pieces of information that made sense to both herself as a writer and to a future reader.

Publishing

As did Aaron and Susan, Cathy planned to publish her web and so entered the composition process with the knowledge that her hypertext would be seen by a larger audience than just a teacher. When she first uploaded her images she discovered that some of her links did not work because, when she set up the link, she did not name the file properly. For example, in her opening screen, she links the words "bald eagle" to a file named "baldeagle." However, the name of the file was actually "baldeagles" with an "s." Cathy discovered she had to

either change her file name or her link. Electronic text publishing, of course, enables such revisions to happen even in the seemingly closed phase of publication. The ability to publish electronically, in fact, allows the author more freedom or more flexibility. Most "mistakes" an author makes are corrected by someone else, an editor perhaps. But Cathy was able to adjust her text well after she believed it to be finished. And though this is possible with "traditional" text, and is certainly possible with other electronically generated texts, hypertext provided the space in which Cathy could realize that possibility. Cathy was able, in the words of Lankshear, Peters, and Knoebel, to experience the fact that "digital text is experienced overtly as being available for rewriting, reconfiguring and, in general, as a resource for making meaning" (175).

Conclusions

There were two things that surprised me about Cathy's processes. The first was that she composed all of her lexias by hand even though she had a computer at home. I had assumed that anyone writing hypertext would anticipate and plan for links, but Cathy said in her post project interview that she did not do this. She created her links after she had written her lexias. It

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may be that Cathy's mature reading choices, an indication that she was an excellent reader, that gave her the confidence to approach linking in this manner. Or it may be that Cathy was unconsciously linking information as she was selecting the bits and piece she would place in her web. Certainly part of the reading process is making those kinds of connections, and certainly those kinds of connections can be unconscious with expert readers. But it also certainly seemed like Cathy, in the role of author, postponed any thoughts of linking her pieces of text until she had all the pieces assembled.

The other thing that surprised me about Cathy's processes was the fact that she composed everything by hand before she approached the keyboard. This, of course, was the process that Aaron used. According to Cathy in her post project interview, she did this so that she could work on her web in her spare time, whether she had access to a computer or not. Hand writing her lexias may have brought Cathy's text closer to her and made it therefore more manageable. Certainly she created a very complex web and it could be that hand composing allowed her to keep track of each thread within her web. Her hand composing also indicates how

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thoroughly involved Cathy was in the process of composing her web. Remember that this was not a graded project. Cathy had no extrinsic reward for doing this project. Nevertheless she was highly motivated by the task itself, the weaving of images, text, color, and links. This is very much in keeping with Barry's conclusions that students working within a hypermedia environment were highly engaged. It seems that the ability to select an interesting topic, and to control textual features such as color, graphics, text, and links were powerful motivating factors for Cathy, ones that are often difficult to place within a classroom environment.

CHAPTER SIX

CONCLUSIONS

Throughout the previous chapters I have investigated whether hypertext provided a space in which the three study subjects, as they composed web-based projects, could experience high degrees of textual awareness, high levels of engagement, and sense a high degree of agency as they composed in a school setting. It is important to again stress that this hypertext composing was situated in a school environment. Even the most progressive and student-centered of teachers practices in a classroom situated within a larger institution that often regiments how students spend their time, where they can go within the larger building, and generally, what they can do and say. It regiments what they read, what they write, when they are assessed and what form that assessment takes. At least to some extent school dictates when students use the restroom, when they can drink water, and when and where they can eat. Schools control students when they assign them to begin learning a given subject and when that learning should stop and move on to a different classroom and to a different subject. And they control the speed at which a given subject should be learned and the path that learning

takes. And while students may attempt to disrupt the system, they are rarely successful in implementing any lasting change. In short, they have little power to create change. They have little power to make meaningful choices and see the results of those choices. Any writing conducted within this school sphere will be affected by the nature of that sphere.

Critics such as Alfie Kohn point out that one of the results of the institutional structure of school, with all its rules and authority, is disengaged students who rebel against the system by opting to only do as much work as they have to. Or the system creates compliant students who do the work out of some sense that they will either gain the approval of their families or that doing well will lead to a later goal (7). Students have learned to either adapt to a greater or lesser degree, or opt out to a greater or lesser degree, either because they don't sense they fit into the system or because they don't want to. Some theorists like Landow believe that hypertext has the power to change the face of education, either through the democratization of the world through its ability to make fluid the borders of text and/or through its ability to link millions of pieces of information (Hypertext 2.0

223-23). And, once the issue of access is resolved, perhaps it will someday. But the structures of school and the definition of school are apt to remain much the same for a while longer. However, people like Catherine Beavis theorize that some of the more troublesome aspects of schooling such as inflexible assessment practices are beginning to change because of computer technology. And, Beavis points out, many of these changes are seen in approaches to literacy that provide children with more choices, less testing and more project oriented assessment, etc. (243). It certainly is no coincidence that instruction that accepts writing as a process has come along at the same time personal computers have entered many people's writing lives. Computers and word processing programs allow us to more easily see that writing happens through a recursive process that is individual to each writer and often individual to each writing event.

The purpose of this dissertation, however, was not to discuss student agency or the lack of it in a school setting, but to investigate the ways in which working within a hypertext environment affected the writing processes of three middle school students. We saw that the three students in this study, though they all had

some exposure to electronic multi-linear text, including hypertext, initially had no experience composing text of that nature. For two of the three study subjects, Aaron and Cathy, that lack of composing experience impacted their first web projects. Lack of experience and perhaps comfort with the technology can be might be seen in their less imaginative layout, their difficulties in finding or establishing interesting links, and their struggles with the multi-linearity of the overall structure. This does not mean that they did not have experience with the concept of multi-linearity. It simply means that they had not consciously addressed the concept through the composition of their own texts. But their struggles during their first web composing project may, too, have been examples of what Mina Shaughnessy witnessed when students paid more attention to surface features than to their written expression. It may be that Cathy and Adam were paying more attention to the technology of writing during that first web composing experience than the content of their webs.

For Susan, of course, that initial web composing experience meant early frustrations that seemed to cause problems in the way in which she approached the act of composing. Those problems, once her concerns about

grades were addressed, diminished and she composed a very fine web project with associational links, a unifying graphic, interesting visual layout, and interesting information presented with a minimum of surface errors. However, we can see that all three students, by the time they approached their third project, the study project, were able to consider such things as unifying graphics, interesting layouts, interesting written text, and workable links. And they were able to talk about the choices they used as writers, the rhetorical decisions they made regarding graphics and color, and the choices they made regarding linking pieces of text together.

Articulating their processes seemed an important developmental step and one that came after the technology of hypertext began to disappear for the students, after they could focus more on creating text than creating text with a new technology. Susan always seemed the most articulate when it came to talking about what she was doing and why. She had probably developed her writing abilities more quickly than her peers, or she was more aware of herself as author. Certainly she was the most accomplished writer of the three prior to the hypertext experience. Aaron and Cathy, however,

became sophisticated enough as hypertext authors to articulate their plans for their developing study project webs, revise those plans as necessary, and adjust their composing to those new plans. However, I need to point out that other students in the class were also able to articulate their plans for their developing webs. It seemed that as they became more experienced with the technology, they became more aware of what the technology could do for them and they could plan more clearly and, ironically, with greater flexibility. In other words, as they became more accustomed to the technology they were better able to make plans, and adjust those plans as needed.

What I found as I observed and listened to Aaron, Susan, and Cathy, and the others in the class, was that they were highly involved in their own composing processes, that they were able to make decisions based on what they knew about their topic, their perceived audiences, and their own abilities to use technology to construct text. While it may be that once these students released their hypertext webs into the wilds of the World Wide Web, their authorship was de-centered by a kinesthetically active reader, the act of composing centered them as authors in ways that I had not

consistently seen before in students who were engaged in more traditional acts of composition, whether those acts took place in a word processing space or in hand written spaces. In this final chapter I will take the three points that I am arguing—engagement, textuality, and agency, separate them, and show how the three study subjects exhibited increased awareness of these three elements as they worked through their study project. To do this, I will discuss the similarities and differences in the ways they selected their topics, made their links, worked with graphics, images, and color, and controlled their writing processes. Figure 6.1 serves as a summary of those elements of the students' processes.

Figure 6.1. A comparison of the three study subjects, showing their prewriting and drafting strategies, their linking strategies, layout considerations, and evidence of their engagement levels.

Invention and Drafting Strategies	Aaron	Susan	Cathy
Topic Selection	Selected timely topic that could be subdivided into many smaller topics so he could write a lexia on each smaller topic and create a "good" web as defined by teacher	Selected topic that would provide enough lexias to insure a top grade	Selected topic that was interesting to her and that had enough subtopics for her to create enough lexias for a "good" web as defined by teacher
Pre-writing	Read a book that helped him establish his sub-topics	Read a novel and used notes taken for history class	Looked up information on the internet
Drafting	Wrote each lexia by hand in a spiral notebook	Composed in a word processing program	Wrote each lexia by hand in a spiral notebook
Control	Wrote links at bottom of handwritten lexia and indicated where link would take reader	Composed first in word processing program, labeling linking words and destinations, re-labeling again when pasting into web editing program (Lexia 1 became "Opening")	Highlighted linking words in hand written draft, noting links and destinations at the bottom of hand written lexias.
Links			
Placement	At bottom of written text, below leaf decoration	In the body of the text (intertextual)	In the body of the text (intertextual)
Destination	To the "chronologically" next event	Sometimes to an "associational" lexia, sometimes to a lexia that doesn't seem to have much to do with the linking word	Associational
Layout and Design			
Text Placement	Written text sandwiched between graphic bar elements with links at the bottom of the screen	Written text placed between two horizontal bars	Written text placed in a table opposite image
Image Placement	No images. Used graphic decorative horizontal bars	Image placed at top of lexia in center	Image placed in a table opposite text

Figure 6.1 Continued

Background	Used background image of flag, Statue of Liberty, etc., in keeping with topic	Used beige background with railroad track border to indicate Underground, which was in keeping with topic of slavery	Used a plain black background, no image or wallpaper
Engagement levels	Worked during lunch and at home. Project not required for a grade. Found web composing "fun"	Worked at home using word processing program. Found web composing "fun"	Worked during unassigned hour at school and at home, sometimes on bus to track meets. Found web composing "fun"
Home computer access	None	Yes, with internet access	Yes, with internet access

Engagement

Alfie Kohn reminds us that when students lack interest or engagement in classroom tasks, they learn less and they spend less time on those tasks. Conversely, when they are engaged, they learn more and they spend more time on the task, "even if the process takes a while" (What to Look for 4). The students in this study were so highly engaged that they spent considerable time outside of school working on their projects. And what is interesting in this regard is that they used their out-of-school time to do the less appealing, in their eyes, tasks involved in the project. Both Cathy and Aaron spent out-of-school time hand writing their lexias. Aaron also used his out-of-school time to research his topic. Susan composed her lexias

using a word processing program. According to their post-project interviews, they did this so that they could devote school time to the tasks within the process they enjoyed the most—working with graphics, color, and linking. They were all willing to do “the grunt work,” spending many hours outside of school, in order to “play” with color and images at school where they had access to the program they worked with. Each web project took approximately five weeks to complete.

Perhaps more telling than the work these students did outside of class was the attitude with which they approached their hypertext composing. Cathy and Susan were good students who could be expected to work on projects outside of school time. Aaron was perhaps a little more casual about doing work outside of school, but he was able to maintain good grades. What struck me most as I observed these three students was the intensity in which they approached their work and the attention to details. It wasn't enough for them to simply put together a collection of lexias. They had to find just the right background, or just the right images and color combinations. All three students commented that this was the part of the composing process they enjoyed the most. Remember that Bradford Barry found

that students who created hypertext projects experienced a high degree of what he called "rhetrinsic motivation." What is perhaps even more interesting is the fact that this rhetrinsic motivation took place with the other students in the class. Aaron, for example, was not the only student to come into the computer lab during lunch. Other students in the class also chose to spend most of their lunch period throughout the year working on their webs. Indeed, this does not seem to be an isolated phenomenon.

Much of the heightened sense of engagement that Susan, Aaron, and Cathy experienced in the act of composing hypertext seemed to come about because of the heightened awareness of textual features. Susan responds in her post project interview , "I like to design a lot. I really like designing. And you get to kinda choose your own page and how you want it to be presented, I just like to really get into it..." (Appendix E). Cathy pointed out that she liked working in hypertext because she enjoyed the research aspect of her projects, but she also said "[I} like designing a different layout. It's kinda neat. Like I haven't really seen this anywhere before...the colors are different...I like them" (Appendix G). And Aaron found

the "fun part" happened when he "was looking on the internet and looking at different websites...for different backgrounds and stuff like that" (Appendix B).

We cannot ignore the power of the visual in hypertext composing and we cannot ignore the power of the manipulation of those visual elements as one of the factors that engaged the three students in this study, as well as other students in the classroom. Keene and Zimmerman (1997) point out that the inclusion of images in student response and in student writing indicates a high degree of comprehension and that images spoke to students emotions and their senses (129-30). Bolter points out that the verbal writing space of print technology has become penetrated (or is penetrated by) "the pictorial space of the image" (79). In her chapter entitled "The Aesthetics of the Medium" in Hamlet on the Holodeck: The Future of Narrative in Cyberspace, Janet Murray talks about the ways in which images satisfyingly immerse a reader in a pleasurable environment. And though Murray refers to gaming images and virtual reality, it was the immersive quality of electronic images, illuminated the way they are by a computer monitor, that so captured the students in this study. Or it could be that the computer allowed them to

use professional quality images and design methods such as placing images and text into such visual organizers as tables that so motivated students.

All three students commented in their post project interviews that what they really liked about hypertext composing was the time they spent on the computer. It was because they were able to negotiate visual elements such as color, images, and links that the three students in this study were highly engaged in the act of composing.

Kathryn Henderson reflects on the growing area of visual literacy and explains that in a world where images convey so much meaning, children are called upon to be visually literate. And the more they are able to construct meaning with images that better they become at that mode of meaning construction (196).

We also cannot ignore the role of play when discussing hypertext composing and the role of the visual in that play. Jay Bolter reminds us that writing "is the creative play of signs, and the computer offers us a new field for that play. It offers a new surface for recording and presenting text together with new techniques for organizing our writing" (10). It is that play, perhaps, and the ease with which that play could

be carried out on the electronic surface that so engaged the three students in this study. Remember that a number of studies concluded that students experienced a high degree of involvement when they composed using a computer.

Deborah Brandt proposes that effective writers and readers are aware of "what a text is saying and what it is saying about what [the writer is] supposed to [be] doing" (5). She adds that literacy "is a fundamental, enabling awareness of the mutual work that is under way around an unfolding text, a growing understanding of how language and work (text and context) constitute each other" (5). And later she points out that writing "is not merely a matter of preparing a text for an eventual reader but also a matter of maintaining the conditions that keep writing itself going" (8). The three students in this study were able to maintain the conditions for their writing, evidence that engagement was happening. Indeed, it is remarkable the pains these students took to maintain the conditions of their writing.

Cathy read and printed pages and pages of information from the internet about Bald Eagles, and then carefully codified that information in a spiral notebook where she highlighted linking words and noted

their destination (Figure 5.8). Aaron, knowing he had difficulties controlling his web-composing processes, also took care to write his lexias in a spiral notebook, carefully planning his links and lexias, carefully selecting a topic that enabled him to maintain and control the conditions of his composing (Figure 3.6). And Susan maintained those conditions by controlling her processes in a word processing program, highlighting her links, renaming her lexias on her word-processed sheet (Figure 4.10). It may very well be that it was the visual elements that allowed them to maintain those conditions. They had the smart tools at their disposal, tools that allowed them to use color and insert images that added to the overall textual sophistication of their emerging texts, tools that allowed the condition of composing to be maintained.

Bradford Barry concluded in his dissertation that students who compose hypertext are highly motivated because they become immersed in "concerns for rhetorical matters of audience, purpose, arrangement and/or style" (iii). And certainly the students in this study experienced those concerns. Working within a hypertextual space allowed the students in this study to become highly aware of audience. Aaron gave directions

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to his imagined reader, explaining how to negotiate his 20th Century web. He also considered his reader when he placed his written text between his starts and stripes banner and his "squiggle" graphic.

Susan established her opening screen of her slavery web with her audience in mind. She said in her post project interview:

"You want to give them options to go anywhere they want to start out, and it gives them a way so they don't have to go through everything to find out what they want. So it has all the links set up..." (Appendix E).

Cathy indicates her sense of audience when she talks about her opening screen in her post project interview and how she wanted it to be "an attention grabber" (Appendix G). And she shows it in her decision to place her text and images in a table so that her pages are more attractive and readable.

There is another reason why these three students were highly engaged in the act of composing hypertext webs. What they were doing was "meaning full." This speaks, again, to Deborah Brandt's premise that engagement happens when students can maintain the conditions of writing. The students in this study were

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allowed to select their own topics and research them in whatever direction those topics took them. They were free to find whatever associations or connections they could and they were free to find images and other graphics they believed meaningful to their project. They were free to maintain their own conditions for writing. Hypertext is an ideal vehicle, albeit not the only one, for this discursive freedom. It requires that students do more than make marks on a piece of paper. It asks them to find associations between chunks of text, therefore almost automatically placing students in a position where they must consciously employ metacognitive thinking. The student must ask himself or herself "What relationship does this word or concept have with something else I will write or have written?" Or the author must ask herself or himself "What relationship does this have with something else I should link to?" That metacognition and the dialogue between the writer, a potential audience, and the content of the web itself became powerful elements of engagement for the study subjects. Bolter reminds us that semioticians now suggest that the mind is itself a web of text, a "writing space filled with interwoven signs" (208).

And we cannot ignore the power of textual play. Remember that Bolter refers to writing as textual play. Jerome Bruner claims that "It is not so much instruction in either language or thinking that permits the child to develop his powerful combinatorial skills, but a decent opportunity to play around with his language and to play around with his thinking that does the trick" (81). And this seems to be exactly what happened with Aaron, Susan, and Cathy. They "played around" with the "language" of hypertext, the images, color, fonts, graphics, and links that go into hypertext composing.

An example of the "playing around" took place one afternoon when Aaron was working on his 20th Century web. He was trying to find a background image for his lexias. I watched him for fifteen minutes as he scrolled and clicked his way through an internet site that contained free graphics for people to use on web pages. He would harvest a background from that website, save it in his file on the school server, than insert it in a lexia. He would then go back to the image site, find another background, and go through the process again. When I asked him what he was looking for, he replied that he didn't know but that he would recognize it when he saw it. As it turned out, he did not find that day the

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background image that he would ultimately use. But the trying out of backgrounds, the playing around with that aspect of his web constituted very purposeful play.

Textuality

Another aspect of my investigation looked at the issue of textuality and whether or not hypertext enabled a greater awareness of textuality in the three study subjects. Landow points out that hypertext challenges us to rethink what we mean by the term "text" (Hypertext 2.0 59). Much of this is due to the fact that hypertext "radically changes the experiences that reading, writing, and text signify [because they are] so burdened with the assumptions of print technology" (Hypertext 2.0 57). Landow explains that part of the problem in using print technology terms when discussing hypertext is that hypertext challenges readers to be more active, taking on the role of author at times. Of course, this can happen theoretically for any piece of text, whether it is electronic or not. But the role of the reader in hypertext, because of the hypertext link, becomes at least more kinesthetic. Much of that stems from the semiotic significance of the hypertext link.

But part of the difficulty is due to the inter-relationship, the intertextuality perhaps, of color,

images, words, and links that create not only an ecosystem within a given lexia, but an ecosystem of all related lexias. This ecosystem, which changes when the reader or writer moves about the lexia or within the hypertext web itself is created not only through the hypertext link, but through the meaning both reader and writer bring to the transaction with the texts. But Landow goes even further when he considers the textuality of hypertext. He includes the cursor, that visual reminder of the reader or writer's presence in the text (Hypertext 2.0 59-60).

We only need to look at Adam's quest for just the right graphic to see the heightened sense of textuality that he brought to his composing acts. If we look at any lexia within his 20th Century web we see a background image in keeping with the topic of his web. We see a horizontal bar with stars and stripes, again in keeping with his topic. And we see other carefully placed visuals that Aaron deliberately inserted either to make his lexia more appealing or more readable.

Aaron placed his textual elements very carefully. When I asked him in his post project interview why he decided to place his title in a particular place on his lexias, he said:

To separate the page is why I did that, so people knew that was the title and that underneath that was the text and that underneath that that icon is is where the links would be, and extra information (Appendix B)

We do not see random or haphazard placements of textual features, but a conscious consideration of how the individual elements work together to create a meaningful whole, an ecosystem of meaning.

Susan, too, made very conscious decisions about the placement of textual elements. In her post project interview she said:

I center my text two or three times, and then I tied the spaces in between, like my home page link and then my information, and then I make sure I have a space on each side so everything's spaced out the same with the lines, and then I try to have the same space in between that and the picture. And then so everything's space out and centered, and then I have a better background (Appendix E).

Again we see great attention to the textual elements on the page. Susan chose her color scheme

carefully. On one occasion I observed her trying various color schemes—grey, black, and red. At one point she also tried various background images. But she finally settled on a cream background with a railroad border that symbolized the Underground Railroad. Again we see an ecosystem of meaning: the railroad track border existing with the written text about slavery, which is hemmed in by two horizontal bars. Above the bar is an image that works with the written text, the color and border. Each element in some way is dependant on the others yet by itself conveys meaning.

And of course we see much the same attention to textuality in Cathy's decisions to place her written text and images in a table. Like Aaron, Cathy spent a great deal of time searching for just the right visual elements for her web site, and she experimented with various colors of text until she found the combination that look "more attractive." She also decided her lexias looked better when she placed text and images in a table. She said:

I typed each one without a table, and then separated the [columns]. I chose the amount of [columns] I wanted from how much...writing there was (Appendix G).

Clearly all three students in this study deliberately and carefully considered the textual elements they needed in their web sties and were committed to spending a great deal of time searching for those elements, playing with different possibilities, and carefully considering them until they found a workable combination. It is important to acknowledge here that writing is a visual form, and that writers, whether they are students or professionals, negotiate the visual when they compose. But hypertext composing brings this negotiation to consciousness.

Agency

The other aspect of my argument is that students experienced a great deal of agency as they composed their webs. If we think of agency as the ability to exercise control over language, or, as Janet Murray says as "the satisfying power to take meaningful action and see the results of our decisions and choices" (126) then we can begin to see that the students in this study felt a great deal of agency as they worked through their project. As always, we have to situate this sense of agency into the broader context of a school environment that does not necessarily acknowledge or enable student

agency. But the very fact that two of the study subjects chose to create hypertext webs that were not required by the classroom teacher is an indication that these students were not only highly engaged in hypertext composing, but saw themselves as situated within an environment where they could control textual features and information. And though Susan's slavery project was part of the classroom curriculum, we can see that her change in attitude from the beginning of the course to the point where she composed her slavery web was really a change in the sense of agency she felt as a hypertext writer. When she felt she had no control over the technology and, by extension, her grade, she sensed little agency. Once she realized that she *could* work successfully within a hypertext environment, she embraced it.

Henry Giroux in a chapter in Counter Narratives: Critical studies and critical pedagogies in postmodern spaces, argues that the "schizoid images, proliferating public spaces and an increasing fragmentation..." (74) are opening up new interactive terrains that blur boundaries and cut across elements that separated students from any sense of legitimacy in a modern world. He urges educators to acknowledge that "identities among youth

are being produced in spheres generally ignored by schools" (74). One of those spheres, of course, exists in an electronic world of e-mail, instant messages, electronic gaming, and the fast paced images of music videos and on-line fan sites with streaming video, chat rooms, and web forums. Giroux further argues that students must be placed in environments where they can experience agency-building in spaces such as those mentioned above where they can be authentically accountable to themselves and others (75). A hypertext environment would certainly be another one of those agency-building spaces, as indeed it was for Cathy, Susan, and Aaron.

We see that agency in the textual decisions these three students made, their search for images, their decisions regarding where to place their textual elements. We also see it in the engagement levels these three experienced. These students found themselves immersed in a textual environment that allowed them to make decisions regarding their emerging text, test those decisions, rethink them if they found it necessary, and create something they were willing to show to a larger world, a world beyond the confines of a classroom or a school.

Each study subject recognized the need to control his or her composing, and that they took the extra time to draw maps, handwrite lexias, or compose in a word processing program suggests they felt a great deal of agency as they worked. Each student recognized his or her need and acted upon that need in a way he or she believed best for that particular writing task.

Revisiting the Initial Study Questions

In Chapter One I listed a series of questions that I wanted to address in this dissertation. This next section will revisit those questions and provide short summary answers to them. First, we must acknowledge that these students used writing processes similar to those found in other composing situations. They invented, they drafted, they revised, they edited, and they published. And they negotiated these phases in a recursive manner. Those phases were never in question when I began this study. I expected to see students moving through the various stages of that writing process. What I wanted to find out was how they would go about those stages in a hypertext environment.

***How do students approach the process of composing
hypertext webs?***

All three students approached the task enthusiastically and as a fun problem to solve. Each student seemed to weigh carefully possible topics until ultimately he or she settled on one that seemed to be interesting and suitable for working with in a hypertext format. Aaron was careful to choose a topic that would give him enough different areas to write about. And though we can see that Aaron perhaps struggled with hypertextuality and how to control his composing within that space, we can see that he approached the task with linking in mind.

What role does agency play?

If we define agency as the ability to make decisions regarding one's writing and seeing the results of those decisions, then we can see that the three study subjects experienced a great deal of agency as they composed their webs. Much of that can be attributed, I think, to the electronic environment in which they worked. Janet Murray writes:

The more realized the immersive environment,
the more active we want to be within it. When
the things we do bring tangible results, we

experience the second characteristic delight of electronic environments—the sense of agency. Agency is the satisfying power to take meaningful action and see the results of our decisions and choices. We expect to feel agency on the computer screen when we double click on a file and see it open before us...(126)

That agency showed itself in the study subjects when they were able to act upon their decisions to insert an image, to make a link, to use a chosen color, to investigate a topic of interest, to explore that topic without the traditional boundaries of schoolish textual structures. Remember that Michael Joyce believes that hypertext offers novice writers the possibilities of the cognitive skills “that experts routinely, subtly, and self-consciously apply in accomplishing intellectual tasks” (40). The freedom to move beyond the simple “beginning-middle-end” structure of school-taught narratives, and the invitation to use color, images, and other textual features was very satisfying to the three students in this study.

***How do students develop and use their sense of
textuality as they compose their webs?***

When we speak of textuality in hypertext, we must address the very important role that visual elements such as color and graphics play. We saw that visual elements played a large role in the composing processes of the students involved in this study. The students involved in this study added visual elements carefully and used them to do more than just illustrate their written text. The visual elements became as much a consideration in the study subjects' composing processes as the written text, moving beyond mere illustration. We need only look at the stark black background of Cathy's bald eagle web, see the black and white line drawings of bald eagles, and the white text against the black background to see a beautiful marrying of written text, color, and images, set within a table to see how visual elements played a part in Cathy's composing processes. Snyder reminds us that hypertext challenges us to pay attention to more than just the verbal, and that learning to exploit graphics is one of the new demands required of technology users. Certainly the students in this study exploited graphics and other

visual elements in the process of constructing meaning through hypertext composing.

What role does engagement play in students' hypertext composing processes?

Remember that Bradford Barry found that students experienced high levels of engagement, what he termed "rhetrinsic motivation" when they composed hypertext webs. I found that the three students involved in this study, as well as their classmates, also experience high levels of engagement when they composed their webs. We see that engagement in the out-of-school time the students spent. And we see it in the attention to detail, the careful consideration of color and graphics. And we see it in the students' own admissions that they enjoyed composing their projects, that they considered those acts of composing "fun."

In what way, if any, does a sense of audience affect decisions the student authors make?

Each student commented in the post-project interview that he or she considered audience when composing the web projects. Aaron gave his readers instructions on how to navigate his web. Susan wanted to make sure her lexias were interesting so that "readers would want to look at what [I] have" (Appendix

G). Cathy, in her post-project interview pointed out that she wanted her lexias to be "attention getters," and that she particularly wanted that for her first lexia in the web. All three students in this study made conscious decisions about their webs with an audience in mind. Graves points out that students who do not have a strong sense of audience (and he includes the author as audience) cannot move ahead in their writing abilities (Fresh Look 73). Aaron had a strong sense of audience when he placed his visual elements on his page. And he commented in his post-project interview that his intended audience was young people who would want to know about the 20th century. And, of course, he had the audience at the technology showcase in Grand Rapids very much in mind when he composed his web. Aaron had high hopes of winning an award at the showcase.

Susan, who commented in her post project interview about how much she enjoyed designing her lexias, added that she liked making them "reader friendly." But she also pointed out that she enjoyed the fact that her webs all had a similar look to them. But in her interview she also added that she wanted her lexias noticeable. She says "I wanna make [the reader] wanna see my page" (Appendix E). She then pointed out that she often finds

herself not reading lexias on the internet because they simply do not look interesting enough to read. "...I don't even find myself reading the text sometimes just 'cause it's so boring" (Appendix E). Susan sensed herself as a critical audience and composed her lexias according to her own critical criteria. She was able to engage in the dialogue as both reader and writer. This should not be surprising, given Susan's previous writing experience and the maturity of her writing abilities. That she could carry out that mature behavior in a hypertext environment is significant.

How do the student authors decide what their links will be?

This, of course, is one of the key elements in hypertext. And knowing why a hypertext writer links certain materials is very important. We saw in both Cathy and Susan that relational thinking was involved in their decisions to link particular chunks of text. Cathy, in her opening bald eagle lexia, linked the word "strength" to the lexia entitled "Personality" where she discusses, among other things, the fact that eagles are dangerous when provoked and the hierarchy in which eagles perch on trees, the oldest and strongest at the highest point. One of the three links from that lexia,

the word "nests," takes the reader to a description of an eagle's nest and a line drawing of a nest, two adult eagles, and a chick. Such associational thinking and writing, of course, are more obvious in hypertext.

In Susan's slavery web, in the lexia entitled "middle passage," the reader can click on the phrase "slave trade" and be taken to a lexia that discusses how the African slave trade began in Europe in the 1500's. From there, the word "Atlantic" takes the reader to a lexia about slave ships. So, we again see the association or relational thinking that connects blocks of text.

What we see in Aaron's lexias, however, is somewhat different. Remember that Aaron struggled with showing his relational thinking in his links. This does not mean that Aaron did not engage in associational thinking. It means that he was not yet able to control the multi-linearity of hypertext and his associational thinking. And so we see something very clever that works quite well in his 20th Century web. We see Aaron making chronological links that take the reader "ahead" one lexia, "back" one lexia, and "home." So, presented with the problem of giving the reader choices, Aaron did so. He simply did not make full use of the multi-linear

possibilities of hypertext. That he did so in his next project indicates that Aaron simply needed more experience with hypertext in order to "get the hang" of it. And we can see that he needed more time in which to explore the territory between his knowledge of linked text and his ability to use web technology to show that knowledge. However, we cannot dismiss the fact that Aaron's web is visually delightful and that he provides his reader with information about what Aaron believes are important events in the 20th century.

How do students keep track of multiple textual threads within a single hypertext web?

This was one of the most interesting aspects of this study. Each student kept track of the multiple textual threads in a slightly different way. Susan did so by composing first using a word processing program and separating out her lexias as if they were paragraphs in a report. But then she made notations on her word-processed document that told her what her links were and where they would lead a reader. She underlined her linking words with a pencil, then noted when she had named her file. She penciled in the name of the file, and then made a circle when she had successfully transferred her text to a web editor (Appendix F). So,

she kept track of her textual threads by using a more linear appearing form.

Aaron and Cathy both organized their webs in spiral notebooks first. Cathy used a pink highlighter to indicate her linking words or phrases. And she made a legend at the bottom of each handwritten lexia that indicated where each linking word or phrase would take the reader. In her "Partners" lexia, for example, she wrote the word "eagles" then drew an arrow, then wrote the words "bald eagles," indicating that when a reader clicked on "eagles," the reader would be taken to a lexia entitled "bald eagles." Prior to composing her eagles project, Cathy had kept track of her textual threads by creating a Story Space map. But she decided she didn't need to go through that step when she composed her eagle project.

Aaron, of course, kept track of his textual threads by never getting too far away from each lexia. In other words, by linking his lexias chronologically forward and back, he was able to maintain control of his textual threads. What is interesting, of course, is that in the project that Aaron did after he completed his study project, he linked his lexias more "intertextually." But he also created at the bottom of his lexia two other

options for his readers. One option took the reader to the "next" lexia, and the other option took the reader "back" to the "previous" lexia. Aaron was able to better control the multi-linearity of his links, but he still wanted to keep the "forward" and "back" option that he used in his 20th Century web.

How do students maintain control of their composing processes within a multi-linear domain?

It was the way in which these three students began their web projects that surprised me the most. I had not expected them to use a different technology to initially compose their webs. None of them had done that with their previous web projects. Aaron hand-drew a map to help him envision his web, and then handwrote each lexia in a spiral notebook where he also noted what his links would be.

Cathy, of course, did much the same thing, which again, was a surprise. She seemed to be the most "hypertextual" of the three students, something I attribute to her gardening experience and her experiences with instant messaging and e-mail. But she seemed to believe that in order to control her composing, she had to plan ahead. And that plan was best realized by handwriting her lexias.

Susan's beginning processes, of course, involved writing her lexias at home using a word processing program. She save everything to a disk, brought it to school, and then copied and pasted into a web editor. She did not feel the need to map out her web, but used her "linear" word-processed document as her guide when she began work within the web editing program she used.

Classroom Implications

One only has to look at the archives of NCTE-Talk or other English Language Arts discussion lists to see that teachers are constantly looking for ways to engage students. And though hypertext composing is not the only way in which to engage students in the act of composing, it certainly is one way to immerse students in a text-rich environment that gives them the opportunity to experience the types of agency that "real" authors experience. Michael Joyce seems to be correct when he theorizes that hypertext is a discursive form that allows novice writers to adapt cognitive skills that experts use routinely. The attention to detail and the deliberate quest for control over their writing processes are things that language arts teachers should continually want to see in their students. That composing hypertext webs can create this urgency in

students is almost startling. And so too is the sight of 28 students intent over the act of composing, not because they are told to by an authority figure, but because they want to, because they are engaged in a meaningful act.

Writing is technology. And each shift in technology impacts how we define and redefine literacy. Part of the current shift in technology, from print culture to electronic is the fast-paced often disrupted and disruptive jumble of images, sounds, lights, shadows, screens, plot, and conversations. Our students are already a part of these "disruptures." As literacy educators we are called upon to ask our students to create and reflect upon these disruptures so that they, as students, will be able to communicate and grow, to approximate and confirm their growing senses of text and textuality.

Literacy is an active endeavor. It is the act of constructing meaning. And hypertext composing offers a rich environment for meaning construction, for interaction with one's own emerging text. It offers novice writers a fertile environment in which to problem solve, in which to acquire confidence and competence. It involves a myriad of meaning making activities that

involve inventing, drafting, revising, editing, and publishing. And because it is so engaging, because it seems to bring with it that wonderful sense of meaningful play, it may very well do what Michael Joyce believes. It may "unlock those [cognitive] skills for novice learners and...empower and enfranchise their learning" (40). Certainly it had that power for the three students in this study, and for their classmates.

I would offer a number of suggestions for teachers who want to implement hypertext composing into their classroom curricula. The first would be to allow students a great deal of choice in not only their topic selection but in the threads they decide to include in their webs. If hypertext web composing is going to be an effective classroom form of writing, students must be allowed to learn and then make the associational links that make hypertext so compelling. These links will largely depend on student interests. For example, one student who was not part of this study chose to annotate "Punto Final," the same poem Cathy chose to annotate. But this student discovered information about Navajo Code Talkers during World War II and so he chose to create a whole textual thread dealing with the Code Talkers. His link from the poem was the word "Navajo."

And though the poem itself did not deal with World War II, the student, by making the association between the word Navajo and the information he found during his research, was able to "justify" that link. Students should be allowed that kind of freedom when they explore the possibilities for their webs.

Another suggestion for teachers is that they allow students to approach web composing in a variety of different ways. We see in the study subjects that two of them controlled their composing processes by handwriting lexias first in a spiral notebook. Susan, of course, used a word processing program. Just as teachers try to encourage and model various pre-writing strategies for novice writers, so should they model and accept various approaches to hypertext composing. And certainly one of those approaches, one of the choices students should have in their array of strategies, is mapping, either in a computer program such as Story Space, or in a less expensive graphic organizing program such as Inspiration. And, of course, students can map their documents by hand.

In a political environment that is calling for more "inauthentic" assessment such as standardized tests, published, student-composed hypertexts, displayed on the

world wide web either on school domains or on the free web hosting services available, has the power to show others the type of writing and thinking that novice learners can accomplish. Hypertext webs should be published. They should serve as artifacts of learning.

And they should serve as vehicles for learning. That learning would include, of course, the technical elements of composing electronically. But we cannot overlook how much each of the study subjects learned about the topics they chose to investigate. Hypertext composing seems to be a wonderful vehicle through which students can learn more about a given subject.

It is no surprise that electronic resources such as the world wide web will become an increasing presence in our students lives. It should become an increasing presence in their classrooms as well. John Slatin, in an article about reading hypertext, points out that "Reading, in hypertext, is understood as a discontinuous or nonlinear process which, like think, is associative in nature, as opposed to the sequential process envisioned by conventional text" (874). And though Slatin is talking about hypertext reading, something students will continue to experience as the world wide web and other hypertexts become more present, his point

about associative thinking is a good one. Students will need to practice, to experience the kind of associative thinking that goes into not only reading, but writing hypertext. Slatin points out "Linear thinking specifies the steps it has taken; associative thinking is discontinuous—a series of jumps like the movements of the mind in creating metaphor" (875). Hypertext composing places students in an environment where they must deliberately think about the relationships between pieces of text, and where they must broaden their definition of text to include other visual elements.

Implications for Further Research

As with most studies there are a number of areas in which more research needs to be done.

1. A comparison study is needed in order to investigate the differences in individual students' print culture text composing and those students' hypertext composing in order to compare such issues as agency, senses of audience and textuality, and levels of engagement and investment in the composing processes.
2. This study investigated the processes middle school students used to compose informational text. Other studies could focus on hypertextual argumentation and hypertext fiction.

3. Further investigations into the role the ways in which textual play affects composing processes would be very interesting. Play seems to be an important element in this study and it would be interesting to further investigate the extent that textual play enters into other students' hypertext composing.
4. I deliberately chose to include both genders in this study. It would be interesting to see if there were any gender-based issues that affected how students controlled the multi-linear aspects of hypertext, the conscious sense of play involved in the composing processes, and the ways in which gender may or may not affect the use of visual elements.
5. Since we live in an era of chat rooms, instant messages, and electronic gaming, it would be interesting to study whether these electronic environments impacted in any way students' authorial decisions.
6. It would also be interesting to compare the hypertext composing processes of more experienced hypertext authors to see how they controlled the multi-linear aspects of hypertext, how they used visual elements in their webs, and how they addressed issues regarding audience.

Ilana Snyder reminds us that no technology can guarantee a particular type of learning in students. Hypertext composing holds great promise for the classroom, but it does so only when the classroom is a space for authentic meaning-making. Its potential to build student awareness of textuality, and increase agency and involvement is less likely to happen if students cannot choose their own topics and follow their own interests once they begin their web composing processes. But in a classroom where hypertext reading and writing is allowed to take place along with other meaning-based literacy events, students will become involved in text, discover multiple textualities, and become agents in their own literacy processes.

Appendix A



This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.



Living Conditions Notes

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.



State of the Country Notes

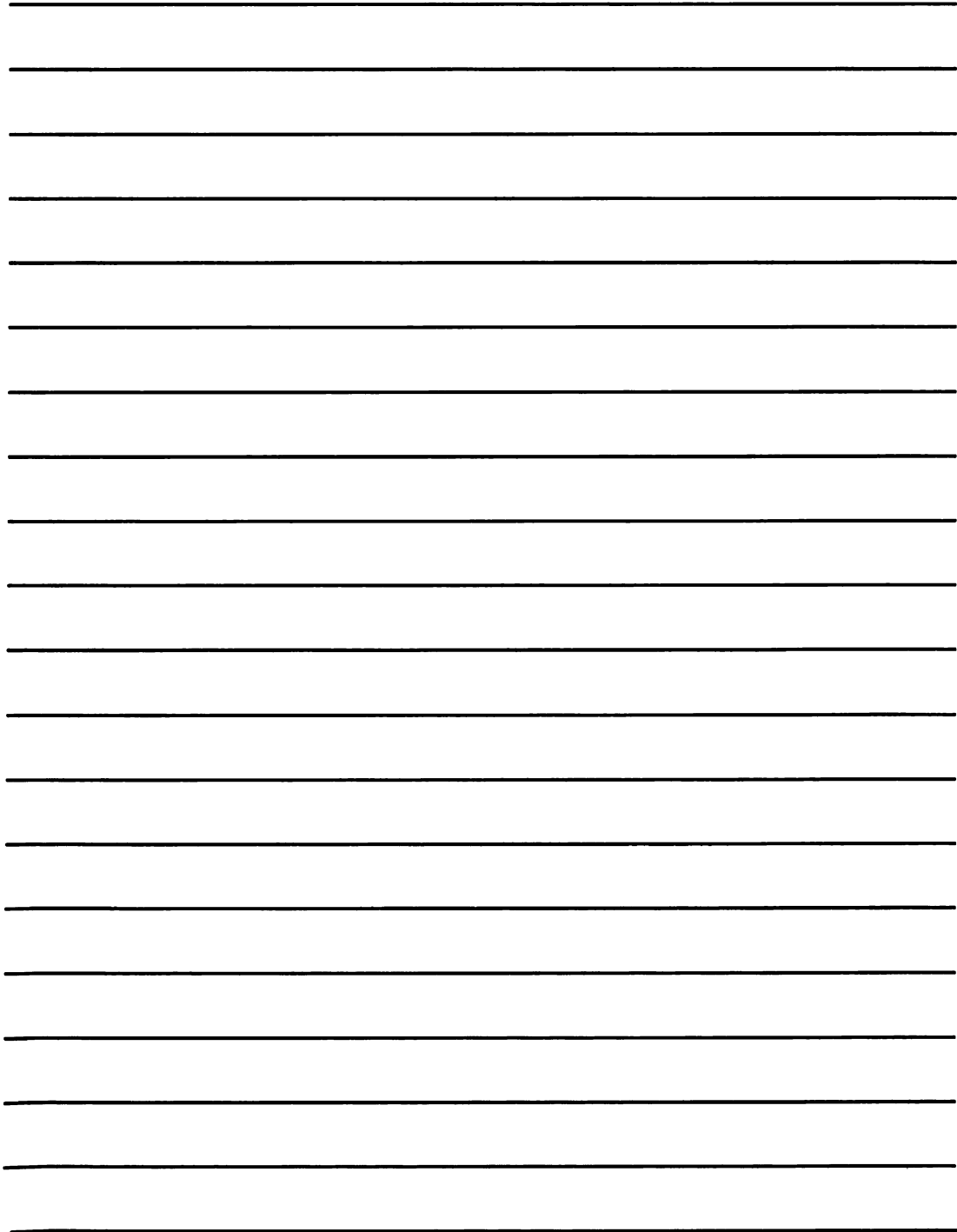
This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.



Adulthood

Notes

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The paper appears to be a standard notebook page.





Childhood Notes



Influenced By Notes

This image shows a single sheet of white paper with horizontal black ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Appendix B

Transcript

Post Project Interview

Aaron

March 18, 2000

Setting: Researcher's home, in front of a computer with internet connection.

N=Researcher Nancy Patterson

A=Study Subject Aaron

N. Ok, this is March 18th?

A. The 20th

N. The 20th. And, um, Aaron is here and we're going to talk about his website, A Century to Remember which is about the first, the first you selected in the 20th Century. Ok, we are at the opening page and you have very nicely told your reader how to use your page. Why did you do that? Do you just think it was important?

A. I don't know. I just did it to fill up the pages, I guess. I don't know.

N. Ok. Tell me about your background. Where did you get your background?

A. I can't remember where I got my background. I, um, found it on a website.

N. Ok. As I recall, you spent a lot of time looking for the graphics. Do you remember if you looked for the graphics first, or did you put together the...What came first when you were doing this?

A. Well, first, I like wrote down what I was going to write on a piece of paper and then I ended up typing it in there. Then I looked for the graphics.

N. So, you typed out everything that was going to be on your website, you wrote it out by hand first?

A. (nods)

N. Ok, do you know why you did that rather than compose everything at the keyboard?

A. Just because...One of the reasons was because I didn't have a computer at home and I could of done things at home instead of wasting my time doing it at school. And I had more time to just type it up.

N. Ok. So you preferred to write it by hand at home and at other times so you could spend class time at the computer.

A. Yeah.

N. And you wrote it up by hand so you knew what you were going to say and then you typed. Ok. So you got everything all together first and you wrote that out all by hand Did you do that on separate pieces of paper?

A. No, I did it in a notebook.

N. So was each page in the notebook a different...

A. A different...

N. Lexia.

A. Yeah.

N. So, you had all that together and then, then you decided what the graphics were going to be?

A. Yup.

N. So, on your opening page, you link to the very first page in your web site. Ok. Can you tell me anything about what you were thinking about when you put this page together?

A. Well, I had a book that had a bunch of stuff like that on it, so I was just looking for interesting things to put in there, in the web page. And I put the first world series first in there because it, um happened first.

N. Ok.

A. And I went in order

N. So. You. What you told your reader that you can go ahead and you can go back. Ok. And so the next think on here is first flight. Was there anything frustrating about doing this website?

A. picking what subjects to write about. Cuz, you know, there were so many subjects.

N. Ok. What about the technology. Was there anything frustrating about the technology that was frustrating?

A. At first it was with the first web page I made, but not now, not with this one. I kinda got the hang of it.

N. Ok. What was the hardest thing to get the hang of?

A. Um, probably...I can't think.

N. When you were putting this together, did you have a particular audience in mind?

A. Not really. it's like, people who would understand it. People my age. It's like the words that were in the book were really big words and I didn't know what they meant so I looked them up and, like, made 'em easier to understand.

N. Ok. So you simplified the words for people your age. Ok. We were. You were trying to get this ready for the Grand Rapids thing. Was that...Did you have that in mind when you were putting this together?

A. Well, before I found that little icon down at the bottom, that was before Grand Rapids and I wanted to put something and so I had to go find something for that.

N. OK.

A. So it would make it more interesting.

N. Now why do you think that makes it more interesting?

A. Just cus it separates the page text for the linking words and the reference.

N. Ok. So you always have your title and have this little flag border then you have a couple of paragraphs of explanation, then you have this little leaf banner which is intriguing, then you have your links. And every page is like that.

A. Yeah.

N. Did you try and look for pictures or anything like that?

A. No, I would have, but it would have messed up the background and made the page look bad. I put some in there at first, but it looked really bad so I took them out.

N. Now I think at one point you had the text size smaller. Is that more how you imagined the page would like like? With smaller text?

A. No because I wanted it to stand out.

N. Ok. So let's go on to the first music. Now we talked about the frustrations of doing this. Can you tell me what was easy? Or what was fun? Or what did you like about doing this?

A. The fun part was looking on the internet and looking at different websites.

N. Such as?

A. Look for different backgrounds and stuff like that.

N. Ok. So you liked the graphics. So the writing of it was so so?

A. It wasn't too fun but it was pretty easy.

N. Ok. But the fun part was finding the graphics? Was setting up the page and putting in the background and the banners better than writing the paragraphs?

A. Yeah.

[illegible]

N. And what type of places did you go to when you were looking for your banners?

A. Like, Iconbazaar. I looked around like American web pages, like U.S. web pages to see if I could find anything that related to the 20th century.

N. Ok. And I remember you were talking about...you wanted some sort of curly cue or squiggly banner to put...So where did you ultimately find that?

A. Iconbazaar.

N. Iconbazaar? Ok. I'm gonna ask you a different kind of question. A lot of the web sites that the kids did had links in the text. Is there a reason why you didn't do that?

A. One was that I wanted mine to be different than everybody else's and mainly because I thought it was pretty hard to find stuff to link to it. I'd have to make...I'd have to go way off the subject just to link it. And I wanted to link the Model T to the First Music and stuff.

N. Why did you want to link Model T to First Music?

A. I don't know. I guess cuz it was the next thing.

N. Was it the next thing in the book?

A. I don't think so. There was...There was other stuff. I can't remember. There was some other stuff but it was kinda, I don't know. It didn't look very interesting.

N. I understand what you are saying. Why then didn't you...You've given your reader basically two different directions--ahead and back. Is there a reason why you didn't give your reader several other options or did you want your reader to go in the order of the years?

A. Well, I wasn't thinking about that when I was writing it, but if I had of I probably would have put more links into it there. Actually I think that a good idea of listing them all down at the bottom. And then the reader could go to whichever one they were interested in.

(continued)

N. Ok. So if you had to do it again, you would put more links at the bottom. Now, why would you do that?

A. Cuz then they wouldn't have to follow a certain way to go to. They could go to something else. So they could pick on what they're interested in instead of, like, like, what they have to go to. They could something else.

N. So, you'd give the reader more choices.

A. Yeah.

N. So, why did you pick this particular topic?

A. Well, cuz I didn't want to, like, do a certain thing that would be harder to link off of, cuz it's like, just one subject. I wanted events and stuff.

N. But can you remember why the 20th century? What was it about that that made you want to create a web site about it?

A. Well, when I did my Andrew Jackson web, I thought it was kind of boring, so I wanted something that had more subjects and stuff. I had a book that helped me out a lot. That helped me pick things to write about.

N. You said that when you started composing this you did it by hand first. Were you doing anything on the computer at the same time that you were also writing information down on paper?

A. When I got to where I typed it up, from the paper, if I found something that made it look a lot better, I changed it.

N. Meaning?

A. Like I wrote it over again.

N. Ok. So you revised.

A. Yeah, I revised.

N. So let me back up for just a second. You didn't wait until you had all of your lexias had written before you started typing, you would...

A. Type a lexia at a time, unless I had like more time at home and then I'd write another lexia.

N. Ok, but you'd always had write your lexias and then come to school the next day and, and type it up.

A. Yeah.

N. Did you put quite a bit of extra time into this? Did you come in during lunch?

A. Yeah.

N. How often would you come in during lunch?

A. For a while I was coming up every day. And I'd bring my girlfriend and show her stuff.

N. Is there a reason why you wanted it...You wanted to get it done for the Grand Rapids thing?

A. Grand Rapids. Yeah.

N. I'm assuming that because you wrote the text, you wrote the words at home, that you didn't get ideas from what to write from the graphics or did you? Did the graphics help you at all about what to write?

A. Not really, no.

N. Ok. I kinda gather that from what you said earlier. Now, why did you decide to set it up like this with your title in the middle, with a short banner underneath it? Is there any reason why you did that?

A. To separate the page is why I did that, so people knew that was the title and that underneath that was the text and that underneath that is wehre the links would be, and extra information.

N. Ok. So you wanted to spearate all the page elements out so the readers understood eactly what they were

looking at. So, here's the title, and it's the title because it's in the title line and it's got the banner underneath it, and then here's the text, because we've got the leaf banner, and then here's the links underneath that.

A. Yeah.

N. We already talked...I wanna go back to the audience. Who do you think is the idea audience for this? The perfect reader for this? Who do you envision?

A. Probably someone who likes history and who is, like younger. Not like an old person.

N. Ok. Why?

A. Because I made it easier. Well actually an old person would like to read this too, but it's still easy to read because it doesn't have real big words in it. But I made it so that younger kids could read it too, and still like it instead of not understanding it.

N. Ok. So the audience is kids your age or younger.

A. Yeah.

N. Then how did you decide this was meeting the needs, that this was going to be readable by younger audience? The fact that you went through and made sure there weren't any real big words?

A. I had Susan read over it.

N (laughing) Oh, so you conferenced with someone about it. Ok. And what kind of feedback did she give you.

A. Well, she showed me where any words were spelled wrong and she told me where stuff would, like, sound better and like that.

N. Ok. Now you used Composer?

A. Yeah.

N. And what is it about Composer that you liked, as opposed to Story Space?

A. In Composer you can put in graphics and backgrounds and stuff like that. And you really couldn't do that as good in Story Space.

N. Now what do you like best about doing stuff like this?

A. Thinking them up. Putting it all together so that it, like, fits. That was the fun part.

N. So, you think this was fun?

A. Yeah.

N. What makes it fun?

A. Like when I think all this stuff up and actually put it together and it makes sense and stuff. I can click on something and it goes to it. A subject that relates to it.

N. So, when you know your links work.

A. Yeah.

N. Ok. Does the time go by fast when you are doing this?

A. Sometimes it does. Like when I'm doing something that I don't like doing, reading through the book and that kind of thing and finding stuff to write it goes slow, but then when I'm putting everything together it goes very fast.

N. Yeah, the grunt work, the research part of it.

A. Yeah.

N. But the actually composing on the computer goes fast.

A. Yeah.

N. Did you have a hard time keeping track of the individual pages that you wanted to put in your web? The individual lexias?

A. No because at the beginning of the notebook I had this map like you do in Story Space that showed like what would link to what and stuff like that.

N. Do you still have that?

A. No.

N. But you made a map. Could you, behind you is a piece of paper. Can you draw kind of what you think the map probably looked like?

A. It was just like in Story Space. I put the opener here. And put, like what the page was, the title of the page, like what he was called and the link, if you linked it, like it wouldn't be called the 20th Century like on my opener. It would just be called opener and like the Titanic sinks. I can't remember what that was called, probably something like Titanic or something. So, I put that and that link to Titanic. I put Titanic and I put a box around it and linked that to other stuff.

N. So, show me how you did the actual one. You didn't have it linked to Titanic, you had it linked to something else.

A. I had it linked to the World Series. But everything was linked to the opener. It has home on the bottom of the page.

N. Ok. Ok.

A. Everything linked to the opener. And, like, when I went to the First World Series that, I think, linked to First Flight. And then there's the First World Series, Series is what it was called, and I'd link that to Flight. (pauses while he draws). And then to First Music. And then there would always be a link back to the opener.

N. Ok. So. World Series linked to First Flight, but it also linked back to the opener, and First Flight linked to Music but it also linked back to First Flight.

A. Yeah. But I saved it as the name of the file, not what the title of the leixa was. To keep the file name shorter.

N. Did you rely on your map a lot? How did you use your map?

A. Well, I used it to keep track of where my links were.

N. Oh, so you used it as a map of your links.

A. Yeah.

N. Is there anything else you can tell me? Do you have a computer at home?

A. We got a new one yesterday.

N. Oh yeah?! What kind?

A. I don't know. It got here yesterday when I was at practice and then I had to work so I couldn't take a look at it.

N. Very cool. You'll have to e-mail me. Do you play computer games?

A. Yeah. At friends house. All the time. And Play Station stuff, too.

N. Let me just ask one more thing. Are you originally a Riverton kid?

A. Yeah. I went to first grade here, but then we moved to PW. And I was in PW until part way through fifth grade and then we moved back to Riverton, in the middle of fifth grade.

N. Ok. Well, I think that's it. Anything else you can think of?

A. Nope.

N. Well, I'll let you know if I've got any more questions later, ok?

Appendix C

Aaron's Learning Journal Entries

September 20, 1999

Today I typed my poem and looked for pictures on the internet.

I don't understand what you said about the links.

I plan to look for more pictures. I think this is fun.

October 4, 1999

I have 5 lexias done. I have a snow background for my web because my poem is sketon in winter I found the background on icon bazaar. I plan to make more lexias off my poem.

January 17, 2000

First of all I am making a big web of information about Andrew Jackson. I have lexias that link off of other lexias.

For example, I have an opening page that has 4 categories. Family, hardships, achievements, and poletics. I have a number of dates after the events of his life that link off to other lexias and tell more information on it. I plan to make more elxias & make all of them have pictures and backgrounds.

January 24, 2000

I have 7 lexias done. I'm finding more pictures but that's hard. I changed my background cuz you said it was hard to read things on it. I went back and change my links cuz you said I should do them different. Now I have the dates in red and the 4 categories. Tomorrow I will look for more pictures.

February 14, 2000

Last week I did a lot of changes. I basically kept the same information but switched it all all around. I changed a lot of my links as well.

What I would do differently ius I would plan all my stuff out on paper before I type any of it, And the only things I'd do different is let you look over it before I start typing.

February 18, 2000

I'm working on a new web that is cool. It is about the 20th century. I'm gonna work on it at home and during lunch so I can get it finished for Grand Rapids.

March 1, 2000

First of all at home I've written down everything I plan to put on my web, I have my opener and acouple other pages to go with it.

Today I typed my opener & my first page that links to it. I put a background on both of them as well.

I changed a few things, as I was typing. Like stuff that didn't wound right. But I also changed the linking words I used.

March 6, 2000

I put all my lexias in a spiral notebook and I wrote the links at the bottom and put where they go. I type the lexias at school and I also come up during lunch. I found a background of the statue of liberty that I'm gonna use. I still have to find some icons to use. I have a flag icon at the top but I want a squiggle to use too. I put my links under the text on my lexias.

March 10, 2000

I think I'm almost done with my web, but I want to make the font smaller so it will fit on the screen altogether at once. I really like my web. I showed it to Sara and she helped me with the spelling. I like my costume for Grand Rapids. I think we should win.

Appendix D

Susan's Learning Journal Entries

September 20, 1999

Well, lets just say I'm keeping myself confused because I definetly don't like this project at all. It doesn't make any sense. Why do you have to link social studies to L.A.? They are two different subjects and it's boring having History twice a day. I don't think that we won't use regular writing in the future like you said on Friday. I don't think that this project is as easy as you say it is. I can't find any real information on anything. The only information I have is pretty much one box and you need 25! I guess that's all.

October 4, 1999

I have gotten 21 lexias done, but I still need find more places for links. I have a lot of links like 4 in 1 and only two in another. All the boxes I have done are almost all paragraphs. I have every place from where I got information except for Athabaskan because I got it from many places but didn't write it down. I still need 4 more lexias and more links. I also have EVERYTHING for Netscape ready to do yet. I haven't even started that.

October 18, 1999

I am still working in Netscape and have found a background a like. It's border with arrowheads. I like the color because it's sort of warm and homey like. I also have a feather graphic in the middle above my text and I found a bar graphic that looks Indian and I'm going to use that above and below my words. I have some pictures on some of the lexias. I really like Netscape better than Story Space.

October 25, 1999

I'm almost done. I like Netscape a lot. For my next project I plan to keep the same layout I think. It is reader friendly and I like the way it looks—kind of neat and simple. I still plan to use Story Space first so I

can figure out where my links go. So, I guess if I had to do my project over again I wouldn't change anything. I like the way my project looks and I think I did a good job of getting information and saying where it came from. My links work and I have sometimes 4 on a lexia.

January 17, 2000

My opening page doesn't really have much yet. It has no images but I have the alphabet A-U for the lexias. They are links tthat do not have names yet. The top has the name of my person, Thomas Edison.

I prewrote every lexia and copy and pasted it onto Story Space. Now I am searching through the prewritten things and am finding things that link together through the already written lexias. I plan to go to IconBazaar and find pictures. It should be between 20-25 lexias total.

January 24, 2000

Last week I pretty much only made links. I printed out all my lexias (that I did in Word) so that I could hylight words that things could link to. That is pretty much all I did and it took a long time.

If I could start all over I would probably have read a different book because it was pretty much only about his childhood. I had to get a lot of my information from an Encylopedia. Other than that I wouldn't do anything different.

I plan to form my pages now, pictures, colored text, sizes. Pretty much just creating the actual pages.

Usually when I revise I center my text and play with different pictures to try and make the page as best I can. Usually I do my finishing touches at the need when all my pages have some kind of picture and background.

February 1, 2000

I'm still looking for pictures, but I'm almost finished. I really like my background. It is Thomas Edison's signature over and over again in sort of a grey color against a lighter grey background.

I don't think I'm going to use Story Space next time. It seemed like a waste of time for me this time.

February 14, 2000

I don't really have anything to write this time because I finished my web last week. I've been helping other kids. You said that was ok.

April 10, 2000

I don't want to use Story Space this time. I want to type my lexias in Word. I don't want to use Story Space anymore because it seems like a waste of time. I decided to do my web on slavery in general so that I would have enough lexias to get an A. And I can also sort of move around in the subject whatever way I want. If something kind of interests me when I start getting into the information, then I can move in that direction.

April 19, 2000

I've been copy and pasting from Word into Netscape and when I'm finished doing that I like to look for backgrounds. I keep thinking I found a background that I like but then I find another one, so I don't know which one I'm going to use yet.

I have about half my lexias done in Word. When I get to school I transfer them over to Netscape. I can label my lexias right on my Word sheet and that helps me keep track of things. I have 1 through 11 done.

April 27, 2000

I'm almost finished with my project. I had to add some lexias so I'd have enough. I have to find a few more pictures because you and Mr. Roessler said my web was confusing, so that has taken more time. I'm having a hard time finding the last few pictures. But I really like the background that I decided on. It has railroad tracks at the side which reminds me of the underground railroad. I stayed with the same kind of layout that I had before. Why mess with success?

Appendix E

Post Project Interview

Susan

May 16, 2000

Setting: Computer lab at Riverton Middle School

N=Nancy

S=Susan

N: It's May 16th and I am at school with Susan, and we're going to be talking about the hypertext web that she just completed about slavery. At the moment she's logging into the computer and onto the internet and taking a look at her site. And we're there.

(to Susan) This is your opening page?

S: Uh-huh.

N: And can you show me a little bit about this page and why you organized it this way, laid it out this way?

S: Well, because when we do these you told us that it's supposed to be like a book. You want to give them options to go anywhere they want to start out, and it gives them a way so they don't have to go through everything to find out what they want. So it has all the links set up, see, like I have.

N: Now you've got a list of one, two, three, four..you have a list here of 20 links. Is there any particular order that you put these links?

S: They're basically in the order that I wrote them.

N: And did you write them in a particular order?

S: Well, I sort of thought of them as the titles to paragraphs and I wrote the paragraphs.

N: So, does that mean they are in chronological order?

S: There might be a little bit, cuz usually, like, when I got to a lexia, if I thought I had a lot of information I'd make it into two, kinda like the middle passages and the slave ship. They're next to each

other. They're kind of related. Slave trade begins, perceptions in America. I kinder started from the beginning when I wrote it, so it is kinda like that. Then toward the end it's not exactly like that. So I guess the whole think isn't in chronological order.

N: Okay. Now how did you...why did you select this particular topic?

S: Because I knew I could find a lot of information on it and I knew I wouldn't be lacking any anywhere. I thought, you know...plus, we've been talking about this in my history classes. It's easier, kind of just take the stuff one day and put it on here, rather than doing a whole different research project. Doing something I already knew was kina easier.

N: (laughs) Oh, you took the easy way out.

S: (laughs) Yes.

N: Ohhh. So tell me about the background and the graphics on this?

S: I basically have the same layout on all mine, so you can kinda tell. It's my signature kind of thing without...having like the bar on each side and then having all the text in between the bars, and having a picture on top. And I usually like having a little bar on the side. I like that.

N: So, a border.

S: Yeah, a little border on it. I think that's nice, cuz it disguises the way, but it's more decorative. Bascially my layout was ll the same so you could tell it's all from me.

N: Okay. What do you mean by "disguises the way"?

S: It makes it more interesting and sort of disguises the fact that there is just a background color.

N: So you don't think the border hides anything.

S: No.

N: Okay, let's look at your opening lexia and decide which leixa to go to. Which one do you think would be a good one?

S: Um. It doesn't really matter. I don't know if it's going to work cuz I just changed all my addresses. Let's try this one. Okay.

N: So, you went to the Harriet Tubman link?

S: Right.

N: So, tell me a little bit about this page.

S: Umm, well, to start out, it's got the same background...all the same background. They're all the same layout with the bars. And then I have a picture of Harriet Tubman on the top to kina bring you back to let you see, you know, usually if you're going to look it up you might want a picture of her, so there's a picture of her at the top. I have a reasonable amount of information on her.

N: I noticed you didn't use a title on your lexias. Why?

S: Yeah, there's a title. Isn't there?

N: Well, you've got a title in your url line, but there isn't one on your lexias.

S: Oh, yeah. I see what you mean. Umm, I didn't...um...I tried using a title, but they didn't look right. I couldn't...I didn't like the way it looked with the lines, and I liked the lines, so I decided not to use a title cuz it didn't seem...I didn't think it would be confusing so I just left the words out.

N: Okay. When you're laying these pages out, what's the first thing that you do?

S: You mean when I write them or when I'm putting them on here?

N: Ummmm, I guess from the very beginning of the process, what process do you use when you're putting like a web page together?

S: Well, first before...I don't work on it at school, to start out with. I write everything at home on a word processor...on Word Perfect, actually...and ummm Microsoft Word, whatever you want to call it...and I type all my lexias out and then I print them all out and then I take a highlighter and I highlight all the words I'm going to link to each other, and then I write down on there what it links to, so that when I get here all I have to do is just copy, paste on, highlight it, link it, and it's really easy. It makes it go a lot faster.

N: Okay. Now why do you...okay, you don't write it out by hand, but you do it on a word processor?

S: Yeah, I type it.

N: And do you save it to a disk?

S: Yep. That's how I bring it to school. Yep.

N: Then you do a copy/paste?

S: Yep.

N: ...kind of thing. Then did you say that you sorted your links out first?

S: Yeah, before it got to school. I have all my links all ready before I get there.

N: So it's easier to think in the quiet of your home than it is...

S: Right.

N: ...in the classroom?

S: Yeah.

N: Okay. So the, when you're thinking, what procedure do you use when you're setting up this page? Once you get in front of the computer, what's the procedure that you use?

S: Basically the same technique I use every time. I center my text two or three times, and then I tie the

space in between, like my home page link and then my information, and the I make sure I have a space on each side so everything's spaced out the same with the lines, and then I try and have the same space in between that and the picture. And then so everything's spaced out and centered, and then I have a little background.

N: Now. What about this? Because you've used this layout for several different web sites that you've done. So what is it about this web, this layout, this web design, that you think particularly...what is endearing about this to you?

S: It's easy to see everything. It's like reader friendly, definitely, because you can...there isn't an overwhelming amount of information. And it's just enough, you know, so that you will read it and you won't just say, okay, too much information...cuz I do that a lot...and then you won't read it. And then it's easier to interpret, and you can just get everything you want out of it.

N: So you have basically just a screen full here?

S: Right, I tried to have the screen full.

N: And the graphic elements, now how did you decide...at one time you didn't have a different border?

S: Yeah, You mean in my background?

N: Uh-huh.

S: Yeah, I had a different one.

N: Why did you change?

S: Because I like this one a lot better, cuz the other one was a lot like the one I had at another site, and this one kinda set it apart more and it has an underground railroad thing and I thought it pertained more to slavery, you could tell. And the color actually brings out a different feeling that I like a lot better.

N: Okay. So let's go to a different...you're clicking on the word "successfully," and that's going to take you to...

S: This one...

N: And this looks like it has to deal with runaway slaves?

S: It's the law of 180...

N: 1808? And what does that have to do with anything, the law of 1808?

S: I used to know. I (laughing) don't really know any more. All I know...I know, that's when they weren't allowed to import any more slaves.

N: Okay.

S: Yeah. Now I remember. I'll go back to that.

N: Wait. What does the law of 1808 have to do with the word "successfully?"

S: Umm. I don't know. It just seemed like an interesting word and I needed to have something that linked off that lexia to something else.

N: So, there wasn't anything particularly meaningful about the word "successfully?"

S: Um. I guess not.

N: Okay, so tell me about this page, why you selected the picture?

S: Okay. I selected this picture because it kinda showed a slave frowning. They weren't allowed to import slaves anymore but they did and the slave in this picture is frowning. So it's not like slavery was gone or anything, this still shows you that even though this happened there's still, you know, had to work hard labor. It's not all perfect, and all that.

N: Okay, now. Let's talk about the links that you've got here. You have four links...five links, and actually a total of six links, cuz there's one that goes to my web site...so one of the links is the date 1808. Can you remember why you chose that as your link?

S: Because that was a day, I think 1807, in another place, and I figured since this was 1808. And so if they wanted to see what happened for this it would give them a connection between those two.

N: Okay. So you have one date and then you have another date. Now you've got the word "increase," that's also a link; this "increase" in the price of slaves. So why did you choose the word "increase" as...

S: I don't remember. I'd have to see what it linked to.

N: Why don't we take a look. You can just hold the cursor over. It links to "owned slaves."

S: Probably because this is talking about increasing the price of slaves. There had to be something in this, like see right here, that had to do with, you know, obviously there's slaves in both these, and probably says...I'm guessing it probably says something about the population of slaves, or...

N: Why don't you click on it? Let's take a look and see if we can see what you were thinking about.

S: Okay. This just talks about the population of the slaves.

N: Okay.

S: And that looks like about the price, so that instance will give you more information on the slaves.

N: Okay. So the first one was talking about that they couldn't import any more slaves from Africa or the Caribbean, and this one talks about...

S: How they were counted for census and tax purposes and that.

N: So, why don't you hit the back button and let's take a look at this other. You've got another link there that they were being separated from their families, and "separated" is a link.

S: Ummm. Back to independence. I think that's because they're saying...I know that was like, you know,

everybody's created equal. This is showing, you know, that...actually that one could almost link to all of them because it shows how they weren't...and you know it was written...how they weren't. Because this is all explaining how it was against the Declaration of Independence, all about being created equal. So almost any of them could probably link to that one.

N: So you're looking here at the irony of slavery, that on the one hand these people have been brought to a country that has a growing Constitution and a Declaration of Independence...

S: And they don't...

N: ...saying that all men are created equal...

S: Right, and they aren't going to allow...

N: ...but these are not considered men.

S: Right. They're people, but not really.

N: Okay. And then you have "runaway" as your link.

S: Oh, and obviously Harriet Tubman, because she was one of the conductors of the Underground Railroad.

N: Okay. Okay. And then you have a link back to your home page.

S: So, they can go anywhere they want.

N: Okay, let's talk about making links in general. When...did you make your...when did you decide to make your links.

S: Ummm. When?

N: Did you decide to, um, make them...were you doing your word processing pages, or were you, um, doing the lexias.

S: Did I decide to, kinda, make the links when I was writing at home?

N: Yeah.

S: Well, I kinda like wrote the stuff using word processing first, and then, sometimes, you know, like I'd kinda decide sometimes when I was writing and then when I had the whole thing done, I'd kinda go over the whole thing and decide what my other links would be because, you know, I wanted to make sure I had...I needed three links on each lexia.

N: So, is that when you make the notes on your word processed page?

S: Yeah, but a lot of times I knew before I made the notes, like when I was typing.

N: So, would you plan to include a lexia about like, say, 1808 because that came up in something you typed earlier.

S: Yeah, but I also knew my topic because of history class, so I was pretty sure that would come in somewhere. Like, I used the date 1807 in "abolished slavery" and I knew the date 1808 was kinda important, so I made sure I made a lexia for 1808.

N: And writing about 1807 reminded you to include a lexia about 1808?

S: Yeah.

N: Okay. When you were thinking of people reading this, what was going through your mind when you were kind of imagining your idea reader?

S: I wanted to give them information that they would want, because I went to a lot of sites, and, like, I went to a lot of sites what I expounded the most I tried to put in mine, because obviously people wanted to see it, otherwise it wouldn't be there. That's why I have Harriet Tubman and 1808 in there because I saw it in different places. I figured, you know, if they have it, I probably should have it too, because that's what people want to see. So I tried to think of something that people would want to know about, like the slave ships.

N: And then to bring it all together.

S: Together in one.

N: Who do you imagine as your ideal reader?

S: Somebody doing the same project I am. (laughs)

N: (laughs) So, another student?

S: Yeah, probably another student just looking for information on slavery in general, and just needing little tidbits here and there about things. You know, something about the kind of all the information that you see, like this page...the page on the screen, just kind of in a paragraph for ya.

N: Okay. Anything else you want to say about how you did this particular web site?

S: No.

N: Do you still have your typed up copy?

S: Yeah.

N: Could I get a copy of...

S: You can have them, I don't need them. I don't even know if I still have 'em.

N: And I may have copied them at one point because I was quite...When I was watching you do this I was intrigued.

S: I think that might have been my Thomas Edison one, cuz that's when I started it. Then I thought, wow, this worked great, and so I used it again.

N: Now let me ask you some questions about these projects in general. Probably some leading questions, but we'll see what kind of information we get. I take it that you somewhat enjoyed doing this?

S: Yeah. It's different from everything else you do in school.

N: So, why is it different? What makes this different?

S: I think I said it before, but it's because you use creativity in it. I love designing things, because you get your own little touch in it, rather than, you know...like my history class isn't bad, but we just have to do like these packets of stuff, you know. And this is like a different way of learning it. This way you're just taking information you've learned and you're applying it.

N: Okay. So when you say your own little touches, what do you mean?

S: Well, like, I get to choose how I want my page to look. So if I were doing a report, you know, it's just typed, and has to be a certain way. Here I can change the color if I wanted to. I can put any colors I want, any pictures I want, any layout I want. I mean, what I want to make the reader get to look at. You know. It's like a paragraph here, indent here, picture, or double spacing if I had to. This way I can design it any way I want.

N: And you like working with the color and graphics.

S: Yeah.

N: And images, and different fonts?

S: Uh-huh.

N: Now what about the linking? Does that present problems for you?

S: No usually. I sat down and did all my links in probably about an hour. But, I knew what stuff was going to link to other stuff because I figured that out in my head. It's not really that hard, really, cuz everything ties together any way, so it was just figuring out what things tied most together, and remembering what I was thinking when I wrote it, and what different words that I've already used. How to make those certain words link to the other boxes.

N: Hmmm. You're in a fairly traditional history class, and this is not a fairly traditional approach to an historical topic. In which setting do you think you learn more?

S: Do I learn more?

N: You can answer honestly.

S: I learned a lot in my history class, and not just maybe because I have history classes during the second semester. Maybe it's just the fact that I wanted to get more out of it because I didn't get not much out of it the first time when I had my other teacher. But I think I...well, for the most part I applied what I learned in there and used it on here, if that makes sense. I didn't really learn much new in this class, I just applied it here and learned it there.

N: So you were able to show what you know?

S: Right, pretty much. And most of the stuff, I had to look it up somehow, but I pretty much knew it already. But I had to look it up because we had to cite references, and stuff. And I used my history book on here too.

N: That's all right

S: Yeah.

N: Now, tell me a little bit about your technological background. You have a computer at home?

S: Yes.

N: But you've never done web sites...Oh, you did it...

S: I did one during my computer class this year, but I...

N: Was that before you were doing...

S: That was during this one.

N: Okay. Okay. Now what about fifth grade? You were part of that project in fifth grade, weren't you?

S: Nope, nope. I wasn't a very computer person until this year, probably.

N: So you think you've kinda turned into a big computer person?

S: Well, I think I know a lot about computers, but I wouldn't want to spend all my time on computers. Yeah, I just don't have time to do it.

N: Yeah, because these are time consuming.

S: Yeah, and time goes by really fast on the computer and you don't know what happened.

N: Why do you think time goes by so quickly when you're on a computer?

S: I don't know. Because you're kinda involved in what you're doing and all of a sudden all the time goes by and you...like, usually what I'll do when I'm on the internet, I'll be like, what have I done this whole time to make all this time go fast, because you can do so much so quickly on it that you forget that you had to take time on it, but it seems like it goes really fast.

N: Yeah, I've noticed that too. That all of a sudden it's the end of the hour and I haven't even gotten around to help everybody. So, yeah. Would you recommend this as a way to really get in touch with a subject matter? I mean, you learned this subject in history.

S: Umm-humm.

N: Did you sort of hammer it home here?

S: What do you mean?

N: Do you think this helped you to learn it...?

S: To remember it?

N: To remember it?

S: Yeah.

N: Or is it hard to say?

S: Maybe. I know that I did some of this from memory, and I just think it always helps, you know, if you read it and then you write it. That always helps me to

remember it. So I guess it's kinda like that. But, yeah, I guess it doesn't make too much of a difference with me, I don't think, cuz usually after so much time I'll forget it anyway.

N: Okay.

S: (laughs)

N: Okay. Let me just get a little bit of family background from you.

S: Okay.

N: What does your mom do?

S: She works at Sparrow as a property manager.

N: As property?

S: Manager.

N: Okay. What does that mean?

S: She manages, like, the professional building and, like deals with tenants.

N: Okay. What about your dad?

S: He's president of a credit union in Grand Rapids.

N: Now, are they divorced?

S: Yeah.

N: Okay.

S: Yep.

N: And how long has that been?

S: You mean how long they've been divorced? I think six or seven years. Long time. I can't remember cuz they were separated for two years and then they got divorced, so I don't remember. It's somewhere back there.

N: And you have one brother?

S: I have two

N: Two brothers.

S: Yes.

N: So, you're the youngest?

S: Yes.

N: The baby.

S: Yup. 15 and 19.

N: Now what about...are your brothers kind of into computers?

S: Well, one brother writes stories all the time, so he basically only writes stories with the computer, and he'll play games on the computer, but he's not very much of an internet person. And my older brother, since he's in college, he's been using them more, but he never really used them much before then. And then he just thinks...he just started...like, when he came home from college he noticed that I had AOL as the messenger, and he's all up on that now. That's pretty much all that they've done on computers, like (inaudible) and stuff like that.

N: You find yourself using the computer at home more now since you've done this kind of thing, or is it about the same?

S: It's probably about the same, because usually at home I'll either just like to on the internet or normally not work on my (inaudible), but that's pretty much all I've been using it for. I don't make these at home.

N: You don't do this in your spare time for fun?!
(laughs)

S: (laughs) No. No.

N: What kind of hypertext student are you?

S: (laughs)

N: Okay. I think I have enough information at least for today.

S: Okay.

Appendix F

Transcript

Impromptu Conversation

Susan

March 13, 2000

Setting: Nancy Patterson's classroom when many students were gone on a field trip and a film was being showed to those who remained in the classroom.

S=Susan

N=Nancy

N: Okay, we were talking--this is Susan and today is March 13th. And we're talking about her initial frustrations with hypertext.

So part of the reason that you were frustrated with the first project was because it was history and you don't care much about history?

S: Yes. That wasn't the main reason, though.

N: Okay. So can you tell me a little bit more what the main reason for your frustration was?

S: Cuz I didn't really get the connection between this and language arts, cuz I was taught more by your reading about this and like doing a book report on it, or writing a story and, like, what are the processes of that. I've never done this before so it's like, why are we doing this? There's no...seems like there's no point to it.

N: Okay. I'm going to ask you a leading question.

S: Okay.

N: So I want you to answer the question as accurately as you can. I'm trying to...I'm in a sense leading you in a direction and if it's not a direction that's an accurate one for you then say so.

S: Okay.

N: Was it the format of hypertext, the way it's all kind of exploded and...did that sort of bother you?

S: Well, I didn't really understand how to write it, because if you're supposed to find words that link to each other, like I tried two words, they were both the same word but they weren't really the same thing. So I'd get, like, if they didn't really...like if you're doing Indians, for instance, one was like there's a big span of that. And so one was like way before, you know, like right in the beginning. One was like towards the end. I don't understand how, why would you connect those two because they don't make sense together.

N: So you were being asked to find relationships between...

S: Right.

N: ...And because a word was at the beginning and then another word was at the end and you were being asked to find a relationship between those two words?

S: Yeah. I didn't think they could go together because they didn't really...see, well here's the book where it starts in the beginning and goes through to the end, and then this is where, like, you can go here, then here, anywhere. It doesn't matter which way you go.

N: Okay. So it was the multi-linear...the different paths. Did you understand in the beginning that a reader would go...one reader might go through your web in one way and another reader would go through your web in another?

S: I think I understood that, you know, once they got outta your starting page they could go anywhere, but like, I didn't see how that would make sense to anybody.

N: Okay. Okay.

S: Like what's the point if they're not going to get it cuz they're missing all the information in between.

N: Okay. And you didn't realize that a reader...you didn't think a reader would sort of go back and forth and sort of jump around. Your expectation was more that a reader would start at the beginning and move through in a logical ...

S: That's the way I learned how to do it, and that's how I got all the information, rather than just going back and forth and jumping all around. I didn't see why would you do it that way.

N: Now, let's talk about now. What's the difference between now and when you started...I mean, obviously your attitude toward hypertext is greatly changed?

S: Yeah.

N: Cuz you just told me that you really kind of enjoy doing this now.

S: It's fun cuz you don't...it's like all these beginning years you're doing the same thing over and over and over every year. You know, you read a book, you do a book report, you write a story And you do it again. This is like different, and now that the internet's starting to get bigger and you see it more, and you kinda understand it more and you understand how these things go together and why they do. Once you've looked through other people's webs too...cuz that was our first one...you've read most everybody else's...once you've seen a bunch of other people's you understand really by reading theirs that...oh, I see why this goes together. After you do one you usually just...it kinda comes together and you understand it better, so it makes it fun.

N: Are there any things that you do outside of school that are sort of similar to this? Any TV kinds of things? Do you watch any movies that you see, any games that you play that are sort of similar to...that remind you kind of this?

S: Not really, I guess. I didn't...I can't think of anything off the top of my head then that's kind of like this. Kinda other than like when I'm...I've been in a lot of plays and you don't always run straight through. You start here and then this scene needs working, let's do this one. That's the only thing I can think of that just

jumps back from scene to scene when you rehearse. I guess. Well...the more I think about it, the more I think play rehearsal is a lot like...hypertext sorta reminds me of play rehearsals. I never thought about that until you, um, said something.

N: That's interesting. I had not...because I've directed a lot of plays, but I hadn't thought of that. But yes, of course, you don't go in order. Are there other reading situations where you don't necessarily go in order?

S: I don't know. I haven't read one of these in a very long time. You do those (inaudible) in the bedroom books. You can just kinda go back and forth. That kinda is not exactly the same thing from the cell, the whole story's here, you just look back in the book.

N: So Choose Your Own Adventures are...

S: Kind of. Not exactly.

N: ...Sort of multi-linear, but not exactly the same. Are there other things that you read that you can think of where you might jump around more?

S: Maybe a history book?

N: Okay, so you sort of skip around in your history book?

S: Well. Yeah. Like right now we're kinda working on a chapter, but like, there's things in the back of the book that kind of pertain to the chapter. Like, we're talking about the Congress, and stuff. Then you have the Constitution in the back of your book which pertains to the Congress. And then you go back to the book and you read about other things, and you go to a different articles about Congress and you note that, and you go back.

N: Okay. Okay. Interesting.

S: Something like that?

N: Tell me what...what do you like about doing a hypertext project?

S: I like to design a lot. I really like designing. And you get to kinda choose your own page and how you want it to be presented. I just like to really get into it and making it reader friendly, as you say, but also making it kinda unique. Making it the way...like I have a certain format I always do with mine to show that...then, like if you see a couple of mine you know it's mine cuz I do it the same way. It's kinda like getting yourself into it, I guess.

N: So it sounds like you feel you can be more creative?

S: Yeah. I like designing things. It's just like another one of those things you're learning while you're designing, so like you're having...so you like what you're doing while you're still learning the steps.

N: Best of both worlds.

S: Yeah.

N: So how much...if we were doing this in a black and white monitor instead, would you still...what role does color and images...

S: It makes...if you have an interesting-looking page, then more readers would want to look at what you have. Otherwise it's just black and white boring. Nobody's going to want to look at it, because what's the...they're not going to see anything interesting. Why would they want to read it? So, I think it wouldn't be as fun but it would still be all right because you can still put it in the same form, you just wouldn't see the same contrasting colors and personality.

N: So when you're writing, are you...and you're putting all these elements on your page, are you always thinking about some unknown reader?

S: Yeah. Like, I wanna make them wanna see my page. I don't want them, like, to just open it up and...like what I've done, I go on the internet a lot...and a lot of time, like, I'll do searches, like, I don't know, on anything. Not anything particular, but like, and I don't even find myself reading the text sometimes just cuz it's so boring.

[Pause in recording]

N: We were taking about an unknown reader, I believe.

S: Yeah, I'm trying to think. I don't remember.

N: We got interrupted, so...

S: But I remember now.

N: And you said you were looking...

S: Looking at other internet pages.

N: On other internet pages?

S: Yeah. Sometimes they're just...if they don't look interesting, then you automatically think just by looking at it that this isn't what I want, and then you just go some place else. So if you want to make it appealing to the eye so that others will look at what you have written...Otherwise they'll just blow it off and go some place else.

N: So, what makes for an appealing page in your eyes?

S: Well, I like having backgrounds that are pictures, but you can still read text over them. So...

N: So, like wallpapers?

S: Yeah. Like you don't want just a plain color...at least I don't think so...because that's just...it seems like they didn't, like the person that didn't do...was kinda rushed, or something, and didn't have enough time to attach the (inaudible) to it. I think a nice picture. Like, it depends kinda on what you're writing about, but like on mine, which is more informational, usually the picture of what you're talking about helps and having the text in a bar...between bars...makes it easy so they don't have to go look all over the page, and skinny so that they don't have to read all the way across it.

N: Okay. And I noticed on your Thomas Edison web you used the wallpaper that had the Thomas Edison...

S: Right.

N: ...signature that appeared a number of different times which I thought was very interesting, and it also pretty much complemented the page design. It was light enough that you could definitely read text over it.

S: Yep.

N: and it was also very nice because it kinda reinforced what the topic was about. You always knew...

S: Yep.

N: That you were reading about Thomas Edison.

S: Right. It kinda connects all the pages, even if they are kinda scattered, that they all do go together.

N: Ummm. Now we haven't really talked about the next project, the slavery project, and we need to as a class sort of negotiate what we're going to do with that. But, ummm...do you anticipate...are you kind of looking forward to doing another hypertext project?

S: Yeah. I mean, I like doing them. Ya know, I just...I don't know. I didn't think it was going to be very good at first because I didn't want to read a slavery book, but even if mine was very long, it was very good, and when you read a book like that you pay more attention to it, which makes the web so much easier. So, I'm actually looking forward to it if we do the same kinda things, but just cuz I think there's so much on the internet, too, that you can get from other sites that can make your picture better by all the great pages that are out there to pick on a really nice-looking page.

N: Okay. I'm probably going to have to ask you more questions later, but I want you to also kind of see the little bit of the movie that's left.

S: Okay.

N: So. We're going to stop the tape.

Appendix G

Transcript

Post Project Interview

Cathy

April 11, 2000

Setting: Nancy Patterson's house

N=Nancy

C=Cathy

N: Ok. It is April 11th, and I'm talking to Cathy about her bald eagle web site; special web site that she did, and we're at the opening page of her—or the opening screen of her web site, and Cathy's going to tell me a little bit about...So, tell me a little bit about your opening screen and what you were thinking about when you designed this as your opening.

C: I wanted it to be, like, an attention grabber, so I wanted to get the best picture I could find of a bald eagle, and so I did.

N: Okay, Now all of the drawings that are in this are, I think what are usually referred to as line drawings, or they're pencil, or pen and ink, or something. Did you find these all on one web site?

C: No, I went to a bunch of different sites.

N: So, you found all these drawings at a whole bunch of different web sites and collected them. Did you look for the drawings first, or did you look for the drawings afterwards?

C: Afterwards. I typed everything first and then I got the pictures.

N: Now, you went about a little interesting process when you were doing this because you did all of your research and wrote all your lexias out by hand first.

C: Uh-huh.

N: And kinda collected your information in a spiral notebook.

C: Yeah.

N: Do you still have that spiral notebook?

C: Yeah.

N: Can I have that spiral notebook?

C: Yeah.

N: Okay.

C: Right now, or...

N: After we do this, yeah. Yeah, I do. (pause) So, anyway, you wrote...you took your notes by hand, and then you wrote...did you write out exactly what the lexias were going to say, or did you just collect information?

C: First I went through the information and I highlighted most of the stuff I wanted, cuz I printed it off the computer, and then I wrote out in my own words what I wanted to say and then I wrote exactly. After I was done writing everything out I kinda organized it so it wasn't all...so it was organized, so it was in order.

N: And when you say in order, what does that mean to you?

C: So it sounds better.

N: What about the order of the lexias as you collected them in your spiral notebook? Was there any sense of...why did you put one thing first and another thing next?

C: Well, I went through when I read it, I kinda thought of different topics in my head, and then I wrote out the different topics on separate pieces of paper, and then when I read about that topic I would write it down under the topic.

N: So, there was really no order to how you put your lexias in the notebook?

C: I guess not. I just put the topics down and when I found information I put that on the pages.

N: So there was no special order.

C: No.

N: Okay, let's look at another screen. (clicks on link and goes to new screen.) Why don't you show me about this one.

C: Well, first I started out, this is kinda the beginning of the project and I just told a short description of bald eagles and then I got a picture that is a nice picture of bald eagles.

N: Ok. And your opening lexia, this is the only choice so the reader has to go to this lexia.

C: Yeah.

N: So, this is...and this is another opening lexia, and now you've given your reader three choices. Which one do you think we should click on?

C: I'd say strength.

N: And what will the reader find when they click on strength?

C: It goes to the lexia called Personality.

N: And what does this lexia talk about.

C: Um, it, well, I guess it talks about some of the personality stuff about eagles, like, how...it talks about how older eagles sit higher on a branch and stuff like that.

N: And it looks like there is something about threat display. What is that?

C: How eagles spread their wings to scare things that are threatening them, and how old time shields and stuff had eagles doing that threat display, sort of like, um, showing how strong they are.

N: So the word strength connects to information about how strong eagles are?

C: I guess. Sort of. Yeah. I thought strength had something, like it was about what was on the lexia.

N: Okay. Any other information you want to add about what you did and when you were doing this project? What was the most difficult part?

C: Getting the information.

N: So...

C: That and writing.

N: And you spent a long time doing that. You must have spent three or four weeks doing that?

C: Yeah.

N: Working almost every day?

C: Yeah.

N: How long did it take you to then put the thing together? It didn't seem like it took you very long to put it all together once you had it written.

C: Yeah, once I got all the information done and wrote down, I got on the computer and was done in a couple days.

N: Did you work on any of this at home? Writing the lexias, did you work...so you did all this in school?

C: I worked on it at home too and sometimes on the bus going to track meets.

N: Track meets? Really?

C: Yeah. (laughs) But the bus is bumpy, and, um, the...it's noisy and I didn't do that much.

N: You're such a slacker.

C: (laughs) I know.

N: I want to ask you a little bit about your computer background. You've got a computer at home?

C: yes.

N: So when do you remember...how old were you when you think you got your first computer?

C: Probably eight.

N: As a little kid, were you glued to the computer right away?

C: Um-hmmm. I played games, like Small Guess and Spell, where you find the states...or you'd have to name the states or something.

N: So when did...when in school did you first start using computers?

C: We used them in elementary, but just...I don't know what for. I remember going in there. This year was the year we really started working on it, and stuff like that. Otherwise I haven't used it before in school.

N: Okay. And that's right, I didn't have you last year. Now, do you think that your skills using the internet have gotten better?

C: Yeah. A lot.

N: In what way? In what way are you aware that your internet skills are better?

C: I know how to find things. I know how to do things a lot faster, and it's easier for me.

N: When you first did an internet search, what was that...in what way was that...was that confusing to do the internet for the first time? You get all these...

C: Yeah, cuz I didn't know where to go after they showed me all the different selections I could chose from. I didn't know where to go after that.

N: And you do now?

C: Um-humm

N: And do you know why you do now? What's...

C: Because I know what I'm looking for. Well I know what I was looking for ,but I didn't know that there would be that many choices.

N: How do you narrow down the choices once you have this whole 450...

C: I look at the descriptions under the thing and I go from there.

N: Make decisions once...from reading the...

C: Whatever describes it more.

N: Should we go into the other site just for a minute to see? The Mark Twain site? I realize that...we're going to go into another...Okay. This again is a black background. Do you like the black background?

C: Yeah, it looks more professional...or I don't know. Maybe not professional, but unique. My picture's not there.

N: Wonder what the problem is? Let's see if the other picture's there..So, once again you're working with tables?

C: Yup.

N: And we have one image, and text. Nice color combination. That's sort of a cream color with the blue. Anything you can think of specifically to talk about the Mark Twain site? This was a required project.

C: This one I didn't...I just read a book and then I wrote kinda was on...what I remembered of the book, I guess I would say, and the different sections. I never wrote out any lexias or anything. I just wrote off the top of my head what I remembered.

N: Okay. So do you think the bald eagle site is better than the Mark Twain site?

C: Yes. More information, I would say.

N: Was the bald eagle site more fun to do?

C: Yeah, cuz I got pick my own topic and I learned a lot.

N: Okay.

C: You know, reading the book, I guess I got...I just didn't remember as much.

N: do you think there is anything...that it had anything to do with you got to choose bald eagles out of the whole world full of choices, and Mark Twain you sort of have this biography project you have to do?

C: Yeah, that might have been, but writing it out, maybey, writing out the lexias, it kinda got stuck in my head.

N: Okay. So you learned more because you had to write it...you chose to write it down?

C: Mmmmmmm.

N: Let's talk about the fun, the enjoyment level, of putting together a web project like this. I'm assuming that there is some fun to this?

C: Yeah.

N: Why is it fun? What makes it fun?

C: Cuz you get to research different things. I like to do research. I like to learn about history, mostly.

N: Okay. So the actual learning. What about the technology part of it? Was that...

C: I think that's fun, too, cuz you get to learn more about the computer, and how to do different things. When I showed my parents this they were amazed.

N: That you did this?

C: I didn't them this one earlier.

N: You didn't?

C: No, I showed it to them just a couple days ago.

N: Well, pooh. Why didn't you show them.

C: (laughs) I don't know.

N: But they were impressed?

C: Yeah!

N: I mean, you have people in Arkansas, for heaven's sake, going Wow, look at this. A famous guy in New York City! So. Yeah! So, tell me, we want to focus more on the fun, the play part. Can you think of why this is?

C: Maybe like designing a different layout. It's kinda neat. Like, I haven't really seen this anywhere before.

N: This layout that you used?

C: The colors are different, too. I like them.

N: When you were making your links, what were you thinking about? What kinds of things did you think about when you're making your links?

C: What I wanted to link it to.

N: Okay, but let's go back to the eagle one, for example, and um, and so here on the bald eagle, one of your two opening pages you've got, "In 1782 the United States Congress chose the bald eagle as our national symbol. The bald eagle represents strength, conquest and freedom. Bald eagles are large, fierce and majestic birds. Majestic, strength, which we talked about, and conquest are links. Why did you focus on those three words?

C: Because they have something to do with the next lexia and it's going to work.

N: Okay. So when you were writing this were you thinking about choosing words that could become links later?

C: Yeah.

N: So you did that deliberately as you were writing?

C: When I wrote...after I was done writing on paper, I went through and underlined the words I wanted to link it to, and then I wrote the word and I wrote what I wanted to link it to.

N: Okay. Okay. And so when you...now, let me think here for just a second. You wrote it all first and then you went back and found your links?

C: Yeah.

N: So, when you were writing it you weren't thinking, okay, I've got the word strength here so I need to say something about bald eagles' strength? That not how you...

C: No.

N: Okay, okay. Let's just take a look at the next one. We've got three links here. One was "eagles can be dangerous when provoked" and eagles is the link. "They steal food from other birds even when food is abundant." The first "food" is a link. And "eagles have a strong impulse to grab things and take them back to its nest" and "nest" is a link.

C: Um-hmmm.

N: And when...when you were looking for links you knew you had information on nests?

C: Yeah.

N: And this one, I think, goes back to your opening screen. Yep. And you knew you had information on food?

C: Right.

N: Did you color code your links at all, or did you use a marker or a highlighter for the links>

C: Yeah, highlighted them in my script.

N: But you didn't...

C: Before I went through and linked them all I made them bold.

N: Okay.

C: On the computer.

N: Okay. And did you do that...you didn't do that with Mark Twain. With Mark Twain you composed at the keyboard, right?

C: Um-hmmm.

N: And you liked composing on paper better?

C: Yes.

N: And I think because you thought you had more control over the information that you could...and you could work on it at other times besides in school, or you just always worked on it in school?

C: I could work on it other times, like the bus, you know. I did, yeah. I did sometimes at home and when I was on the bus.

N: Okay.

C: But I knew I could work on it second hour, too, so working on it on the bus or at home wasn't my first priority even though I sometimes did work at other times.

N: Okay. Well, I think we're done, actually.

C: Okay.

N: This is really a nice site, you know. What was your...I don't remember your poetry web. I've been slow about getting the poetry webs up on line. Next year the kids are going to take our geo-cities accounts, their own web sites, and I'll link, instead of relying on me to upload things to my site you'll have your own one,

your own site. Kids can upload as they get pages done.
If it's done, they can upload it.

C: Okay.

Appendix H

Cathy's Learning Journal Entries

September 20, 1999

What are my successes or confusions?

I really like doing this. It's fun. I have typed my poem into Storyspace and then copied into Netscape. I like Netscape better. I have different colors for each of my lexias. I'm doing punto final for my poem.

So far I'm not confused about anything. You showed me how to make a table last week and I have that on my first lexia.

October 4, 1999

I have all my lexias done. I sort of stopped using Story Space because I kept losing the map view and I was afraid I would lose my lexias, so I decided to finish my project in Netscape. I have lots of definitions. I like the colors I used on my lexias. I don't like story space cuz sometimes my boxes all disappear and I think everything is gone but then I click on new map and I get the stuff back. But I hate it when that happens.

October 18, 1999

I helped Chad with his lexias. He's way behind and he forgot how to do his links, so I helped. For my next project I want to use pictures and you said we should have just one background because it makes the reader know we are in our project, so I'm going to use the same background. I really like black and I might use that as my background for my next project. I learned a lot about Indians in this project and how to do links and Netscape.

January 17, 2000

I'm doing my project on Mark Twain and I have 8 lexias done already. I using Story Space first then Netscape. I transfer things from Story Space to my Netscape web. First I write the stuff about Mark Twain. I don't have my links figured out yet. I don't have my background put in yet. I'm using my history notes for my categories. I think I'll be done pretty soon.

January 20, 2000

I want to hurry and finish this project because I want to start that other one for you. Last week I finished all my lexias and all my links, then I transferred all of to from Story Space into Netscape. In Netscape I made all my links and I got one picture. I'm going to stop using Story Space because I like Netscape better. Is that alright?

If I could start all over I would write all my information down on paper and I would underline the words I would like to link. I would also just use Netscape and not use Story Space because that was just more time consuming.

In the existing part of my web I am going to add more pictures, and change colors. I will review it and maybe add more.

Usually the only things I change when I revise is spelling or I will add or take out a few sentences. So far I have 20 lexias and each lexia has 4 links.

January 24, 2000

I am doing my new web project on Bald Eagles. I will mainly focus it on what they eat, where they live, and what they like. So far I have gotten all my information from Enternet Explorer. Tonight I will sort out my information and start my project tomorrow.

February 2, 2000

The other day I got on enternet explorer and got a whole packet of information, now I am going to go through the information and highlight all the stuff I want to include in my web project. Then I will sort out my detailed information into different categories.

February 8, 2000

I'm going through the information and highlighting things that I think I want to include on my web project. Once I am done highlighting I will go through and sort out the information into different topics. Then I will write down all the information in the different topics and I will underline the words I want to link. After that I will transfer it to Netscape.

February 17, 2000

After I went through and highlighted the information I wrote it all down in my own words, and seperated them into different topics. After I got done writing I typed all of the info on Netscape. I have already finished typing and now I'm starting to make my links.

Also, when I was done writing on paper I went through, highlighted the words I wanted to link then at the bottom of the page I wrote down the linking word and where I'm going to link it to. And after I got done typing I went through and highlighted all of the words I'm going to link, so now I can just go through and create the links.

March 2, 2000

I'm finished with my web and I really like the way it looks. It's black. I found all my pictures on the internet and they are black and white and go with the background really good. I'm glad I wrote my lexias on paper first. I was really surprised how fast everything went together after I wrote the lexias. The fun part was putting everything together. I like putting the writing in a table and finding the right picture, and making the links connect to the right information. I

didn't like doing the research so much, but I learned a lot about e

Appendix I

Field Notes on Aaron

September 29, 1999

Aaron turned in both permission slips.

January 11, 2000

Wants to do web project for Grand Rapids. Doesn't know topic yet.

Working on closing page of Jackson web, re-read lexias, made sure links work.

January 14, 2000

Am thinking about Aaron for study.

Didn't understand my classroom comments or directions that each lexia needs to have 3 links. He asked how he could do that. I had not seen his opening page to Jackson we, so I wasn't sure what he was talking about. I drew a web on the board.

Aaron still didn't understand. So when we went to the lab I tried to show him using a Story Space map. Adam still said he didn't understand, Then he shoed me his opening lexia. It showed a time line or a chronology of Andrew Jackson's life. Adam appeared to be trying to organize his web chronologically and he was understandably confused about how to link things. He realized that the links would mess up the order of his chronology. He originally planned to put 2 links on each lexia—one forward, one back, and one back to the opening page. When I showed the map drawing on the board he couldn't square that with his view of how his web would work.

Aaron realized after conferencing with me, that he would need to put the events of Jackson's life in categories. He began doing this in his second draft of his opening lexia.

January 17, 2000

Aaron still doesn't get it. Now he has dates in chronological order AND every even in Jackson's life listed—in chron order.

January 18, 2000

I finally had to show Aaron how to set up his opening page. He was still wanting to set it up more like a book than a website. I showed him how to make links in his broad categories. Aaron wanted to make a lot of unidirectional links from his opening page. He is not pleased that he has to remake his links.

January 20, 2000

Aaron has totally changed opening screen. Now he has just 4 broad categories. I think he's got it.

January 21, 2000

Today Aaron played around with images. He found a photo of Andrew Jackson's grave. I showed him how to copy it, save it to his file, and place it on his page. I also showed him how to create a table, but he didn't like the way tables looked so he decided not to use them. The time I checked on him he was using the grave photo as a background and was trying to find a font color that would show up. He finished writing his planned lexias today.

January 24, 2000

Aaron decided to use stone background for website. Web almost done. He's starting to think about special web project for Grand Rapids. No topic yet.

January 28, 2000

No topic yet for GR project.

January 30, 2000

Topic-20th century. Has book at home.

February 4, 2000

Making lexias in spiral notebook first. Still seems to have link problems. Looks like links go forward and

backward only. I'm going to just let it go and see what happens.

February 10, 2000

Finishing Jackson. Working on 20th at home.

February 21, 2000

Still working on web at home. Links still look like forward and back.

February 28, 2000

Still writing lexias by hand in notebook.

March 3, 2000

Started typing lexias a couple days ago. Found nice background with statue of lib and flag. Links are forward, back, and home.

March 13, 2000

Asked about links. Aaron says he's going to write directions for his readers. Likes the way his links work. Spent several days looking for just the right "squiggle" graphic to go below his text.

March 15, 2000

Settled on costume—is newsboy. Cute.

March 16, 2000

Put finishing touches on web for tomorrow. Worried about font size.

March 17, 2000

Aaron a hit at showcase. Spent whole time in booth. Pulled people in from the aisle asking them if they wanted to learn about hypertext. Who could resist. The kids didn't win anything but a certificate, but it's framed. Little kids won. Aaron fussed with website before showcase, working from disk. Wants to hurry up and upload it so others can see it.

Appendix J

Field Notes for Susan

April 10, 2000

Returned permission slips.

April 11, 2000

Is putting stuff into word processing document first.
Does work at home at night and collects information at school and prints it off so she can go over it at home.
Internet connection at home??

April 12, 2000

Still doing the word processing thing.

April 17, 2000

Seems to have all her lexias written and is now doing a copy paste. Her word processed document is all marked up where she has made notations about which lexias she has done a copy/paste for. She has her lexias lettered, then numbered, then named. Interesting.

April 19, 2000

Says she is almost finished with the copy/paste thing. Wants to start looking for image to use. Wants a unifying graphic.

April 25, 2000

Big misunderstanding. Single photo of slaves on porch doesn't work as unifying graphic but she didn't believe me. Had MR look at it with her and he said same thing. He thought he was on the same lexia and he wasn't. Proof what she had done was confusing.

April 26, 2000

Complaints about having to get images and is worried she won't find enough for all lexias. Helped find some images.

April 28, 2000

Images found. Imagine.

May 3, 2000

Terrific background. Picked because it reminds reader of underground railroad. Not all links associational. Weird. Looks like she tried to make them associational but I don't see reasoning behind a few. Susan can't remember why she did links on some lexias the way she did. She was worried about getting enough links per lexia. Last five lexias kind of tacked on like she needed more stuff to write about to get an A. Susan confirmed that was the case but liked the way she did it because she said "it makes it more hypertexty." Same basic layout as other websites.

Appendix K

Field Notes on Cathy

September 21, 1999

Returned permissions slips.

January 19, 2000

Cathy signed on today to be part of the study. She already there last fall. Talked yesterday. Cathy has an open hour so she will enroll as my aide, but she will actually work on her project. She has already completed one and a half projects. The first one was a poetry web on punto final. The second is a bio web on Twain. She thinks she wants to do another bio web.

January 25, 2000

We have a topic—bald eagles. No clue yet as to why.

January 26, 200

Talked to Cathy. She says she sometimes sees bald eagles looking for fish on the river. One landed in a tree close to house. She said she has always really liked them and she'd like to know more about them so that's why she chose eagles as her topic.

February 2, 2000

Is getting a bunch of info off the internet. She's printing off huge packets of stuff. Gads.

February 7, 2000

Oh. She started writing. She said she started a couple of days ago. Hmmm. She's putting things in a spiral notebook. But first she said she went through her packets and underlined everything. She isn't actually writing her lexias yet. She's just organizing her info into categories like nesting, food, partners, etc. She says she adds stuff as she goes along in her packets. Haven't seen notebook. At home. Spent today looking for more info and printing. She's highlighting important stuff on printed out web pages.

February 9, 2000

She started typing her lexias and she doesn't think it will take long to key everything in. She goes fast! Cool notebook pages. She's highlighted them in pink to show where links are. And then she has this legend thing at the bottom that says "word" and "link to" under those she has the linking word and where it links to. Example majestic features.

February 17, 2000

All done keying in. Now working on layout. She's playing with colors.

February 22, 2000

She's finished keying in and she has bolded her linking words. She says it's an easy way to see which words she has decided will be linking words, and she has her notebook to tell her where each word links. When she sees an underlined word on her lexias, she knows she has already made that link in Composer. This is how she keeps track of what she has to do yet. Has gone back to playing with colors.

February 29, 2000

Selected color scheme and is working in tables. Looking for graphics. Haven't seen a finished lexia yet but know things are going to black.

March 2, 2000

She says she's done. I looked at it and she has a few links to fix, mostly because of misspelled file names, so she's tweaking. It's a pretty web-black with line drawings of eagles. She said she didn't get them from all one site, but found them all over the internet.

March 6, 2000

Still having problems with links and spelling.

March 11, 2000

Web done. She used intertextual links. Very cool. Very associational. We went through the web together and talked about it. She's proud of it. She says she had fun doing it, that the fun part was putting it all together, doing the layout. Looking forward to slavery web.

May 20, 2000

Took Cathy home and she invited me into her house. The house is full of eagles. No wonder she chose that topic. Said her grandfather was a wood worker and carved a lot of the eagles in the house. She took me out on the deck that is separate from the house. She says it's a good place to watch for eagles. They swoop down onto the river. She lives right by the dam and there's a salmon ladder. She showed me the gardens she helps her dad with. She wants to be a landscape architect. She likes moving big rocks from one place to another for decoration. Has designed most of the gardens around her house. She likes to work in the gardens with her dad.

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