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HYPERMEDIA COMPOSITION IN A SEVENTH GRADE LANGUAGE ARTS CLASSROOM

by

Maya Blair Eagleton

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A Dissertation Submitted to the Faculty of the DEPARTMENT OF LANGUAGE, READING AND CULTURE

In Partial Fulfillment of the Requirements For the Degree of DOCTOR OF PHILOSOPHY

In the Graduate College THE UNIVERSITY OF ARIZONA

1999
As members of the Final Examination Committee, we certify that we have read the dissertation prepared by Margaret B. Eagleton entitled Hypermedia Composition in a Seventh Grade Language Arts Classroom and recommend that it be accepted as fulfilling the dissertation requirement for the Degree of Doctor of Philosophy.

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Final approval and acceptance of this dissertation is contingent upon the candidate's submission of the final copy of the dissertation to the Graduate College.

I hereby certify that I have read this dissertation prepared under my direction and recommend that it be accepted as fulfilling the dissertation requirement.

Dissertation Director Dana Fox
STATEMENT BY AUTHOR

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DEDICATION

Dedicated to my nephew Justin and my nieces Jessica, Danielle and Kacey.
You inspire me to continue to explore the strangely magical relationship
between children and computers.
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ABSTRACT

This microethnographic study describes what happened when a small group of 12- and 13-year olds were given the opportunity to compose with hypermedia in their language arts class. Drawing from semiotic, sociocultural, constructivist, transactional and holistic theories, the researcher interpreted the meanings the students and their language arts teacher ascribed to the creation of a student-run online magazine. The researcher investigated the kinds of things that the seventh graders in this study value, what the webzine project meant to the student editors, what processes are involved in the creation of a webzine, how hypermedia literacy functions as a language form, how the hypermedia design project impacted the language arts curriculum, and the roles that computers can play in the classroom.

Hypermedia is a multi-symbolic semiotic language form that is still in the process of evolving. Hypermedia literacy requires transmediation among print literacies, oral literacies, visual literacies, computer literacies and hypertext literacies. Becoming fluent in hypermedia involves orchestrating the various elements (cueing systems) of hypermedia and flexibly applying this knowledge within a variety of hypermedia genres.

The webzine project was a positive experience for the seventh graders in this study because it met their affective needs to be active, to learn new things, to have new experiences, to feel motivated and interested, to be social, to have freedom, to feel proud and to have a sense of audience. It also stimulated the cognitive processes of generating ideas, collaborating, problem solving, representing concepts and monitoring their own learning.
It is suggested that hypermedia design projects cannot be fully integrated into the language arts curriculum unless the district and/or the classroom teacher has made a paradigmatic shift from a transmission model to a constructivist philosophy of education. Successful integration of hypermedia composition in the curriculum is also related to the students’ and the teachers’ perception of the potential roles of computers.

Based on the results of this study and others, the author concludes that junior high language arts students should be given invitations to compose with hypermedia whenever feasible, but that educators should not dismiss the challenges associated with such an undertaking.
CHAPTER I
AN EMBRYONIC LANGUAGE FORM EMERGES

The discussion surrounding the potential impact of computers on literacy and learning is often centered on the question of whether or not hypermedia technologies constitute a paradigmatic “revolution” in our way of thinking about and visualizing the forms and functions of literacy. Many notable literacy educators such as Emilia Ferreiro, Margaret Meek and William Teale have suggested that we situate computer-based literacy within an historical context, placing electronic texts alongside such pivotal inventions as the ancient papyrus roll, the medieval codex, and the printed book. As Teale (1997) writes:

The invention of written language some 3000 years ago promoted new modes and registers of communication. . . . people in today’s literate societies think somewhat differently from nonliterate persons in nonliterate societies because they use literacy as a tool to mediate their activities. . . . I think that computer-related technologies have the potential to affect human thinking and communication as much as the technology of written language has. (1997, p. 81)

Ken Goodman (1996) writes about how new language forms arise when the needs of the culture demand them. While he is referring to the advent of written language in orally-based cultures, I think the same model holds true for radio, film, television and computer technologies. Hypermedia has arisen in our society to fulfill specific contemporary human needs, such as organizing and accessing large volumes of data, communicating asynchronously across vast
distances, and presenting complex ideas in a dynamic, interactive medium that can juxtapose several symbol systems at once.

In the same way that print should not be considered a “simulation” of oral language, but as a language form in its own right, many educators are beginning to believe that electronic text is not simply a lesser cousin of printed text (as it may indeed have been ten years ago), but is a distinct language form governed by its own idiosyncratic semiotic freedoms and constraints (Bolter, 1991; Eagleton, 1999; McNabb, 1997; Reinking, 1998; Snyder, 1996). If it is true, as Kozma (1991) suggests, that “media can be defined by its technology, symbol systems, and processing capabilities” (p. 180), then hypermedia, with its flexible use of text, image, audio, video, animation and virtual reality, may represent a revolutionary new form of human discourse.

Hypermedia is a complex language form that already encompasses many different kinds of genres that address diverse human needs through narrative, expository and communicative formats. Just as it would be a mistake to discuss print literacy in only one of its iterations—such as encyclopedias or personal letters—it is limiting to discuss hypermedia as if it is uni-dimensional. Below, I have listed common variations found in the rhetorics of oral, print, film/television, and hypermedia in order to contextualize hypermedia in relation to these other culturally-valued forms of representation (Table 1.1).
<table>
<thead>
<tr>
<th>ORAL GENRES</th>
<th>NARRATIVE</th>
<th>EXPOSITORY</th>
<th>COMMUNICATIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>storytelling</td>
<td>discussion</td>
<td>conversation</td>
</tr>
<tr>
<td></td>
<td>joke</td>
<td>lecture</td>
<td>phone call</td>
</tr>
<tr>
<td>PRINT GENRES</td>
<td>novel</td>
<td>newspaper</td>
<td>letter</td>
</tr>
<tr>
<td></td>
<td>mystery</td>
<td>magazine</td>
<td>fax</td>
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<tr>
<td></td>
<td>adventure</td>
<td>encyclopedia</td>
<td>handout</td>
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<tr>
<td></td>
<td>science fiction</td>
<td>essay</td>
<td>graffiti</td>
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<tr>
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<td>fantasy</td>
<td>manual</td>
<td>chalkboard</td>
</tr>
<tr>
<td>FILM/TV GENRES</td>
<td>drama</td>
<td>documentary</td>
<td>video conference</td>
</tr>
<tr>
<td></td>
<td>comedy</td>
<td>news</td>
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<td></td>
<td>cartoon</td>
<td>talk show</td>
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<td></td>
<td>action</td>
<td>commercial</td>
<td></td>
</tr>
<tr>
<td></td>
<td>horror</td>
<td>sports</td>
<td></td>
</tr>
<tr>
<td>HYPERMEDIA GENRES</td>
<td>combat game</td>
<td>webpage</td>
<td>email</td>
</tr>
<tr>
<td></td>
<td>puzzle game</td>
<td>simulation</td>
<td>listserv</td>
</tr>
<tr>
<td></td>
<td>anim. storybook</td>
<td>electronic ency.</td>
<td>live chat</td>
</tr>
<tr>
<td></td>
<td>virtual reality</td>
<td>educ. software</td>
<td>MUD</td>
</tr>
<tr>
<td></td>
<td>hypertext fiction</td>
<td>webzine</td>
<td>teleconference</td>
</tr>
</tbody>
</table>

Table 1.1: Characteristics of language forms

Although there are exceptions to every category listed in Table 1.1 (because authors, screenwriters and directors often relish defying conventions and genre boundaries), it is apparent that the scholarly conversation regarding the emerging semiotic system of hypermedia has only just begun. For example, some educators have suggested that hypermedia lends itself more gracefully to episodic rather than narrative story structures (McLellan, 1992), thereby changing the essential rhythm or landscape of reading. Postmodern theorists are interested in how hypermedia easily accommodates “multi-voiced” text rather than the more traditional single-voiced narrative. Similarly, postmodernists are intrigued by the possibilities inherent in multilinear,
associatively linked text (see Snyder, 1998, Page to screen: Taking literacy into the electronic era for a collection of postmodern essays).

Hypermedia is an embryonic human language form that cannot be judged against mature cultural forms of representation such as oral and written language. It is pertinent to recall that early motion pictures are referred to as “cradle films” and that books printed before the year 1501 are called “incunabula,” a word derived from the Greek word for “swaddling clothes” (Murray, 1997). The books that were printed in the first 50 years after the invention of Gutenberg’s printing press were the result of a technology that was still in its infancy, just as are today’s CD-ROMs, websites and virtual reality technologies. As Murray (1997) reminds us, “It would be a mistake to compare the first fruits of a new medium with the accustomed standard yield of older media” (p. 28).

Hypermedia forms are currently being invented, explored and expanded, and are far from being conveniently codified into genres, conventions and items on a standardized test (Heba, 1997). This is not to say that we shouldn’t offer hypermedia technologies in educational settings until hypermedia settles down into isolated bits of measurable knowledge. Far from it! I think that today’s students are in a strategic position to assist us in inventing these new language forms because they are so viscerally connected to modern media and so willing to push the boundaries of historically-agreed upon language conventions. Let’s not leave this mercuric creation process entirely in the hands of computer programmers and university theorists, otherwise we may have to settle for juvenile shoot ‘em up games and obscure postmodern fictional labyrinths. For now, I advocate a healthy balance of cautious research with the joyful
exploration of an exciting new medium for expressing and sharing human emotion and thought.

**Purpose of this Study**

The purpose of this microethnographic study was to describe what happened when a small group of 12- and 13-year old students were given the opportunity to compose with hypermedia in their language arts class. I undertook this research project because I am interested in exploring the potential impact of computer-mediated learning on the language arts curriculum and because I seek to understand the meanings people associate with contemporary literacy forms and genres. I also wished to extend my findings from an earlier exploratory study in which a group of junior high students designed their first school website (Eagleton, 1999).

In the current project, hypermedia composition consisted of a student-run electronic magazine, dubbed "E-ZEEN" or "zeen" by the students. The webzine includes six student-selected departments: (a) People; (b) Writing; (c) Sports; (d) Inner Self; (e) Issues; and (f) Editors. It incorporates text, graphics and animation; however, due to equipment and time constraints, it does not contain audio or video elements. Please note that the screen captures of the e-zeen (Figure 1.1) that are included in this document do not transmit the vibrant color, dynamism and interactivity of the students' original creation located at this web address: http://earthvision.asu.edu/~maya/e-zeen.
During the course of one semester, seven volunteer editors spent 45 minutes (half of their 90 minute language arts class period) every other day working on the zeen project with guidance from Staci Markham (a pseudonym), their regular classroom teacher, and myself, a visiting teacher-researcher. The zeen editors gave themselves the "fake names" Alan, Cory, Crash, Jean, Larissalynn, Rissa, and Spencer (Figure 1.2).
I use the term "hypermedia" to refer to computer technology that combines text, graphics, animation, audio and/or video in a multi-linear, branching format, such as electronic encyclopedias, websites, and postmodern hypertext fiction. The term "multimedia" refers to computer technology that may incorporate all of these same media forms but is generally linear in its presentation, such as electronic storybooks and multimedia slide shows. References to the word "text" should be interpreted as "any chunk of meaning that has unity and can be shared with others" (Short, Kauffman & Kahn, in press). Finally, the word "literacy" is broadly defined as "the ability to encode or decode meaning in any of the forms of representation used in the culture to convey or express meaning" (Eisner, 1994, p. x).
Contextualizing the Issues

The issue of computers in educational settings has become a topic of great concern to educators at all levels. We find ourselves in a unique time in the history of education in which we are no longer able to accurately predict the kinds of literacy skills today’s kindergartners will need upon graduation from high school (Leu, in press). I am confident that students will continue to require fluency in oral literacies and print-based literacies far into our future; however, I am curious whether the explosive advance of electronic forms of literacy calls for a modification of traditional school curricula (specifically, the language arts curriculum) or whether prudence is advised.

In an effort to contextualize the critical issues surrounding this research project, I will briefly discuss two key areas of concern to today’s educators: policy issues and curricular issues.

Policy Issues

There are several key issues with which educational policymakers must grapple concerning the appropriate and effective integration of computers into educational settings. First, and most critical, is funding. Never before has the educational community been called upon to finance such an expensive innovation. Seemingly limitless supplies of money are needed to buy or lease hardware and software, to maintain and upgrade equipment, to provide compensation for technology coordinators and technical experts, and to provide release time for teachers for planning and staff development. In response to unprecedented community pressure, most school districts feel an intense obligation to provide these kinds of resources to their students, often at the
expense of other valuable school programs such as music, physical education, art and even school libraries.

The second key policy issue is equity. There is growing concern about the widening gap between the computer “haves” and “have-nots.” Due to disparities in socioeconomic resources, not only is there a discrepancy in the availability of computers and Internet access between and among school districts, but there is a huge discrepancy between children who have access to computers at home and those who do not. These kinds of inconsistencies suggest a possible educational and societal advantage for the “haves.” However, since it has always been the case that more affluent families and districts have numerous educational advantages, I’m not yet sure how the current technological disparity compares in magnitude.

Finally, there is a serious policy issue having to do with educational assessment. Whenever an educational innovation is implemented in the schools, it becomes critical to reexamine assessment practices in order to preserve a consistent match between educational objectives and educational outcomes. Assessment practices tend to lag behind innovations, as is currently the case with computer technology in the schools. Further, since there is at this time a lack of understanding regarding exactly what kinds of educational outcomes can be expected with the advent of hypermedia technology, some educators may fail to see the benefits of spending time and resources on computers. As one school principal recently lamented to a colleague of mine, “We’ve spent thousands of dollars on computers, but our test scores still haven’t gone up!”

Curricular Issues

There are several crucial themes that must be highlighted when discussing
the potential impact of computers on the K-12 curriculum. First, teachers must gain an understanding of how technology can serve their instructional objectives; second, teachers need to know how to match software with their philosophical beliefs; and third, teachers need to know how to frame computer-related activities so that they will have the most beneficial impact on student learning.

In choosing how and when to use technology most appropriately, it is essential for teachers to have a clear sense of their own instructional objectives. For example, as a reading specialist, if it is my primary goal to help students learn how to encode, recode and comprehend *traditional* narrative text, then I might center my instruction on printed text rather than on electronic text. Conversely, if it is my goal for students to learn how to find resources online and navigate within hypertext environments, then I would focus my instruction on electronic text. Perhaps less obvious, if it is my goal for students to be motivated, to be interested, to have a sense of freedom and empowerment, to work collaboratively, and to have an authentic sense of audience when they write, then I would most definitely want to incorporate hypermedia design projects and the Internet into my curriculum.

Closely related to the topic of using technology to support instructional objectives is knowing what kinds of software products are available and making sure they match teachers' philosophical orientations. As with many inventions, people often initially perceive new innovations with old envisionments (recall that automobiles were first dubbed "horseless carriages" and were considered by some to be a passing fad; similarly, some people predicted that the novelty of television would quickly fade [Reinking, 1998]). Computers were initially
regarded as "number crunching machines" until new envisionments for their use were developed. Computers were then viewed as extremely efficient "word processors" (still with the ultimate goal of producing printed text). A variety of other educational envisionments ensued: games, interactive storybooks, problem solving software, electronic encyclopedias, and more. Now, with the advent of sophisticated software, powerful processors, telephone modems, and a palette of a million colors, computers have become complete hypermedia authoring systems.

With all of the diverse software products available today, teachers need to know how to select the best software for use in their classrooms. A very important distinction needs to be made between ready-made software programs that are designed to present information and software application packages that are designed for students to construct information. This is analogous to the difference between: (a) presenting students with a commercially prepared workbook or filmstrip; and (b) having them construct original products using a sophisticated toolkit of writing, art, photography, animation, video, and audio recording supplies. It is easy to see that these involve entirely different processes, serving entirely different objectives.

Language arts-related software that is designed to present information, such as an interactive storybook, a game, or a comprehensive reading program, can either be based on a skills model, a holistic model, or some attempted combination of the two. Sometimes it is not obvious what the philosophical orientation of the software publisher is until the software is previewed; therefore, educators should try to do so whenever possible. Presentation software can be beneficial for use in the classroom if it is well-designed,
affordable, easy to use, and matches the teachers' philosophical beliefs.

Open-ended software applications that are designed for the student to construct their own information, such as word processing programs, database programs, and hypermedia composers (Jonassen, 1996, calls these "Mindtools"), are often difficult for inexperienced teachers to implement, but the rewards for student growth and learning can be worth the effort. This is similar to the demand placed on teachers who shift their curricula away from commercially-produced basal readers and anthologies to an inquiry-based curriculum. Often it requires that teachers shift out of their accustomed role of information-giver to learning-facilitator (Erickson, 1997; Lehrer, Erickson and Connell, 1994) because students may quickly move beyond the expertise of the instructor.

The final curricular concern that I will discuss is that teachers need to know how to frame computer-related activities so that they will have the most beneficial impact on student learning. It is clear that simply placing a computer in a classroom will not guarantee increased learning opportunities. It all depends on how the computer is used. If students are permitted to engage in aimless surfing on the Internet or endless hours of arcade-style gaming, then it is doubtful that they are learning the kinds of things we want them to learn. Further, if a teacher cultivates the perception that the computer is an electronic babysitter, a place to "play" when all the "real" work is done, this will communicate a message to students that the computer is not a place to learn. In 1984, Gavriel Salomon introduced the salient notion of "amount of invested mental effort" (AIME) on a task. This concept is still applicable today—if we don’t present computer-related tasks as valuable while demanding accountability from students who are engaged in such tasks, then students will relate to computers in
the same superficial way that television and movies have often been perceived.

**Research Questions**

Given the educational policy, curricular, and literacy related issues of the day, I am intentionally limiting my study to a focus on curriculum and literacy. I believe that it has almost become moot to discuss whether or not we should be infusing computers into educational settings because they are already arriving in ever-increasing numbers. A more critical issue for me is how we, as language arts educators, might capitalize on the computers that are already in the schools in the most beneficial way for literacy instruction.

I began this study with two very broad questions that were designed to address pressing contemporary curriculum and literacy issues:

1. What happens to the language arts curriculum when hypermedia composition is brought into the classroom?
2. What forms and genres for literacy emerge as students become hypermedia composers?

As the research progressed and I came to know the research participants and the research setting more intimately, my two original questions evolved into the following six specific questions related to my work with the seventh graders as they worked to create an online magazine:

1. What is it like to be a seventh grader in this study?
2. What did the zeen project mean to the student editors?
3. What processes are involved in the creation of a webzine?
4. How does hypermedia literacy function as a language form in the creation of a webzine?
5. How did the zeen project impact the seventh grade language arts curriculum?

6. What roles can computers play in the classroom?

I will address each of these questions individually in Chapters Four, Five and Six, but will first turn my attention to theory, research and methodology.

**Theoretical Framework**

In this study I employed semiotic, sociocultural, constructivist, transactional and holistic perspectives to guide my work with students and to inform my analysis of the research data. Through this theoretical lens I view hypermedia technology as a culturally-valued mediational tool that can be used to facilitate authentic literacy experiences in inquiry-based classrooms. There is a growing body of literature to support this theoretical stance, as illustrated below.

**Semiotic Stance**

Educators and researchers who embrace a semiotic viewpoint suggest that what makes us human is our capacity to create and interpret signs and symbol systems (Eisner, 1991; Harste, 1994; Short, 1989; Siegel, 1995; Suhor, 1984). As Gardner (1983) states, “the ability of human beings to use various symbolic vehicles in expressing and communicating meanings distinguishes human beings sharply from other organisms” (p. 25). Because we can never know the world directly, we use signs (defined as anything that we use to convey meaning, such as pictures, words, gestures, and/or objects) to mediate our world (Short, 1989; Suhor, 1992). From this perspective, the goal of literacy instruction is to teach children how to orchestrate a variety of symbol systems and to utilize “multiple ways of knowing for purposes of ongoing interpretation
and inquiry into the world" (Leland & Harste, 1994, p. 339).

It is important to expose children to multiple symbolic forms of representation because each form is uniquely capable of addressing different aspects of the world around them (Kozma, 1991; Salomon, 1997). Certain symbol systems may be better suited for representing specific concepts or ideas; therefore, "the forms we use to represent what we think – literal language, visual images, number, poetry – have an impact on how we think and what we can think about. If different forms of representation performed identical cognitive functions, then there would be no need to dance, compute, or draw" (Eisner, 1997, p. 349). Forms of representation, the devices that we use to make public the conceptions that we privately hold (Short, 1989), need not be taught as ends in themselves, but should be viewed as tools that students can learn to use as resources in thinking and communicating (Eisner, 1994; Greeno & Hall, 1997).

Multimedia technology has the unique capacity to combine multiple symbolic forms into one medium, thereby offering the possibility for greater educational equity for children whose intellectual strengths do not rest primarily in the linguistic realm (Kinzer, Gabella & Rieth, 1994; Wilhelm, 1995). This rich multimodal resource combines elements of written language, dynamic images, audio, video, animation, and graphic design in order to enhance its communicative power (Downes & Fatouros, 1995; Glasgow, 1997; Reinking, 1994). With technology, it is "possible not only to convey words but also to convey their inflections, the accompanying gestures, the surrounding action, the visual context, and other nonverbal communication" (Rose & Meyer, 1994, p. 291). Some educators suggest that "constructing meaning from multiple perspectives, using multiple media sources, provides a richer understanding of
complex information, especially if one lacks prior knowledge about a topic" (Kinzer & Leu, 1997, p. 130). In a fascinating semiotic analysis of young children at work in a classroom computer center, Linda Labbo (1996) discovered that:

The computer also seemed to offer unique support and mediation for children's construction of meaning about the process of symbol making. . . . Children were able to draw on their understanding of the purposes and forms of the language arts (e.g., listening, speaking, and writing) as they intertwined processes related to fine arts (e.g. using color, line and text) and multimedia arts (e.g. visualizing, creating dynamic screen effects, accomplishing animation through manipulation of icons). (p.381)

The computer's capacity to instantaneously transform information from one symbol system into another capitalizes on the power of transmediation for children's literacy development (Dickson, 1985; Labbo, 1996; Snow, 1997). Transmediation refers to "taking a content and expression plane of one sign system and recasting it in terms of the content and expression plane of another sign system" (Harste, 1994, p. 1226). Because there is no one-to-one correspondence between different modes of representation, the tension between symbol systems "propels learners to invent a way to cross the gap and in doing so they engage in both reflective and generative thinking" (Siegel, 1995, p. 30).

The opportunity for children to experiment with transmediation within a flexible hypermedia environment may lead to a greater understanding of complex information and to multiple ways of knowing (Blackstock & Miller, 1992; Kozma, 1991).

Hypermedia technology may also allow young children easier access to
adult forms of literacy by presenting material in a multimodal format that is more congruent with their holistic view of the world. Numerous researchers have noted that young children tend to move freely between drawing, writing, gesturing, and talking when composing (Clay, 1991; Dyson, 1993; Harste, Woodward & Burke, 1984). As Vygotsky (1978) so eloquently states, “the gesture is the initial visual sign that contains the child’s future writing as an acorn contains the future oak... children do not draw, they indicate” (p. 107). Children actually have to be taught to make the artificial separation between each form of representation that constitutes our socially accepted forms of communication (Lemke, 1993b). The ability to construct meaning by manipulating the various symbol systems available within a multimedia program may afford the young child a smoother transition into the “literacy club” (Smith, 1978) of proficient readers and writers. In fact, these opportunities for weaving together all kind of symbols may make it possible for young children to “successfully orchestrate literacy events long before language alone can serve them” (Siegel, 1995, p. 5).

As Labbo (1997) points out:

[young children] are uniquely suited for opportunities to express ideas through various symbolic means on the computer, because they are living in what Gardner (1980) calls an ‘age of synesthesia’. During this era of cognitive development, young children respond to the world with all of their senses: colors can readily evoke sounds and sounds can readily evoke colors... motions of the hand suggest lines of poetry or lines of verse stimulate a dance or song. (p. 360)

As children become proficient users of hypermedia technology, they may even invent new forms of meaning that we have not yet imagined. If
"representations are constructed for specific purposes during attempts to solve problems and communicate with others about these attempts" (Greeno & Hall, 1997, p. 365), then the future problems that will be faced by the youth of today may inspire them to fashion unusual and innovative symbolic products (Eisner, 1994; Gardner, 1983) using computer technology. The flexibility of multimedia technology, combined with video, animation, holography and virtual reality provides a powerful venue for experimenting with new forms of representation and may require language arts educators to extend the four generally recognized language arts processes of reading, writing, speaking and listening to include literacy events within hypermedia environments (Downes & Fatouros, 1995; Eagleton, 1999; Lehrer, Erickson & Connell, 1994).

Each form of representation carries distinct strengths and weaknesses as a means for us to express ourselves and to make sense of the world around us. In my view, language arts instruction—and life—is about making meaning and trying to communicate those meanings to each other using whatever sign system is best for the job at hand, whether that be printed language, oral language, art, dance, mathematics, or hypermedia.

Sociocultural Stance

The origins of the modern sociocultural, or social-constructionist perspective on literacy learning can be attributed to the writings of Langer, Bruner, Bakhtin, and the Soviet psychologist Lev Vygotsky. Vygotsky’s fundamental assumption is that “human learning presupposes a specific social nature and a process by which children grow into the intellectual life of those around them” (Vygotsky, 1978, p. 88). The oft-quoted “zone of proximal development” is defined as “the distance between the actual developmental level
as determined by independent problem solving and the level of potential
development as determined through problem solving under adult guidance or in
collaboration with more capable peers" (Vygotsky, 1978, p. 86).

From this perspective, the primary goal of language arts instruction is for
students to be able to communicate their understandings effectively with others
in their environment, and for teachers to provide experiences for students that
promote purposeful interactions with others (Dyson, 1993). As John Dewey
(1938) states, "all human experience is ultimately social... it involves contact and
communication" (p. 38). Although language arts educators have tended to place
an overemphasis on linguistic ability, it is undeniable that "language is the
primary organizer of human experience and is essential to virtually all school
learning. No matter what the subject area, language will play a major part in
learning" (Suhor, 1984). The value of meaningful collaboration between and
among children and adults in literacy learning is described by Dyson (1993) in
this way:

  To learn a mediational tool, including talk or writing, children need
other people who not only model and guide the appropriate processes
but also respond to their efforts (their spoken words, written texts,
drawings and paintings) in situationally and culturally appropriate
ways. It is those responses that imbue the child’s symbolic acts with
social meaning, and it is, in turn, the sense of a functional goal that
organizes and drives the symbolic process. (p.29)

It has been noted by several researchers that open-ended software, such
as draw/paint programs, word processing, music-making programs, problem
solving software and simulation games, invites purposeful communication
among students and can promote collaborative efforts to solve problems (Dickson, 1985; Kinzer & Leu, 1997). In an article in which he reviewed the influence of different types of media on learning, Dickson (1985) found "significantly more collaboration between children when they worked with computers when compared with other classroom tasks" (p. 37). According to Downes & Fatouros (1995), "researchers have consistently found that small groups using a computer often generate much more oral language, of higher quality, than groups involved in more traditional learning experiences" (p. 27). Kinzer & Leu (1997) report similar results:

multimedia environments, because they are both powerful and complex, often require us to communicate with others in order to make meaning from them. Thus, learning is frequently constructed through social interactions in these contexts, perhaps even more naturally and frequently than in traditional print environments. (p. 133)

These findings may come as a relief to critics who fear that computers will promote social isolation. (It is interesting to recall that there were once critics who feared that books would hamper children's social development because they were considered to be an isolationist medium). In many classrooms the computer center can more accurately be described as a "social center" (Downes & Fatouros, 1995); furthermore, chat rooms, role-playing games and virtual reality environments in cyberspace are becoming meeting grounds for human social interaction (Lemke, 1993a).

Telecommunications, particularly e-mail and web-page authoring, are rapidly becoming a culturally-valued means of communication. Through keypal
projects and online curriculum projects, students can share information and resources with children and adults in other localities, putting them into contact with other “thought collectives” (Fleck, 1935/1979). It has been suggested that Internet technology can be “a mechanism for children from different countries to come closer together through personal communication” (Downes & Fatouros, p. 136) which might serve to “break down classroom walls and lessen community isolation as students from different geographic regions, with different world views and resources, communicate with each other” (Downes & Fatouros, 1995, p. 143).

In addition to electronic mail and webpage design, it may be feasible in some schools to arrange for computer conferencing and live chat sessions with people in distant locales. While it is possible to utilize more traditional forms of communication (such as pen pals) for these kinds of exchanges, the Internet can provide a much “wider range of audiences and purposes for reading, writing, talking, listening, researching and cooperating” (Downes & Fatouros, 1995). As Frank Smith (1997) remarks, “We shall all be closer through electronic technology, whether we want to be or not. Readers will be closer to authors, writers to editors, learners to practitioners” (p. 150).

Telecommunications can also provide a powerful venue for children with special needs to engage in meaningful communication with others. For example, multilingual students can make contact with children in other locations with a shared first language; children in a cultural minority group can communicate with people from the same cultural group in other communities; and students with physical disabilities can interact with other students who may be unaware of their disability and can respond without any preconceived images of disability
Constructivist Stance

The constructivist model of education stems from at least two complex strands: the social-constructionist model (described above) and the cognitive-constructionist perspective. I will first present an interpretation of constructivist philosophy in its most appealing iteration for me, that of inquiry-based learning, and will then summarize the cognitive-constructionist view as it relates to computer technology.

An inquiry-based model invites both students and teachers to participate in a collaborative negotiation of the curriculum (Harste, 1994; Short & Burke, 1991; Short, Schroeder, Laird, Kauffman, Ferguson, & Crawford, 1996). This conception of curricular collaboration was expressed over sixty years ago by John Dewey (1938) in this way:

There is, I think, no point in the philosophy of progressive education which is sounder than its emphasis upon the importance of the participation of the learner in the formation of the purposes which direct his activities in the learning process, just as there is no defect in traditional education greater than its failure to secure the active cooperation of the pupil in construction of the purposes involved in his studying. (p. 67)

According to Marjorie Siegel (1995), "Inquiry models invite learners to see themselves as knowledge makers who find and frame problems worth pursuing, negotiate interpretations, forge new connections, and represent meanings in new ways" (p. 3). This is a radical departure from the traditional view of curriculum in which the primary goal of instruction is to "cover" the
district-mandated content in a predetermined, sequential fashion (Short & Burke, 1991; Short et al., 1996). A deeply-held belief in the need to “cover the content” is often an obstacle for teachers who are attempting to blaze new paths in literacy instruction (Hardt & Eagleton, 1988).

In an inquiry-based classroom, hypermedia technology and the Internet can enable learners to transform information into knowledge using critical thinking and problem-solving strategies. In a longitudinal study that researched high school students using multimedia technology, Dwyer (1993) reported that the students “routinely employed inquiry, collaborative, technological, and problem-solving skills uncommon to graduates of traditional high school programs” [Online]. Furthermore, “teaching in an online setting challenges teachers to shift paradigms and use a constructivist model of learning” (Peterson & Facemyer, 1996, p. 53). It is interesting to observe the way in which technological developments are occurring simultaneously with the general movement in the field toward constructivist models of teaching and learning (Ayersman, 1996; Brown, 1991).

There are unlimited opportunities for learners to conduct searches for information of personal interest to them using hypermedia technology and the Internet. They are free to forge their own personally meaningful paths through vast databases of information, for, as Eisner (1994) writes, “the course of inquiry seldom follows the path of an arrow” (p. 43). It is possible that the combination of many symbolic forms of representation more closely resembles inquiry as it is conducted outside the confines of a classroom (Flood & Lapp, 1997). As stated by Kinzer, Gabella & Rieth, 1994:

An equally compelling reason for the inclusion of [multimedia
technologies] is that they are all key components of inquiry into the human condition. The sources for social understanding exist not only in the documents and narratives, but also in the paintings, sculpture, music and literature created throughout time. Hence, with a wider range of representational forms available to students, learning not only becomes more accessible, but also more closely approximates inquiry as it is carried out in 'the real world'.” (p. 125)

Many researchers have suggested that computers can serve as powerful cognitive-constructionist tools for learners (El-Hindi, 1998; Jonassen, 1995; Salomon, 1997). The cognitive-constructionist interpretation is based on the apparent isomorphism among the symbolic forms (e.g. nodes, networks and webs) used in hypermedia and those of our cognitive apparatus, “as both human comprehension and these media are based on the creation of and ‘movement’ within networks of connected knowledge” (Salomon, 1997, p. 380). This similarity may help students construct interrelationships among concepts that they encounter in their self-guided explorations (Kozma, 1991; Reinking, 1994). It has been theorized that hypermedia technologies can help “organize student activity and scaffold the cognitive and social processes involved in students’ literacy practice” (Glasgow, 1997, p. 20). Some educators even cite the computer itself as a means to propel learners through their respective zones of proximal development by utilizing anchored instruction, situated cognition, and problem-based software (The Cognition and Technology Group at Vanderbilt Learning Technology Center, 1993; Jonassen, 1995; Salomon, Globerson, & Guterman, 1989).

Hypermedia allows learners to engage in authentic, meaningful
experiences that they might otherwise be unable to access. Expanding on Dewey's (1938) belief that “a philosophy of education [should be] based upon a philosophy of experience” (p. 29), one of the most promising applications of hypermedia technology in the classroom is that it expedites students' visualization of complex ideas and events that they have never directly experienced. “Multimedia technologies facilitate bringing important contexts for learning into the classroom, especially in instances where students either cannot go to the context or where multiple visits to the context are not possible” (Kinzer, Gabella & Rieth, 1994, p. 120). These types of vicarious experiences will reach new heights as virtual reality technologies become more readily available:

In cyberspace we will be able to see virtual reality worlds. . . We will be able to hear all frequencies, from the echoes of earthquakes and the songs of whales and insects, to the resonances of crystals. We will be telepresent with probes on Mars and on the deep-ocean floor, we will be able to walk the Martian plains, kick lunar dust, sound with the whales. We will be able to float above the earth at any elevation, seeing in any spectrum, observing cities or rainforests in real-time or watching the changes of days or years go by in minutes, or seconds. We can live at the pace of a tree or a forest, a hurricane or a glacier, a cell or a molecule. We will do all this as children. We will not develop along the same cultural paths as in the past. (Lemke, 1993a, Online Document)

It has also been argued that technology, through the use of dynamic visual support, can, in a sense, level out the playing field between high prior-knowledge learners and low prior-knowledge learners in the classroom (The
Cognition and Technology Group at Vanderbilt Learning Technology Center, 1993; Kinzer, Gabella & Rieth, 1994; Sharp, Bransford, Goldman, Risko, Kinzer & Vye, 1995). It is posited that multimedia images, "especially dynamic ones that illustrate complex processes and relationships, provide a better mechanism to compensate for a lack of knowledge and experiences than do text-based or verbal presentations" (Kinzer, Gabella & Rieth, 1994, p. 118). This is because, according to Kozma (1991), "pictorial symbol systems share more properties with the corresponding objects and events in the real world than do linguistic symbol systems" (p. 188). I think this accounts for the fairly universal appeal of popular media such as television, film and hypermedia. These media can evoke a more visceral response than print because they are more visually, aurally and tactiley immersive (Murray, 1997; Wilhelm, 1994).

By providing multimodal experiences for children to internalize as mental models, technology can stimulate metacognition, activate children's background knowledge, promote new knowledge, and help to highlight connections between complex concepts (Sharp et al, 1995). As Eisner (1994) affirms, "Through imagination - the creation of mental images - we are able to conceive what we have never experienced in the empirical world" (p. 25). This is an interesting challenge to the widespread fear that excessive visual input will cripple children's imaginations. I will be fascinated to see what happens as time progresses and virtual reality technologies become increasingly more "real."

**Transactional Stance**

The transactional view of literacy is originally attributed to John Dewey and has been further extended by Louise Rosenblatt and Ken Goodman. In an effort to determine the locus of meaning in the reading process, Rosenblatt
(1994) suggests that "the term 'reader' implies a transaction with a text; the term 'text' implies a transaction with a reader. 'Meaning' is what happens during the transaction" (p. 1063). Moreover, "reader and text are involved in a complex, nonlinear, recursive, self-correcting transaction" (Rosenblatt, 1994, p. 1064). What is significant about this interpretation of the reading process is that it is impossible to find "a single absolute meaning for a text because the same text can take on different meanings in transactions with different readers or even with the same reader in different contexts or times" (Rosenblatt, 1994, p. 1078.)

Goodman (1994) further explains,

> Texts are constructed by authors to be comprehended by readers. The meaning is in the author and the reader. The text has the potential to evoke meaning but has no meaning in itself; meaning is not a characteristic of texts. . . meaning does not pass between writer and reader. It is represented by a writer in a text and constructed from a text by a reader. (p. 1103)

For printed texts, reading is transactional in the sense that "the reader is constructing a text parallel and closely related to the published text" and "it is this reader's text that the reader comprehends and on which any later retelling is based" (Goodman, 1994, 1114). The printed text does not literally change its characteristics as a result of being read, nor is there a direct interaction between the reader and the author of the text, therefore this transactional exchange is purely metaphorical.

Electronic texts can actually change the fundamental relationship between the reader, the author, and the text by permitting a literal transaction between the reader and the text (Reinking, 1994). Not only can an electronic text be
programmed to adapt and respond to an individual reader's needs and interests during reading, hypertext environments allow the reader to select her/his own path through extensive networks of textual and multimedia information (Reinking, 1992). Readers can even choose to re-author portions of the "text" that they encounter by changing the appearance, the layout, and/or adding their own content. In this way, the distinction between author and reader have become blurred (Bolter, 1991), giving readers a greater sense of control or "agency" over the reading process than they have had in the past (Murray, 1997). In this sense, hypermedia may more closely resemble oral discourse than print discourse because it allows the person who is on the receiving end of the interaction to respond and thereby influence the future course of events.

Technology can also create a forum for a real life interaction between authors and readers. Using the Internet, children can have direct contact with authors, with fictional storybook characters, and with researchers in remote locations. As writers themselves, children can also participate in this same type of meaningful interaction with their own audiences, whether they are classmates, schoolmates, or readers from faraway places.

An enhanced awareness of audience can have a significant impact on the quality of students' writing (Cohen & Riel, 1989; Eagleton, 1999). It has been suggested that the public nature of the computer screen in a classroom, as well as the public nature of publishing on the Internet, allows readers to give writers direct feedback on their work, which in turn, challenges students to create higher quality revisions (Downes & Fatouros, 1995). As Rosenblatt (1994) states, "writers at all levels can be helped to understand their transactional relationship to their readers by peer reading and discussion" (p. 1083). One set of educators
also notes that:

Once a paper-based text is published in the classroom, audience response rarely leads to further revisions. Publication is equated with “finished.” With an electronic text, however, the publishing stage (i.e. making it available for the general audience to use) does not carry the same degree of permanence. (Downes & Fatouros, 1995, p. 106)

Holistic Stance

The holistic viewpoint is primarily based on the writings of Ken Goodman (1967; 1986; 1993; 1994; 1996) and of Frank Smith (1973; 1981; 1997). A holistic perspective on literacy learning is based on the psycholinguistic view that children should learn to read and write (and compose with hypermedia) in much the same way as they learned to speak—through natural, meaningful interactions with others in a genuine effort to engage in authentic communication (Goodman, 1994; Smith, 1997). It is believed that a teacher’s philosophical stance regarding literacy instruction can make learning either very easy or very hard for students. It is more beneficial to students if teachers can make learning meaningful, natural, and easy for children to understand. Goodman (1986, p. 8) illustrates these differences in this way:

<table>
<thead>
<tr>
<th>It’s easy when:</th>
<th>It’s hard when:</th>
</tr>
</thead>
<tbody>
<tr>
<td>It’s real and natural.</td>
<td>It’s artificial.</td>
</tr>
<tr>
<td>It’s whole.</td>
<td>It’s broken into bits and pieces.</td>
</tr>
<tr>
<td>It’s sensible.</td>
<td>It’s nonsense.</td>
</tr>
<tr>
<td>It’s interesting.</td>
<td>It’s dull and uninteresting.</td>
</tr>
<tr>
<td>It’s relevant.</td>
<td>It’s irrelevant to the learner.</td>
</tr>
<tr>
<td>It belongs to the learner.</td>
<td>It belongs to somebody else.</td>
</tr>
<tr>
<td>It’s part of a real event.</td>
<td>It’s out of context.</td>
</tr>
<tr>
<td>It has social utility.</td>
<td>It has no social value.</td>
</tr>
<tr>
<td>It has purpose for the learner.</td>
<td>It has no discernible purpose.</td>
</tr>
<tr>
<td>The learner chooses to use it.</td>
<td>It’s imposed by someone else.</td>
</tr>
<tr>
<td>It’s accessible to the learner.</td>
<td>It’s inaccessible.</td>
</tr>
<tr>
<td>The learner has power to use it.</td>
<td>The learner is powerless.</td>
</tr>
</tbody>
</table>
Frank Smith has published similar lists of ways in which teachers may unintentionally make literacy learning difficult by decontextualizing language activities and by utilizing materials that are nonsensical to children. He writes, "It's not nonsense that stimulates children to learn but the possibility of making sense; that's why children grow up speaking language and not imitating the noise of the vacuum cleaner" (Smith, 1997, p. 79). The understanding that children have an intrinsic need to make sense out of learning and that they need to perceive literacy activities as relevant to their lives has been noted throughout history by other influential educational theorists such as Dewey (1938), who criticized traditional education for introducing information to children that is "segregated when it [is] acquired and hence is so disconnected from the rest of experience that it is not available under the actual conditions of life" (p. 48); and Vygotsky (1978), who believed that "teaching should be organized in such a way that reading and writing are necessary for something... [reading and] writing should be meaningful for children... and should be incorporated into a task that is necessary and relevant for life" (p. 117).

Technology is a natural point of reference for today's children because they are already immersed in and familiar with media. If "literacy practices are the ways we make meanings with texts" and "if they are to be useful, practical skills, then they must be adapted to the real diversity of actual texts in the many communities to which [children] belong" (Lemke, 1993b, p. 1). Since computer games, television and video games have replaced books as the dominant recreational media of many children of the western world (Downes & Fatouros, 1995), then the most meaningful and relevant texts for today's children may actually be multimedia texts. As Short, Kauffman & Kahn (in press) reflect:
The most common intertextual connections that students make is to movies and the mass media. These texts fill their lives and are a natural point of connection as they work at understanding literature. . . While teachers often do not value these connections to movies and television shows, these seem the most easily accessible texts for children and a significant point of reference for their views of texts and life. (p. 21)

Most students are also highly motivated to use computers. According to Smith (1997), "For children, computers can be interesting things to work on and to think, talk, read, and write about, even when the children's particular interests are as diverse as art, music, science, or sports" (p. 149). The mesmerizing appeal that computers hold over today's students is immediately obvious to any casual observer in a classroom that has computers. Since most children spend exorbitant amounts of time every day focusing on television, video, and computer games, teachers may as well harness this fascination into their daily instruction, because, as we know, "students need to see the connection between what they study in school and the life they lead outside of school" (Eisner, 1994, p. 84). Although some children may not be attracted to computers, and may not choose to use technology in the classroom (just as some choose not to read), technology is omnipresent in their lives in a multiplicity of forms; in this country, it is impossible to avoid technology, even on a mundane errand to the bank, the grocery store, or even to the public library.

The irrepresible advance of modern technology suggests that "tomorrow's world needs citizens who are able to handle information and communicate using these new technologies" (Downes & Fatouros, 1995, p. 3). In
the home and in the workplace, computers and digital media are rapidly becoming the norm; therefore, we need to prepare children to become confident and effective users of language in the communication and information media of their world, in addition to the world in which mass schooling was introduced (Downes & Fatouros, 1995; Rose & Meyer, 1994). The U.S. Department of Labor has published a set of competencies in which they maintain that high school graduates must master the ability to “organize resources; work with others; locate, evaluate, and use information; understand complex work systems; and work with a variety of technologies” (Dwyer, 1993, Online Document). In fact, one study declared that there is an impending shortage of technologically-savvy workers in the U.S. in which “one out of every 10 jobs requiring information technology skills is going unfilled due to a shortage of qualified workers... it’s like running out of iron ore in the middle of the Industrial Revolution” (Edupage Online, 3/9/97).

If language arts educators are concerned with facilitating students’ use of strategies that will be relevant to their daily lives and which will be useful to them twenty or thirty years hence, then we may want to familiarize ourselves with current advances in technology in order to help children learn how to intelligently construct and deconstruct hypermedia texts. According to Reinking (1994), “the inexorable pace at which electronic forms of written communication are expanding strongly suggests that educators must become familiar with the essential nature of electronic texts. Only then will we be able to lay the foundation for developing an electronic literacy that will prepare us for the future” (p. 16).

As Kinzer & Leu (1997) remind us:
We live during a time when fundamental change is taking place in the nature of literacy and learning as digital, multimedia resources enter our world. Literacy and learning are being redefined by the digital communication and multimedia technologies that are quickly becoming a part of the information age in which we live... multimedia and hypermedia technologies are changing traditional definitions of literacy and learning. (p. 126)

I would like to reiterate at this juncture that I am not predicting the demise of written language nor am I suggesting that we abandon print-based instruction in favor of hypermedia-based learning. Books and other printed materials will continue to have a place in our culture because every form of representation addresses different kinds of needs and communicates different kinds of meanings. Hypermedia is not a replacement for print literacy but is an alternate sign system with its own characteristic genres and forms. However, I believe that we cannot ignore the potential impact of hypermedia discourse on our youth and on our contemporary notions of literacy and learning. As stated previously, I am advocating prudence as we explore the implications of this nascent, alluring medium that seems to be gaining momentum rather than conveniently fading away as the "novelty" wears off.

Summary

Hypermedia is an embryonic human language form that is currently being invented, explored and expanded. It cannot be considered a mature form of representation; therefore the scholarly conversation regarding the emerging semiotic system of hypermedia has only just begun. I have attempted to
contextualize my investigation of hypermedia composition in a seventh grade language arts classroom within current pedagogical discussions having to do with technology and literacy, technology and educational policy, and issues related to technology in the curriculum.

The scholarly conversation regarding the potential impact of computer technology on literacy is focused on whether hypermedia demands a paradigmatic shift in our conceptualization of literacy. I am taking the position that hypermedia, with its juxtaposition of many symbol systems in one medium, does indeed represent a revolutionary new form of human discourse.

Contemporary policy makers have at least three serious issues with which to grapple concerning the rapid dissemination of computers in the schools: funding, equity, and assessment. At the curricular level, teachers and administrators must understand how technology relates to instructional objectives, how to match software with teachers' philosophical beliefs, and how to frame computer-related activities so that they will have the most beneficial impact on student learning. A distinction was made between prefabricated software programs that are designed to present information to learners and software application packages that are designed for students to construct their own meanings.

In this study I employed semiotic, sociocultural, constructivist, transactional and holistic perspectives to guide my work. Through this theoretical lens I view hypermedia technology as a culturally-valued mediational tool that can be used to facilitate authentic literacy experiences in inquiry-based classrooms. This explanation of my ideological stance situates this study within current theoretical conversations in the field of literacy education.
In the next chapter I will turn my attention to the small body of research on hypermedia presentation and construction in educational settings that is relevant to this study. I will then describe the research methodology that was employed in this qualitative study. Chapters Four, Five and Six report my findings, with the fourth chapter focusing on the participants, the fifth chapter highlighting the process of creating the webzine and the sixth chapter concentrating on issues having to do with the language arts curriculum. Finally, Chapter Seven draws conclusions from the findings and suggests directions for future pedagogy and research.
CHAPTER II
THE TODDLING YEARS IN HYPERMEDIA RESEARCH

There is a shortage of relevant educational research in the area of technology and literacy because hypermedia is a fairly recent arrival on the educational scene and is such a rapidly-changing form of discourse. Kamil & Lane (1998) report that fewer than one percent of the published articles in four leading literacy research journals during a recent five-year period addressed issues related to technology. Further, most of the research published to date on hypermedia-based learning has tended to focus on hypermedia as a presentation tool rather than as a construction tool (Nelson & Palumbo, 1992). This is similar to the vast discrepancy between the amount of educational research that has centered on reading versus the research that has focused on writing.

I will first summarize the research to date on hypermedia presentation as it relates to language arts instruction (specifically, to reading comprehension), and will then highlight the current research on hypermedia construction in the classroom. Please bear in mind that researchers who set out to investigate hypermedia presentation as a narrative form of discourse (and therefore compare it to narrative forms of print rather than to expository forms) do not address the possibility that expository formats may be better represented within hypermedia environments at this time.

Hypermedia Presentation

A review of the research on the effects of computer software on students’
reading comprehension in the twelve year time period between 1987 and 1999 reveals distinct qualitative differences in the types of research and in the results reported in the literature prior to the advent of CD-ROM technology with those published after the infusion of CD-ROMs into educational settings. Much of the research conducted prior to 1992 tended to take a convergent stance in assuming that electronic texts and printed texts are essentially the same in nature; in those studies, comprehension differences were not found in comparisons between electronic and printed text (Reinking, 1992). In contrast, much of the research reported since 1992 has tended to reveal significant effects of computer technology on reading comprehension, particularly with the use of well-designed multimedia software. Because of the inconsistency between the two time periods, I will discuss the hypermedia presentation research in two distinct sections: 1987-1992 and 1993-1999.

1987-1992

Research that investigated the relationship between computer technology and reading comprehension during the late 1980's was restricted by the relatively primitive capabilities of computers at that time. Most of the computer hardware found in public schools was limited by severe memory constraints (thus inhibiting graphics, animation, sound, and video), and most monitors displayed monochrome text on minuscule screens. The software of the day reflected a behaviorist theory of learning in which students were presented with decontextualized drill and practice activities; however, a few researchers were able to invent more holistic models for use with their subjects. All of the research at this time was dominated by quantitative research methodologies. The research can be categorized by: (a) convergent studies in which comparisons
were drawn between reading comprehension and/or reading rate on computer screens versus print; (b) studies that investigated computer controlled access to print; and (c) those that explored the benefits of extra textual aids and hypertext on comprehension.

As mentioned previously, researchers that compared computer-based displays of text with paper-based displays of text as if they were conceptually the same often did not find significant advantages to computer text. For example, Fish & Feldmann (1987) sought to investigate whether there were differences in reading comprehension when graduate students read informational and directional text presented on a computer screen as compared to the same content presented on paper. No significant differences were found between the two treatment conditions; additionally, reader characteristics such as prior experience and interest in computers, age, and self-efficacy ratings were not significant factors in performance.

According to David Reinking (1992), the only convergent studies carried out prior to the publication of his early review of the research that found significant differences between computer-based print and paper-based print were those that measured reading rate. It is consistent in the literature that “electronic versions of printed texts are read more slowly than comparable versions displayed on [computers]” (p. 13). Recent studies have also found that children may spend up to four times as long interacting with electronic texts as they do with printed texts (Okolo & Hayes, 1996). However, the older research findings vary as to whether or not this increased time affects comprehension favorably or adversely.

Several studies conducted during this time investigated the effects of
computer controlled access to information on comprehension. Tobias (1987) explored the effects of computer-mediated mandatory text review on comprehension and on the use of extra-textual aids. In his experimental study, high school students were assigned to one of four treatment groups: (a) required reviewing of main text; (b) required reviewing of an easier version of the text; (c) reading with adjunct questions; and (d) reading without adjunct questions. The mandatory text review groups outperformed the others in comprehension and reviewed more sentences than did the other groups. Significant interactions were found among treatment, prior achievement, and anxiety measures, but self-reports of reading strategies were found to be unrelated to the use of extra-textual aids.

An experimental study conducted by Swanson & Trahan (1992) attempted to determine the degree to which computer controlled access to text (in the form of rereading previous screens) influenced learning disabled children’s reading comprehension and whether cognitive factors related to metacognition, attribution, and working memory influence treatment effects. Sixty learning disabled fourth, fifth and sixth graders and sixty non learning disabled students were assigned to four treatment conditions: (a) control; (b) paper; (c) computer-no reread; and (d) computer-reread. Within each treatment condition, traditional and cloze comprehension questions were presented at three levels of passage difficulty. Results indicated that computer mediated text did not improve learning disabled readers’ comprehension as compared to that of the non learning disabled subjects. In fact, the only factor related to performance on computer mediated text was working memory. Metacognition and attribution were independent of treatment effects.
In 1988, MacGregor conducted an experimental study that measured the effects of manipulating computer controlled access on the reading performance of third graders. Subjects were assigned to one of three different treatment groups (computer-controlled instruction with extrinsic motivation, student-controlled learning with extrinsic motivation, and student-controlled learning with intrinsic motivation) and to two different social learning conditions (individual or collaborative). Results showed that computer-controlled instruction led to greater vocabulary knowledge and that extrinsic motivation led to better performance on vocabulary and comprehension measures. Social learning environment had no effect on reading performance.

The third category of studies reviewed from this time period are those that investigated the relationship between extra-textual aids and hypertext with traditional print. Reinking (1988) set out to replicate his earlier findings that students' reading comprehension is higher when computer-mediated texts are used to expand or control readers' options for deriving information from text. He also examined whether readers' preferences, estimation of their own learning, and reading time are affected by the type of textual presentation. Results indicated that students were able to comprehend better when they read computer-mediated texts that utilized extra-textual aids as compared with printed materials and computer texts that did not offer options for assistance. Of course, it is imperative that students take advantage of these extra-textual aids if they are to benefit from them (see Miller, Blackstock, & Miller, 1994, for an excellent discussion of "reluctant clickers").

Spiro et al. (1988) [cited in Reinking, 1992] found that medical students were better able to apply information gained while reading in a hypertext format.
than were students who read the same information presented in a conventional printed text. Interestingly, those students who read the traditional printed texts were better able to recall that same information. This split between recall and comprehension has been found in other studies as well (cf. Large et al., 1995); hypertext environments can improve students' comprehension of information (particularly expository information), but can have a negative impact on their literal recall of that same information. This is perhaps related to the fact that the associative, multilinear nature of hypertext more closely resembles the thought processes of the human brain, thus lending itself to the act of synthesizing and integrating information from various sources. Conversely, literal recall is based on a sequential memory of events, which may be better represented with traditional print and linear multimedia formats. Because of these differences, it is incumbent upon teachers to determine their instructional objectives prior to the utilization of a particular medium.

In sum, the experimental research conducted prior to the dissemination of CD-ROM technology in the schools shows mixed results with regard to the effects on reading comprehension. Because of the wide range of research populations, instruments, materials and research designs employed, it is difficult to draw any definitive conclusions based on this older body of work about the efficacy of computer technology for enhancing reading comprehension other than that electronic texts seem to be read more slowly than printed texts and that hypertext environments with extra-textual aids may improve students' comprehension of information, but can have a negative impact on their literal recall of that same information. A review of more recent research in the field may prove more fruitful.
Research on hypermedia presentation and literacy that has been published since 1993 centers on the impact of interactive multimedia technology on children's reading comprehension. Increased computer hardware memory capacity allows for the integration of multiple sign systems and commercially available software is beginning to mirror modern constructivist and holistic theories of learning. Telecommunications technologies are also becoming more accessible in educational settings and seem to be promoting greater collaboration and purposeful communication in the classroom. Recent research reports can be categorized as: (a) research that investigates hypertext literacy; (b) studies that compare students' comprehension of interactive CD-ROM storybooks with that of comparable print versions; and (c) research that explores the effects of animation on comprehension.

In a fascinating two year observational research project, Anderson-Inman et al. (1994) conducted a study in which at-risk eighth graders engaged in reading hypertext short stories. The researchers discovered some distinguishing characteristics of hypertext literacy which they categorized into "hypertext reading profiles." They identified three distinct hypertext reading profiles: (a) book lovers; (b) studiers; and (c) resource junkies. Book lovers are "superficial users of the system" in which "resource use is minimal" and in which they tend to move through the story in a fairly linear manner (p. 284). Studiers are the most effective hypertext readers who access many different types of resources and are still able to provide detailed and accurate retellings. Resource junkies tend to become "enamored with one or more of the available resources and [access] them continuously" (p. 284). The authors found that some students
were not ready to read and learn in hypertext environments, that some students were ready but didn't necessarily enjoy it, and that some students liked it so much as to become dysfunctional.

It is important for educators to be aware that individual student characteristics can have a significant impact on their ability to effectively comprehend information in hypertext environments. Because "the 'reading' of different symbolic forms of representation requires different sets of mental skills and capacities" (Salomon, 1997, p. 378), certain types of students will naturally be more successful learning in hypermedia environments than others. It is becoming apparent that:

Strategic knowledge will become even more central to success in electronic environments than in traditional print environments.
Knowing how to navigate through the complex and informationally rich environments possible in electronic contexts requires us to consider new forms of strategic knowledge and to support students as they acquire this knowledge. Knowing how to find the best information in the shortest time will quickly advantage certain students over others. (Kinzer & Leu, 1997, p. 133)

There have been several research studies that have explored the effects of interactive CD-ROM software on children's reading comprehension. In 1994, Miller, Blackstock, & Miller conducted an exploratory study that used both qualitative and quantitative methods in examining the reading behavior of four third grade children of average reading ability engaged in repeated readings of CD-ROM storybooks and comparable printed books. Based on their individual reading ability, students were given a different title to read in each of the two
conditions. Using the measure of "search for meaning" miscues to determine comprehension gains, the researchers found that children made increasingly fewer miscues when engaging in repeated readings of electronic storybooks than they did when reading printed texts. The authors also noted that the children were highly motivated by the CD-ROM materials.

Greenlee-Moore and Smith (1996) also sought to investigate the effects of interactive CD-ROM software on the reading comprehension of above-average fourth graders when reading shorter, easier narrative texts and longer, more difficult narrative texts on the printed page as compared to reading the same narrative texts using interactive CD-ROM software. Results indicated that reading from computers increased comprehension scores when the students were interacting with longer and more difficult narratives. Interestingly, there was no difference when students were reading shorter, easier narratives.

The impact of animation on students' comprehension has been explored in several recent research studies. Large et al. (1995) undertook a three year experimental study in order to determine whether multimedia information (specifically, animation) combined with electronic encyclopedic texts produces higher recall and comprehension levels for sixth graders. Approximately 100 students were divided into three treatment groups: (a) text group with text-based illustrations; (b) CD-ROM group with text-only; and (c) CD-ROM group with animation sequences. After students assigned to each condition read four articles, their comprehension was measured by several different techniques: written recall, multiple-choice questions, problem solving, and enactment of a procedure. Results indicated that the animation had a significantly positive effect on comprehension and a negative effect on recall, as was found in earlier studies.
The most interesting finding was that students were much better able to problem solve and enact procedures in the animation condition. Animation seems to enhance students' ability to visualize and carry out procedures.

In a 1996 study, Okolo & Hayes evaluated the use of children's literature presented to 20 primary age students in three different conditions: (a) an adult reading a book to the child; (b) the child reading a commercially-published CD-ROM version of a book with low animation (Discis Books); (c) and the child reading a commercially-published CD-ROM version with high animation (Living Books). Results showed that although 80% of the students preferred the high animation condition, students in the high-animation condition had the lowest retelling and the lowest comprehension scores. Students spent the greatest amount of time in the high-animation condition, and the least amount of time in the adult-reader condition, but those in the adult-reader treatment group received the highest comprehension scores. Students in the low animation group fell somewhere in the middle. There were considerable individual differences in the levels of interaction with the three types of texts, although it is interesting to note that students in the high-animation condition made more spontaneous comments about the pictures than they did about the text. In contrast, subjects in the adult-reader condition made more comments about the text.

In the Okolo & Hayes (1996) study, while students preferred the high-animation condition the best and spent four times as much time "reading" the book in that condition, more time and engagement did not necessarily produce greater comprehension. There are several reasons why this may have happened. First, as mentioned previously, students may fail to learn from
hypermedia environments because they do not take full advantage of the learning opportunities embedded in the materials.

Second, illustrations and animation that do not support the text may distract students and may actually hinder comprehension (Goldstein, Olivares, & Valmont, 1996). Unfortunately, many of the interactive electronic storybooks on the market today are prone to the utilization of superfluous animation.

Third, it is possible that hypermedia formats are not as beneficial for enhancing narrative forms of discourse as they are for supporting expository text, in which the order of presentation is less critical for comprehension of the material. Storytelling is by nature a linear art, and perhaps hypermedia, unlike multimedia, does not provide the architecture needed to fortify these types of story structures.

Finally, students may invest less mental effort in activities that are perceived as entertaining (Salomon, 1984). It is likely that the high animation environment in Okolo & Hayes' (1996) study was perceived by the youngsters to be recreational, whereas the adult-reader combination was perceived by students to be more educational. It is also possible that the relationship between the teacher and the student in adult-reader condition had the advantage of positive social interaction, and may have actively propelled learners through their respective zones of proximal development more effectively than did the computer-based activity. It is questionable whether current computer software programs have the ability to scaffold the reading process as effectively as do trained educators, although this is improving with the advance of artificial intelligence technologies.
Hypermedia Construction

A thorough review of the research published between 1994 and 1999 that focuses on students' constructing hypermedia projects has unearthed five research studies (a sixth study will be described later under "Exploratory Study"). Although there are increasing numbers of hypermedia design research studies in educational settings (Cohen & Holzman-Benshalom, 1997; Erickson, 1997; Fan, 1995; Labbo, 1996; Lund & Hildreth, 1997; Nicaise & Crane, 1999), the five articles listed below (Table 2.1) met my strict criteria for (a) detailed descriptions of (b) robust research on (c) intermediate age children (grades 4 to 10).

A review of the findings of each of the five studies reveals several recurring themes which can be organized into two overarching categories: The first is the reported benefits and the second is the reported challenges of hypermedia design in the classroom. I will list each of these benefits and challenges and will then discuss each one separately.

Reported benefits of hypermedia design projects in the classroom include: (a) high levels of student motivation and engagement; (b) frequent student collaboration; (c) the superior quality of student productions; (d) the utilization of diverse cognitive processes; and (e) new forms of expression mediated by hypermedia technology. Reported challenges include (a) time constraints and (b) equipment limitations.

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| Ways of expressing self differently in single media versus multimedia. | qualitative  
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Tierney et al., (1997). Assessing the impact of hypertext on learners’ architecture of literacy... *Reading Online*

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| Differences between hypertext-based and text-based compositions. | qualitative  
9th/10th graders |

Table 2.1: Hypermedia design research

All five of the research articles listed above reported high levels of student motivation and engagement. Riddle (1995) states that “One of the greatest attributes of multimedia software beyond offering a variety of communication tools is its motivational element for students... students seem to be inherently
motivated by computers” (p. 11). This researcher notes that one of her student participants who was a constant behavior problem in other subject areas would get so engrossed in his multimedia design project that he had to be pried away at the end of the period. Another of her students proclaimed for an entire session, “That’s just so cool!” (p. 21). These findings are corroborated by Neal (1995), who observes that “students are willing to give up time at recess or lunch to work on projects” (p. 11). In the Tierney, Kieffer, Whalin, Desai, Moss, Harris & Hopper (1997) project, all of the students commented that they found hypermedia design to be “more interesting, more enjoyable, more exciting or better than conventional writing assignments” [online document] and that they, too, would congregate during recess to collaborate on their design projects. Lehrer, Erickson & Connell (1994) found that off-task behaviors declined from 30% to 3% toward the end of their study as the students became more engaged in the design process (p. 240). In the Finkelman & McMunn (1995) study, the entire research project was formulated to assess students’ attitudes toward the use of computer technology; not surprisingly, they also report high levels of student interest and enthusiasm, concluding that “if a student holds a positive view about computers and how they are used, then he or she will learn more by using the computer” (p. 5).

Another benefit noted by four of the five articles is that the hypermedia design process seems to propel learners to collaborate with each other. Although many commercial software programs do not lend themselves to collaboration (Jonassen, 1996), hypermedia design can enable “more social interchange because students have to ask questions, give answers, and provide explanations and feedback to each other” (Finkelman & McMunn, 1995, p. 12).
Many educators note that the public nature of the computer screen seems to encourage collaboration more readily than does a standard sheet of paper (Downes & Fatouros, 1995; Labbo & Kuhn; 1998). Riddle (1995) and Neal (1995) both observed a tremendous amount of student-initiated collaboration and peer support in their studies. The pedagogical benefits of this type of sociocultural exchange are far reaching; as Lehrer, Erickson & Connell (1994) write:

Unlike the individually-centered authorship of conventional text, we assume collaborative authorship in the hypermedia design approach . . . . The educational virtue is that collaborative authorship provides students with opportunities to view knowledge as distributed, to see one another as resources and sources of knowledge, to develop critical skills in arguing for one’s own viewpoint, and to collectively develop ideas that might be out of the reach of individuals. (p. 229)

Four out of five researchers report that the challenge of composing in hypermedia coupled with an awareness of an authentic audience for their work gives students a sense of purpose and motivates them to produce higher quality work. The students in the Tierney et al. (1997) study reported that constructing hypermedia documents was “more demanding but worth the effort” and that these projects “required energy and time resulting in higher quality products” [online document]. The positive effects of an authentic audience on student’s writing has been well established (Cohen & Riel, 1989; Eagleton, 1999). The possibility of publishing for a global audience on the Internet can dramatically increase students’ desire to write and can give students a “sense of pride . . . in seeing their work published” (Neal, 1995, p. 22). Lehrer, Erickson & Connell also note that “the literal audience generally induced students to reorganize and
revise their documents” (p. 246). In Riddle’s (1995) research, she remarks that the students tended to ask her questions about “how to do something” as opposed to “what to do”; in contrast, when students were composing with traditional writing tools, they tended to ask “What should I write?” (p. 22).

Four out of five articles describe students’ utilization of diverse cognitive processes when engaged in hypermedia design. Lehrer, Erickson & Connell (1994) identify four primary types of cognitive processes when students compose with hypermedia: planning, transforming, evaluating, and revising (p. 228). They go on to remind us that,

Although many forms of media, including conventional text, could encompass many of these skills, hypermedia has an important educational advantage - it can be used to encourage students to think about how to represent an idea, to think about how to link different representations of an idea, and to think about relationships among ideas. (p. 229)

This added dimension of creating links between interrelated concepts forces students to think more critically about the topic at hand (Riddle, 1995; Tierney et al., 1997), creating an active rather than a passive learning environment (Finkelman & McMunn, 1995). Students must also learn how to troubleshoot their errors, which gives them “ample problem-solving opportunities” (Finkelman & McMunn, 1995, p. 9).

All five research articles that were reviewed suggest that hypermedia design projects can allow new forms of expression to emerge as a result of the unique combination of multiple symbol systems in one medium. When Finkelman & McMunn (1995) interviewed their student participants at the end of
the project, the students reported that the aspect of the project that was most satisfying for them was “the freedom to design their own presentations and the opportunity to incorporate a variety of media into their projects” (p. 2). Similarly, the students that Tierney et al. (1997) interviewed stated that multimedia “afforded opportunities to engage in ways of connecting ideas that otherwise would have been less possible with traditional texts” [online document]. Through transmediation, “students had the opportunity to see how the same piece of information could be transformed in multiple ways through its participation in different systems of knowledge” (Lehrer, Erickson & Connell, 1994, p. 231). Riddle (1995) and Neal (1995) also mention that the dynamic, interactive and multisensory qualities of multimedia and the Web enable students to “express themselves and their worlds differently than they do with traditional learning materials” (Riddle, 1995, p. 7).

Although three of the research articles reviewed did not report problems with the use of hypermedia in the classroom, two articles make mention of two very critical challenges to the successful integration of hypermedia technology into the curriculum: time and equipment. When Lehrer, Erickson & Connell (1994) interviewed their student participants, “all students indicated that 50-minute periods were not sufficient to get any ‘real thinking’ done” (p. 242). Similarly, Finkelman & McMunn (1995) list “time restraints” as one major obstacle for their students.

Finkelman & McMunn’s students also identified the “physical restrictions of the software as problematic” (p. 22) while Lehrer, Erickson & Connell’s students simply “wanted more computers”, (p. 242). Anyone who has spent time in the public schools can appreciate the significance of these challenges as
well as many more that were not mentioned by this set of researchers. Much of
the current literature on computer technology is produced by writers who are so
enamored with the prospect of technology in the classroom that they tend to
gloss over the challenges in their haste to “prove” the benefits of computers in
education.

In sum, these five research reports represent the beginning of an
important curricular conversation in the field of language arts education, leading
the way for future research that is rigorous and continues to ask meaningful
questions.

**Exploratory Study**

In preparation for the current study, I completed an exploratory study,
the results of which were published in the International Reading Association’s
electronic journal, *Reading Online*. The article is entitled “The Benefits and
Challenges of Student-Designed School Websites” (Eagleton, 1999, Online
Document).

In the exploratory study, a small group of seventh and eighth graders
enrolled in a media arts elective volunteered to design their first school website.
The students identified several meaningful purposes for constructing the school
website, aside from the obvious, which is to educate and inform people about
the school. These were categorized as: (a) giving students a global voice; (b)
showing the world that they’re up-to-date; (c) communicating a sense of school
pride; and (d) attracting future students to their school. It was concluded from
these results that giving students, rather than teachers, ownership of the school
website can have numerous benefits for the junior high school culture.
I also sought to discover the general pedagogical benefits and challenges involved in creating a school website. As we have seen in other research on hypermedia design, benefits included: (a) student empowerment; (b) student motivation; and (c) student collaboration. It is obvious that these benefits can have a positive impact on student learning.

Pedagogical challenges included: (a) time constraints; (b) equipment limitations; (c) technical skills; and (d) disharmony among students. It is suggested that educators must take these challenges under consideration when making decisions regarding the use of hypermedia technology in the classroom.

Finally, I investigated the potential benefits of a student-designed website for the language arts curriculum. I found that, in the natural course of constructing the school website, students: (a) utilized print-based literacies; (b) engaged in oral literacy; (c) applied problem solving and critical thinking skills; and (d) employed two new hypermedia-based language processes that I termed "interpreting" and "composing."

Based on my findings, I concluded that the four generally-recognized language arts processes (listening, speaking, reading and writing) may need to be expanded to include hypermedia-based literacies. The implication of including hypermedia in the traditional language arts model is that educators might want to incorporate computer technology into their language arts curricula whenever feasible.

The exploratory study answered some of the questions I had about the potential benefits and challenges of hypermedia technology; however, because the study took place in a media arts classroom, I felt that it was critical to conduct a new research project in order to see how these benefits and challenges would
play out in the context of a language arts classroom. Further, as is always the case, the exploratory study raised additional questions in my mind about the nature of hypermedia literacy and the meanings we ascribe to this fledgling rhetorical form.

**Summary**

In this chapter I summarized the research to date on hypermedia as a presentation tool for enhancing reading comprehension and as a construction tool in the classroom. Early research on the effects of hypertext presentation on students' reading comprehension was severely crippled by the primitive capabilities of computers at that time; however, it can be concluded that most electronic texts are read more slowly than printed texts and that hypertext environments with extra-textual aids can improve students' comprehension of information, but may have a negative impact on their literal recall of that same information.

More recent studies consistently report that hypermedia texts have a negative effect on literal recall of sequential narrative and a positive impact on students' comprehension of expository information. Animation, in particular, seems to distract readers from their comprehension of fictional narratives, while it seems to enhance learners' ability to problem solve and enact procedures based on expository information. At this time in their development, hypermedia environments may be more conducive to learning expository information than to comprehending traditional narrative formats. Narrative story structures may be better represented with linear multimedia.

There are increasing numbers of researchers' investigating hypermedia
construction in educational settings; however, only five research articles were reported here because they provided detailed explanations of robust research on intermediate-age learners (grades 4-10). A review of the findings of each of these five studies revealed pedagogical benefits such as: (a) high levels of student motivation and engagement; (b) frequent student collaboration; (c) the superior quality of student productions; (d) the utilization of diverse cognitive processes; and (e) new forms of expression mediated by multimedia technology. Reported challenges included (a) time constraints and (b) equipment limitations.

A recent exploratory study conducted by the author was described as well (Eagleton, 1999). This study probed the pedagogical benefits and challenges of hypermedia construction in the form of a student-designed junior high school website. It was concluded that the four generally-recognized language arts processes (listening, speaking, reading and writing) may need to be expanded to include hypermedia-based literacies but that further research is needed in order to more fully understand how hypermedia design projects might impact the language arts curriculum.

The remainder of this book represents my continuing efforts to contribute to the burgeoning field of technology and literacy. The next chapter outlines the research methodology utilized in the current study, while Chapters Four, Five and Six report the results from my investigation. A final conclusion is presented in Chapter Seven.
CHAPTER III
GETTING INTO THE HEADS OF THE PARTICIPANTS

As stated previously, the following questions guided my investigation of hypermedia composition in a seventh grade language arts classroom:

1. What is it like to be a seventh grader in this study?
2. What did the zeen project mean to the student editors?
3. What processes are involved in the creation of a webzine?
4. How does hypermedia literacy function as a language form in the creation of a webzine?
5. How did the zeen project impact the seventh grade language arts curriculum?
6. What roles can computers play in the classroom?

Research Design

I chose to utilize an ethnographic approach in this study because this method is most congruent with my personal philosophical beliefs and because it seems well-suited for the kinds of questions I have about what it is like to be a seventh grade language arts student, what meanings they and their teacher ascribe to the literacy process, and what happens when students have the opportunity to express themselves in a multi-symbolic medium. In an effort to further explicate my rationale for choosing an ethnographic approach, I will briefly discuss some key characteristics—participant observation and fieldnotes—of ethnographic inquiry.
Qualitative researchers have often been criticized for being "biased, inattentive, ethnocentric, partial, forgetful, overly subject to infection and disease, incapable of attending to everything at once, easily distracted, simultaneously too involved and too detached" (Wolcott, 1997, p. 332); however, as Wolcott (1997) goes on to remark, "what better instrument could we ever devise for observing and understanding human behavior?" (p. 332). Because an uninvolved observer cannot interact with the people under study, ethnographers must become participant observers in order to fully understand the meanings people assign to a cultural scene (LeCompte & Preissle, 1994).

Participant observation is usually considered to be the mainstay or foundation of ethnographic inquiry. It is a method of collecting data that relies on watching, listening, asking questions, taking notes, and/or keeping a journal. Because "participant reports of activities and beliefs may not match their observed behavior, participant observation is a check, enabling the researcher to verify that individuals are doing what they (and the researcher) believe they are doing" (LeCompte & Preissle, 1993, p. 197). Conversely, interviews and artifacts can be seen as checks for participant observation in which participants and artifacts can confirm or deny cultural themes that the researcher believes are present. Each of these data sources serves to triangulate, or validate the researcher's assumptions. With reference to the overarching purpose of ethnographic inquiry, Wolcott (1997) offers this astute summation:

All humans are participant observers in everything they do, yet they do not claim to be ethnographers. We are ethnographic observers when we attend to the cultural context of the behavior we are engaging in or observing. In doing so, we look for mutually understood sets of
expectations and explanations that enable us to provide cultural interpretations about what is occurring and what meanings we may reasonably presume are being attributed by others present (p. 335).

One of the most interesting characteristics of ethnographic research is that the researcher actually becomes the primary research instrument (Miles & Huberman, 1994). Ethnographers must treat themselves as informants, just as they do ordinary participants (Spradley, 1980). Seen in this light, researchers' own experiences, observations, thoughts, and feelings are considered legitimate data sources and are analyzed as such.

The hallmark of the ethnographer is the written fieldnote entry. Fieldnotes may take the form of condensed accounts (short descriptive notes jotted down while on the scene), expanded accounts (lengthy descriptions made after the fact), a researcher's journal (personal reflections about the scene), or interpretive notes (analytical comments in the margins) (Spradley, 1980). Modern ethnographers, especially action-researchers who are unable to take fieldnotes while teaching, may also transcribe audiotapes or videotapes in order to capture more details than are possible with written fieldnotes.

Most ethnographers begin their fieldnote log by making "broad descriptive observations, trying to get an overview of the social situation and what goes on there" (Spradley, 1980, p. 33). Then they begin to make more focused observations, and finally, selected observations. However, even as the observations become more focused, ethnographers will continue making general descriptive observations until the end of the field study (Spradley, 1980). Some of the kinds of things that ethnographers may include in their fieldnotes are: (a) portraits of the participants; (b) reconstruction of dialogue; (c) a
description of the physical setting; (d) accounts of particular events; (e) a depiction of activities; and (f) the researcher’s behavior.

If the essential tools of the ethnographer are the fieldnote and the interview transcript, then the primary data source in qualitative research takes the form of language selections. This requires that “ethnographers must learn the argot, dialects, and other linguistic variations used by participants” (LeCompte & Preissle, 1993, p. 196) in order to preserve the authentic language of the culture under study. It also requires a type of data analysis that categorizes, organizes, and analyzes language units rather than numerical units, as would be the case with quantitative research methodologies.

Although most qualitative researchers deploy the same basic methods of inquiry—participant observation, interviewing and artifact collection—this study is defined as ethnographic because I am seeking to understand the meanings that my participants ascribe to the nascent cultural practice of hypermedia design in the language arts classroom. Although I can never be a full participant in the seventh grade subculture, I can still attempt to understand their innermost thoughts and perceptions by gaining their trust, observing carefully, and asking relevant questions, much in the same way that exemplary researchers such as Margaret Finders (1994) have done.

**Site Selection**

Flowing Wells Junior High School (FWJHS) in Tucson, Arizona was selected for this study because I am interested in junior high culture and because I have prior history with the district in my dual roles as a Project Facilitator for the US West/NEA Teacher’s Network Grant (Eruditio Project) and as an educational technology consultant. Permission was granted from the Flowing
Wells School District Board to conduct research at FWJHS during the 1998-1999 school year (see Appendix A for informed consent form). The school board readily granted this access because I had conducted an exploratory study at FWJHS the previous school year and had established a collegial relationship with the teachers and administrators in the district.

FWJHS enrolls approximately 1,000 seventh and eighth grade students and is the only junior high school in a small urban district that houses one high school, one alternative school, and six elementary schools. FWJHS is located in a neighborhood that includes families with middle- to lower-income status, as determined by a schoolwide free and reduced lunch count of 51%. According to one source, the zip code in which the school resides carries the largest number of welfare recipients in the city. The student population is predominantly Caucasian and Hispanic, but also includes a small number of Native American, African American, Asian Pacific, and second language learners.

In addition to the gym, the cafeteria, the library, and the administrative offices, the junior high campus consists of seven discrete “pods”, which are octagonal buildings with small wedge-shaped classrooms. At the center of each pod is a large common area that houses eight teachers’ desks—this progressive architecture enables teachers to collaborate and share resources, thus discouraging isolation. Because of this structure, FWJHS tends to have a very close-knit staff, particularly within each pod.

FWJHS follows a modified block schedule in which students enroll in six courses and attend four each day, with core classes meeting every day for 90 minutes and electives meeting every other day (blue days and gold days).

Staci Markham’s classroom was selected for the study based on
recommendations from last year’s media arts teacher, the Title I Coordinator, and the previous school principal. Staci has an excellent reputation as a language arts teacher (she was listed in the 1998 “Who’s Who in America’s Teachers”) and is particularly well-known for promoting writing in her classroom. She views herself as a writer and is working on a novel in her off hours. Staci ensures that her students write for an authentic audience by arranging a “portfolio review” twice per year in which representatives from local radio stations come to the school to meet with her students individually to discuss the students’ writing portfolios. Although she does not have an extensive technical background, Staci had expressed a strong interest in incorporating technology into her curriculum and was eager to collaborate with me in creating this kind of environment for her students.

The origins of the webzine project can be traced back to a conversation I had with Staci Markham more than a year prior to this study. Because of Staci’s strong creative writing background and her conviction that students will put more effort into their writing if they have an authentic audience, she felt that an online literary magazine would be an exciting way to bring technology into her language arts curriculum. Her concept worked well with the goals that I had for understanding the impact of hypermedia composition in a language arts classroom. We agreed to initiate the project during the second semester of the 1998-1999 school year.

Staci’s third period language arts class was selected for the study based on my schedule and that of the new networked computer lab. The availability of the computer lab during this period enabled the zeen editors to utilize the lab for their Internet access without disrupting classes other than the media arts elective,
which is a highly flexible, unstructured class. An additional benefit of working with the third period class was that this period straddles the lunch break (the students meet for 45 minutes, go to lunch for 30 minutes, then return for the remaining 45 minutes), thus allowing time for me to collaborate with Staci and time for students to put in extra work on the zeen project (which they choose to do on many occasions).

Case Selection

Once I had established myself in Staci's classroom and familiarized myself with the classroom environment, we were confronted with the difficult task of selecting webzine editors. We were eager to involve all of her 105 students in the project, but knew that it would be impractical for more than a small group to actually serve as webpage editors. Staci and I told the class about the project and asked for volunteers. Because almost all of the students wanted to be editors, I distributed a volunteer survey (Appendix B) in order to better understand their reasons for wanting to join. I was looking for students with diversity in gender, computer experience and academic prowess. I also wanted students who were interested in the project for more robust reasons than "I want to get out of class" or "It sounds cool." Staci Markham's primary selection criteria was to choose "responsible" students whom she felt would have the initiative to make up any missed schoolwork and who "didn't need her curriculum" as much as others might. I worked with the editors for 45 minutes every other day, (approximately 25% of their total language arts classtime) and Staci was not comfortable allowing them to skip regular assignments.

In order to give the reader a sense of what prompted us to choose the students that we did, I have included the following three unedited excerpts from
their volunteer surveys:

Cory: [I really, really, really want to be an editor! Please choose me!] I will kill myself and start crying till I can't cry anymore (just joking) I really would like to be an editor because I never get a chance to do something like this. I mean I get to speak my own opinion to millions of people and that's a really good feeling. I know I get into trouble but it would mean a lot to me I mean I will really try very hard to stay out of trouble and to speak my opinion and everyone else's on the ezine. It would mean a lot to me to do this project. I really want to do it.

Crash: I want to be an editor sooo bad because it would be a great experience & life when you're young is about having great experiences. And I would like to get more details & work more with computers. I am really interested & am willing to do a lot & take things a step further when this is over & make my own. I am very serious about this & you won't be disappointed if you pick me so PLEASE PICK ME!! Also I really want to put my work in it & work it. I think it will be great.

Alan: I really want to be an editor because I'm really into computers but I've never made an E-Zine and want to learn how to make one. I would like to put a short story I've written on it for one of the 2 pieces of writing because I'd like more people to read it. Another reason I want to be one of the editors for the E-Zine is that it might get me into writing more and letting me become a good writer. I also want to be in the E-Zine because I think it will be very fun to be in & I want to be in a group like this.

Those who were not selected to be editors were invited to submit written pieces to the zeen for publication, as were the rest of Staci's 105 students. It is interesting to note that, out of 33 students surveyed, there were 12 who expressed extreme interest (I really, really, really want to be an editor! Please
choose me! I am going to be really bummed if I can't do it), and 17 who expressed strong interest (I would really like to be an editor). There were only four students who were not interested in serving as zeen editors, apparently because they lacked confidence in their editorial abilities.

The seven zeen editors are a somewhat diverse group, representing both sexes and differing views on language arts and literacy; however, they are not completely representative of the diverse population at FWJHS— as is often the case with microethnographies and case studies. Aside from Larissalynn, who is a Title I student, the rest of the editors are above average students, above average writers, and more responsible about completing class assignments than average. All of the editors are of primarily Caucasian descent except for Alan and Larissalynn, who have some Asian and Hispanic ancestry, respectively.

A small group of four students (Cory, Crash, Alan and Rissa) out of the seven editors were selected for case studies, or “profiles.” I utilized a maximum variation sampling procedure (Creswell, 1998) in order to identify diverse variations in their responses to hypermedia design and to traditional print-based literacy activities while still identifying important common patterns. For example, Crash detests reading and writing while Rissa loves both activities and does so in her spare time. Alan hates traditional writing, but loves working on computers and will write when he sends email and goes to chat rooms. Cory is a behavior problem in the regular classroom but loved the zeen project so much that he gave up numerous lunch periods to work on the project. Crash and Cory are extremely outgoing while Alan and Rissa tend to be shy. All of them have fascinating things to say about life, language arts, and computers.
**Researcher’s Role**

In the spirit of qualitative research, I will share some information about my professional background so the reader has some sense of who I am and what strengths I bring to the educational setting. I have 15 years of teaching experience at all levels except high school (preschool to university), primarily as an elementary reading specialist. I worked as a Title I coordinator and Reading Recovery teacher for seven years before transitioning into educational technology consulting. I currently teach interactive media design courses at the university level and work as an instructional designer for an educational software company. When in the role of researcher, my extensive teaching experience enhances my ability to relate to students, teachers and administrators, and it also informs my analysis of the data.

Throughout the course of the study, my role shifted slightly depending on the timing and location of the zeen project. The project proceeded in four distinct phases, as listed below:

**Observation:** October 29 - December 11, 1998

**Project Phase 1:** January 11 - February 23, 1999

**Project Phase 2:** March 1 - April 6, 1999

**Project Phase 3:** April 14 - May 6, 1999

During the observation phase I acted as an observer in Staci’s third period class. I took copious fieldnotes, interviewed Staci, and collaborated with her in planning the webzine project. Prior to this time, I spent eight weeks in the media arts computer lab assisting the new media arts teacher in setting up his curriculum.

In Phase 1 (January - February) the students were surveyed, the editors
were selected and interviewed, and the zeen project was initiated. During this phase the project was housed in a small corner of Staci's classroom and took place alongside her regular curriculum. My role at this time was as a participant observer and the primary instructor for the zeen editors. Staci's and my original intention had been that the zeen project would take place during her writing workshop time, which she planned to schedule for the first half of the period every other day. Later on, due to a variety of reasons which will be discussed in subsequent chapters, Staci decided not to have writing workshop during the first half of the semester. This created some difficulty for myself and the zeen editors, who were compelled to whisper so that we wouldn't interrupt Staci's whole group instruction. Eventually Staci and I agreed that the zeen project needed to be relocated.

In Phase 2 (March - April) the zeen project was moved to an empty classroom two doors away from Staci's room (a short hop through the center of the octagonal pod) where I continued in my role as a participant observer and primary instructor. The editors thrived in this private, spacious setting and were extremely productive during this time. However, the project began to drift further and further away from Staci's curriculum. By the time spring break arrived and standardized testing had come and gone, Staci felt ready to reintegrate writing workshop and the zeen project back into her classroom.

Finally, in Phase 3 (April - May), we brought the zeen project back into Staci's classroom. The tables were rearranged to give the editors more space so that all seven of them could sit down at the three project computers. Although I had intended to step back into an observer role toward the end of the project and encourage Staci to take over facilitation of the webzine, I continued to serve
as the zeen editors' primary instructor for the remainder of the school year. The reasons for this will be discussed at length in Chapter Six.

**Data Collection**

Primary data sources for this ethnographic study included audiotaped semi-structured interviews with the zeen editors and the language arts teacher; observational and anecdotal fieldnotes; daily videotapes of the zeen editors at work; daily researcher reflection logs; daily student reflection logs; the student-designed webzine itself; whole class student surveys; whole class student writing samples; and the teacher's lesson handouts. These data sources can be grouped into three basic categories: (a) interviews; (b) fieldnotes; and (c) documents and artifacts.

First, all of the zeen editors were interviewed for 30 minutes each at the beginning and at the end of the study. Editor interviews focused on their experiences as seventh graders, their likes and dislikes, their feelings about the zeen project, computers, and the Internet, and their views on reading, writing, speaking, and listening. (see Appendix C for student interview protocols). The language arts teacher was interviewed four times during the course of the study for approximately 90 minutes each time (a year prior to the study, at the beginning of the study, in the middle and at the end). Teacher interviews focused on Staci's perception of the impact of integrating hypermedia design projects into her language arts curriculum, her impressions of the students' reactions to the zeen project and her envisionments of literacy (see Appendix D for teacher interview protocols). All interviews were audiotaped, transcribed and coded. Informal conversations with all of the students and with Staci were
considered data sources as well.

Second, because I acted as the zeen editors' primary instructor and was unable to take fieldnotes while teaching, I videotaped every 45 minute session (two to three sessions per week for four months—a total of 32 sessions or 1,440 hours of videotape) for later transcription and analysis. Additionally, I kept a researcher reflection log in which I entered my observations immediately after each class session for purposes of later coding and analysis.

Third, I gathered significant documents and artifacts such as surveys, editors' reflection logs and the webzine itself. I circulated a literacy survey (Appendix E) and an interest survey (Appendix F) to the whole class prior to the study, collected whole class written pieces, and picked up a representative sampling of Staci's lesson handouts.

Data Analysis

All of the data gathered in this study were coded and analyzed using an inductive approach. Categories and thematic connections were derived from the data, using a spiraling reduction process as described by qualitative researchers such as Creswell (1998), LeCompte & Preissle, (1993), and Miles & Huberman (1994). Although researchers employ a wide variety of taxonomies for organizing and analyzing data, qualitative data analysis generally involves combing through the total data set in several iterative stages: (a) searching through the data and deriving initial categories; (b) probing for disconfirming evidence; (c) searching through the data several more times; and (d) regrouping the data into new categories until it has been determined that saturation has been achieved.
For the current study, I entered every raw data source into the computer in text form so I would have searchable electronic versions of every data element. I also printed every file so I would have a hardcopy version to view more conveniently. Employing the "constant comparative method" originally devised by Glaser & Strauss, (described in Maykut & Morehouse, 1994), I penciled keywords and key phrases in the margins of every portion of data, including typed survey results, transcribed interviews, typed fieldnotes, transcribed videotapes, and all other artifacts (using a pencil allowed me the freedom to backtrack and revise my wording in light of newer evidence). The first stage of data analysis elicited themes identified by keywords such as "active," "boring," "progress," "audience," and "freedom," and key phrases such as "hypermedia vs. print," and "delivery model."

After every germane unit of data (defined as a participant quotation, a transcribed unit, or a unified portion of an artifact) had been coded with a keyword, I typed these keywords into lists and began sorting them into categories related to my six research questions. After numerous brainstorming sessions and several additional runs through the data, many of these original themes were blended, renamed, and reorganized into more permanent categories. Below, I have provided two examples of the emic approach I used to organize the data concerning the roles of computers in the classroom (Table 3.1) and seventh graders' affective needs (Table 3.2).
<table>
<thead>
<tr>
<th>INITIAL THEMES</th>
<th>FINAL CATEGORIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>fun</td>
<td>Recreation</td>
</tr>
<tr>
<td>play games</td>
<td>Recreation</td>
</tr>
<tr>
<td>similar to TV/video</td>
<td>Recreation</td>
</tr>
<tr>
<td>entertaining</td>
<td>Recreation</td>
</tr>
<tr>
<td>do homework</td>
<td>Production</td>
</tr>
<tr>
<td>type papers</td>
<td>Production</td>
</tr>
<tr>
<td>neater papers</td>
<td>Production</td>
</tr>
<tr>
<td>spell check</td>
<td>Production</td>
</tr>
<tr>
<td>learn things</td>
<td>Education</td>
</tr>
<tr>
<td>educational software</td>
<td>Education</td>
</tr>
<tr>
<td>learn about computers</td>
<td>Education</td>
</tr>
<tr>
<td>good source of info</td>
<td>Information</td>
</tr>
<tr>
<td>do research papers</td>
<td>Information</td>
</tr>
<tr>
<td>download stuff</td>
<td>Information</td>
</tr>
<tr>
<td>get ideas</td>
<td>Exploration</td>
</tr>
<tr>
<td>go on the Internet</td>
<td>Exploration</td>
</tr>
<tr>
<td>see what's happening</td>
<td>Exploration</td>
</tr>
<tr>
<td>talk to people</td>
<td>Communication</td>
</tr>
<tr>
<td>chat</td>
<td>Communication</td>
</tr>
<tr>
<td>email</td>
<td>Communication</td>
</tr>
<tr>
<td>you control them</td>
<td>Experimentation</td>
</tr>
<tr>
<td>click on things</td>
<td>Experimentation</td>
</tr>
<tr>
<td>see your work onscreen</td>
<td>Construction</td>
</tr>
<tr>
<td>make stuff</td>
<td>Construction</td>
</tr>
</tbody>
</table>

Table 3.1: Data analysis: Roles of the computer
Table 3.2: Data analysis: Seventh graders’ affective needs

I felt that saturation had been achieved when each relevant data bit had been successfully grouped into one or more thematic categories and when the leftover data bits were determined to be irrelevant to the research questions at hand. I did not conduct member checks due to the onset of the summer holidays and the resulting unavailability of the participants; however, I feel confident that the data were sufficiently triangulated due to the large volume of data that was gathered and the variety of sources that were utilized.

When I determined that the new categories were internally consistent and fairly stable, I scrolled through the source data on the computer and copied and pasted each unit of meaning into new word processing files named “curriculum,”
“motivation,” “hypermedia literacy,” and so on. I inserted every positive and negative instance of each theme into these categorical files, then developed outlines for each category, sequenced the data bits, and printed each new file so it would be easily accessible while writing.

Although I used the same data analysis procedure for each of my six research questions, I found certain data sources to be more pertinent for answering particular kinds of questions. Below (Table 3.3), I have summarized the primary data sources that were utilized for each research question:

<table>
<thead>
<tr>
<th>QUESTION</th>
<th>PRIMARY DATA SOURCES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question 1: What is it like to be a seventh grader in this study?</td>
<td>Whole class surveys; student interviews</td>
</tr>
<tr>
<td>Question 2: What did the zeen project mean to the student editors?</td>
<td>Observation; student interviews; student journals.</td>
</tr>
<tr>
<td>Question 3: What processes are involved in the creation of a webzine?</td>
<td>Observation; student journals; student interviews</td>
</tr>
<tr>
<td>Question 4: How does hypermedia literacy function as a language form in the creation of a webzine?</td>
<td>Observation; student interviews; artifacts</td>
</tr>
<tr>
<td>Question 5: How did the zeen project impact the seventh grade language arts curriculum?</td>
<td>Observation; teacher interviews</td>
</tr>
<tr>
<td>Question 6: What roles can computers play in the classroom?</td>
<td>Whole class surveys; student &amp; teacher interviews</td>
</tr>
</tbody>
</table>

Table 3.3: Primary data sources
Equipment

Because the zeen project was technology-based, it is important to note the types of hardware and software the students were able to access in order to produce the webzine. In this section I will briefly describe the specifications of the equipment that was utilized.

Hardware

All of the computers at FWJHS are housed in computer labs and in the library; therefore, when students need to use computers they must leave their classrooms to do so. In order to better integrate the zeen project into Staci’s curriculum, I contributed one PC-compatible laptop and solicited two additional PCs from the media arts teacher for the zeen editors to use for the duration of the project. The three project computers consisted of two laptops with early Pentium I processors, 500 MB of hard disk space and 8 MB of RAM and one desktop computer with a slightly faster Pentium I processor, 500 MB of hard disk space and 32 MB of RAM. The computers were in good working order but were described by the students as being extremely slow.

As is typical in many of today’s public schools, there are no phone lines in the classrooms at FWJHS; therefore, when the editors needed Internet access, they went across campus to the new Dell computer lab. They also used the lab for access to an LCD projector, video equipment, a digital camera and a scanner. The remainder of the time the editors worked on the three project computers offline and I published their webpages from my home computer.

Midway through the project, the students felt dissatisfied that they had no printer access, so both Cory and Alan brought extra printers from home. Although Alan’s printer was not functional, Cory’s ink jet printer was a great
asset to the zeen project.

**Software**

Each project computer was equipped with Netscape Communicator 4.5 for webpage composing, Paint Shop Pro for graphics editing, and Microsoft Word for word processing. All of the graphics and animations that the editors included in the webzine were either hand drawn and scanned in or downloaded from free clipart websites. Although the editors wanted to add audio and video clips to the zeen, it was not possible given time and equipment constraints.

**Summary**

In my role as an ethnographic learner rather than as an expert (Spradley, 1980) I attempted to “get into the heads” of my participants by striving to understand the meanings (Wolcott, 1997) they ascribed to the hypermedia design process. Because I believe that 12- and 13-year old students do have something meaningful to say and that hypermedia technology provides an inviting forum for them to express themselves more fully, I was eager to come to some understandings of what hypermedia literacy can mean to junior high language arts students. The next three chapters of this book present an in-depth description of my findings on this timely subject, while Chapter Seven summarizes my work and suggests future directions for pedagogy and research in this arena.
CHAPTER IV

“COMPUTERS ARE AN OUR GENERATION KIND OF THING”

In this chapter I will address my research questions having to do with the participants in the study, starting with an overview of issues that are important to the seventh graders in this study. I will then move into a series of four case studies, or student profiles, in order to determine what the project meant to the editors on a deeper level.

Q1: What is it Like to be a Seventh Grader in this Study?

Anyone who has spent time around junior high age children has an intuitive sense some of the recurring issues for this age group. However, rather than assuming the role of armchair psychologist, I have derived common themes from webzine editor interviews, editor reflection logs and whole class student surveys in order to paint a portrait of these contemporary American seventh graders. My goal in sharing my understanding of what it’s like to be a seventh grader in this study is to contextualize the meanings these students ascribe to computers, hypermedia, language arts and the zeen project.

These interpreted data will be presented in three parts: (a) common interests; (b) affective needs; and (c) views on literacy.

Common Interests

While it is indisputable that seventh graders are not all alike, the students in this study share several common interests. These seventh graders value family and friends, sports, popular media, computers, humor, food, and talking
about the opposite sex.

All of us tend to think of ourselves in relation to our families of origin, but I think that for children, this relationship more centrally defines their sense of self and their experience in the world. Imagine asking an adult you’ve just met, “Who are you?” You will probably elicit a variety of responses ranging from a career definition (“I am an accountant”) to identification with a particular cultural group (“I am Jewish”) or perhaps even a hobby (“I am a cyclist”). When I asked the zeen editors about themselves, most often their first remarks were about their family. Here is Cory’s initial response to the question, “Tell me about yourself. Who is Cory?”:

Me? Um, well, I live with my dad cause my mom and dad got divorced. And so my brother lives with my mom and they live in Catalina so it’s not that far, we usually go up there, I usually go up there like every, every weekend, so it’s not bad at all. And, um, I have like 3 older bro-, I have 1,2- 3 older brothers. Shannon, he’s 28, uh, second one, Micah, he’s 19, no 21 now. And Nick, he’s 16, and uh, older, half-sister Brandi, she’s about 19 now.

Students also define themselves in terms of how many friends they have, who their friends are, and what their friends are like. Alan stated in his initial interview, “I have tons of friends. One of my friends is Chris Johnson” (all names are pseudonyms). Here is a portion of Rissa’s response to the question, “Who is Rissa?”:

Um, Lissa Stipler, she lives in Phoenix, she’s my best friend. Then I have a couple of friends here who I’m really close to. They are Tia Carpenter and Ron Houghton. Then I have a couple other friends,
but we're not getting along right now.

Although Crash didn’t list all her friends, she did discuss what she values in a friend:

Friends, well, my friends are all different, I mean. I have friends in eighth grade, seventh grade, in, um high school. I have a lot of friends in high school. And my friends are just, themselves, I mean, they do what they want, say what they want. They’re like me, they have personalities of their own, and don’t try to be like other people. So that’s what I look for in a friend, a person who wants to be themself and, you know, is proud of themselves.

Another interest shared by the majority of the students I interviewed and surveyed is sports. While not all students play organized sports, most of them watch sports on television, check the sports stats in the news or on the Internet, and go to school sporting events. Among the seven zeen editors, two are very serious basketball players (Crash and Jean) and one is a state champion gymnast (Spencer), while the others enjoy volleyball, basketball, baseball, softball and football. Cory says that he’s “a big football guy. Looooove football. Ask me any question, I will know it.” Basketball is such an important part of Crash’s identity that she states simply, “It’s just that basketball is my life.”

Popular media such as television, movies, and music are also common interests for these American youth (Downes & Fatouros, 1995; Short, Kauffman & Kahn, in press). The students in this study have an extremely broad range of preferences for TV shows (The Simpsons to Saturday Night Live to MTV), movies (the Lion King and Lady and the Tramp to Armageddon and Halloween II), and contemporary music (pop rock to alternative to hard rock). While Rissa
prefers extreme artists like Marilyn Manson, Cory likes to listen to mellow music to relax. He states,

I like, I like soothing music sometimes. Just nice quiet and nice melody. Not all that rap stuff, I don't like that stuff. Can't even hear what they're saying [hilarious imitation of an unintelligible rap phrase]. Might as well be speaking Chinese.

Being entertained and having fun are big priorities for teens, and popular media seem to address this need.

Similarly, video games and computers hold a strong interest for this age group. Out of 33 students surveyed, every one of them indicated that they liked computers. And for those of us that wonder when the novelty will wear off, consider that today's seventh graders were born in the mid 80's, right at the time when personal computers became available to the general public. Crash reminds us that she's "had a computer like all my life, growing up and everything." Of course, not all students have access to computers at home or even in school, but I have yet to meet a student in this age group who hasn't had a positive experience with computers. Alan states, "I just really enjoy anything about a computer, especially if it's stuff about the Internet. As another student proclaimed, "Computers are an our generation kind of thing." I will talk more about students' views on the role of computers in the schools later on.

Humor is another major interest shared by my participants. Many of their preferred TV shows are comedies, and many students indicated that they like to read and write funny stories. In fact, humor is one of Cory's primary motivations for writing. He explains,

Well, I'm usually pretty funny. People like funny. And I make a lot
of fiction non-believable stuff. And it's pretty funny. Like one time I made this story about a big foot, about a big shoe that went crazy and started stepping on everybody. It was kind of funny. And I made this one about this girl who kept slapping everybody and then Bill Clinton tried to like bomb her and she was caught red-handed—it's funny.

These seventh graders seem to have a strong interest in food as well. In school, they are exceedingly motivated to "earn" candy, popcorn, and pizza parties. When I asked the editors what their favorite aspect of being a seventh grader was, I was surprised to find that almost all of them immediately responded, "lunch." They stated that the food was better in junior high and that they especially liked being able to chose what they could buy to eat. I suspect that they also like lunchtime because it is a break from class and provides time to move around and to socialize with friends.

Finally, the students in this study share a common interest in talking about the opposite sex. When I asked them what kinds of things they like to talk about, more often that not they produced this kind of reply:

Rissa: Guys.
Cory: Girls.
Spencer: Boyyyyy.
Alan: Who I have a crush on.

It is interesting to note that this topic is reserved for same-sex friends and is not a theme they initiate with their siblings or parents. Alan said that he never tells his brothers whom he has a crush on because they would "blab it out" to everyone. Spencer felt that her parents probably "wouldn't understand" how she felt about
this subject.

**Affective Needs**

The seventh graders in this study have a particular set of affective needs that may not be shared as keenly by other age groups and populations. Namely, these students have an intense need to be active, to have new experiences and learn new things, to be interested, and to be productive. They also want to be social, to express themselves, and to be viewed as responsible and independent. Above all, they have an extreme intolerance for being bored, being lonely, or being controlled by others.

During the following discussion of these seemingly universal seventh grade affective needs, please consider whether or not the structure of a traditional school curriculum encourages students to feel active, social, interested and independent. Visualize meticulous rows of single desks, a pall of silence, teacher-selected topics, and a state-mandated curriculum. This issue will come into play later on when I share students' perceptions of the zeen project and some of the struggles we experienced in our efforts to integrate the project into the language arts curriculum.

This group of seventh graders can't stand being bored. It's as if their brains demand a higher level of cognitive stimulation than they have required before. "Sitting around" is almost the worst imaginable fate for these students, but often they don't have the means to avoid it—they can't drive yet, they don't have their own income and they are constantly being told what to do by parents, teachers and the rest of society. It is possible that today's 12- and 13-year olds are even more susceptible to feeling bored than were their contemporaries of the past because of their familiarity with fast-paced modern media forms.
One antidote to this abhorrent state is to be active and involved. As Crash states, "I like hands on activities that don’t involve sitting around." Cory likes the passing period between classes because "you’re not in the classroom all day. It’s like a little break." Larissalynn also likes the passing period because "you can hang out with all your friends and everything. I think the passing period should be 10 minutes [instead of seven minutes].” In contrast, the time that they spend in class often makes them feel restricted. Rissa complains that some classes are boring because “all we do is sit there.” According to Cory,

Not all classes are boring, but there is some stuff that like social studies and science they just TALK and talk and talk and talk. I always just daydream [laughs]. I just think about other things. I’m not like trying to, it just happens.

On the topic of teachers, Rissa says that some of her instructors explain things too long and try to get their point in too much when we already know it and... they’re like really strict for no reason. If you try to help somebody and you whisper something you’ll get in trouble.

It is not easy for anyone to sit on a hard chair for six hours a day (even adults struggle to stay focused in lengthy meetings and workshops), but it seems particularly uncomfortable for children and teens, whose bodies require a great deal of physical activity.

Another way for students to stay out of the quagmire of boredom is to have new experiences and learn new things. Most of the students who were interested in being zeen editors indicated that they wanted to join the project because they thought it would be a “cool experience.” Crash says that she plans
to “experience a lot while [she’s] young” and that “right now it’s a time of opportunities.” She goes on to say, “I just like to learn new things [and] expand my knowledge.” Sadly, she feels that school has not met this need for her:

Well, see, I am not too interested in anything having to do with school, I mean, unless it’s sports, cause that’s like probably my only motivation is, do this so you can play sports. And probably that is one of my big reasons for coming to school? Or else I would have no reason to come to school, and learn, even though I like learning and stuff? But, it just would seem pointless.

Another solution for boredom is for students to be interested in what they are doing. Crash advises teachers to “make sure [students] are interested and try to have them work on things that they, like, enjoy.” Spencer says that she “can read a book probably in one week if I’m interested in that book. But if I’m not, it probably will take me a year to read the book.” This point may seem obvious, but unfortunately, many traditional school activities are not relevant to students’ interests (Short & Burke, 1991; Smith, 1997).

A final method for avoiding boredom is to be productive. As we’ve seen, these teenagers can’t stand “sitting around.” One of ways they feel fulfilled is by accomplishing difficult tasks and feeling proud of their work. All of the zeen editors were extremely focused on making progress on the website (more on this later), felt proud of their work, and were upset when they didn’t get as much done as they wanted to, as Cory’s journal entry reflects:

3/12/99 I don’t think I did much today I am not proud but I’m taking the stuff home to work.

In addition to avoiding the specter of boredom, these seventh graders
have an affective need to be social. They dread being lonely and perceive communication and meeting new people as the best methods for avoiding loneliness. Listen to Spencer struggle to describe why communication is so important to her:

To express [my] feelings, um, because if you didn’t talk or write or read, you’d feel pretty— you’d feel like a walrus just sitting around all the time, not doing anything. Just, I mean, I think the only thing, oh man! There would be nothing to do. I mean, you’d probably, people would just die of being lonely if they couldn’t talk or write or read.

Cory talks about the value of communicating in this way:

I guess just to hear what other people are about and see other people and try to make em laugh or try to see who they are and see somebody different besides yourself and not be alone and, just have someone there, I guess. You don’t have to always be alone and just talk to yourself.

Crash shared that she can’t imagine not being able to communicate with other people; as she explains, “If I was like all by myself I’d go crazy, start talking to myself.” These students are articulating what progressive educators, sociologists, psychologists and anthropologists have known for years—humans are social creatures (Dewey, 1938; Vygotsky, 1978).

Part of being social is communicating with those you know; another part of it is meeting new people. Spencer remarks that she likes junior high because “you get to know a lot of interesting and new people.” In the following quotation, Crash reflects on a school leadership retreat that had been a very positive social experience for her:
I like meeting other people and I met so many other people and now I'm best friends with all of them. And, I don't have one best friend, I cannot say I have one best friend. I have about a million and a half.

While it is true that socializing, communicating, and being part of a community are important to humans of all ages, most people would agree that teenagers have a particularly intense need to be social (Atwell, 1987). Underlying this need to be social is a desire to express oneself to a receptive audience. While that audience may, at times, be a beloved pet, a private diary or an infant, generally it is hoped that the recipient will listen empathetically, understand our plight, and have the capacity and initiative to respond appropriately.

Finally, these seventh graders want adults to view them as responsible and to grant them personal freedom. They don't appreciate feeling controlled by others. Rissa notes that in seventh grade, "you don't have to raise your hand anymore to leave for lunch." Larissalynn enjoys having "more space to go anywhere you want." Spencer also likes junior high because:

You have a lot of um, privileges, um, like, if you do something right you get to go down to Dairy Queen and get something that you want. You're trusted more, kind of, cause you're older and they know that you can do things. Like when you're little they think, "Oooh, no, you're not allowed to do that yet." And now, it's better.

It was important to all the zeen editors to be seen as responsible by both Staci and me. I will discuss this more later. For now, ponder Crash's concise statement on why she needs personal freedom at school: "Cause I'm not good with boundaries, I just need freedom." Of course, it is not practical to give 1,000 junior high students free reign of the school grounds or to allow them to make
choices that might compromise their safety or the safety of others; however, it is desirable to give them opportunities to control their own destiny whenever possible.

In sum, these seventh graders have a specific set of affective needs that may not be experienced as intensely by other age groups and populations. They seek to avoid boredom through being active, learning new things, having new experiences, being interested, and being productive. They seek to avoid loneliness by being social and expressing themselves. Finally, they seek to avoid feeling controlled by being given responsibility and personal freedom.

*Views on Literacy*

The students in this study represent a full range of views about school, teachers, language arts and literacy--some love school, some hate school; some like certain teachers and dislike others; some enjoy reading and some do not--but they share similar views on the *purposes* for engaging in the language arts processes of reading, writing, listening and speaking. I will first summarize their perceptions of the purposes of each literacy activity and will then go into greater detail on each, using unedited participant quotations to support these findings.

In general, these seventh graders feel that the purpose of reading is to get away from your problems, to experience new worlds, to learn new things, and to be entertained. While many students also view reading as a means to avoid boredom, some students experience reading as the penultimate boring experience--either way, boredom is again a critical issue.

The purpose of writing is almost universally seen as a way to express your feelings. This act of individual expression may or may not be destined for an audience other than the author. One reason seventh graders seem to like
writing is because they can control the characters and the course of events. For students who dislike writing, it is considered unpleasant because it is too hard and/or boring.

Listening is viewed as essential for getting to know other people, understanding other people’s problems, and gaining information. Speaking, like writing, is considered a way to express yourself. And, like listening, speaking is a way to share your problems and ask questions so you can get information.

As stated previously, the students identified several purposes for engaging in reading. Many students view recreational reading as a means to distract themselves from their problems. As Jean comments, “it gets my mind off what is going on in my life.” Rissa echoes this sentiment: “Reading, I forget about everything else in my life. Like when I’m upset or something I’ll read and I’ll forget about it.” Spencer takes this one step further—in her mind, not only do we read to “get out of our own problems” but also to “read about other people’s problems, or animals’ or whatever.” Cory makes the same observation about why people read: “To get away from their problems. To read other people’s problems. And I don’t know, just get away from everything. Just go in a quiet room and just read.”

Reading is also a way to experience new worlds. Spencer wrote on her survey that she “love[s] to read other people’s creations because it’s like your [sic] climbing inside their head.” Alan likes to read because it lets him “go into another world.” Rissa talks about “fantasizing other kinds of lives and stuff.” Larissalynn also likes to read so she can “fantasize, to like think of things that don’t really exist.”

As we have seen, these seventh graders enjoy learning new things.
According to Cory, people read to “learn new things” and to “learn very good lessons.” Alan writes that he likes to read “because it lets me learn and read about adventures.” Jean suggests that people read “cause they want to kind of know what is happening everywhere.”

For some students, reading is a form of entertainment. Alan says that people read “just to enjoy doing something else, something entertaining.” Jean thinks that some people read “to pass the time, like if they’re bored.” However, some students view reading as a direct route toward boredom rather than as a path away from boredom. One student wrote on his survey that “everything about it is boring to me. I hate it!” Others wrote that reading was “boring,” “hard” or “time consuming.” To students like Crash, reading is a “time wasting activity that could be used for working out or practicing your [basketball] shot.” Another student wrote that he doesn’t like to “just sit and do one thing for 45 minutes.” It is interesting to note that students in this age group will sit for far longer than 45 minutes when playing video games and computer games and when immersed in hypermedia design projects (Eagleton, 1999; Lehrer, Erickson & Connell, 1994; Riddle, 1995; Neal, 1995; Tierney et al., 1997).

Larissalynn and Spencer mentioned some additional reasons for reading that are worth mentioning. Larissalynn remarks that we also read to “learn words” and to “read signs.” She seems to have a practical perspective on reading, perhaps from her experience as a Title I student. Spencer makes the utilitarian observation that “if you don’t practice reading you couldn’t really get a very decent job, I mean, the only job you could really have is probably selling newspapers on the street.”

Students also had common views on the act of writing. Out of 33 students
surveyed, nearly half of them penned some variation on the idea that the purpose of writing is to "express your feelings." Here are just a few of these (unedited) student-generated responses:

- It's a fun way to express yourself.
- It is a way to express my feelings.
- It lets me express my feelings on paper, so I can get it out.
- I can express myself.
- It expresses my feelings.
- I can get all of my feelings out & also my ideas
- You can get your feelings out.

Larissalynn told me: "I like to write because I get to express my true deepest feelings," and further: "I love writing. Like if I didn't have a paper and a pen or pencil, I would die." Jean, who is not garrulous by nature, suggests that people write "to express themselves because if they don't wanna talk to someone they can write it in their story or their diary or something. That helps them feel better if they write it down." Spencer articulates the concept in this way:

[People write] to express their feelings, I think. And also to let other people know what the world is like out there, and be able to let them-- I mean I think life would be kind of boring if you couldn't read someone else's writing, or if you weren't writing at all. There'd be, you'd feel like you were trapped and there's nothing that you could let out.

I was dismayed that so few students mentioned any kind of audience response to the oft-mentioned "expression of feelings" through writing. It's as if the act of expressing themselves on paper does not necessarily imply that
anyone is going to read what they write, as in the case of a diary or personal journal. Perhaps this is also because so much of the school-based writing that children do has no real audience other than the teacher (Atwell, 1987; Short & Burke, 1991). This notion of an authentic audience will play a significant role in my later discussions of hypermedia literacy and the zeen project. Aside from Spencer's quotation above, Cory was the only other student to mention an audience for his written work. He indicated on his survey that he likes to "write comedys so when I share my story everyone laughs and that makes me feel good."

Another reason these seventh graders seem to like writing is because they can control the characters and the course of events. Recall that one of the hallmarks of this age group is a need to feel in control of one's life. I will revisit this idea when I talk about why so many students like computers. For now, I'll leave you with these provocative survey responses: [I like writing because] "I am in controll of everything that happens and I know whats going to happen next." Also, [I like writing because] "I could write about any thing, and no one can stop you for doing that." And finally, [I like writing because] "I can make my own story up."

For students who don't enjoy writing, it is generally due to the fact that they find writing to be too hard and/or boring. One student wrote on his survey that "writin is the harest thing for me to do. I get stuck and frustrated alot." Another wrote "I can't spell good." One young man wrote rather dramatically, "because it is (((((Boreing)))))." Alan states that "writing just doesn't interest me" and that "it's boring after a while. [It] hurts my hand." Crash proclaims that "my hand was meant to dribble a ball, not move a pen."
back and forth on a piece of paper." Interestingly, Alan and Crash also state that the reason some people choose to write is "because they have to" (Alan) or "for a job" (Crash).

It is noteworthy that none of the students identified writing as a means to share what they know. This is most likely because of the heavy emphasis schools have placed on narrative writing in the early grades in lieu of expository writing and inquiry-based research projects. It may also be related to the fact that this age group is rarely called upon to contribute their expertise to society. After spending several years closely observing and interviewing junior high students, I am convinced that many of them have special knowledge that could prove beneficial to the rest of the world if only they had the means and the audience with whom to share this information. Webpage publishing is one avenue for giving historically disenfranchised populations such as teenagers a global voice (Eagleton, 1999). We shall return to this vital topic later.

I did not include questions about oral literacy (listening and speaking) on my whole class student surveys, but I did ask the seven zeen editors about these important language arts processes. One purpose for listening that the editors identified was to get to know other people and to listen to their problems. This communicative exchange is important for fulfilling their social needs. Larissalynn suggests that people listen "because they wanna understand you, they wanna know you, I guess." Jean says that people listen:

because they wanna know what's going on and that, like if that person, something happened to them then they want to listen and see what happened so they can show that person that they care about them.
Spencer advises that “if [you] didn’t listen, you wouldn’t really have anybody that would trust you, because they would feel like they couldn’t come and talk to you, because you just wouldn’t listen to them.” Similarly, Crash counsels that listening is:

one key about winning friends. If you just talk and talk and talk and never listen to what anyone else says? No one wants to be your friend, cause they wanna talk, too. And it’s like a 50-50 deal.

According to the zeen editors, another important reason to listen is to gain information. Rissa says that people listen “to get information on what they need to do.” and Alan states that people listen “to figure out what they’re doing so they don’t have to ask any questions. And to learn.”

Students value being able to speak because, like writing, it is a way to express themselves. And like listening, it is a way to share your problems and ask questions so you can get information. Rissa observes that “God gave you a voice to let things out” and Jean suggests that people talk “cause they want to tell people stuff, like kinda like writing, if they feel bad, they tell someone they feel better.” Alan says that sometimes people talk “just to communicate and have a conversation or to tell people about your problems and ask questions.” I think Larissalynn sums it up quite profoundly:

People talk because of communication. If we didn’t have talking we’d just be silent, there couldn’t be anything else in the world. Communication is important cause if you didn’t have communication then you’d be all, “oogh,” nobody could understand, you could groan or something, but it wouldn’t make sense.

As language arts educators, it is our mission to facilitate students’
communicative skills by giving them opportunities to practice the four traditionally-recognized language processes of reading, writing, speaking and listening. However, are these the only four legitimate forms of communication in the age of modern technology (Kamil & Lane, 1998; Kinzer & Leu, 1997; Reinking, 1998; Teale, 1997)? That is a subject to which we will return later.

In this section I provided an overview of the interests, affective needs, and views on literacy that are shared by these modern seventh grade students (Figure 4.1). My hope is that this will contextualize the meanings that the zeen editors ascribe to computers, hypermedia, language arts and the zeen project in the next section of this chapter.

![Figure 4.1: Portrait of an American seventh grader](image)

**Q2: What Did the Project Mean to the Student Editors?**

In the previous section I highlighted several affective needs of the seventh graders in this study which already revealed the meanings the editors derived from the project. Although the project held some of the same meanings for all of the editors—being active, being interested, being social, having new experiences, feeling productive, and feeling independent—each student experienced the zeen project as meeting certain needs more intensely than others. Using data derived from observation, editor interviews and editor
reflection logs, I will investigate these meanings more deeply by sharing my interpretation of what the project meant to four focal students: Cory, Crash, Alan and Rissa. I chose these four participants using Creswell’s (1998) maximum variation sampling procedure, as described in Chapter Three.

Cory: “Personally, I don’t like to listen, I like to talk”

The reader probably already has some sense of Cory’s vibrant personality by some of the quotations that have been included thus far. Cory is a creative, intelligent, good-looking kid who sports a fashionable haircut and trendy clothes. He is energetic, funny, moody, and charismatic, and revels in being the center of attention. He is also extremely articulate and talkative. He aptly describes himself as “loud, uppity and weird.” As a result, he is constantly in trouble with teachers for being out of his seat, talking back, and getting into fights with other students.

Staci had been reticent to select Cory for the project because of his chronic behavior problems (recall his rationale for being chosen: “I know I get into trouble but it would mean allot to me I mean I will really try very hard to stay out of trouble”), but she felt that he “needs something like this.” Cory was as surprised as the rest of his peers when I announced the names of the editors to the class and his was listed among them. There was an unspoken understanding between Staci, Cory, and myself that he would need to control his behavior in order to remain on the project, and I am happy to report that Cory was so motivated by the zeen project that he never felt a need to challenge my authority or distract himself by clowning around for his peers. He did crack a lot of jokes but it seemed to me that his primary objective was to make us laugh (he is really quite witty for his age), not to disrupt things.
Based on my observations and discussions with Cory, I believe that the zeen project appealed to him because it gave him the opportunity to be active, to be social and to be interested. It also gave him an audience for his work.

Being active is a strong theme for Cory; in fact, he says he often feels “antsy.” One of the aspects of designing the zeen that he enjoyed the most was interviewing people around campus. He especially liked interviewing school administrators such as the principal and vice principal (probably because he has spent so much time in the school office being disciplined and it gave him a chance to interrogate them for once). He wrote in his reflection log,

2/15/99 I am so excited we are working on my favorite part Interviews. I dont want to stop.
2/17/99 I liked running around campus and interviewing it was alot of fun
2/23/99 I am real excited it is going very well I like working on the computer and always on the move.

Cory's need to be active made it difficult for him to sit for long stretches at a time. He willingly took turns with his partners on the computer, not because he savored relinquishing the mouse, but (I suspect) to give himself a break from being seated in the chair. He would then stand behind his teammate(s), or drag a student desk over and sit on top of it, all the while remaining engaged in the process. There is no doubt in my mind that one of the biggest challenges of the traditional classroom for Cory is the need to stay seated for six hours a day, five days a week.

The zeen project also fulfilled Cory's intense social needs. Working in a small group with his peers (and with a 1:7 teacher to student ratio--not always
practical in the real world of mass education) gave him the attention he craves and the opportunity to talk that he so dearly loves. In his own words,

Personally, I don’t like to listen, I like to talk. I’m talking for like an hour and [if someone else] wants to talk for like 2 minutes, I’m “NO, I’M TALKING!”

The small group provided an intimate setting that allowed Cory to practice his “working with others skills;” in fact, Staci commented at the end of the year,

I like to see Cory working well with other people. It was nice to see him in a small environment where he could work well, once he ironed things out. It was really cool to see them collaborate.

Cory brought up the topic of collaboration frequently in his exit interview, making observations like,

you gotta work together, cause if you don’t you get into a lot of arguments and you can’t agree on things, and you can’t be, like real stuck up because you haveta agree with everyone else. It’s not just you, it’s a whole group.

He also wrote about collaboration in his reflection log; for example:

3/3/99 I think me and Larisalynn work real good together we share alot of the same thoughts.

Cory is so attuned to the world of interpersonal dynamics that he is often distracted by other people’s communicative exchanges. For example, whenever I had a conversation with another student, teacher or administrator during class, Cory would suspend his activity and listen closely to the dialogue until it was complete. I’m sure there are many reasons for his focus on social interchange—
perhaps having four older half-siblings and one younger brother, or perhaps the
fact that his parents recently divorced (he says he spends a lot of time listening
"to my mom’s problems and my dad’s problems")—whatever the case, Cory is
one of those people for whom oral communication and relating to others is a
strong area of focus. I think the zeen project meant a lot to him because it gave
him an inviting forum for social discourse.

As with many students, Cory also needs to be interested in what he is
doing or he will start creating diversions to keep himself occupied. One of the
reasons he wanted to join the project was because he likes computers so much.
He reflected,

I needed an extra activity and I like computers and me and my whole
family is really interested in computers and I like fooling around on
computers so I figured it would be pretty good for me since I have
nothing better to do. So I figured it'd be pretty fun. And people could
read my writing.

Cory’s last statement elucidates one more important reason why he was
so inspired by the zeen project: It gave him an audience for his work. What
could be more motivating for a class clown type of kid? As we have seen, Cory
loves being the center of attention, and, in fact, envisions a future career as an
actor or a writer:

I’m in drama and I like drama and I’ve always been a loud speaker.

And I’m gonna be an actor or a writer when I grow up. I’d like to be
an actor and a writer in my spare time. That would be cool!

He fantasized that someone might see his writing on the webzine, "maybe an
author or someone" and that it could "boost my career or something!" When I
asked him what made the zeen project so appealing to him, he replied, “People get to read your stories and stuff from all around the world” and “It’s just cool to think that everyone’s gonna be looking at it, like all around the world. Just a really cool feeling.”

Although it is impossible to literally “get inside the heads” of my seventh grade participants, these data suggest that for Cory, the zeen project was meaningful to him because it gave him an opportunity to be active, to be social, to be interested, and to have an audience for his work.

**Crash: “It’s just that basketball is my life”**

Again, I’m sure the reader has already gained a sense of Crash’s dynamic personality by reading some of the quotations I have included in this chapter thus far. Crash is, above all else, a basketball player (her teammates gave her the nickname “Crash” based on her aggressive style on the basketball court). She harbors no doubt that she will eventually become a professional women’s basketball player, even though she “doesn’t really like the women’s pro basketball [league], but I’ll probably get in it, so I’m just gonna go from there.” Crash dislikes reading, writing and everything else about school except for extracurricular activities, stating that,

extracurriculars just add to school and so that is a big thing for me. I mean, student council, which I totally love, and sports, of course. [I like] extracurriculars, cause school, you know, you have to do.

Recall Crash’s earlier statement that she’s “not too interested in anything having to do with school, I mean, unless it’s sports, cause that’s like probably my only motivation.” She also commented (as I quoted earlier) that, if it weren’t for sports,
I would have no reason to come to school, and learn, even though I like learning and stuff? But, it just would seem pointless and I think I'd be a bad kid if there wasn't sports and my parents. It's just that basketball is my life.

Crash is athletic, creative, intelligent, and a self-avowed tomboy. She describes herself as "a leader and an individual." She always wears her long, brown hair in a ponytail and is generally attired in athletic jerseys and long baggy shorts. She walks with a swagger, speaks with confidence, and is not shy about expressing her opinions. Crash values trying new things and having new experiences as often as possible (recall her rationale for being selected for the zeen project: "I want to be an editor sooo bad because it whold be a great expereance & life when your younge is about having great expereances").

Staci and I had originally planned to have six editors since we had access to three project computers. Crash hadn't made the first cut because Staci felt that Crash already had numerous opportunities to participate in special school activities like sports and student council. However, Crash been very outspoken in her disappointment about not being chosen--when the six names were announced and hers was not one of them, she remarked loudly to the class, "I KNEW it!" I invited Crash to join the team several days after the first six editors had already been selected because I was intrigued by the idea of having an editor who hated reading and writing so passionately. Curiously, Crash is an excellent reader ("Well, I read fine—it's just that I don't enjoy it") and possibly the most talented writer in the class! Staci thinks that "Crash is very good with voice" and that a lengthy, intense story Crash wrote about a boy who almost drowned and was in a coma was "one of the most amazing pieces" Staci had received from a
12-year old.

I think that the zeen project appealed to Crash because it gave her the opportunity to be active, to be interested, to have new experiences, and to have freedom and independence.

Being active is not just a personal preference for Crash—it is a necessity. Her primary reason for disliking reading and writing is because "they’re boring, they’re just so slow." She finds them boring because "I’m not doing anything, my mind is, but my body’s not" and goes on to explain: "if I’m not doing something with my hand and my feet and my head at the same time, it’s like, boring." Unlike many of her peers, Crash doesn’t even like to watch television: TV can bore me unless I’m really interested in the show, otherwise I just get so bored. I’m not real big with just sitting around and doing stuff, unless it’s on the computer, cause, you know, your hands are moving.

Crash’s last comment about computers being an active rather than a passive experience is an important point. For Crash, being able to manually interact with computers makes them extremely appealing. This is one critical feature that sets computers and video games apart from books and television.

Being interested is also a prerequisite for Crash. As she stated above, she only enjoys watching TV if the show is “interesting.” Similarly, she says that she only chooses to read if “it’s like a ten page book” about a topic she finds interesting such as “basketball, cats or dogs.” It is fortunate for Crash that she cares enough about her grades to complete school assignments that she considers boring, but unfortunate that so many school activities seem to fall into this category for her. The zeen project was meaningful for her because she finds
computers interesting and was able to work on topics (such as sports) that she found stimulating (Figure 4.2).

![Computers are interesting](image)

Figure 4.2: Computers are interesting

A recurring motif for Crash is "having new experiences." Here is her response to the question, "What did you like most about the zeen project?"

Um, definitely, just the new experience. I’m all for trying new things, you know, and I really like working on computers. But I’m not too good at it, so it just made me that much better and just like, in any sport or anything you do, if you work at it, you’ll get better. And so, if I make one webpage then I can make more of ‘em cause now I know everything, how to do everything, and I am more interested in it, the farther I go on.

If it seems somewhat contradictory that such an active, athletic student would find computers so interesting, I must emphasize that, for Crash, the computer is not passive, stationary object but rather an interactive, engaging medium filled with places to explore, buttons to press, and friends with whom to chat. I’ll return to this point when I talk about the roles of computers in the classroom.

Another major theme for Crash is having freedom and independence. I
already shared her assertion that she’s “not good with boundaries” and “just need[s] freedom.” She describes herself as “pretty much independent” and is frustrated that many teachers don’t allow her the freedom to express her own ideas:

Well, I have like, I have my own theory for most everything and most of the teachers want you to follow their theory and I always have like a say in something and, not all the teachers like that, so. And whatever I believe in, you can’t change my mind, unless you’re really good at changing minds.

One of the factors that made the zeen project such a positive experience for Crash is that she felt free to express her ideas, to set her own educational goals, and to carry out her plans with minimal teacher intervention. This level of student control over the curriculum could, of course, have been accomplished without the use of technology (Harste, 1994; Short & Burke, 1991; Short et al., 1996), but since Crash is so turned off to traditional print-based literacy activities, she was more inclined to dedicate her tremendous energy and strong leadership skills to this end.

*Alan: “I just really enjoy anything about a computer”*

Alan is one of those 13-year olds who knows more about computers than the average adult. He is bright, studious, and very computer savvy. He wears nondescript clothing and always carries a thick science fiction or fantasy novel in his backpack along with his sack lunch. He feels that junior high is “OK, but boring,” but that he likes it better than elementary school because “they have the Internet on the computers here. They don’t have those little old MS-DOS computers.” Alan describes himself in this way: “I have dark brown eyes and
hair, glasses, I'm an A student, and I have a lot of friends." He reads voraciously but can't stand writing because "writing just doesn't interest me" and "it's boring after a while. [It] hurts my hand." His handwriting is, in fact, almost illegible, and he mumbles when he speaks.

Alan was a shoe-in for the zeen project because he gets his work in on time, loves computers, and works well with other people. He also indicated on his volunteer survey that the project might "get me into writing more," which was an irresistible hook for Staci and me. When I first interviewed Alan, I found it intriguing that he claimed to hate writing but that he enjoys sending and receiving email and going to chat rooms on the Internet. After talking with him further, I have discovered that it's actually the physical labor of writing by hand that he seeks to avoid rather than the process of writing that bothers him. I believe that he has gone through life thinking that he loathes writing simply because he lacks the fine motor skills to produce pages and pages of handwritten text. He is also a painfully slow and inefficient typist; he admits, "that's the one thing I can't do at the computer, is type." Nevertheless, Alan, like Crash, is actually quite a strong writer. He published a suspenseful and well-crafted hypertext fiction piece in the Writing section of the website (hypertext stories will be discussed later).

In reflecting on what the zeen project meant to Alan, I found that it gave him the opportunity to work on computers, to be interested, to be social, and to have an authentic audience for his work.

There is no doubt in my mind that having an opportunity to work on computers was a considerable motivating force for Alan. He revealed that he knows how to install modems, sound cards, programs and other software, and
that he knows “all the little parts... underneath” and that he even knows how
“hack people.” Alan started seventh grade in the Beginning Computers elective
and was quickly moved up to Advanced Computers (designed for eighth
graders), even though he had never taken any previous computer classes. He
explained that when his parents bought a new computer and let him put their
old one in his room, his fluency with computers dramatically improved:

I taught myself how to solve stuff and I just looked at the Windows for
Dummies and stuff. I got a whole bunch of those books. That’s
basically it, it’s my first computer class.

Alan was very interested in learning how to make a webpage so he could
make his own in the future. When I asked him what kinds of websites he would
like to make, he said that he would:

Probably do it on a book I read, on books, or something I’m interested
in. Like one of my friends, all he does at home is make webpages. He
doesn’t even have a TV, he has like a really expensive computer. And
he sits there for hours making his webpage. He makes, the new one
he’s doing is on a video game he made. And he’s doing a club that he
can use to make the webpage and he has codes and all that stuff. His is
a lot more complicated than the one we did.

Alan asked technical questions frequently throughout the project, such as,
“What does ‘htm’ stand for?,” “What is ClarisWorks?,” and “What is ‘rtf’?” He
was not very interested in the planning phase of designing the zeen because
there were some days when the editors didn’t even boot up the computers. At
the end of his initial interview when I asked him if there was anything else that
he wanted to share about reading, writing, language arts, computers or the
project, he replied, "Yeah, when are we gonna use the computers? When are we gonna start actually making the page?"

Just as "being active" and "being interested" are prerequisites for engaging students like Cory and Crash in school activities, being interested is essential for Alan. He completes all his school assignments because he is committed to getting good grades; however, he complains constantly about being bored. In the following excerpt he describes the experience of having to read books that he did not select for himself in order to fulfill the requirements for the Accelerated Reader computerized reading program that FWJHS instituted this year:

I just finished another book. I finished like this really thick book. Uncle Tom's Cabin. Boring book, too. The only reason I read it is cause I had to, otherwise I'd get in trouble. It was worth 49 points! That's more than anyone else in the school. I have to read [level] 8.0 and up. I've read almost every book in there, and there's a whole bunch of thick books I have to read.

Although it is unrealistic to expect every student to be interested in every school activity—and there are times when it may be appropriate to ask a student to read a "boring" classic like Uncle Tom's Cabin—it is a shame when intelligent, inquisitive, and intrinsically motivated students like Alan are not given the freedom to choose their own reading materials, writing topics, and inquiry projects in school. The zeen project was particularly meaningful to Alan because of his strong interest in computers, webpages, and the Internet.

Although Alan is somewhat introverted (in contrast to Cory and Crash), it is apparent that the zeen project fulfilled his need to be social. He stated that he
enjoyed getting to know “more people in there that I usually don’t hang out with;” in fact, he and Cory (as the only male editors) established an unusual alliance as a result of the small group setting. Alan describes himself as having “tons of friends,” and that his favorite hobby, aside from computers and basketball, is “hanging out with friends.” I have gathered from conversing with Alan that the majority of his friends are also very interested in computers and online role-playing games (MUDs).

Finally, the zeen project was a positive experience for Alan because he felt a sense of audience for his work. In an initial interview, he stated that the purpose for creating the zeen was “to show people what kids our age can write and what we can do. Show ‘em our experience in this, so they can hear us at home.” Similarly, when I asked Alan in an exit interview what it was like being a zeen editor, he answered, “It’s cool. Actually get to do something fun, but it takes a lot of hard work and effort. We made a webpage that everyone else can see.” Even shy students like Alan want their voices to be heard in the world, and webpage publication provides an effective means for accomplishing this goal (Eagleton, 1999).

Rissa: “Communicating in different kinds of ways”

Rissa describes herself (and I would concur) as “tall, athletic, pretty, swift and smart.” She gets expensive, mature haircuts, dresses fashionably, and occasionally wears makeup, but is not a member of the “popular” crowd at FWJHS, probably because she has unusual interests such as saving endangered animals and the environment, going to speech competitions, and playing the clarinet in the school band. She is the eldest of four girls and wants to be a pediatrician when she grows up.
Rissa is the only one of the editors who reads teen-oriented magazines like “Sixteen,” “B-Bop,” and “Teen,” and had even tried to make a webzine prior to the zeen project with a group of friends. She values expressing herself through speaking, writing and computers and felt that the zeen project “would be a great learning experience for me in the future if I wanted to express some important issues on the web.” The following volunteer survey response further explicates her rationale for wanting to be a zeen editor:

I’ve opened a webzine with a couple of friends and they kind of bombed out on me so I had to close it down. I really liked putting on my ideas. We had little complaint sections, it was really cool and I would love to do it again because I know people wouldn’t judge my pieces because we’ve learned that and I think this will be good for me because of what I wanna do in the future. I also really, really like computers, they are like a bare-necedetti to me. Again I would really, really, like to be an editor.

Staci and I were in agreement that Rissa would make a great editor due to her sense of responsibility, her excellent communication skills, and her strong interest in writing and computers. Rissa was the only editor who wanted to work on the Writing section of the site (though it was still her third choice after Inner Self and Sports) and she ended up running this department for the entire semester in collaboration with Larissalynn and, later on when the Inner Self department was abandoned due to time constraints, Crash and Spencer.

The zeen project was meaningful to Rissa because it fulfilled her need to be given responsibility, to be social, and to express herself to a global audience.

It is important to Rissa to be viewed as responsible by the people in her
life. She stated that she liked being part of the zeen project because, “the teacher's sorta recognizing us as responsible students and we take care of [our] grades.” She also said that one of the things she learned from the project was “how to be more responsible.” She advises other schools who want to make webzines to “get people together that are responsible and aren’t gonna slack off on it.” It was obvious from the way Rissa carried herself that she felt privileged to have the freedom to move around campus and that she loved how “you get to choose what goes on [the zeen] and what doesn’t.”

Rissa, like the other editors, enjoys being a part of a small group and working with her peers. She made numerous references to collaboration in her reflection log such as this one:

2/1/99 I like the way we all cooperate well with each other, and vote well

Rissa stated in her initial interview that she wanted to join the project because she “thought it would be cool just like working with other people and communicating in different kinds of ways.” For Rissa, a fundamental component of positive interpersonal relations with others is not being judged or criticized, and I think the small group setting gave her a feeling of safety and camaraderie that she doesn’t always feel in the context of the whole classroom. In the following quotation, Rissa explain the one thing she doesn’t like about being in language arts class:

There isn’t really that much things that I don’t like about it. The only thing [I don’t like] is sometimes when you try to communicate with people they like put down your ideas and stuff. And then that got out of hand once with me with another person. I won’t let that happen
again, so basically we’ve been communicating better now.

The theme of being judged by others is a significant recurring motif for Rissa. She identifies this theme as one of the major reasons she likes to write so much, as the following quotation illustrates:

Well, I write just, I like put down my feelings, just like in a journal. I like it, I think people like it because when you write something down on the paper, the paper doesn’t talk back and say “Oh, that’s dumb.” or “I can’t believe you say this kind of stuff about somebody.” It doesn’t judge you, it doesn’t, those are your feelings, your ideas.

And just like a dog, it just sits there like my dog or my cat when I’m sad I hug it and tell him like everything I need to get out and the dog doesn’t open his mouth and say, “I’m gonna go tell your mom” or something like that. They don’t say anything.

Even though she risks being judged by others, it is important to Rissa to have a voice in the world. She wants to “let people know how seventh graders think and know that they’re good for something,” and feels that the purpose of creating a student-run webzine is:

To like let people know how seventh graders think and write and that they’re not just these people who think we’re all cool and everything. They have feelings and they have artistics and everything.

Teenagers and children (among others) often feel powerless, misunderstood, and voiceless in society. Rissa’s pronouncement reminds me of an insightful statement made by a 13-year-old student in my exploratory study of FWJHS students’ designing the first school website, which I will include here:

[I want to] let people know what we’re doing in our community and
to show people that there is schools out there that are caring, that are
doing stuff and it's just not, we're all not just throwing away our
youth. We're actually doing something here, and I think the world
should know about it instead of just brushing us off as worthless.

Rissa was ardent about being able to communicate with a global audience
via the webzine and was interested in getting feedback on her writing. She
wrote that she wanted to contribute her writing to the zeen “because I want to
see how people would react to my choice of writing and see if they had advise
for me, I LOVE ADVISE.” She also stated that she thought that:

it would be cool communicating with people around the world with
my stories and knowing that, um, just like writing it on paper, the
webpage doesn't judge your stories so you can just let out your
thoughts. It won't say anything.

Although there is an ongoing tension between Rissa's desire to be heard
and her desire to not be judged, it is clear that communicating to a global
audience through the zeen was a profoundly meaningful experience for her.
Early in the semester, she wrote in her reflection log,

2/19/99  I can't wait till we get our e-zeen set up and all people
around the world will see it.

By the end of the year, Rissa realized that the zeen project had made her “more
interested in writing what people around the world were gonna see.”

Summary

In this chapter I provided an overview of issues that are important to the
seventh graders in this study. I also presented four student profiles in order to
determine what the project meant to the zeen editors on a deeper level.

I discovered that there are common interests shared by the seventh graders in this study, such as family and friends, sports, popular media, computers, humor, food, and talking about the opposite sex. Additionally, I found that these seventh graders have an intense need to be active, to have new experiences and learn new things, to be interested, and to be productive. They also want to be social, to express themselves, and to be viewed as responsible and independent. Above all, they dislike being bored, being lonely, or being controlled by others. I also shared the students’ views on the purposes for engaging in the language arts processes of reading, writing, listening and speaking so that their views on computers in the language arts curriculum might become more transparent.

In order to more deeply understand what the process of hypermedia composition meant to the zeen editors, I conducted four in-depth case studies of Cory, Crash, Alan and Rissa. Although each of these four students has different strengths and weaknesses, interests and personalities, they derived some common meanings from the project. For Cory, the zeen project gave him the opportunity to be active, to be social, to be interested and to have an audience for his work. Crash found the project to be appealing because it gave her the chance to be active, to be interested, to have new experiences and to have freedom and independence. Alan enjoyed being a zeen editor because he could work on computers, be interested, be social and have an audience for his work. Finally, for Rissa, the creation of the webzine was meaningful because it fulfilled her need to be given responsibility, to be social and to express herself to a global audience.
In the next chapter I will investigate the actual process of hypermedia composition as it was carried out in the creation of the zeen project.
CHAPTER V
“MAKING IT COME TO LIFE ON THE COMPUTER”

In this chapter I will address my research questions having to do with the process of hypermedia composition, starting with an investigation of the specific processes that are involved in the creation of a webzine. I will then take a closer look at how hypermedia literacy functions as a language form in hypermedia design projects and which genres and elements are specific to hypermedia forms of representation. My hope is that this investigation will move us forward in understanding what kinds of outcomes we can expect when students compose with hypermedia in the language arts classroom. This, in turn, will help educators determine how to measure student growth in hypermedia composition using assessment rubrics based on these cognitive processes.

Q3: What Processes are Involved in the Creation of a Webzine?

Very few researchers have investigated the processes involved in composing with hypermedia aside from Lehrer, Erickson & Connell (1994) and Carver, Lehrer, Connell & Erickson (1992). These researchers list “four primary types of cognitive processes when students compose with hypermedia: planning, transforming, evaluating, and revising” (Lehrer, Erickson & Connell, 1994, p. 228), and five types of design skills: project management, research, organization and representation, presentation, and reflection (Carver et al., 1992). Although there is some overlap between these researchers’ models and my findings, I believe that both constructs represent the beginning of an important
conversation regarding the kinds of outcomes we can expect when students compose with hypermedia in the language arts classroom.

In an attempt to explore this important issue, I looked very closely at editor reflection logs, interview transcripts and videotapes of students at work. An analysis of the process of creating the webzine revealed five fundamental processes: (a) generating; (b) collaborating; (c) problem solving; (d) representing; and (e) monitoring. Designing the webzine was an extremely positive experience for the student editors because it addressed the affective needs experienced by these seventh graders, such as being active, having new experiences, being interested, being social, and having personal freedom.

**Generating**

In this study, the first stage of the composition process required the editors to generate the content of their online magazine. They went to the computer lab to peruse other online magazines, particularly ones that had been designed by teens. This gave them some ideas for what they did and did not want to include in their magazine. With respect to layout and appearance, the editors were in agreement that they wanted “good colors” and “animations” and that they did not want a lot of “boring text.”

The editors solicited ideas from their classmates and spent several sessions brainstorming content for the magazine. It is interesting to note that, while I think Staci was originally envisioning a *literary* magazine, the students quickly moved beyond these confines to formulate an online magazine that they felt would be more interesting to produce and would have a wider audience appeal. With my help, the students agreed on six departments for the webzine and organized themselves into teams of two or three to work on each department so
they could better “share ideas.” I will list the departments in the order of highest interest for the editors:

1) INNER SELF: teen zine content - relationship problems; horoscopes; self-help tips
2) SPORTS: interviews with coaches, players and fans; sports stats
3) PEOPLE: interviews with people; penpals; questions for experts
4) ISSUES: global social issues; information
5) EDITORS: biographies; photos of themselves
6) WRITING: student writing; book reviews

As is evidenced by this list, Writing was the least popular department, and would not have made the list at all had it not been required by Staci. Rissa was the only one who was even interested in working in this area until Larissalynn finally volunteered, just to be accommodating. This department eventually proved to be the most laborious in terms of soliciting student work, re-typing short stories and poems for peers who didn’t have them on disk, and editing other students’ pieces. I think it was less inspiring for the editors to manage other students’ productions than it was to generate their own; however, this was the only way to involve the rest of Staci’s students in the project.

The process of generating ideas was one of the most common themes that appeared in the editors’ logs throughout the project. Note the use of the word “ideas” in the following journal entries [italics mine]:

1/22/99 (Crash) We had some great ideas today & we made a lot of progress & things are roling & it’s only a matter of time till it’s up.
2/3/99 (Rissa) I think it was really cool how we mess around for ideas
2/15/99 (Jean) I am glad that we are going to stay with the sports
group for a while because I just keep getting one idea after another.

Collaborating

I was extremely impressed with the editors' teamwork skills during the project. Although they disagreed on many issues, after democratic votes were taken (their solution, not mine), those whose wishes were not fulfilled were willing to go along with the majority decision. For example, there was a heated controversy about what to name the webzine and how to spell it (Electronic Magazine, E-ZINE or E-ZEEN). There was also debate about the header on the main page—they started with “The Everything Magazine for Everyone, Adults, Teens and Kids” and eventually agreed on “The Electronic MagaZEEN 4 Everyone by Teens.” At their own initiative, the editors distributed a stack of thesauri around the table (a language arts teacher's dream!) in order to conjure up enticing words like “phenomenal,” “extraordinary” and “exceptional,” that they hoped would attract more readers. During all of these discussions it was apparent that the students had a keen sense of a diverse and tangible audience.

With the exception of Alan, who was impatient with the planning stage and eager to get on the computer, the students really enjoyed the collaborative aspect of the process because they liked exchanging ideas. As Cory wrote in his reflection log,

1/22/99 I had lots of fun brainstorming. I think this is going very well. Everybody has lots of really good ideas, I am really into this.

Spencer, Jean and Rissa also made numerous references to collaboration and the sharing of ideas in their reflection logs:

1/22/99 (Spencer) I am very happy that we work together well and we are coming up with all kinds of ideas for our E-zine
1/22/99 (Jean) I feel that we have made lots of progress because we have been getting our ideas out of our head and on to paper.

2/5/99 (Spencer) I feel that I am doing alot of brainstorming lateley. It has help us though to work together. We have some really cool ideas.

2/5/99 (Rissa) I love how are ideas mix up and they become 1 whole idea all together. Also how we don’t critizize each others ideas in the process of getting ideas. I think this group activities (E-ZEEN) is good for us all.

**Problem Solving**

Many of today’s teachers are intimidated by the prospect of including hypermedia design projects in their curricula because of the technical aspect of managing, navigating and troubleshooting computers (Kamil & Lane, 1998).

*This is a legitimate fear.* Solving technical problems is an extremely time-consuming aspect of the webzine design process. However, two recent developments make this a slightly less daunting challenge: (a) computer savvy students; and (b) user-friendly hardware and software.

In order to create a webpage, students first need to know how to navigate within the operating system, manage the desktop, open and close applications, and save, copy and move files. Because today’s junior high students share an anniversary with the personal computer, most seventh graders already have some familiarity with computer operating systems from home use (games, educational software, and surfing the Internet) and school use (primarily word processing). In my experience, many of today’s students are more fluent and more willing to take risks with computers than are many teachers; however, this proportion will eventually shift as today’s teachers reach retirement age and are
replaced by younger, computer literate professionals (Garner & Gillingham, 1998).

Every school has an assortment of—for lack of a better word—young computer nerds who not only feel comfortable with technology but also have the ability to troubleshoot problems with hardware and software. Among the seven zeen editors, there is no doubt that Alan fits into this category. In his entry interview, Alan revealed,

I recently installed a modem in a computer. And then, I'm the only one that knows anything about computers in my family. So, I have tons of programs on my computer, I know how to use the Internet, I know how to use fax machines. I know how to install programs, and software, and hardware, and I know how to fix some things inside a computer. I know basically how it runs on a computer. I know how to clean the CDs and keep ‘em and stuff. I know how to put, like modems, and how you use ‘em and what they are and, like, sound cards and I know all the little parts, or most underneath. And then, I should be learning more in Advanced Computers about the insides. I know some stuff I shouldn’t know about, like how to hack people.

My advice for schools (including elementary schools) that wish to incorporate computer technology is to put the computer nerds to work! Not only will they be a significant asset to the school community as technical experts but they usually enjoy helping and feel good about practicing skills that they know will assure them high-paying jobs later on. These are often the same kids who create computer viruses and break into military intranets; therefore, we should make every attempt to redirect their talent toward socially acceptable
uses.

The advantage for the overburdened teacher of encouraging students to solve their own computer problems is evidenced in the following episode (Figure 5.1) of Spencer’s frozen computer:

Figure 5.1: Technical problems

Spencer: Oh, my gosh. It’s not working. Mayaaa!
(Maya doesn’t hear her, so Crash comes over to help)
Spencer: Look at it, it’s stuck.
Crash: Where? What did you do?
Spencer: I don’t know.
Crash: Plug the mouse back in.
Spencer: WHAT is wrong?!
Crash: Is it in?
(Alan joins them)
Alan: Is it moving?
Crash: Now it’s moving. Where is it? Get it somewhere where I can see it.
Spencer: Mayaaa!
Crash: Now try and take it out. I think, you know what, if you start it
up with the mouse in there, it thinks that there's always gonna be a mouse in there.

(Maya finally arrives, but the problem is already solved).

The other reassurance I can offer to technologically-insecure teachers is that computers are becoming increasingly user-friendly. Early computers programs were so unwieldy that there was at one time a significant danger of erasing your entire project if you relaxed your vigilance even momentarily; however, this threat has decreased as the technology has matured. These days, once the user has some familiarity with the operating system and the ability to work with a few common applications like word processors and draw/paint programs, learning new applications becomes easier and easier. Programs, menus, and keyboard shortcuts are becoming standardized, even between Macintosh and PC-Compatible platforms. Familiarizing oneself with a new software and hardware by clicking on things and observing what happens is an exploratory technique that I have observed children doing naturally, but many adults are still paralyzed by the fear that they'll break something if they push the wrong button.

For this project, the zeen editors needed to know how to use a webpage composer, how to copy and paste text documents into the webpage composer, and how to search for graphics online. I taught these skills in mini-lessons and found that the editors caught on easily and only rarely needed refreshers on how to accomplish these tasks. Webpage composers have become as easy to use as word processors, and in my opinion, it is not necessary to teach students html coding unless there is ample time and interest. I always like to show students the underlying code, but I have yet to teach html directly to junior high students.
The students also learned how to use a scanner, how to use a digital camera and how to manipulate graphics in a graphics editor. These skills were taught to the zeen editors by some of the students from the media arts class and myself. I cannot emphasize strongly enough how valuable it is to use peer training and support when faced with the technical challenges of computers in the schools. Whenever possible, it is beneficial to give students the opportunity to solve their own technical problems.

**Representing**

Another process that was a crucial aspect of the webzine project was figuring out how to organize and represent content in a new medium (I will discuss the concept of orchestrating sign systems and semiotic transmediation in greater depth in the next section of this chapter). Since the students were already familiar with the prewriting technique of webbing, they used webbing for organizing the hyperlinks between the main page, the department pages and the other subpages (see Figure 5.2).
The editors also created storyboards to help determine how best to represent their information using graphics and text in an appealing and practical layout. Storyboarding is a technique that has been utilized for years in the film, television, and video industry and is a useful strategy for sketching the layout of a webpage on paper in advance (see Figure 5.3). The students enjoyed storyboarding and referred to their original storyboards often while working with the webpage composer.
Real life

Table 5.3: Jean's storyboard
Monitoring

One of the most striking themes present in the editors’ conversations and reflection logs is an intense focus on “making progress.” This kind of metacognitive awareness is one of the aspects of project-based learning that I find so powerful, regardless of whether or not a project is technologically-oriented. The editors also continually monitored their progress on the webzine in terms of appearance (Spencer: “Our page just looks kinda plain”) and functionality (Alan: “That [link] color doesn’t show up”).

As we have seen, these seventh graders like to feel productive. In this case, the seven editors implicitly shared a common goal of finishing the website and not having any “under construction” signs on the site. Although they didn’t quite get there, and, in fact, were forced to abandon the Inner Self department along the way due to time constraints, the students were doggedly focused on reaching completion of the project. The following reflection log entries illustrate their impressive level of task orientation (note how often they use the word “we” as well):

3/12/99 (Alan) We got really far on the page. I don’t think it’ll take much longer to finish.
3/16/99 (Spencer) I think that our People pages are almost complete. I think everyone is working hard
3/22/99 (Jean) Today I feel that we will finish by spring break. I am looking forward to looking at my page on the Web.
4/20/99 (Rissa) I think by next time well almost be ready to go and we won’t have any pages under construction except Inner Self.
4/22/99 (Larissalynn) I thought it was a great day because we got
almost everything done

There were no slackers; in fact, when former behavior-problem Cory
broke his wrist at the end of the school year and was wearing a cast on his right
arm, he lamented in his journal,

5/6/99 I didn't do much today because I couldn't my hand is broke
but Larisalynn did good.

The most significant challenge to getting the project finished was time.
This is a consistent theme in the research on hypermedia design projects in the
intermediate grades (Eagleton, 1999; Finkelman & McMunn, 1995; Kamil & Lane,
1998; Lehrer, Erickson & Connell, 1994; Tierney et al. 1997). I regret that I have
found no easy answer for this. It seems that every year teachers are expected to
compact more “content” into the curriculum and then implement it in the same
amount of time and with increasing numbers of special needs students, more
shocking discipline problems, fewer resources, and larger class sizes. Every
choice a teacher makes inevitably shortchanges some other worthy activity.
Therefore, every district, school and teacher will have to determine whether or
not they feel that the time devoted to hypermedia composition is worth
sacrificing other kinds of projects and activities in the language arts classroom. It
is my hope that this study will help inform that difficult decision.

All of the editors regretted not having more time to work on the zeen
project. As Cory explains, “Cause you get going really, really, really good and
then all of a sudden just stop. And I think we deserved a lot more time." Several
of the editors wished that they had been able to start the project earlier in the
year and that they’d had the whole class period every day instead of just half the
period every other day; as Crash relates:
I wish we just had more time to be together, cause I mean, rush rush rush rush rush, and so, it's like, "Oh, I have to go do this. So I can't do this." And, I mean, cause I thought we worked pretty well together, I mean, we were like a team. And then, since we were always rushed, then we were doing all these different kinds of things, and some things got forgotten, and some things, we didn't have enough time to do, you know?

When the end of the school year arrived and time ran out, one of the things that I marveled at was how positive the experience had been for the editors. In the next section I will again use the participants' own words to reflect on this intriguing phenomenon.

A Positive Experience

Why was the zeen project such a positive experience for the editors? I believe it is because the project addressed most of the affective needs shared by these seventh graders (discussed in the last chapter). Specifically, it gave them the opportunity to be active, to have new experiences, to be interested, to collaborate, and to have personal freedom. It also gave them a strong sense of accomplishment and pride. While many of these affective outcomes can be achieved without the use of computers, as in the case of inquiry-based education (Leland & Harste, 1994; Short & Burke, 1991; Short et al., 1996), hypermedia design projects seem to amplify these positive outcomes because technology holds such high interest for students and because computers are a unique multi-symbolic medium. There will be more on this point later.

There were two ways in which the zeen project allowed students to be active. First, they literally had more freedom to move around the room and
around the campus. Second, students stated that they feel more active when they are clicking a mouse and pushing buttons on the screen than they do when they are engaged in traditional print-based literacy activities.

The fact that the editors had room to move around physically may be attributed more to my teaching style and the small group size than to any other factors. Particularly during the second phase of the project when we relocated to the empty classroom, I did not insist that students remain seated at all times. We conducted many of our "pow-wows" while standing in a loose group or sitting on top of desks (Figure 5.4).

I also made permanent hall pass badges so they could travel unharassed across campus to interview people and to go to the computer lab. They understood that this privilege was revocable in the event that they were not able to handle themselves appropriately, but we did not encounter problems because they were so vigilant in their task orientation.

The fact that the students still felt "active" when they were seated in front of the computer has been mentioned previously. With regard to this tactile experience, Crash explains that when you interact with a computer, "you press buttons, there's like a bunch of buttons you can click, and I like being active with
it." Rissa echoes this sentiment:

> I think a hypertext story, it gets you into, it makes you move around more, to where you’re not just sitting there and reading a story and getting bored. You’re pushing buttons, I mean, even in [my hypertext story], if some of my words were part of a title in a different story, I could have that, to where they could go to another story after it and stuff.

The computer’s ability to engender a tactile, physical relationship with the user is a significant factor in its seemingly universal appeal to people of all ages (Murray, 1997). This is in contrast to the nostalgic notion that electronic texts, unlike printed books, will fail to evoke a satisfying physical response from the reader (such as the feel and smell of a book), and will therefore always remain subordinate to print (Rose & Meyer, 1994).

The zeen project also appealed to the students’ desire to learn new things and have new experiences. All of them valued learning how to make a webpage and plan to make more webpages in the future. As Alan shares,

> Well, I feel that it’s helped me be more computer literate in different ways, like on the, um, Internet, I knew how to surf the Net, you know, but I wasn’t as good, and I learned how to make a webpage and find free graphics. It was a good experience, especially for people who like computers.

Crash talks about how working on the zeen project was “a great new experience” and that she thinks that the experience will benefit her in the future:

> Well, I’ve learned how to make a webpage and everything, I mean, just the technology these days is so out there, and just being able to
grasp a little bit of it, you know, is very exciting. And I’m sure that if I
just know that much I can go on and do bigger and better things.

The level of motivation and excitement expressed by the zeen editors
throughout the project was extraordinary. Their reflection logs are peppered
with words like “excited,” “happy,” “psyched,” “cool,” “awesome,” and “fun.”
The editors frequently chose to come in at lunch to work on the project (Cory: “I
ain’t leaving and you can’t make me. Maya, I don’t want to leave!”), constantly
begged to have the whole period, and continually asked if they could keep
working on the project after school, over the summer, and in eighth grade. As
mentioned previously, this is a common finding in the literature on hypermedia
design projects in the intermediate grades (Eagleton, 1999; Finkelman &
McMunn, 1995; Lehrer, Erickson & Connell, 1994; Neal, 1995; Riddle, 1995;
Tierney et al., 1997). When I asked Cory if he still would have wanted to work
on the project if they’d had to work on it every day of the week, he replied, “Oh
yeah! I don’t know why, it’s just really cool. That’s why I came in at lunch like
50 times.” (See Appendix G for an inspiring transcript of an extremely motivated
Cory designing interview questions with Alan during lunch).

One day when the editors were hard at work, two classmates came over
and starting horsing around with my video camera. Alan spotted the intruders
and objected loudly, “Hey!” Then Cory, (formerly the class clown) ordered
firmly, “Hey guys, don’t interrupt us, please.” Another day when Staci was
gone, there was a substitute teacher who turned out the lights and played an
animated movie at top volume--and the zeen editors completely ignored the
movie and continued working in the dark.

Halfway through the semester, the editors showed the partially
completed zeen site to the rest of the class on an LCD projector in order to solicit submissions for the Writing section. The experience of sharing their creation with their peers greatly motivated them; Jean, who had been extremely nervous about talking in front of the class, wrote:

4/8/99 Today we showed the class the E-ZEEN web-site. They all seemed to like it alot. And it made me feel good about making it because everybody loved it. Now I feel even more motivated to do the Issues page!

The tremendous capacity for hypermedia design projects to motivate and engage students has far-reaching implications for learning in the 21st century. These students, who griped about homework in all their other classes, often asked if they could take their spiral notebooks home to “brainstorm ideas” and wanted to borrow disks to “type up a story for the zeen.” Contemplate the following journal entry from Rissa:

1/20/99 I feel very excited, my arms and my legs tingle when I think about it sometimes.

Another way in which the zeen project met the affective needs of the students was the opportunity to be collaborate with their fellow editors. As we have seen, being social is an important priority for this age group, and many teenagers enjoy working and communicating in collaborative groups. All of the zeen editors spoke about this topic and often wrote about it in their journals, as the following entries from Spencer’s log indicate:

1/22/99 I am very happy that we work together well and we are coming up with all kinds of ideas for our E-zine

2/3/99 I like working with my partners.
2/15/99 We are working together well. I think our page will look cool.

3/22/99 I think everyone is working together well and ideas are coming up fast.

Cory stated that he liked being a part of the project because "you get to work with other people and it helps your, like, 'working with others' skills."

Larissalynn, who rarely talks during whole class discussions, felt that being in a small group had a positive impact on her ability to communicate; she observed:

It helped my talking and communicating. I speak up for myself more. It's different with a small group. I knew everybody and they didn't make me feel stupid.

Rissa also appreciated how "we all worked together, and we're not, you know, putting down each other's ideas." In the following videotape transcription, note the level of positive social interaction and collaboration between Cory and Alan (Figure 5.5):

Figure 5.5: Collaboration

Cory: Alan, what do you like better, "Open," "Come in" or "Welcome?"

Alan: Welcome.

Cory: Maya, what do you like better, "Open," "Come in" or "Welcome?"
Maya: You choose.

(Cory takes Alan’s suggestion)

Cory: How do I put it on the People page? All right, now what do I do?

Alan: Click “Open.” Click “OK.”

Cory: Now “OK” again?

Alan: Yeah. Watch this: Enter, enter, enter.

Cory: But we want the “Welcome” at the top. Trust me.

Cory: Maya, should I put “People Page” or “EZEEN People Page” or “People Connections?”

Maya: You should put whatever your team thinks you should put.

Alan: “People Page.”

Cory: How about “People Connection Page?”

Alan: It doesn’t have a ring to it.

(Cory takes Alan’s suggestion again)

Cory: ‘Kay what do I do, dude? This [dialog box] came up.

Alan: You right-clicked on it.

Cory: I didn’t mean to. OK, now we’re getting somewhere.

In contrast to the preceding transcript, collaborating is not always an enjoyable experience. There were occasional power struggles over control of the mouse and infinite compromises that had to be made about what was going to go on the webpage. Cory reflects that the most difficult part of the project was “working with other people” because “you wanna do an idea and they don’t like it, like you really wanna do something, but you really gotta work with them on it.” Jean remarks that:
You had to listen to what your partner said they wanted to do, cause if you wanted to do something different than them, then you would have to compromise. Like if they want a blue background and you want a green background, you can make a blue-green background.

It is important to note that while student collaboration can be time consuming, exasperating for teachers, and frustrating for students, it is still an important socialization process that helps prepare students for the adult world of marriage, community, and the workplace (Finkelman & McMunn, 1995; Lehrer, Erickson & Connell, 1994).

Another important outcome of the zeen project was that the editors felt a sense of personal freedom and responsibility. This is not necessarily unique to hypermedia design and may be more indicative of my constructivist teaching philosophy than anything else; however, I don't want to minimize this compelling finding. As Crash reflects:

Um, it's really like, whatever you wanna do, well, whatever your group wants to do, then you get to do it. And it's not like a teacher says, "Do this, this and this." And it's really, you are the boss of the page, and I like that. You have authority.

Rissa states that the zeen project is:

cool because you get to choose what goes on it and what doesn't. You get to choose what you think people are interested in across the, you know, the United States, and people in Japan and China.

I will return to the topic of empowering students by giving them control over the curriculum in the next chapter. For now, I'll share an excerpt from my own researcher reflection log:
2/17/99 I think the kids are really enjoying the freedom I've given them. The amazing thing is that they are all so intrinsically motivated and completely on task!!!

The final outcome of the zeen project that I will discuss is that it promoted a magnificent feeling of pride. In my experience, adolescents need to feel proud of themselves and to know that others are proud of them and they enjoy feeling productive and having a sense of accomplishment. Both of these affective needs were well-met in the project, particularly because of the public nature of web design (Downes & Fatouros, 1995; Labbo & Kuhn, 1998). Most people do not create webpages to display on their home computers—webpages are inherently destined for a global audience. Cory said that his favorite part of the project was knowing:

That everyone's gonna read what I wrote. And the good feeling knowing that I did something, like, where you go online and you click on it and you go, "Whoa, I helped do that."

Crash states that she wants to make more webpages in the future because:

I like doing something where my name could be on it and where I know it would help people and where other people would appreciate it more than just, "Oh, it's some webzine." Like, cause I know there are some kids out there who wanna know what junior high is like and so they look on there and they're like, "Oh, really? I didn't know that."

And they can go to so many different [websites] that I just wanna know that when they went to our webpage, that they got a little more out of it than just "seventh grade is fun." I just like knowing I did something good for other people who I don't know.
This feeling of pride is echoed in Spencer's recollection of presenting the
website to the whole class,

I was a little nervous but it kind of, it was fun to say things that you
did and share them with them so that if they went on it, they go,
"Oooh, that person made that." So it makes you feel better, so, I think
that kinda helped cause you felt confident in yourself.

To summarize, the process of designing the webzine engaged the
students in generating, collaborating, problem solving, representing and
monitoring. I believe that the zeen project was a positive experience for the
editors because it gave them the opportunity to be active, to learn new things, to
have new experiences, to be interested, to collaborate, to have freedom, and to
graduate from seventh grade filled with a sense of accomplishment and pride. I
was particularly touched when Jean, who is shy and not verbally expressive, sent
me the following unsolicited email message from her home computer:

Subject: (no subject)
Date: Mon, 10 May 1999
From: anon@aol.com
To: maya@earthvision.asu.edu

Maya -
I was on the Internet and I decided to go to the E-ZEEN. I think that it
looks really good and I am proud to be one of the people that made it.
My parents both like it to and my dad goes there at work on his spare
time. They are both really proud of me. I am also glad because I can
show it off to my friends.

THANK YOU FOR GIVING ME THE CHANCE TO MAKE IT!!!
Q4: How Does Hypermedia Literacy Function as a Language Form in the Creation of a Webzine?

I have discussed the process of hypermedia composition (generating, collaborating, problem solving, representing and monitoring) but I have yet to define hypermedia literacy as a language form and to describe the genres and elements of hypermedia. In this section I will attempt to further expose the mystery of hypermedia literacy so that teachers who choose to embark on the exciting, challenging and uncharted voyage of hypermedia composition in the language arts classroom will be fortified with the knowledge of what to expect in this arena and how to assess learning outcomes. The data that were analyzed on this topic primarily come from observation, student interviews and artifacts such as the electronic magazine itself.

Hypermedia as a Language Form

Starting from the previously stated premise that literacy is “the ability to encode or decode meaning in any of the forms of representation used in the culture to convey or express meaning” (Eisner, 1994, p. x), then, in my view, being literate is being able to express oneself in the semiotic medium under discussion and being able to interpret other people’s expressions in that medium. It requires an understanding of the elements of each sign system and flexibly applying these understandings in a variety of situations using a variety of tools and within a variety of genres. For example, when we say that someone is a “great musician,” we mean that s/he has an intuitive understanding of the elements of music, such as tone, pitch, melody, and rhythm and that s/he is able to pick up almost any kind of instrument and apply that innate sense within almost any musical genre, such as classical, rock, reggae, or country. Similarly,
"natural artist" is someone who is instinctively drawn to the elements of color, line, shape, form, texture, and style and is able to apply that intrinsic understanding using many different "tools of the trade" (brushes, pencils, clay, found objects) in a wide variety of genres (painting, sculpture, drawing, collage, book illustrations).

We also might compliment people for being music or art "aficionados" because of their extensive knowledge and ability to appreciate and discern among styles and genres of those forms of representation, even if they are not skilled at composing musical scores or designing art pieces themselves. There are always at least two sides of a meaningful exchange between humans—every language form has both a productive and a receptive aspect. Because we are social creatures, the primary motive for producing an utterance (or song, or sculpture, or treatise) is generally for another human being or group of human beings to receive our expression of meaning. In thinking about this, I find it helpful to imagine a time before oral language in which early humans may have communicated by gesture and sign. Even body language itself has a productive and a receptive component—expressing and interpreting—as do all other language forms that humans have invented.

From my perspective, being fluent in a language form means that one has mastered the elements and genres commonly found in that form of representation. One has control of either the productive, the receptive, or both aspects of the semiotic medium. We say that young children are fluent speakers when they are able to express themselves coherently and make themselves understood in a variety of situations. We say that someone is a fluent reader when s/he can pick up almost any kind of written text and comprehend
something resembling the author’s intended meaning. (Of course, every language form contains genres that elude comprehension, such as medical texts or legal documents; just as there are situations that defy oral fluency such as debates, interviews and first dates). In an effort to contextualize hypermedia as a language form, I have assembled a list (Table 5.1) of sign systems that are relevant to this study:

<table>
<thead>
<tr>
<th>PRODUCTIVE</th>
<th>RECEPTIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>oral literacy</td>
<td>speaking</td>
</tr>
<tr>
<td>print literacy</td>
<td>writing</td>
</tr>
<tr>
<td>visual literacy</td>
<td>designing</td>
</tr>
<tr>
<td>music literacy</td>
<td>composing</td>
</tr>
<tr>
<td>media literacy</td>
<td>producing</td>
</tr>
<tr>
<td>computer literacy</td>
<td>programming</td>
</tr>
<tr>
<td>hypertext literacy</td>
<td>developing</td>
</tr>
<tr>
<td>hypermedia literacy</td>
<td>composing</td>
</tr>
</tbody>
</table>

Table 5.1: Productive and receptive aspects of language forms

From this study I have learned that in order for students to become fluent hypermedia composers, they need to have facility with and be able to orchestrate at least five other forms of representation: (a) oral; (b) print; (c) visual; (d) computer; and (e) hypertext. (Although it was not the case in this study, if students’ hypermedia productions include audio or video elements, then they will also need some fluency with music and media literacy). I will discuss how each of these sign systems was activated and how all were orchestrated in the zeen project before concentrating on the elements and genres that are unique to hypermedia.
**Oral literacy.** All of the zeen editors felt that they utilized their speaking and listening skills as part of the process of working in a collaborative group. Collaborative hypermedia design projects demand that students communicate orally with each other and with the teacher (and, in this project, with the adults they interviewed and the students in their class). Alan said he “listened to what other people would say, and I listened to what they would do, then I’d help. Instead of just do it all myself.” Crash said that she used her listening skills in the project “since I had pretty much no clue how to make a website, I had to listen more to learn how to do everything or else it would’ve just been a mess.” Larissalynn also remarked that “you had to listen to directions cause you don’t want to mess up.” Rissa commented that when the topic is about something interesting, like computers, “I listen more than I usually do.”

Regarding the use of speaking skills, Rissa thought that the project helped her because she spent a lot of time “asking people if they wanted a story on, or interviewing people.” Larissalynn mentioned that she tried to use “proper grammar so people will know what you’re saying” when she communicated with her teammates and with the whole class.

**Print literacy.** The zeen editors also had to use their knowledge of print literacy in the process of designing the webzine. They dreamed up catchy titles, words and phrases to lure readers into their site, wrote concise introductions to each of their departments and sections (“Welcome to the E-ZEEN writing page. Here you will find creative, artistic writing ideas by junior high students!”), and wrote descriptive paragraphs on the Issues and Editors Pages. The editors also developed interview questions, notated interviewees’ responses, and wrote up the interview results on the People and Sports pages. Additionally, they were
expected to write original poetry and fiction pieces for the Writing section of the website and were required to keep daily reflection logs for research purposes (Figure 5.6). These last two items are critical: had they not been required to write fiction pieces or keep journals, the students might not have tapped their extended narrative writing skills very deeply during the zeen project. Educators must keep this factor in mind when deploying hypermedia design projects such as this in the language arts curriculum.

Figure 5.6: Print-based literacy

The students exhibited a remarkable flexibility in moving between many different written language genres; in fact, one of Spencer’s favorite aspects of the project was “writing different kinds of things, and putting everything together.” She felt that the project helped her writing ability because designing webpages demands so much “organization” and felt that this would help her write expository essays in the future, “where the info is all flung out.” Alan stated, “I usually don’t write of my own free will, but when I wrote in my journal it helped me write my thoughts down.” Jean liked seeing “what other people write on the Internet. I know there’s a way to get published without sending it to a publisher, so I might want to write more.” Larissalynn said that the project:

improved [my writing] more, showed that I can write better cause I
usually don’t put effort into it. It was boring before. [The zeen] talked about things I wanted to write about.

The students also utilized their reading skills throughout the project. Alan felt that, although the project didn’t necessarily improve his reading level, (because he’s “already at a high reading level”), it gave him a chance to “read other types of pieces of writing” that he wouldn’t normally encounter because he usually “just stick[s] to one certain kind of writing.” Spencer noted that she got a lot of practice reading because she “had to read different webzines” and “read all these different pages.” Crash reflected that she, too, had to read a lot of different stories. I got to look at my peer’s writing and I think that helped me see how you could make your writing develop in different ways. I got to see a lot of different stories and the way they’re written and it’s a bunch of different people writing different ways, so, I got to experience different writing than just plain writing.

Larissalynn said she “was reading a lot more, reading the text on webpages, reading more carefully instead of just skipping over it.” Rissa thought that her reading improved because she had to read so many incoming submissions for the Writing department. She stated that she had to “read ‘em over fast” because “we couldn’t spend time, you know, two days reading one story and fixing one story, you had to do it quick.”

**Visual literacy.** Hypermedia composition also involves an understanding of visual literacy (designing and viewing). When the students first visited other webzines and evaluated them in terms of appearance, content, and navigation, it was immediately apparent to them that the appearance of a webpage greatly
influences the viewer's initial response to it. The editors universally endeavored to avoid "blank backgrounds, cause that looks kinda dull" (Spencer) and large chunks of text "where people are like reading the screen" (Rissa). While the editors were perusing an online magazine, Cory remarked to Alan, "You just don't wanna read all this stuff, it's boring. See, when we have pictures and stuff, that'll be really cool." Visual elements such as attractive colors and a pleasing layout were of particular import to the students, and they sought to achieve this harmony in their own compositions. Rissa said that she's learned:

the good qualities of writing that should go on pages and what good quality you should see in pages. Not just a blank background but they're colorful and interesting (Figure 5.7).

Figure 5.7: Visual literacy

It is important for language arts educators to be aware of the substantial role that visual literacy plays in hypermedia composition. If these kinds of
projects are brought into the language arts classroom, then visual literacy will need to play a much more significant role in the curriculum.

**Computer literacy.** As we have seen, hypermedia authors must possess some degree of computer literacy (programming and using) in order to be successful and independent in this complex medium. In its colloquial use, the term “computer literate” has come to mean someone who can get around the operating system, use applications, produce digital products, and solve small technical problems that inevitably arise. Fortunately for most of us, software engineers have made our lives easier by developing user-friendly applications that allow us to become multimedia authors without literally having to learn a programming language. In other words, you do not need to be a programmer to be considered computer literate.

I have already discussed how pleased the editors were about improving their computer skills during the project. The editors were proud of themselves for conquering at least a small portion of the beast, as Crash so profoundly stated (quoted earlier),

Well, I’ve learned how to make a webpage and everything, I mean, just the technology these days is so out there, and just being able to grasp a little bit of it, you know, is very exciting. And I’m sure that if I just know that much I can go on and do bigger and better things.

**Hypertext literacy.** In the process of designing the website, the students also had to gain fluency in hypertext literacy (developing and navigating). Hypertext is not a new language form—we have used annotated texts, encyclopedias, and dictionaries for centuries—but it creates a uniquely dynamic literary landscape when applied to an electronic medium. The students in this
study navigated the web easily and did not become disoriented or "lost in
cyberspace," as some educators have predicted. I was also impressed that they
seemed to have no difficulty conceptualizing the hierarchical and associative
relationships (links) between the different sections of their own website. It is
very simple to learn how to create links between webpages in modern web
authoring software, as Cory's journal entry suggests:

3/3/99 Today I learned how to make a background and do a link and
use images

Cory sheepishly confessed that, before the project, he "didn't know much, I
didn't, I didn't even know how to get on the Internet, really." Jean said, "At first
I didn't know how to make a link or get images off the Internet." With respect
to hypertext literacy, Spencer said she learned how to "find graphics, how to put
in a background, [and] make links."

Orchestrating Sign Systems

Not only did the editors need to demonstrate fluency in oral, print, visual,
computer and hypertext language forms but they needed to orchestrate all of
them during the process of creating the webzine. Just as young children need to
orchestrate cueing systems in order to become fluent readers (Clay, 1991; Short,
Kauffman & Kahn, in press), hypermedia composers need to orchestrate sign
systems in order to become hypermedia literate. In the following videotape
transcription (Table 5.2), I have labeled each utterance and action with the
appropriate language form in order to demonstrate the way in which the
students moved flexibly between sign systems as they composed the webzine.
To summarize, hypermedia composition demands fluency, flexibility and orchestration of at least five other forms of representation: oral, print, visual,
computer and hypertext. Depending on the nature of the project, students may also need some familiarity with music and media literacies. However, there are some additional genres and elements that play a particular role in hypermedia that students will need to master in order to be considered hypermedia literate.

**Hypermedia Genres**

The hypermedia genres that were utilized in this project included webzines and hypertext fiction stories. [Other prevalent contemporary hypermedia genres used in educational settings are email, live chats, simulations, and electronic encyclopedias (please revisit Table 1.1)]. I am somewhat cautious about applying the word “genre” to these modern inventions because I think we are still in the process of determining the characteristic style, form and content of each, but I believe that some safe generalizations can be made.

The webzine is an electronic adaptation of its print-based counterpart, the magazine. There are as many different kinds of webzines as there are traditional magazines—sports, beauty, literary, news—but they frequently share features such as captions, short articles by multiple authors, photographs, drawings and advertisements. One of the interesting outcomes of the student-designed zeen project is that the editors didn’t feel obligated to stick to one category, such as student writing, but rather included any topic that they found (and thought that their audience would find) interesting. As Rissa put it, they tried “to make it different from a lot of others, to where it isn’t just the same, to where it stands out.” Crash liked the idea of having an electronic magazine instead of a print-based magazine because:

You have graphics that can move, which is very appealing to me.

And, also, there’s like so much technology in the computer that you
could, in the more technological writing, you could listen to it? Instead of having to read it. And you can make it different colors. I’m sure you could do that on a piece of paper, but it’s just more appealing to the eye on a computer.

When you think of magazines, you think of Teen and like YM and everything, and kids really get into em. I think, having an electronical one is like, absolutely perfect, cause you don’t have to go out to the store, or sign up for it, cause you know, when you sign up there’s so many strings attached and everything? You just go online, click a button and you can read your article and find out what’s on TV and who is like the hottest guy now, or so they say.

In the preceding quotation, Crash identifies some important distinctions between a printed magazine and a webzine: multimedia elements such as animation and sound that can’t be replicated in the print medium. Further, electronic texts can be updated frequently and inexpensively. These features set webzines apart from their predecessors; thus, they can be considered a genre unto themselves.

The other contemporary genre that the students experimented with in the zeen project is hypertext fiction. Toward the end of the semester the editors discovered a school website in San Francisco that included a hypertext story published by a third grader. This relatively linear fiction piece invited the reader to move from page to page by clicking on the last sentence of each chapter, which then became the first sentence of the next chapter.

Several of the zeen editors (Rissa, Spencer, and Alan) were so enchanted by this variation on the familiar narrative genre that they designed their own hypertext stories for the zeen. When I questioned Rissa about her enthusiasm
for creating a hypertext story, she explained that she wanted “to make it like a 
visual kind of story to where you click on buttons to like, go to the next page” 
(recall that one of Rissa’s stated reasons for wanting to be a zeen editor was 
“communicating in different kinds of ways”). Rissa went on to say (quoted 
earlier),

I think a hypertext story, it gets you into, it makes you move around 
more, to where you’re not just sitting there and reading a story and 
getting bored. You’re pushing buttons, I mean, even in [my hypertext 
story], if some of my words were part of a title in a different story, I 
could have that, to where they could go to another story after it and 
stuff (Figure 5.8).

Mary's Sewer Adventure
"A Hypertext Story"

Page 2

"Eww! I just took a shower and it smells down here. I'm going to be late for 
school again, yes! Ugh, what's that squeaking noise? Oh, it's my rubber ducky! 
I've been missing you for years."

"I forgot there are alligators down here. Oh, there's a hole, maybe I can go 
through it and get out of this place. Hey, what's this string?"

Figure 5.8: Hypertext fiction

Rissa had grand visions of all the things she wanted to do with her 
hypertext story, such as incorporating graphics (because “it'll be more exciting 
with pictures”), navigation buttons, external links, and a “cool, swirly
background," but unfortunately there wasn’t enough time for her to carry out her vision. Similarly, Alan and Spencer were too rushed to do much more than separate out the sections of their narratives and insert navigation links for the user to proceed in a linear fashion from one page to the next. However, I do not want to minimize this important discovery. If a feature as seemingly unremarkable as having the reader "click" instead of turning the page while reading their work can be so motivating to students, just imagine the possibilities that lie out there waiting to be discovered in the relatively unexplored dynamic landscape of hypermedia fiction. [For an enlightening discussion on this topic, I encourage the reader to pick up Janet Murray’s (1997) *Hamlet on the holodeck: The future of narrative in cyberspace*. As Crash so poignantly states, "And the hypertext, how you just make it come to life on the computer."

It is regrettable that the students weren’t able to experience (and invent) more hypermedia genres than webzines and hypertext stories during the project, but at least they got their feet wet and all look forward to plunging further into these intriguing modern language genres. Alan and Crash are enrolled in the media arts elective next year as eighth graders and the other five editors (who had scheduling conflicts with other electives) have plans to continue making webpages and working with computers on their own. I, for one, will be keeping my eye out for future productions from these young authors who are poised on the threshold of the modernist and the postmodernist eras of literacy.

**Hypermedia Elements**

There are four media elements, or cueing systems, that were used in the zeen project that play a special role in hypermedia compositions and with which hypermedia authors must have some familiarity in order to be considered
hypermedia literate: (a) text; (b) graphics; (c) photographs; and (d) icons.

Text. Text is obviously not unique to hypermedia design. However, in this semiotic medium text requires brevity and flair. It is considered discourteous when designing a user interface to force the user to engage in interminable scrolling through text because it is unpleasant for most people to read large blocks of print on screen. We have already heard the editors making comments to this effect; namely, that it's "boring to just read text and text and text" (Rissa) and that websites are "boring when you scroll down and all there is is words" (Alan). Therefore, part of being literate in this medium is learning how to write concisely and to the point.

Related to the need for textual brevity is the need for flair. Particularly on the Internet, in which attention spans may be shorter than usual, if the text isn't immediately interesting the audience will quickly leave the site in search of more alluring material. Students with a knack for writing catchy slogans will be more successful in this medium than students with an inclination toward uninspiring verbosity.

Although this feature was not used in the zeen project, I will also mention that in certain hypermedia products, such as CD-ROM games, Java- or Flash-enabled websites and multimedia slide shows, it is also desirable to utilize dynamic text that changes colors, animates across the screen, or appears and disappears from the user's view.

Graphics. Graphic design elements such as backgrounds, images and animations are also not unique to hypermedia compositions, but in this medium it is critical that they be well-chosen, colorful, and theme-driven. It would generally be considered an inappropriate use of this medium to insert random
images, irrelevant animations, clashing colors, and backgrounds that make the text impossible to read or that compete with other visual elements.

All of the editors emphasized the importance of choosing the "right" graphics to communicate their intended meanings and felt frustrated that they didn't always have time to get exactly the effect that they wanted. As Cory explains,

[I wished we could] just take our time, find the right backgrounds, I mean, like perfect ones, not just like, "hurry up and pick one that looks OK." I mean, really take our time and find really good graphics. The editors' vision of "perfect" backgrounds, graphics, or animations are those that are color-coordinated and relate to the theme of the webpage. Rissa advises other hopeful webzine authors to "choose wisely on your colors," while Cory suggests using "colors that work good with other colors" and colors that will show up when you type them on the background. While the editors generally preferred bold colors and complex backgrounds, I found it interesting that Alan and Jean intentionally choose sedate colors for the Issues page because of the serious nature of the topic (Russian orphans). The kids routinely collected graphics for themselves and for each other if they found an image that they thought would go well with their theme. (Spencer: "A spinning earth! For the People page;" Crash: "Here's an animated book. Do you guys want this for the Writing page?").

The editors also made sure that every student who submitted work to the E-ZEEN Writing section was given an acceptance letter with a tear-off order form in which they could select their own background color, two text colors (regular text and link text), and pertinent clip art. Larissalynn put a lot of energy
into finding a "swirly blue and green background" and custom graphics (butterflies, musical notes and hearts) for her own poems in the Writing section (Figure 5.9).

Photography. The zeen editors also made use of photography to communicate their intended meanings. Rissa incorporated artsy digital camera shots of student authors at work in the Writing section, and Cory and Larissalynn included digital portraits of all of the zeen editors on the Editors page. One of the most powerful uses of photography on the zeen is found in the Issues section, in which Jean and Alan strategically inserted five disturbing images of Russian orphans in order to persuade their audience to take political action. Realistic photography should not be underestimated as a means for conveying a direct and potent message to one's audience (Figure 5.10).
Icons. The final media element that I will highlight that played a role in the creation of the webzine is icons. Icons, like the other media elements discussed thus far, are not unique to hypermedia, but in this medium they take on new significance. Icons are a convenient method for visually communicating a commonly agreed-upon cultural meaning in a small amount of space and are ubiquitous in the world of computers and the Internet.

Since it was impossible for the editors to find pre-made navigation icons to use on their webzine, they drew their own navigation buttons and scanned them in for the Main page (Figure 5.11), the People page, and the Sports page. Spencer, Crash and Jean each drew two of the six icons that were used for the main navigation buttons (note that they chose to represent the editors section of the webzine with a modern computer laptop and the writing section with an antiquated quill and paper).
The editors wanted more than just “squares with words on them” (Rissa) for their navigation buttons. I think that this extra effort personalized the site and gave them a sense of ownership and control; I also believe that the process of envisioning and designing icons is a valuable cultural literacy activity and demonstrates the power of semiotic transmediation.

**Semiotic Transmediation**

I have suggested that the process of becoming hypermedia literate is a complex activity that includes understanding genres and elements that are specific to hypermedia while at the same time orchestrating several other language forms. Orchestration not only requires fluency and flexibility with each form of representation, but also involves inventing bridges between different sign systems, or transmediating (Harste, 1994; Short, 1989; Siegel, 1995) from one system of representation to another. In this study, I observed the zeen editors transmediating between sign systems, particularly while engaged in the generative and representative aspects of the composition process.

The following videotape transcript of an early planning session (on paper)
for the Inner Self page illustrates the way in which the students struggled to find a way to represent their ideas using a variety of sign systems. The dialogue picks up just after Crash, Spencer and Rissa decided on a “watery blue” background and a key icon to symbolize their concept of Inner Self (Figure 5.12):

![E-ZEEN Inner Self](image)

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Spencer: Our background is really cool! Unlock the key to the heart.
Crash: Do you want to have moon and earth for horoscopes? Do you want to write horoscopes fancy or—Oh, we’ll just worry about that later.
Crash: When they touch this world, that’s when they go to horoscopes. When they want to go to questions, they click on the question mark.
Rissa: Oh, that would be really cool.
(They begin discussing icons for Personal Problems).
Spencer: We could make a “P”, like this.
Crash: What do you think of as personal? A diamond?
Spencer: And then put a “D” on it.
(They all try to draw a diamond locket).
Spencer: Pamper Yourself. What is pamper yourself?
Rissa: How to take care of yourself, like tips and stuff.
Crash: You know those fluffy pad things, those huge ones?
(They all wonder how to draw it, but give up after a few attempts.
Crash modifies her “Pamper Yourself” icon to a woman’s compact,
which is easier to represent visually).
Rissa: Now let’s pick one page to draw out.

According to semiotic theorists such as Siegel (1995), “instructional
experiences requiring transmediation... may foster the development of a wide
range of cognitive, aesthetic, and psychomotor skills which remain untapped in
most traditional classrooms” (p. 12). The zeen editors were involved in
transmediating between oral, print and visual sign systems during the
generative phase of the web design process. Later, when they carried out their
vision on the computer, they had to bring hypertext and computer literacies into
play as they endeavored to represent their ideas using these additional rhetorical
forms. They had to select the most effective ways to communicate within the
hypermedia environment by drawing upon cueing systems such as text,
graphics, photography and icons. In the traditional language arts classroom, in
which language is elevated above all other sign systems (Kinzer, Gabella &
Rieth, 1994; Siegel, 1995; Short, Kauffman & Kahn, in press; Wilhelm, 1995),
students don’t often have an opportunity to experiment with alternate forms of
representation, much less to devise ways to transmediate between them.

Summary

The process of creating the webzine activated five cognitive processes:
generating; collaborating; problem solving; representing; and monitoring. In
reflecting on why the zeen project was such an overwhelmingly positive experience for the zeen editors, I found that it met their need to be active, be interested, be social, have new experiences, feel productive, feel independent and have an authentic audience for their work. Collaborative hypermedia composition combated their universal distaste for being bored, being lonely and being controlled by others.

I also found that hypermedia literacy requires the ability to orchestrate and transmediate among oral, print, visual, computer and hypertext literacies. While creating the online magazine, the editors gained familiarity with webzine and hypertext fiction genres while also advancing their knowledge of the particular roles that elements such as text, graphics, photography and icons play in the hypermedia environment.

In the next chapter I will turn my attention to issues having to do with the impact of the zeen project on the language arts curriculum and the potential roles of the computer in the classroom. Finally, I will summarize all of these findings in Chapter Seven.
CHAPTER VI
CURRICULUM AND LITERACY IN THE POSTMODERN ERA

In this chapter I will address the ways in which the zeen project impacted Staci Markham's seventh grade language arts curriculum in the hopes that this discussion will prove useful to other educators who wish to incorporate hypermedia design projects into their curricula. I will also explain the participants' views on the role of computers in the schools, suggesting that these views can have a significant impact on the efficacy of hypermedia-based learning.

Q5: How Did the Project Impact the Curriculum?

In order to assess the ways in which the zeen project impacted the regular curriculum, I will share my analysis of the data derived from observation and teacher interviews. I will start this section with a brief profile on Staci and will then share her perspective on the ways in which the the zeen project fit (and did not fit) into her language arts curriculum, revealing my own outlook on this issue as a teacher and a researcher.

Staci: "It's shifting, it's constantly shifting"

Staci is a vivacious, politically liberal, 36-year old woman with five years of experience teaching junior high language arts. She has short blonde hair and wears bohemian attire topped with old-fashioned rhinestone glasses. She is a feminist, a vocal animal rights activist and a strict vegetarian. Staci has never been married, but at the time of the study was dating a comedian from San
Francisco whom she admired for his “wit and facility with words.”

Prior to earning her secondary teaching certificate, Staci had worked as a teacher’s aide in a gifted preschool, as a teacher’s aide for special education, and as a volunteer in a gang prevention program for teenagers. She has an undergraduate degree in creative writing, loves reading and writing, and contends that “reading and writing are the most essential things you need in the world” and that “language is the single most powerful thing on the face of the planet.”

Staci describes herself as “always in transition.” She has, in fact, changed the spelling of her first name three times and even inverted her first and last names halfway through the semester, insisting that the students call her “Miss Stacey” instead of “Miss Markham.” She also changed all of the furniture and wall decor around in her classroom six times during the second semester of the school year. She feels that her students probably view her as “caring and supportive,” and “more of a friend than a teacher.” She also says that some students think she’s “strict and moody” but that overall she is well-liked by her students. Staci thinks that her colleagues probably view her as:

An individualist. They would say that I’m a rebel, and individualist, that on the one hand I’m a team player, but more often than not I’m off in my own little world doing my own little thing. I also think that my colleagues would describe me as a risk-taker, and a wave-maker (laughs).

Although Staci never intended to teach junior high (she always envisioned teaching high school age students because they are more “capable and mature”), she has discovered that she likes this age group because:
They’re nerdy, dorky, geeky kids. They’re just in the middle. They really are in the middle, they can be a pain in the butt, but they also need you so much, you know. You can still mold them, they’re still excited about social issues, you know, they’re very compassionate, they’re motivate-able, you know, you can motivate them.

Aside from her regular teaching duties, which consist of one planning period and three 90 minute blocks of seventh grade “Language and Literature” classes per day (a total of 105 students—approximately 35 students per period), Staci runs an all-girl rock climbing club and sits on the district language arts curriculum redesign committee. Due to a variety of reasons, some of which I will describe below, she did not participate in as many school activities this year as usual, and, in fact, left the profession at the end of the school year for “a breather.” She “loves being a teacher” and plans to return to the field (possibly to high school instead of junior high) after “taking a break and coming back fresh.”

A prevalent theme in my conversations with Staci is her frustration with classroom management and large class sizes. She reflects that managing student behavior is where “your energy gets zapped,” and that “kids just want so much from teachers, so much, so much, so much.” She also shared that:

It’s a great job, but it wears on you. And there are shortcuts you can take, and there’s things you can do to make it easier but I’m also a person of very high integrity and when I start to take shortcuts, I’m like, “I don’t like this.” But if I don’t take them, then I don’t have a life.

If I had 60 kids, or 80 kids, it would make a huge difference. Staci estimates that she spends “30 to 40 percent of my time each day on
classroom management” and that this “makes it really difficult to get things you wanna get done, cause of the discipline and lack of motivation.”

Staci feels that the best way to manage this age group, “since seventh graders are not known to be responsible anyway,” is to provide them with a lot of structure. She believes that “they work really well with routines,” so she tries to organize her language arts period into discrete segments: 20 minutes of silent reading when they enter; 10 minutes of “I & I” (information and inquiry, in which she gives them information on a current global social issue such as the “mistreatment of Russian orphans” and they ask her questions about it); a 15 or 30 minute “mini-lesson” on a topic such as “the five methods of characterization,” “the three parts of exposition,” or “the three appeals of a persuasive letter;” and then 30 to 45 minutes (after the lunch break) of quiet time in which the students complete individual assignments. The majority of her instruction is based on a whole class transmission model.

There was one notable week during the semester when Staci returned from a teachers’ workshop and was excited about having the students “respond to literature through art.” She arranged the desks into groups of four and had the students work in teams to draw the characters’ personalities from “The Outsiders.” When this activity was complete, she intended to “keep ‘em in groups the rest of the year, as long as I can stand it,” but eventually moved the desks back into rows, sheepishly admitting, “but I like it this way.” Other small group and dyadic exchanges I observed during the second semester were students’ trading papers to “correct” them and students’ asking classmates to read rough drafts of fiction stories and provide feedback.

In contrast to Staci’s free-spirit-alternative persona, she runs a very tight
ship in her classroom because she feels that this is the best way for students to learn. She insists on absolute silence in the room and holds the whole class responsible if someone chooses to talk (“Voice level warning number 1 . . . Voice level warning number 2 . . . Voice level warning number 3. Everyone owes me 60 seconds after the bell rings”). She gives “points” to the whole class for quiet transitions between activities and keeps a tally on the board in which her three classes compete against each other for trips to Dairy Queen and miniature golf. Because she implements the same lesson plans for all three of her classes, she endeavors to keep all the classes “caught up” with each other. This proved to be a significant challenge for integrating the zeen project, which was specific to her third period class.

Another frustration that Staci (along with many other contemporary educators) faces is that she feels that every year the students are getting worse in terms of motivation and academic ability. She said that this year’s students were “not real motivated on their own” and that she sees:

\[
\text{kids coming up that just don’t read. And they really need to be turned on to reading. You have to find what really turns them on. It’s hard, it’s very challenging. And it’s stressful and it’s tiring, which is why I think I’d like to go away for a couple years.}
\]

Staci also felt that her current crop of students were not very strong writers and that “the things that I’ve done in the past just haven’t worked with these kids.” This perceived deficiency in students’ writing ability was particularly frustrating for Staci because she says she “is much stronger in the area of writing that I am in reading anyway. We don’t read as much as we write in my classes.” Aside from providing 20 minutes of silent reading, Staci does not teach reading,
though she does occasionally conduct whole class novel units. The reader may recall from Alan’s profile that the students complete computerized comprehension tests in the library on preselected books from the Accelerated Reader software program in order to receive their grade for reading.

Because of her impression that the students are getting worse and also because the district has thrown out the old state assessment standards and has not yet implemented the new ones, (this timely gap in state-mandated curriculum is extremely relevant to the story), Staci’s goals for her language arts students shifted last year. In January, she explained,

I’m shifting as I teach, I’m shifting from more emotive to more organizational writing. I’m seeing that, the kids that I’m getting year after year are not- um, not as skilled, and that’s kinda scary. Cause this group is a really scary group in terms of literacy, in terms of skills, in terms of their place in the world. You know, like, oh my god! Where did they come from? And is this a trend? Or is this a phase? And I hope it’s a phase.

This year I just think I wanna give them more of a foundation of knowledge so they have more to grasp, to reach into, when they write, you know. Cause I feel like they’re so blank, just so full of Baywatch and Nintendo 64 playstation. You know, and there’s no vocabulary there, there’s no, they don’t know who, I don’t know, let’s see, what don’t they know? They don’t know “Curiosity Killed the Cat.” They don’t understand that. So, anyway, so it’s shifting, it’s constantly shifting.

Even though Staci’s primary goal has always been to provide a “safe place
for [students] to be and express themselves, "to have students "write clearly and cohesively" and to have them "write from within," she abandoned writing workshop just before the onset of the zeen project because she felt like "I'm trying to get them to write a novel when they don't even know how to write a sentence" and because the "writing workshop hasn't really worked very well with these kids, they DO NOT know how to budget their time." (As mentioned previously, Staci did reinstitute the writing workshop later in the semester for her poetry unit). She felt that she could do more "diagnostic teaching" if students completed shorter assignments instead of "10 page, or 30 page, short stories, you know, full of mistakes? There's enough mistakes that will be made in two or three paragraphs!" To combat this, Staci taught grammar, which she had never felt the need to teach directly before, stating that "this group needs concrete info and the higher level stuff is too hard for them."

In addition to grammar, Staci stated in January that she planned to teach "sentence structure, paragraph structure, organization of the paragraph, and how paragraphs have transitional sentences." In general, her goals shifted from a previous focus on the process of writing to a more intense focus on written language conventions. By February she had removed a poster from her bulletin board that outlined the seven steps in the writing process: 1) prewriting; 2) rough draft; 3) share; 4) revise; 5) edit; 6) teacher feedback; and 7) final copy.

Staci also placed a strong emphasis on cultural literacy this year so that she could "give them a knowledge base" and so that the students would leave her class "appear[ing] to be smart and well-rounded people." Additionally, she wanted them "to know idioms, and lots of figurative language" so that they would "see that words are fun and exciting."
Changing her goals for her language arts students was painful for Staci; as she reflects:

Well, you know, I love planning things. This year I haven’t loved it because, like I said, the things that I’ve done in the past just haven’t worked with these kids. Um, you know, you really, as a teacher, you wanna get to the higher levels of application and synthesis and stuff, cause that’s evaluation, that’s where it’s exciting, but these kids are not really ready for that, so I had to start from way- It took me a long time to figure that out. I felt like I was in a little hamster wheel, you know, just horrible.

With these new goals in mind, I asked Staci, “How do you go about putting your curriculum together? How do you decide what the students will do in class every day?” Here is her partial response (remainder below):

How do I decide? I think this is the first year we really hadda look at the kids and decide what they need, because the other kids all, they all fell into this, this group, they were able to do certain skills and the ASAPs [Arizona State Assessment Program] fit them well, the old curriculum fit them well. This curriculum does not fit this group of kids well.

I learned through many discussions with Staci that, in her mind, the words “curriculum” and “state assessment” are nearly synonymous terms. She explained that she’s on the district curriculum redesign team “so that we can match up with the new state curriculum. So we can prepare the kids for the AIMS [Arizona Instrument for Measure of Success] test.”

Staci shared with me that she likes the “new curriculum that’s coming up
from the state" because the new statewide assessment consists of an essay writing test with a scoring rubric that rates students on six traits: organization, word choice, content and ideas, conventions, voice, and fluency. However, she was glad that "we're not being forced to do the AIMS stuff yet" because "we're not ready, we're not there yet." Here is the rest of her response to my question about how she decides what to teach:

Um, but how do you decide, I guess, it's funny, cause I've always had the state decide for me and this year I don't have to do that, and I have like all this freedom, so I had to, I had to look and see, what? What do these kids need? You know, what do they need? And what can I get away with not doing that the eighth grade teachers are gonna expect me to do, and still have them be prepared? That's what I spent the break thinking about, and just agonizing over!

It is clear from this brief profile of Staci Markham as a seventh grade language arts teacher that she cares deeply about her students and that she wants to do what's best for them, but that she feels somewhat lost without having her curriculum mandated by the state. Like many traditional classrooms, her curriculum is teacher-centered, highly structured, statewide assessment-driven, and, as she bemoaned, "my lessons just have not been exciting, and I haven't had a lot of time on task, because I've just been trying to get through to them." She also feels that she "[doesn't] really have kids that will take off and do real creative stuff." Staci hopes that if she takes some time off teaching she can put together a new kind of curriculum that will be more meaningful to her and her students:

This is like a shock this year, it's a huge shock. I mean like, everything
that I did before doesn’t work. So I kinda wanna take a break, and that’s how I do things anyway. Like tons of stuff will come at me and I’ll sort through it and do what I think is the best thing to do. But then there’s all these other things you lay by the wayside. So I think if I took a couple years off I could create like this really great curriculum for language arts that would make it (sigh) really valuable for them, and not so stressful on me.

**Positive Outcomes**

Now that the reader has some sense of who Staci Markham is as a teacher and the challenges she faced at the particular point in time that the study took place, I will share the ways in which the zeen project impacted her curriculum. Staci valued the zeen project because it motivated the zeen editors, because it made them collaborate, and because it made them more computer literate. She also appreciated the webzine project because it provided an exciting venue for all of her students to publish their work and felt that it inspired them to edit their writing more carefully. However, beyond these factors, the zeen project made relatively little impact on her curriculum. I will investigate the reasons for this, suggesting that hypermedia design projects cannot be successfully integrated into the language arts curriculum unless the school district and/or the classroom teacher makes (or has already made) a significant paradigm shift from transmission-based learning to project-based learning (Erickson, 1997; Garner & Gillingham, 1998; Lehrer, Erickson & Connell, 1994; Peterson & Facemyer, 1996).

In a final interview, Staci expressed that she thought the zeen project was “an awesome project and I hope someone picks it up next year.” She noticed a “huge amount of excitement and pride, inspiration and motivation” in the zeen
editors and felt that all seven of them "really, really liked what they were doing."

Staci believed that the zeen project was "really good for them [the editors]" because they learned "responsibility and camaraderie." She thought that (as quoted earlier) "it was cool to see them collaborate" (Figure 6.1) and felt that the small group environment helped students like Cory learn how to "work well with other people."

Figure 6.1: Working in a small group

Staci also valued the zeen project because the editors "learned an awful lot about computer technology." She maintains that "it's really necessary" and "ultra-important" for today's students to feel comfortable with computers and to "know the lingo." At the end of the year she concluded that:

Overall I think it was a great project and I'd like to see it expand and be, you know, somehow integrated. I'd like to see language arts teachers be trained in this technology. Yeah. More than any other teacher.

Staci also liked the impact that the webzine had on the rest of her students. One of her top priorities for her language arts students has always been to write for an authentic audience. She believes that when students "have a real audience, they work hard. It has meaning to them. So that's really
valuable." In an interview nearly a year before the study took place, Staci envisioned that having a webzine would inspire students to put more effort into their writing because:

they’re not gonna write crappy stuff to go on a website that the entire world can look at. You know, they’re gonna make darn good and sure that their graphics are nice and their, all their words are spelled correctly and they have an indentation where it needs to be and a colon where it needs to be. And they’re gonna, they’re gonna go through the process of writing it rough draft, roughing it first, you know, putting it through the writing process to make sure that before we stick it on the computer it’s perfect.

Staci was pleased to discover that her prediction was correct. At the end of the project she observed that “the majority of [this year’s] students, maybe 98%” of them, “were really excited about perfecting their pieces to get them on the Web” and that they “watched their conventions, put more effort into it, made it more interesting and more creative” because they knew “it’s gonna be watched, looked at by a world-wide audience.” Staci remarked that the zeen project “reinforced my belief that if you have something that’s going to really be published, they’re gonna spend more time with it.”

The following videotape transcription illustrates the high level of concern for written language conventions that Alan and Jean maintained when they were composing an introductory paragraph for their Issues webpage (concerning the Russian orphans):

Alan: What’s going on this page?
Jean: We’re gonna put the format of the letter for people. We’re gonna put a video clip that we like right here. We’re gonna put
people’s letters right here, and we’re gonna have links here.
Alan: Do we need to get the links first?
Jean: We need a little icon they can click on to get to the letters.
Alan: Yeah, an icon.
Jean: How do you spell “officials?”
Alan: O-F-F-I-C-I-A-L-S.
Jean: How do you spell “O’Donald?”
Larissalynn: “O”, and then that apostrophe thing, then “D-O-N-D.” I need a pen.
Alan: That’s Donald, as in Donald Duck. I don’t know, I don’t watch that show. Maya, how do you spell Rosie O’Donald?
Maya: It’s actually “O’DonnELL,” not “O’Donald.”
Jean: How do you spell “Oprah?”
Alan: O-P-R-A-H.
Jean: How do you spell Winfrey?
Alan: We have another spelling question. How do you spell publicity?
Maya: What do you have so far? That’s great!
(Alan and Jean trade seats. Alan reads what Jean wrote out loud, checking it for flow. He starts typing in some more text).
Maya: That looks like a good start, keep saving it.
Jean: We’re gonna have the letter forms and a clip from the video here. How do you make a table?

In sum, Staci felt extremely positive about the zeen project. However, she also noted that, “as far as integrating it, it was really hard.” During the project Staci became aware that the zeen editors were “just not interested in what we’re doing in class anymore” and that they seemed “resentful that they have to come back into class.” I noticed this phenomenon as well, and have spent a great deal of time ruminating on the causes for this stark contrast between the students’ experience as zeen editors and their experience in the regular classroom. I believe that there is one overarching reason why Staci, as she puts it, “had a
difficult time incorporating it” into her curriculum: there was a paradigmatic conflict between the traditional conception of curriculum and the constructivist zeen project.

**Barriers to Technology Integration**

One limitation of this study is that there were two “cooks in the soup” (by the same token, this was also one of its strengths). Although collegial collaboration is a powerful model for curricular change, in this case I think it also caused some tension for the students. A pertinent analogy is the “weekend father syndrome,” in which children prefer to spend time with the parent whom they see the least and whom doesn’t suffer the daily responsibility of packing school lunches, cleaning the house, and handling school discipline problems. Because I was only present for two hours every other day and because I had the luxury of concentrating all of my attention on seven students (rather than Staci’s 105), the editors basked in the individualized attention they received and were reticent to return to their humdrum role as ordinary students. All of the editors said that designing the zeen took “a lot of effort and hard work” (Alan) and that being involved in the project made them feel “proud” (Jean), “special” (Rissa), and “important” (Larissalynn); therefore, it is not surprising that they preferred this elite status. Cory, in particular, had a difficult time traversing between the two environments. He was notably depressed during regular classtime and downright cheerful when it came time to work on the zeen project, which created an ongoing power struggle between Staci and him.

However, I think there is more to the story. Because the zeen project was facilitated by me rather than by Staci, the project was birthed according to my doctrine of education rather than by hers. Since I was not accountable to the
state, the district, or the school as a regular classroom teacher, I did not feel pressured to adhere to a traditional, transmission-based model of instruction; nor did I feel as personally responsible for students' scores on standardized tests or for their preparation for eighth grade, as did Staci. I was also relieved of the chore of grading the editors' work on the zeen project because of my ethical position that the students' grades should not be affected by my research project.

As stated earlier, hypermedia design projects seem to necessitate constructivist models of learning, as does all project based-learning (Erickson, 1997; Garner & Gillingham, 1998; Lehrer, Erickson & Connell, 1994; Peterson & Facemyer, 1996). This became especially obvious during the second phase of the project when the zeen project was housed in a separate room and the students had the freedom to talk and move freely about the room. The zeen project took on a life of its own that made it essentially incompatible with a more traditional teaching philosophy.

I do not mean to imply that one theory of education is superior to another; however, I do intend to suggest that the zeen project would have been more successfully integrated had there not been a paradigmatic mismatch between it and the standard curriculum. Specifically, there are three core beliefs that Staci would have had to discard in order for the zeen project to have come back "under her wing" in the third phase of the project: (a) that everyone should be doing the same thing at the same time; (b) that classrooms should be quiet and under teacher control; and (c) that teachers need more technical knowledge than their students have in order to effectively incorporate technology in the curriculum.

\textit{Everyone should be doing the same thing at the same time.} It is
important to Staci that all her students have the same opportunities and that they engage in the same activities at the same time. With regard to what advice she would give to other schools that wanted to start a webzine, Staci offered this recommendation:

It depends on their staffing, but I think that I would tell them that the ultimate thing would be that they have a room full of computers, that they have a small group of kids, I would say no larger than 20. That they would have to have guidelines, you know, already written down, that each of those students are going to be submitting a certain amount of work, um, that they’re gonna work together, that they’re gonna do the writing process together as a group.

I think would have to be taken care of up front, and would have to be somehow supported by the school district or the school itself. I think that would be awesome to have it as a class, um, I don’t know how you would do that, with the class sizes that we have. You know, that’s the problem. Unless everybody had a computer and everybody’s doing the same thing at the same time, making different parts of the web, on the page, learning how to set it up, you know, all together at one time, it would have to be, you’d have to start it out as a computer class. Um, and then again, is a webzine big enough for 36 kids to work on each hour? You know, that would be a concern.

I included the preceding quotation in full because it illustrates Staci’s belief in the value of whole class instruction. This belief presents a conflict for her in terms of how to incorporate hypermedia composition into her classroom when her students may only have access to one computer, or three at best. She spoke
frequently of her “pipe dream that every language arts class has 36 computers in it, that the kids are stationed there,” though she also cautioned against a “science fiction-type life [in which] we send kids to a cubicle to sit at a computer all day.” The most effective way that I have seen classroom teachers combat the problem of limited resources such as computers is for students to work in groups and to take turns. However, this necessitates relinquishing the idea that “everyone has to do the same thing at the same time” for some portion of the day.

*Classrooms should be quiet and under teacher control.* Another of Staci’s beliefs that conflicted with the nature of the zeen project is the notion that students learn best when the room is quiet and under teacher control. All children need a varying degree of structure from the adults in their lives, and there are certainly times when overt adult control is desirable (particularly when dealing with large numbers of adolescents in one small space like a classroom); however, as we have seen, there are also times when this age group needs to be able to socialize and to have some degree of personal freedom in order to feel fulfilled. Since I have yet to see a language arts classroom with 36 computers in it, we can safely assume that any hypermedia design project that occurs is going to happen in a collaborative group. This means that students will inevitably need to talk to one another, and the classroom teacher must feel comfortable with letting go of silence in the room.

Noise was an area of constant strain between the zeen editors, myself and Staci, which was one reason why we relocated the project. Having another teacher and another activity going on inside her classroom was very difficult for Staci. It caused her to realize how much she values a quiet classroom and how much control she likes to have over the course of events. In her exit interview,
she shared:

I feel very good about the zeen project. I’m thankful that you were here. Um, there were rough spots though, and I realize as a teacher how much control I like to have in my classroom, how quiet I like it to be, and how difficult it is for me, like when you guys were in there the other day and they were working? The kids, it wasn’t any problem for them! You know, you guys were over there working and I was all tense, and then I looked around and thought, “Well, they’re not being bothered. And they’re the ones who are working, so calm down, it’s okay.” So, you know, it really helps me to see that and that’s one of the reasons why I want to get outta teaching, is cause of that control issue. And I don’t like how controlling I’ve become (laughs).

In my experience, elementary and junior high students are so accustomed to being controlled by parents and teachers that they sometimes feel a bit lost without that structure (just as Staci felt lost without outside forces’ telling her what to teach). When I first started working with the zeen editors, they kept asking me what I thought they should do and I kept having to remind them that they were now in control of their own learning. This was an unfamiliar feeling for some of them, as the following dialogue demonstrates (emphasis mine):

Alan: Miss, uh?
Maya: You can call me Maya.
Cory: Miss Maya!
Maya to Alan: What was your question?
Alan: I forgot. Oh yeah, when do we get to start to make the main page?
Maya: Well, since I’m not in charge of driving this process, you guys tell me. Is that something you guys want to do sooner rather than later, or later rather than sooner?
Alan: *Is candy allowed in here?*
Maya: *Yeah.*
Alan to Cory/Spencer: *Do you want to do the main page sooner rather than later?*
(Alan passes out candy while negotiating with his teammates)
Alan: *So I think we want to do it sooner.*
Maya: *OK.*
Alan: *When do we get to use the computers?*
Maya: *You tell me, what do you need to do?*
(Cory grabs Alan's spiral notebook)
Cory: *Gimme that. We need to start interviewing people!*
Maya: *What do you need to do to get organized?*
Cory: *We need to figure out some questions. I think we need to do interviews.*
Cory to Maya: *Do you want me to do this during the period, today, whenever?*
Maya: *Whenever you guys decide to do it.*
Cory: *I can go ask teachers when is a good time.*

Eventually the students became accustomed to having more control over the curriculum when they worked with me. They learned to travel between the dominant educational paradigm in the regular classroom and that of the zeen project, just as all children do when confronted with different adults' expectations for their behavior. To illustrate, something intriguing happened one day when the zeen editors were working on the project in our empty classroom. Staci came in and asked if I would have them complete a short assignment ("write down ten characteristics of good writing"). When I told the students that they needed to do a quick class assignment, they immediately assembled their desks into rows. They could just as easily have completed the assignment in the relaxed configuration they had adopted for the project, but it was as if implicit
rules sanctioning the completion of regular class assignments demanded that level of physical structure.

*Teachers need more technical knowledge than their students.* The third belief system that created a barrier for Staci’s genuine desire to integrate technology into her language arts curriculum is that she feels that she should have more technical knowledge than her students have in order to effectively “show the kids how to use the computers.” She feels embarrassed that her technical knowledge is insufficient to do so, stating that her new home computer “does like 6,000 things and I can do two things on it.” She was reticent to take over the facilitation of the zeen project from me because she feels intimidated by computers. Staci says she “would like to be computer literate” because she feels that she “could be a lot more effective using it and I could help the kids better” because “the more I learn, of course, the more they’re gonna learn.” It is germane to note that one of her stated reasons for enjoying being a teacher is “to impart knowledge to students.”

While I wholeheartedly believe that teachers who wish to utilize computers into their classrooms need to have a minimum level of technical expertise in order to feel confident (as discussed earlier), it may not be possible for everyone to keep ahead of today’s teenagers. When it comes to modern technology, policy makers, administrators and teachers have to be willing to give up their esteemed role as “dispensers of knowledge” and allow students to take charge of the learning process (Garner & Gillingham, 1998; Peterson & Facemyer, 1996).

In sum, although Staci saw many positive outcomes of the zeen project for her students, the project fell short of our expectations for curricular
integration for reasons that neither of us completely understood at the time. At the time that she reinstituted the writing workshop and we brought the zeen project back into her classroom, she felt optimistic about integrating the project but uncertain how it would play out, given her views on curriculum (emphasis mine):

So I'm glad that we pulled them out, but I'm looking forward to integrating it now. We'll see, and then we can better gauge if that would've been better in the beginning anyway. But I don't know how we would've done that when I had curriculum to teach. Unless we could've gotten everybody to do something, but we don't have the computers for it, you know. So you can look at integrating computers and language arts, and that would be fabulous. I mean, I really think the whole language arts curriculum should be computer based, webzine based, web based.

Based on my findings, I believe that hypermedia design projects cannot be fully integrated into the language arts curriculum unless the school district and/or the classroom teacher makes (or has already made) a paradigmatic shift from delivery-based curricula to inquiry-based curricula. This is partly due to the collaborative nature of most student hypermedia projects (Dickson, 1985; Downes & Fatouros, 1995), partly due to the fact that no one can know everything there is to know about computers (Kinzer & Leu, 1997), and partly due to the process of hypermedia composition itself, which requires students to generate ideas, collaborate with each other, problem solve, figure out how to represent their ideas in multiple sign systems and monitor their own learning objectives.
Q6: What Roles can Computers Play in the Classroom?

In the previous section I suggested that the potential for successful integration of hypermedia-based projects into the curriculum is strongly influenced by the school districts’ and the teachers’ operating belief systems. I have also found that it is related to the teachers’ and the students’ perceptions of the role of computers (and perhaps even the parents’ perceptions, though this was beyond the scope of the study). By analyzing whole class surveys, editor interviews and observations, I have discovered that the way in which computers are utilized in the classroom depends on the teachers’ and the students’ implicit and explicit goals. My analysis of the data revealed eight roles that the computer can play in the language arts classroom (below). It is important for educators to understand how each of these roles can function to support curricular objectives and to plan technology-based activities with one or more of these goals in mind.

(1) Recreation: Playing on the Electronic Jungle Gym
(2) Production: Doing What We’ve Always Done
(3) Education: Learning in a Multimedia Environment
(4) Information: Searching for Modern-Day Gold
(5) Exploration: Seeing What’s Out There
(6) Communication: Tying up the Phone Lines
(7) Experimentation: Taming the Beast
(8) Construction: Creating Your Own Terrain

Recreation: Playing on the Electronic Jungle Gym

It is obvious that one of the major appeals of the computer for children is that they experience it as fun. Computer games, video games, and Nintendo
have become national pastimes for the modern American teenager (Downes & Fatouros, 1995). When I surveyed Staci’s class, almost all of them indicated that kids like computers because “they’re fun” and “you can play games on them.” One student wrote that the computer is “similar to TV, but [it] does more.” All of the zeen editors mentioned playing games as one of the most common things they’ve done on computers.

Recreation is usually not a teacher’s top priority. Beyond kindergarten, recreational activities are generally reserved for the times that students are not in class. Therefore, computers will not be beneficial to the curriculum if the students view the computer as an electronic jungle gym. In the zeen project, it was clear to all of the editors that the purpose of using the computer was not to play around; however, they still felt like they were having fun. Although their primary goal was to work hard to finish the website, having fun along the way was a pleasant outcome.

Similarly (as mentioned in Chapter One), the computer will not serve the objectives of the curriculum if the teacher unwittingly exudes an attitude that the computer is a place to play when all the real work of learning is complete. This attitude was reflected in the final phase of the zeen project when we reentered Staci’s classroom and I attempted to turn over the responsibility for facilitating the project to Staci. Upon reentry into the regular classroom, the editors were not able to work on the zeen until they had their regular assignments complete—which prompted several of them to “throw together” (according to Staci) their assignments in their haste to get back to work on the zeen—and on some days they never worked on the zeen all, depending on Staci’s instructional objectives for the day. Because Staci viewed the zeen project as supplementary rather than
integral to her curriculum, it was understandably de-prioritized.

The editors were extremely upset about this new development and protested vociferously to both Staci and myself for the remainder of the school year. This mutual frustration prompted Staci to say to the editors one day,

This doesn’t fly with me, guys. It’s all fine and dandy that you’re over here having a great time and you’re putting together a great webzine. But some of you are neglecting your duties in class.

Production: Doing What We’ve Always Done

The perception of the computer as a fancy word processor was prevalent in my research. Nearly all of Staci’s third period students indicated on their surveys that computers can be useful in language arts class because “you can type up a story.” They also reported that the computer helps them “do homework” because you can “write neater,” “write faster,” and use spell check, grammar check and punctuation features. This powerful aspect of computer technology appeals to students who seek to be relieved of the tedium of handwriting (and especially recopying) long papers for school. An episode that I recorded in my fieldnotes during the observation phase of the study highlights the value students place on using the computer for production purposes:

11/6/98 Several students return to class who had gone to the library to type final copies of their stories. They wail to Staci that the “computers are down!” Staci tells them they will have to hand write their final drafts, which prompts two of the boys to slap their rough drafts on the table with melodramatic sighs of frustration. But they don’t give up— they ask her if they can go to another pod to type their stories. Staci lets them go once they have assured her that they are
ready to type their final copies.

Staci's personal experience with the computer is primarily in its role as a production tool, stating that she "never compose[s] on paper anymore" because on a computer "it doesn't take as long" and "it's spurred me on to do revision." She goes on to say:

One thing that the kids absolutely hate to do—but thank you for later—is all the revisions that you make them do. But they hate it. And, you know, if you had it on disk, I could talk to a kid about it, and they would be less reluctant to go in and make a change. I'd get better work, I just know I would.

We have seen that Staci envisions a language arts classroom in which every student has a computer for composing, editing, and printing written work. In an early interview, she remarked that she's found that "kids who have computers at home are more able to do more creative things, like put graphics in, or have a title page with borders." She also added:

Plus I just think the kids would be more motivated if we taught 'em Powerpoint and we taught 'em how to make really cool covers, um, there's that whole thing about presentation, you know, their presentations.

Several of Staci's students also mentioned the benefits of adding presentation features such as "pictures" and "cover pages" to stories. However, keep in mind that the final product of this envisionment is still a print-based document, albeit with graphic "decorations."

The perceived role of the computer as an efficient word processor for "doing what we've always done" had a significant influence on the zeen project,
particularly during the third phase when the project reentered Staci's classroom. At that time, her students were involved in a poetry unit and were rushing to get their poems typed and turned in on time. Some of them also wanted to get their poems on the webzine, and knew that their work might not be accepted at that late date without its being submitted on disk. There was a sudden interest in using the zeen project computers to "type up" poems, and I had to restrain students from diverting the computers to this end.

This role of the computer—as an efficient tool for producing written text—was the least appealing component of the project to the zeen editors (evidenced by their fairly universal lack of interest in working on the Writing section of the zeen) because they felt that it simply recreated an aspect of education that they'd already experienced. The Writing section of the website includes fiction, poetry, non-fiction and book reviews, but the latter two are devoid of entries. However, it still gave them a great deal of satisfaction when they finally got some student work published on the site; as Rissa penned in her reflection log:

3/16/99 I'm so happy we finally got 1 story on the page!

4/22/99 We have gotten backgrounds for almost all stories except 2 and we keep getting more and more stories.

*Education: Learning in a Multimedia Environment*

Another potential role of the computer noted by the seventh graders in this study is that it can be "educational." They suggested that people can "learn things" from computers by using educational software and by visiting educational websites (recall that one of the affective needs of this age group is to "learn new things"). Spencer told me that she uses a lot of educational software at home, particularly a pre-algebra game that she works on to prepare for "tests
and things." Alan, who wants to "go really far in math," visits math websites that "help you learn stuff about math." Prior to the project, Rissa was involved in an online "homework club" in which students write in and ask for homework advice. She explains,

I like computers a lot. I think they're a fun way to learn. When my computer was working, there was a thing, it was called, um, "A Hungry Ear," and it was a teachers' spot and you would talk to teachers and they would help you with your homework. And I would go in there a lot and I would help kids with their homework and I was part of that club and stuff.

Rissa also said that learning in a multimedia environment is exciting to her because "you can learn some things in different ways."

The notion of the computer as an environment within which to learn was apparent in the way the students constructed the Issues page. The Issues page includes information on Russian orphanages, photos of Russian orphans, letters to government officials and the media, email addresses and links, and even a form for people to use if they want to write persuasive letters on the topic.

It is also important to note that the perception of the computer as a valid educational tool was critical to the success of the project because all of the participants—the students, Staci, me, parents and administrators—were invested in the belief that the project would have a positive educational outcome.

**Information: Searching for Modern-Day Gold**

A relatively new envisionment for the use of technology in the schools is for students to locate—and provide—information. People are fond of referring to our times as the "Information Age;" information has, in fact, become a
commodity as valuable as gold once was.

Staci wished that she had a phone line in her classroom so that her students could get online and have "information right there at their fingertips on the super-info-highway or whatever it's called." She emoted,

I see the kids being connected to the universe, you know, like, really connected, like they know resources. You, know, it's like you need to really hook in to what's out there, and I just really want them to know that there are resources.

She also realized the power of students' publishing their own information on the web for other people to read and hoped that her students:

- could find out stuff about important issues, and they could put it on the website for other kids to know. You know, if you’re upset about animal testing or, you know, whatever, there's some things that you can do. And then they can share information and the world can be a better place!

The students also spoke about this role of computers in their lives. On their surveys, about a fourth of the students mentioned that they like computers (and think computers are useful in language arts) because computers are a "good source of info" and are helpful for "doing research projects" and "downloading stuff." Electronic encyclopedias and the Internet are powerful ways for students to search for interesting information (in keeping with their affective need to be interested). Larissalynn says she spends a lot of time using online and offline encyclopedias to "look up stuff" about topics of interest to her. Spencer told me that she visits the NASA website frequently, along with whale and other marine mammal websites. She hopes that keeping a close eye on
those websites will help her career, that she will find out how to “move up to get into that one spot, that position that I want to go to” in the future. Spencer also used the Internet to help her grandmother plan an Alaskan cruise. Jean visits sports websites in order to:

see what the scores are and sometimes like if the game’s not on TV I go to the site that gives up to the minute or whatever information about what’s happening in the game. Or I do a lot of research.

Rissa said that when her home computer was working, she used the Internet for research as well:

I do a lot of research and just like I used to go to Teen magazine, teen webzines, webzines and stuff like we’re doing. I used to go and read stuff, read my horoscopes and do a lot of research. I learned a lot about my favorite animal, tigers, doing that.

One way in which this particular role of computers came into play in the zeen project was that the editors had to search the Web for free graphics and animations. The task of locating relevant information quickly on the Internet is a daunting one for all of us—but the students were persistent in their efforts and improved as the project matured. Due to time constraints, the editors did not have opportunities conduct web searches for other information of interest to them during the project.

There was only one occasion in which the students accidentally stumbled onto an inappropriate website: Cory, Alan and Spencer were collecting animations from a free clip art site when they suddenly found themselves staring at a miniature animation of a naked woman wiggling her fanny. Cory and Alan, were, of course, riveted to the screen, while Spencer made obligatory comments
like, "That’s gross!" I quickly intervened and redirected their search efforts to another website. Even though the school deploys software that prevents students from visiting known inappropriate sites, there are always a few that get through the filters. Some schools may prefer to purchase a clip art CD-ROM for these kinds of projects instead of having students hunt for graphics online—but this intervention denies them the opportunity to practice their web searching skills.

Another way in which this aspect of computer technology—as a resource for information—had an impact on the zeen project is that the students created the Sports section with that concept specifically in mind. Crash and Jean constructed interview questions that are designed to inform the reader about coaches’ and top players’ advice on being successful athletes. Furthermore, although they were unable to finish the Top Ten Basketball Teams section, they planned to provide information to the reader about current sports statistics and predictions.

It was disappointing to me that none of the students were able to assemble inquiry-based research projects for the non-fiction section of the webzine. Rissa had intended to do an endangered animal project, Spencer wanted to do a marine mammal site, and Jean had expressed interest in publishing some research she had done on Abraham Lincoln, but there wasn’t enough time. This is extremely unfortunate, given the strength of hypermedia in the expository realm (Kamil & Lane, 1998).

Exploration: Seeing What’s Out There

I would like to make an important distinction between searching for information on the Internet and surfing the Internet. In my mind, searching the
Internet involves using keywords, key phrases and other techniques for locating specific information, while surfing is simply exploring the Internet to see what's out there without necessarily having a specific target in mind (consider the students' need to have new experiences). The students in this study mentioned several reasons why they like to surf the Web, including "seeing what's happening" and "getting ideas."

There is not one major corporation in America that doesn't have a website. There is not one major motion picture that doesn't have a website. And there is not one major movie star who doesn't have umpteen websites. As quoted earlier, today's students view computers and the Internet as an "our generation kind of thing." They feel like they are missing out on what's happening in the world if they don't have access to television, movies and the Internet. It's hard not to feel like you're out of the loop when every commercial on TV ends with, "Come visit us at www.com!" The message is, "If you're not part of it, you're really out of it" (note that children and senior citizens are the fastest growing populations of Internet users—of course, they have less mobility and more free time than the general population). Metaphorically, the Internet represents a meeting place for everyone who's anyone and a place to find anything that's worth finding. This analogy may even become literal as virtual reality technologies become more prevalent.

Role playing games (MUDs) have become a popular activity for the modern teen, especially boys (Murray, 1997). These role-playing games have the capacity to become extremely addictive to users, I suspect because the cyberworlds that are created seem so realistic, providing a "safe" venue to experiment with alternate identities, solve problems, practice gaming skills, act
out aggression, compete with unknown opponents and make allies. It would behoove teachers and parents to be aware of the content of these games in order to monitor the level of simulated violence their children are experiencing. I'm sure there is no one among us who doesn't fear the negative influence of violent gaming on today's students.

Exploration is an activity that can take place offline as well. Some kids just like to cruise around the operating system of a computer to see why things work the way they do (I have grouped this under the eighth category: Experimentation). Some computer programs like CD-ROM games and simulations are specifically designed to provide a colorful and stimulating terrain for the user to explore. When the computer puzzle game "Myst" was introduced, it was considered revolutionary because there were no instructions for how to "play." The user simply explored the highly realistic three-dimensional landscape in search of clues.

For students like Crash, computers and the Internet are perceived as places to explore and find things that are interesting. She says,

I explore. I press new buttons, nothing bad's ever happened, so [I] don't worry about that. You know, just like say, 'Hey, what's this?' 'Chitch' [sound effect], click on it, don't download anything, unless I'm allowed. So I just surf it, I mean, look into things that interest me.

In reflecting on who she thinks is going to be visiting their webzine, Crash goes on to say,

the curious people like me, who just like surf the Net and click on buttons and once they click on it? They find something interesting, they go back like everyday and they might get more into it and stuff.
Basically anyone.

One way in which exploration played a role in the zeen project was that the editors surfed other webzines and school websites in order to "get ideas" for their own. However, their exploration was not completely random or free; they were required to focus on webzines and school websites and not go astray. This is how the students discovered the hypertext fiction piece which had been published by the private K-8 school in San Francisco.

The other way in which exploration was relevant to the zeen project is that the students envisioned their own "Inner Self" department as a place for the reader to "explore your inner self," "find out more about you," "look up your horoscope," and "get tips and tricks for making yourself feel good." It is unfortunate that this department had to be abandoned, as it was an area of high interest to the editors and to their perceived audience.

**Communication: Tying up the Phone Lines**

For any parent who fantasized a day in which your teenagers would no longer be tying up the phone lines interminably talking to friends on the telephone, the news just got worse. Today's teens seem to view the modern computer as an even more appealing communication apparatus than the telephone! And until the majority of home phone lines are replaced with technology that can accommodate simultaneous usage of telephones and modems, the busy signal is only going to get more insistent.

Approximately one-third of the students I surveyed indicated that they like computers because "you can talk to your friends," "talk to your relatives faraway," "go to chat rooms," and "meet new people." Cory, for whom being social is a high priority, says,
I like to chat a lot. I have lots of friends on the Internet. I have like so many, I have so many friends. Every time I get online I can't even try to do, try to do my homework without someone trying to bug me.

All of the zeen editors view the computer as a communicative tool. As mentioned earlier, even Alan, who claims to hate writing and has difficulty keyboarding, says that he enjoys sending and receiving email and "going to chat rooms and talking in it." He says that he prefers email over letters because "you don't have to buy a stamp and an envelope. You just push a little button."

Larissalynn also stated that she likes to "email my friends and chat with other people." On a more educational note, Rissa said that she thought computers could be useful in language arts because "you can send your stories to a penpal and put in a picture."

Staci also mentioned the penpal—or keypal—idea. In an early interview, she envisioned her students "hook[ing] up with another group of people, like in Australia or something. They could have penpals." The possibility for students to communicate with an authentic audience through keypal projects or by publishing their work online is one of the more powerful uses of computers in the language arts classroom (Eagleton, 1999; Garner & Gillingham, 1998; Leu & Leu, 1997). Figure 6.2 (below) illustrates the way in which the zeen editors speak directly to their audience:
Another way that educators have harnessed the power of the computer as a communicative device is to participate in online curriculum projects, such as the Monarch Watch, in which schoolchildren track the migration patterns of the monarch butterfly and publish the results online (Leu & Leu, 1997). Younger children can participate in the Monster Exchange Project, in which students draw a picture of a monster and then communicate it in writing to another child or class. The recipient tries to draw the monster from the verbal description. Then both sides post their images at the site so they can compare their artwork (Leu & Leu, 1997). There are thousands of websites such as these that educators can utilize in their quest to encourage authentic communication using technology in the classroom.

This view of the computer as a method of communication had a significant impact on the Zeen project because, as already stated, the students were extremely motivated by their acute sense of audience. They felt that the purpose of creating the Zeen was to express themselves to a global audience and to create a webzine that people would want to visit. This is especially evident in
the People section of the site. In this section, the editors invite the reader to "Make a new friend on the other side of the world" and "Write us a question on any topic. We will find the answer your question and send the answer back to you." Unfortunately, due to time constraints, the webpage was not available to the public early enough in the project for the students to have many visitors, and this section of the site did not receive much activity.

*Experimentation: Taming the Beast*

Another reason that many students are attracted to computers is because they enjoy experimenting with "clicking things and seeing what happens." They also derive a great deal of satisfaction through solving their own problems and feeling as if they've mastered a difficult task (I call this "taming the beast").

Taking into account how important it is to this age group to feel in control, I find the following student survey responses extremely insightful.

[Kids like computers because]:

They do what you want them to do.
You can do almost anything you want.
It gives them the freedom to do what they want.
They have control over something and it does what they tell it to do.

This factor alone may account for much of the appeal of computers on our youth. Aside from being perceived as fun, interesting, educational and informative, and in addition to enabling students to create professional-looking documents and to communicate with others, computers provide students with a venue for feeling a longed-for sense of personal agency and control.

Not only can we learn *from* computers and learn *with* computers, the zeen project was also seen as a way to learn *about* computers. Larissalynn, who
attended computer camp for three years in a row, said that she felt that one of
the purposes of the zeen project was for the kids to "learn how to use
computers." As stated previously, all of the editors valued becoming more
computer literate during the project.

Construction: Creating Your Own Terrain

As is apparent from my theoretical orientation, "construction" is the role
of the modern computer that I am most interested in investigating for its
potential to enhance student learning and literacy in the language arts classroom.
The only comments that were made by participants prior to the study that
indicate any awareness of this potent arena is that, according to the students,
some kids like computers because they allow you to "see your work on the
screen" and "you can make stuff" like cards, banners and "crazy stuff" in
programs like PrintShop and KidPix.

One of the things I noticed when the zeen project reentered the regular
classroom was that the editors' focus seemed to downshift from "construction"
to "production," which more closely matched Staci's experience with computers.
This is the time frame in which the decision was made that the Inner Self
department had to be dropped so that those three students--Rissa, Crash and
Spencer--could put all their energy into producing the Writing section of the site
that Rissa and Larissalynn had been working on during the first half of the
semester (an extremely unsavory development for Crash, but she was a good
sport about it). As I've mentioned, this was also the same time that everyone,
including the editors, suddenly wanted to use the project computers for typing
up poems.

Nevertheless, at the end of the study, all of the zeen editors felt proud of
their creation and were motivated to design more websites in the future. They also felt strongly about including an “About the Editors” section of the website so people could see who they were and find out more about them (they chose pseudonyms plus photos over real names with no photos).

In reflecting on the source of this intense pride and on the students’ continued interest in constructing their own hypermedia terrain for others to explore, I have concluded that the reason why the role of the computer as a constructivist tool holds such a strong appeal for seventh graders is because the process of hypermedia design by definition encompasses all the other roles previously listed. The editors experienced the process of creating the webzine as: (a) recreational; (b) productive; (c) educational; (d) informative; (e) explorative; (f) communicative; (g) experimental; and (h) constructive. To put it another way, constructing their own website met the seventh graders’ affective needs to: (a) have fun; (b) be productive; (c) learn new things; (d) be interested; (e) have new experiences; (f) be social; (g) have control; and (h) be active agents in their own learning process:

recreation       =       having fun
production       =       being productive
education        =       learning new things
information      =       being interested
exploration      =       having new experiences
communication    =       being social
experimentation  =       having control
construction     =       being active

In sum, the way in which computers are utilized in the classroom depends on the teachers’ and the students’ implicit and explicit goals. Hypermedia design projects will not meet our educational goals if students or their teachers view the
computer solely as a recreational device, a fancy word processor for producing written text, a landscape to explore aimlessly, or as a tool for chit-chatting with friends. One reason why the zeen editors found hypermedia composition so meaningful is that the zeen project, governed by a constructivist philosophy, included all eight of these powerful roles in their most appropriate iterations for an educational setting.

I would like to reiterate at this point that hypermedia design projects cannot be fully integrated in the language arts classroom unless school districts’ and/or teachers’ belief systems shift toward inquiry-based models of learning. While constructivist-based education does not require the use of computers in order to meet the affective needs of our students, hypermedia design does require the application of a constructivist philosophy of education (Erickson, 1997; Garner & Gillingham, 1998; Lehrer, Erickson & Connell, 1994; Peterson & Facemeyer, 1996).

Summary

This chapter addressed the ways in which the zeen project impacted the seventh grade language arts curriculum and the participant’s perceptions of the roles of computers in the classroom.

Staci valued the zeen project because it motivated the zeen editors, because it made them collaborate, and because it made them more computer literate. She also appreciated the webzine project because it provided an exciting venue for all of her students to publish their work. However, the zeen project made relatively little impact on her curriculum because there was a paradigmatic mismatch between the hypermedia composition project and the regular
curriculum. In order for hypermedia design projects to be gracefully integrated into the curriculum, it is suggested that policy makers, administrators and teachers must shift away from transmission-based models of instruction to constructivist models that invite students to take charge of the learning process.

The way in which computers are utilized in the classroom also depends on the teachers' and the students' implicit and explicit goals. It appears that there are at least eight roles that the computer can play in the classroom: (a) recreation; (b) production; (c) education; (d) information; (e) exploration; (f) communication; (g) experimentation; and (h) construction. One reason why the ZEN editors found hypermedia composition so meaningful is that the ZEN project, governed by a constructivist philosophy, included all eight of these powerful roles in their most desirable variations for an educational setting.

In the next chapter I will synthesize all of the findings presented in chapters four, five and six in an effort to answer the most imperative question that plagues researchers: "So what?" What can we conclude from this research study? What were some of the limitations of the study that should be noted? What are the implications of this study for literacy and learning on the eve of the 21st century? What further research is needed in order to guide us through the uncharted waters of hypermedia technology in the language arts curriculum?
CHAPTER VII
SO WHAT?

In an effort to address the "so what?" of this study, I will first summarize the research findings described in the previous three chapters. I will then identify which of these findings confirm existing theory and research and which are new contributions to the emerging field of technology and literacy. Following a discussion of the limitations of this study, I will share some implications for pedagogy and directions for future research.

Summary of Findings

The purpose of this study was to describe what happened when a group of 12- and 13-year olds were given the opportunity to compose with hypermedia in their language arts class. I sought to understand the meanings those students, their language arts teacher, and the rest of their class ascribed to the creation and publication of a student-run electronic magazine. In the process of exploring what those meanings were, I identified the kinds of things that these seventh graders value, what the webzine project meant to the student editors, what processes are involved in the creation of a webzine, how hypermedia literacy functions as a language form, how the hypermedia design project impacted the language arts curriculum, and the roles that computers can play in the classroom.

Through interviews, participant observation and artifact analysis, I determined that this group of contemporary seventh graders value family and friends, sports, popular media, computers, humor, food, and talking about the
opposite sex. I also discovered some critical affective needs shared by these students that may not be shared as keenly by other age groups; specifically, these seventh graders seek to avoid boredom through being active, learning new things, having new experiences, being interested, and being productive. They seek to avoid feeling lonely by being social and expressing themselves. Finally, they seek to avoid feeling controlled by being given responsibility and personal freedom.

I learned that while the student participants harbor a wide variety of views on school, teachers, language arts and literacy, they share similar views on the purposes for engaging in reading, writing, listening and speaking. In general, they feel that the purpose of reading is to get away from one's problems, to experience new worlds, to learn new things and to be entertained. The purpose of writing is almost universally seen as a means to express one's feelings, either to the paper itself or to an authentic audience. Listening is viewed as essential for getting to know other people, understanding other people's problems, and gaining information. Speaking is considered a way to express oneself, to share one's problems and to ask questions to get information.

In order to more deeply understand what the process of hypermedia composition meant to the zeen editors, I conducted four in-depth case studies of Cory, Crash, Alan and Rissa. Although each of these four students has different strengths and weaknesses, interests and personalities, they derived some common meanings from the project. For Cory, the zeen project gave him the opportunity to be active, to be social, to be interested and to have an audience for his work. Crash found the project to be appealing because it gave her the chance to be active, to be interested, to have new experiences and to have
freedom and independence. Alan enjoyed being a zeen editor because he could work on computers, be interested, be social and have an audience for his work. Finally, for Rissa, the creation of the webzine was meaningful because it fulfilled her need to be given responsibility, to be social and to express herself to a global audience.

For all of the zeen editors, creating the webzine activated five cognitive processes: generating; collaborating; problem solving; representing; and monitoring. In reflecting on why the zeen project was such an overwhelmingly positive experience for the zeen editors, I found that it met their need to be active, be interested, be social, have new experiences, feel productive, feel independent and have an authentic audience for their work. Collaborative hypermedia composition combated their universal distaste for being bored, being lonely and being controlled by others.

I found that hypermedia literacy requires the ability to orchestrate and transmediate among oral, print, visual, computer and hypertext literacies. In this study, the zeen editors gained an understanding of the role that elements such as text, graphics, photography and icons play in the hypermedia environment. Hypermedia composition also demands the flexible use of these media elements, or cueing systems, within a variety of genres, such as webzines and hypertext stories. Depending on the project, students may also need some fluency with media and music literacies in order to be comfortable communicating within the semiotic medium of hypermedia.

After a thorough analysis of the impact of the zeen project on the seventh grade language arts curriculum I found that, although there were many positive outcomes of the project from Staci's point of view, the project fell short of our
expectations for curricular integration. I believe that this is because there was a fundamental mismatch between the dominant pedagogical paradigm and my own. In addition to outside pressures from the state and the school district, there were at least three core beliefs that prevented Staci from fully incorporating the project into her curriculum; namely, her view that: (a) everyone should be doing the same thing at the same time; (b) students learn best when the room is quiet and under teacher control; and (c) the classroom teacher needs to have more technical knowledge than the students have in order to effectively integrate technology into the curriculum. I concluded from this analysis that hypermedia design projects cannot be fully integrated into the language arts curriculum unless the school district and/or the teacher makes (or has already made) a paradigmatic shift from delivery-based curricula to project-based curricula.

Finally, successful integration of hypermedia-based projects into the curriculum is also related to the students’ and the teacher’s perceptions of the role of computers in the classroom. I identified eight roles that the computer can play in students’ lives: (a) recreation; (b) production; (c) education; (d) information; (e) exploration; (f) communication; (g) experimentation; and (h) construction. Hypermedia design projects will not achieve our educational goals if students or their teachers view the computer solely as a recreational device, a fancy word processor for producing written text, a landscape to explore aimlessly, or as a device for chatting with friends. One reason why the editors found hypermedia composition so meaningful is that the zeen project, governed by a constructivist philosophy, included all eight of these powerful roles.

While some of the positive outcomes described in this study are not necessarily specific to hypermedia composition and may be achieved through
the use of many kinds of inquiry-based collaborative projects, the use of the computer in a constructivist environment greatly intensified the students' excitement and interest in the project by providing them with an engaging, dynamic, multi-symbolic medium with which to express themselves.

**Confirmation of Prior Theory and Research**

There are four ways in which this study supports existing theory and research on literacy and technology: (a) hypermedia as "revolution;" (b) the synergistic relationship between hypermedia design and constructivism; (c) the pedagogical benefits of hypermedia design; and (d) the pedagogical challenges of hypermedia design.

Based on the results of this study, I am in agreement with educators who place the invention of electronic discourse within the historical context of four major revolutions in the "palpable shape of text, the nature of the reader, and in the center of learning" (Purves, 1998, p. 235). The first came with the use of alphabetic print and the papyrus roll, the second came with the medieval codex and the illustrated manuscript, the third was the invention of the printing press and inexpensive paper, and the fourth was in the development of computer technology. As Reinking (1998) states, "It is becoming obvious that electronic texts represent a substantively new technology that does not readily mesh with the assumptions that have arisen from the technology of print" (p. xvii).

After two years of closely observing junior high students' composing with hypermedia, I believe that hypermedia technology is indeed a new semiotic medium that is unique in its ability to combine so many diverse symbol systems into one dynamic, interactive environment. It is currently in the process of
developing its own distinct elements, forms and genres that borrow from, expand upon, and diverge from more mature forms of representation such as oral, print and visual literacies. When students compose with hypermedia, they are engaged in a complex process of generating, collaborating, problem solving, representing and monitoring that calls upon different sets of skills and strategies than those that are employed in other expressive language processes such as speaking, writing, composing with music, producing films or programming computers; therefore, I believe that hypermedia technology represents an alternate sign system.

I also have come to agree with theoreticians and researchers who believe that hypermedia design and constructivist models of education are synergistically related (El-Hindi, 1998; Erickson, 1997; Garner & Gillingham, 1998; Lehrer, Erickson & Connell, 1994; Peterson & Facemyer, 1996). Based on my analysis of the impact of the zeen project on the seventh grade curriculum, I believe that transmission models of education are incompatible with collaborative hypermedia design projects, which, by nature, require teachers to step out of their traditional roles as transmitters of knowledge and shift toward constructivist paradigms. Hypermedia design projects “decentralize the traditional role of the teacher and distribute instruction, evaluation and knowledge across the classroom community” (Erickson, 1997, p. 6). It is not possible for teachers to know everything there is to know about computers (Kinzer & Leu, 1997), nearly impossible to control the transitory information that students encounter in their travels on the Internet (Garner & Gillingham, 1998), and undesirable for educators to interfere with authentic student inquiry when implementing hypermedia design projects in the classroom (Nicaise & Crane,
Another way in which this study joins the existing chorus in research on technology and literacy is that familiar pedagogical benefits of hypermedia design emerged from the data. This study replicated earlier findings (Eagleton, 1999; Finkelman & McMunn, 1995; Lehrer, Erickson & Connell, 1994; Neal, 1995; Riddle, 1995; Tierney et al., 1997) that hypermedia composition projects in the intermediate grades can promote student empowerment, motivation, and collaboration. In all of these studies, students consistently reported feeling excited about the prospect of expressing themselves with multiple literacies in a unique semiotic medium; further, for those projects that involved publication on the Internet, students demonstrated an unusually keen awareness of an authentic audience for their work.

This study also confirmed earlier research findings regarding the pedagogical challenges of hypermedia design projects in the public schools (Eagleton, 1999; Erickson, 1997; Finkelman & McMunn, 1995; Lehrer, Erickson & Connell, 1994). It is crucial for educators, administrators and policy-makers at all levels to take into account the serious challenges of updating equipment, providing technical training for teachers and students, and, most critically, structuring time. As Erickson (1997) notes, “These types of student-design environments that attempt to build communities of learners require more time and more depth than traditional curriculum” (p. 16).

**New Contributions to the Field**

Based on my review of the literature, I have determined that there are at least four important contributions to the field that this study makes in addition to
those already mentioned. First, it unravels the mystery of the seemingly universal appeal of hypermedia composition; second, it describes the process of creating a student-designed webzine; third, it outlines eight roles that computers can play in the classroom; and finally, it defines hypermedia literacy as a language form within the context of literacy education.

This study provides some important understandings regarding the nearly universal appeal of hypermedia technology for children: specifically, hypermedia composition gave the seventh graders the opportunity to be active, to have new experiences, to learn new things, to be interested, to collaborate, and to have personal freedom. It also gave them a strong sense of accomplishment, pride and audience. If literacy educators were cognizant of these potential outcomes of hypermedia design, they might be willing to invest the time and effort into implementing these kinds of projects.

Another important contribution that this study makes is to identify the processes involved in hypermedia composition: generating; collaborating; problem solving; representing; and monitoring. An understanding of these processes is critical for educators as we strive to create assessment rubrics in order to measure student growth in this new culturally-valued form of representation. In this study, the students spent a great deal of time generating ideas and negotiating their ideas with their peers. They also had to engage in a great deal of problem solving, particularly of the technical variety. The editors had to learn how to represent their ideas in a variety of sign systems and were continually monitoring their own progress toward clear and well-defined goals.

An additional contribution that this study makes is that it clearly describes and provides examples of eight potential roles of the computer in the language
arts classroom: recreation, production, education, information, exploration, communication, experimentation, and construction. Hypermedia technology will not meet our educational goals if students or their teachers superficially relate to the computer in only one or two of its many areas of potentiality. In order for hypermedia technology to be successfully implemented into the language arts curriculum, it is essential for teachers and administrators to be aware of the functions that computers can fulfill so they can plan their technology-based activities selectively and purposefully and so that they don’t unintentionally promote a limited, trivial or negative view of computers. The computer is too powerful a tool to be relegated as a place to play when the “real” work of learning is complete (Leu et al., 1998) or to be used solely as an elaborate typewriter. Digital resources are too valuable to be overlooked in favor of outdated textbooks, static encyclopedias, or stale lectures (Erickson, 1997) and the potential for telecommunications technologies to “break down classroom walls” is certainly worth exploring further (Downes & Fatouros, 1995). A well-crafted combination of each of these roles of the computer may herald an exciting transformation in the way curriculum is envisioned.

The final way in which this study contributes new knowledge to the field of literacy instruction is that it defines hypermedia literacy as a language form within the context of literacy education. The model set forth in this book should prove useful in understanding the kinds of cognitive and affective outcomes we can expect in this arena. The results of this study indicate that becoming hypermedia literate is a complex mission that draws upon students’ ability to orchestrate and transmediate among oral literacies, print literacies, visual literacies, computer literacies and hypertext literacies. For the zeen editors, it
required an understanding of the elements of each language form, including the special functions that text, graphics, photographs and icons serve in the hypermedia environment. Becoming hypermedia literate also involves being able to apply these understandings in a variety of situations and within a variety of genres.

Some of the hypermedia genres that were listed in this book that might lend themselves to supporting educational goals include depictive genres such as problem solving games, hypertext fiction, and virtual reality; expositive genres such as webzines, simulations and electronic encyclopedias; and communicative genres such as email, live chats and teleconferencing. Providing educators with a more complete picture of what hypermedia, in its current embryonic state, has to offer in the educational setting should prove useful as we write technology plans, devise budgets, and implement technology-based activities in educational settings.

**Limitations of This Study**

This ethnographic research project has several limitations that may prevent some of its findings from generalizing to other students, other schools and other situations: (a) the timeline; (b) the students; (c) the classroom teacher; (d) the researcher; (e) the project; and (f) the instructional model.

The zeen project took place during one semester and would have benefited from extending over the course of an entire school year. Four months may be considered by some researchers to be somewhat short for qualitative research, and this short timeframe may have negatively affected the results of the study. For example, some of the findings may be the result of a novelty
effect that would have faded over time.

The seven editors who volunteered for the project were selected based on criteria such as their interest in the project and their ability to take the initiative for completing class assignments, which may render them less representative of the total school population. It could be argued that the level of excitement and task orientation that they displayed was primarily related to the fact that they love computers and are already intrinsically motivated learners. However, I am not suggesting that everyone should have to use computers in language arts classes, just that (whenever feasible) teachers provide invitations for students who are interested.

Some of the findings regarding the integration of hypermedia design projects into the curriculum may have been adversely affected by the fact that the classroom teacher was experiencing “teacher burnout” and was planning to take a break from the profession. It is possible that the same themes would not have emerged with another teacher in another setting who intended to continue teaching, even if that teacher shared a similar teacher-centered philosophy of education.

Another limitation of the study is that I was not the regular classroom teacher and was therefore not responsible for the rest of the language arts students, which allowed me a great deal of freedom to focus on the specific needs of the seven zeen editors. Their affective needs for physical activity, socializing, freedom and independence may not have been as well-met in the context of a larger group, even if I were their regular teacher. I was also not obligated to conform to district expectations regarding curriculum, standardized testing, or grades.
The results from this study on a student-run electronic magazine might not be generalizable to all kinds of hypermedia design projects in the classroom, although many parallels were drawn. For example, the sense of an authentic, global audience that the student participants experienced would not be the same in a hypermedia design project (such as with KidPix or Hyperstudio) that was intended to be viewed by a local audience of peers, teachers or parents.

Finally, there were confounding effects from the instructional model (collaborative, constructivist, inquiry-based) that cannot be rightfully be attributed to the instructional medium (hypermedia). Leu, in press, notes that this is a common problem with research in hypermedia design; therefore, I have attempted to highlight the synergistic relationship between hypermedia composition and constructivism at several points along the way.

Due to these limitations, and as a result of further questions that may be raised as a result of this study, I encourage the reader to assimilate the information that seems relevant to your current situation and to put aside the rest as a compelling tale that is unique to the fledgling culture of the E-ZEEN project.

Implications for Pedagogy

In my view, the findings in this study present a compelling case for offering hypermedia composition as an invitation for interested students in other language arts settings; however, I do not want to overgeneralize the results from this ethnography nor dismiss the challenges associated with such an undertaking. Educators must ask some difficult questions: Is there enough time in the day? Will other valuable literacy activities be overlooked? Do students
have access to reliable, up-to-date equipment? Can students work effectively in collaborative groups? Do teachers have the technical training and support they need in order to feel competent? And so on. I believe that the safest course of action at this time is continue vigorous research in this area while we cheerfully embrace the benefits of hypermedia design already established by the teachers and the research community and courageously face the challenges with our eyes open and our gaze upon the horizon.

**Embracing the Benefits**

Based on the results of this study and others of its kind, I see four implications for pedagogy that are related to the benefits of hypermedia design projects in educational settings: (a) utilizing constructivist models of education; (b) providing invitations for hypermedia composition; (c) understanding discourse genres within the hypermedia environment; and (d) returning to an emphasis on visual literacies.

If the educational community wishes to capitalize on the power of hypermedia technology to empower and motivate learners, then there needs to be systemic change in the way curriculum is envisioned. I recognize that there will always be a continuum of pedagogical philosophies, with some educators adhering to more transmission-oriented models of instruction and some educators embracing constructivist models; therefore, I am not naively suggesting that if we all simply changed our views about education that everything would be fine. I do, however, believe that hypermedia design projects cannot be successfully implemented in the classroom unless teachers are willing to share control of the curriculum with students. Of those instructors who do have access to computers in the classroom, it seems that many are more
comfortable utilizing hypermedia technology for presentation purposes (CD-ROMs, games, slide shows) rather than for constructive purposes, but this is an anemic application of the technology. This is akin to teaching children to listen but not to talk, or to read but not to write; in other words, it only allows students to become passive recipients of other people's creations rather than providing opportunities for them to express themselves in the medium. This dichotomy will probably lessen as hypermedia authoring applications become simpler to use and teachers become more fluent in hypermedia environments.

Another pedagogical implication of this study is that educators should provide invitations for hypermedia design and publication whenever and wherever feasible. Although hypermedia technology is not a "magic bullet" for all the problems in education, it has the potential to support semiotic, sociocultural, constructivist, transactional and holistic perspectives on literacy learning. Most of today's students enjoy working with and interacting with computers, they value computers, and they see computers as a permanent fixture on the horizon of their lives. U.S. statistics indicate that 55% of young children (6- to 7-year olds), 72% of preteens (8- to 12-year olds), and 67% of our teenagers are spending time using computers on a monthly basis (Edupage Online, 3/18/97); therefore, if language arts educators are concerned with facilitating students' use of strategies that will be relevant to their daily lives and which will be useful to them in their future lives then we might want to provide opportunities for students to engage with electronic texts whenever we can.

This study implies that educators must have an understanding of the large variety of hypermedia discourse forms as they consider the use of hypermedia in the classroom. It would be a shame to dismiss hypermedia as a legitimate
language form simply because violent, role-playing games are offensive. This would be like avoiding all films because horror movies are unpleasant or rejecting books because pornography magazines are objectionable. We must begin to sift through the emerging discourse genres within hypermedia and determine which ones seem suitable for classroom use and which ones should be relegated to the recreational realm.

Educators also need an understanding of the differences between narrative, expository and communicative forms of hypermedia discourse. For example, teachers may want to explore narrative genres non-digitally at this time. Storytelling has an important place in human history and may be better represented in more linear formats such as multimedia, though this may change as virtual reality environments mature and students are able to immerse themselves in fictional worlds with a sense of agency and purpose (Murray, 1997). For now, expository and communicative hypermedia genres seem more conducive to classroom settings.

Related to the issue of understanding hypermedia rhetorics is an awareness of the powerful role that visual literacies play in the electronic environment. If educators wish to implement hypermedia composition projects in the curriculum, they will need to spend some time addressing visual elements such as graphics, photographs and animations. It is fascinating to study the relationship between text and image throughout history, noting that images held an esteemed status in the era of the illuminated manuscript but then were demoted during the long reign of the printing press due to the constraints of the technology (Bolter, 1991; Murray, 1997). Many contemporary adults have an overt prejudice toward images in books, interpreting children’s advance toward
“chapter books” and away from “picture books” as a sign of maturity. Similarly, illustrations in textbooks are often treated as extraneous crutches for readers. However, it seems that images have arisen again in relative import in the technological age, and will probably need to become a more prominent component of the language arts curriculum.

**Facing the Challenges**

There are two further pedagogical implications of this body of work that must be addressed: (a) staff development in electronic media; (b) the collapse of discipline boundaries and altering the way time is used in the classroom.

One of the missing links in the nationwide implementation of computers in the schools is the short-sighted lack of emphasis on preservice teacher education and staff development in the use of technology. Although I have stated that teachers must feel comfortable knowing less than their students at times, no one enjoys being in this position. Teachers will be feel more confident and be more effective with curricular integration if they have some degree of experience with hypermedia technologies; therefore, we must divert a substantial portion of our technology funding toward this end. Unfortunately, businesses and other corporations are frequently more interested in donating, leasing or selling equipment than they are in offering money or volunteers for staff development; therefore, this burden may remain with schools and university campuses. This will not be an easy challenge to overcome, but it must be confronted. Computers will not be useful in educational settings if they are never taken out of the box or are used as decorative plant stands or fancy doorstops.

An important place to start is with preservice education. Even as teacher
certification programs are filled with young computer-literate students, these students will still need guidance in how to integrate technology into their curricula. In my opinion, as long as the nationwide agenda is to infuse computers into the public schools, universities should require a "technology methods" course for preservice teachers, just as they do for the other subject areas.

There is no simple solution for the challenge of inservice training. Attrition is the easiest answer: if we just "wait it out" for about twenty more years until older teachers and professors retire, then this issue will not be quite as critical. In the meantime, we will just have to continue with our best efforts for after-hours workshops, distance learning models, and release time for staff development.

The final pedagogical implication that I will discuss is that the educational community may need to reconsider the way in which the disciplines are segregated and time is utilized in the classroom. The adoption of constructivist models of instruction often instigate the collapse of discipline boundaries (Eisner, 1994; Kinzer, Gabella & Rieth, 1994; Leland & Harste, 1994; Short & Burke, 1991). Aside from classic literature, poetry, plays and storybooks, language arts itself does not have its own content (Hardt & Eagleton 1988). As language arts students explore topics of personal interest, they often find themselves touching upon social studies, science, psychology and many other disciplines in their travels; therefore, educational structures need to accommodate for this authentic mixture of domains.

In addition to the melding of disciplines, longer class periods are a requirement for inquiry-based and hypermedia design projects. Junior high and
high schools may wish to restructure the school day in order to allow for longer class periods. Many schools, such as the one in this study, are moving toward block scheduling models, in which core subjects meet for 90 minutes instead of 45 or 50 minutes, thus allowing more time for student inquiry projects.
Secondary schools may want to combine subjects like social studies and language arts or science and math in order to relax artificial discipline boundaries and provide uninterrupted time for authentic student inquiry.

**Implications for Research**

Some technology and literacy researchers such as Donald Leu (Leu, in press; Leu, Karchmer & Leu, 1999) have noted that “technology is changing faster than our ability to evaluate its utility for literacy by using traditional approaches” (Leu, Karchmer & Leu, 1999, p. 641), and that it has become “difficult, if not impossible, to develop a consistent body of published research within traditional forums before the technology on which a study is based is replaced by an even new technology” (p. 642). Wisely, Leu and colleagues suggest that we look toward practicing classroom teachers rather than toward researchers to guide our pedagogical practices during this time of rapid technological change. While I agree that it is difficult to pin down a moving target such as literacy in the postmodern age, I do believe that we have an obligation to continue our research efforts in this nascent arena. Thus, I will offer recommendations for the continuation of existing research in hypermedia technology and suggestions for future research.

**Existing Research**

It is my hope that exemplary researchers such as David Reinking (1988;
1992; 1994; 1997; 1998) and Lynne Anderson-Inman (Anderson-Inman et al., 1994; Horney & Anderson-Inman, 1994) will continue their important work on the nature of electronic texts and students' reading strategies and behaviors when reading in hypertext environments. I believe that their findings will continue to prove informative as we explore the impact of hypermedia structures on human discourse.

I look forward to future work from Linda Labbo (Labbo, 1996; Labbo & Kuhn, 1998) to inform our understanding of young children's responses to digital environments, particularly from semiotic and sociocultural perspectives.

For an understanding of situated cognition and anchored instruction using hypermedia technology, I look to all of the outstanding theorists and researchers from The Cognition and Technology Group at Vanderbilt University (CTGV, 1993a; CTGV, 1993b; Kinzer, Gabella & Rieth, 1994; Sharp et al., 1995). Their research findings should continue to help the educational community better serve at-risk and learning-disabled students using hypermedia technologies.

I sincerely hope that Donald Leu (Kinzer & Leu, 1997; Leu, 1997; Leu, in press; Leu, Karchmer & Leu, 1999) will continue his valuable research concerning the ways in which teachers appropriate existing hypermedia technologies into their curricula and how we can narrow the chasm between current educational software programs and teacher's actual classroom needs. Leu (personal communication, 1998) has also made the critical observation that we need to build a bridge between literacy researchers and information technology researchers, who often ask similar research questions but do not tend to cross-pollinate each other's findings.

Finally, I look forward to continuing research by Julie Erickson and her
colleagues (Carver et al., 1992; Erickson, 1997; Lehrer, Erickson & Connell, 1994) to guide our understanding of the processes of hypermedia composition in the classroom, teacher change, and how to assess students' growth in hypermedia literacies. Erickson (1997) has shared some helpful rubrics for evaluating students' hypermedia design projects that will surely prove useful for educational communities that choose to establish hypermedia design as a more integral part of the daily curricula. As much as some of us would like to eliminate the grading system altogether, it doesn't seem that American society or the educational system is ready for a full-scale move toward portfolio assessment or other more progressive measures of student growth.

**Future Research**

My recommendations for future research on technology and literacy are based on my reading of the literature and my own work in this area. First, I think that more longitudinal research is needed in order to understand how students and teachers develop hypermedia literacy over time, whether the "novelty" of computers ever wears off, and whether the institutionalization of hypermedia design projects in the curriculum will eventually begin to interfere with students' intrinsic motivation. It would also be interesting to track hypermedia literate high school graduates into the work force in order to see how their preparation manifests in the "real world."

Second, future research designs should include a much broader scope of participants than has previously been reported, from students to teachers to parents to administrators. Multiple researchers may also wish to collaborate on larger studies so that their findings may paint a more complex portrait of policy, curriculum, literacy and technology issues in modern educational systems.
Third, I would like to see future research in hypermedia inquiry projects in the content areas. Rob Tierney (Tierney et al., 1997) and Lehrer, Erickson & Connell (1994) have started the dialogue in this arena, but more research is needed. One of the more powerful applications of hypermedia design is for students to conduct and publish their own research on topics of personal interest in hypermedia formats. As I have suggested in this book, expository formats are native to the hypermedia environment, and have the potential to become the standard for knowledge representation. Currently, more electronic encyclopedias are being sold than printed encyclopedias (Purves, 1998), and more individuals, schools, corporations, retail operations and social services are going online every day.

Finally, I would like to see future research in a variety of hypermedia genres, many of which have not yet been explored by literacy researchers. This study explored the webzine genre from an authoring standpoint and took a tiny snapshot of the possibilities inherent in hypertext fiction, but left many hypermedia discourse forms untapped, as have most other research studies. I'd like to find out what happens when students are given the opportunity to browse and compose their own online newspapers, digital advertisements, virtual reality cyberstories, problem solving games, webpages with digital audio and video, animated storybooks, and simulations. I'd also like to know how telecommunications technologies affect student achievement, classroom practices and discourse patterns when students have regular access to email, listservs, live chats and videoconferencing. Perhaps even more exciting would be a research study that allowed learners to express themselves in any genres of their choosing, whether they be narrative formats, expository formats,
communicative formats, a creative combination of the three, or some new rhetorical form that we have yet to envision.

As language arts educators, I believe we must continue investigating the potential impact of hypermedia technology on our modern conceptions of literacy, learning, and learners. If we do not understand or provide these kinds of opportunities for our youth, I fear that students (like Crash) will increasingly experience schools as cobwebbed institutions championing antiquated standards that do not address their contemporary needs.

Wrap Up

As a final message to educators who are wondering whether or not they "should" be incorporating hypermedia design projects into their curricula, I will share my personal stance on this critical issue.

I cannot imagine teaching language arts at any grade level without incorporating hypermedia design projects into my inquiry-based curriculum. If that means allowing students to use my personal laptop at school and taking the extra time to publish student work from home, then that is what I will do. If it means sacrificing valuable class time to take or send students to the computer lab, then that is what I will do. If it means running an after-school club, then that is what I will do. Now that I have seen firsthand how meaningful hypermedia design projects are to students, I would feel that my curriculum was lacking without them. But I cannot speak for anyone else. I am fortunate to have many years of teaching experience, extensive technical knowledge, and the type of personality that can tolerate a noisy, busy classroom so long as it's productive.

In my mind, hypermedia technology is not just another semiotic medium,
but is the culmination of many human forms of representation and is unique in its ability to juxtapose so many of these symbol systems together. Collaborative hypermedia design projects naturally require students to orchestrate many other culturally-valued language forms in the process of designing their compositions, whether those products be destined for a global audience via the Internet or a local audience via CD-ROM or some other storage device. This assures me that students will be practicing many of their traditional print- and oral-literacy skills while composing in hypermedia; therefore, I don’t worry as much that my other language arts goals will suffer during the time devoted to hypermedia design projects. However, I don’t want to minimize the challenges involved in such an undertaking. Educators must address policy issues, funding issues, curricular issues, philosophical issues, technical issues, and equity issues as they explore the rich potential of hypermedia technology in educational settings.

I will wrap up this discussion of hypermedia composition in the language arts classroom by sharing some final thought-provoking participant comments.

When I asked Staci if she thought there was any difference between a printed composition and multimedia composition, she remarked that the latter is “more captivating, more dynamic, [and] more interesting.” Regarding the impact of hypermedia projects on the language arts curriculum, she responded:

The level of concern about your own piece raises. I think it makes it more exciting for the kids, it puts it in a space they understand because they are so connected to media. So that’s really exciting.

Finally, consider the the following editors’ responses to the question, “If you knew you were going to write something for an online magazine, what would you do differently?”
Alan: I'd put more time in it, cause I knew a whole bunch of people were gonna read it, not just the teacher. I'd be revising it a lot more and getting other people to revise it.

Larissalynn: Speak my mind instead of acting like someone else, since no one would know it was me. Put more effort into it instead of for a grade. I'd be more into it. It's different.

Jean: I would have a lot of pictures and make links. I would write it so other people would like it, not just the teacher.

Cory: I'd think a lot more, I just wouldn't write any old thing down, I'd think about it, think like what am I gonna write in the next paragraph, I'd like plan it all out before I actually wrote it, and then I'd like redo it like three times so everything little thing was right. Then I'd probably go around and ask some people, "What do you think this story could be better? How would it be better?" Get some opinions and try to change the story a little bit to ask if people think it's right, and then I'd probably do it again! And then write the final copy, and that'd be it. [Otherwise] I'd just write one in an hour and turn it in.
APPENDICES
I am being invited to participate in a doctoral research project because I am enrolled as a language arts student in Ms. Staci Markham's class at Flowing Wells Junior High School. I understand that this project is being conducted by Maya Eagleton because she is a Ph.D. student at The University of Arizona.

I agree that Maya Eagleton may record (audio- and videotape) observations of my participation in designing our webzine and that she may quote any statements I make throughout the project in her dissertation and in future publications.

I understand that the results of these interviews and observations will be used for the purposes of writing and publishing her research. She will also share the results of her study with my parents and me upon our request.

I know that there is no risk to me by participating in this study and that my grades will not be affected by my participation in this project.

_________________________This is the false first name I would like Maya to use.

Student’s Signature and Date _______________________________   ______
Parent/Guardian’s Signature and Date ___________________________   ______
Researcher’s Signature and Date _______________________________   ______
APPENDIX B
Volunteer Survey

Now that I know what is involved in serving as a webzine editor, this is how I feel about participating:

_____ I really, really, really want to be an editor! Please choose me! I am going to be really bummerd if I can't do it.

_____ I would really like to be an editor.

_____ I would like to be an editor, but it's OK if you choose someone else.

_____ I'm not sure if I want to be an editor.

_____ I definitely don't want to be an editor. Don't choose me.

Please explain your choice:
APPENDIX C
Student Interview Protocols

Entry Interview Framework
Tell me about yourself. Who is Firstname Lastname?
What are your hobbies and interests?
Why did you volunteer for the webzine project?
What is your experience using computers?
What is your experience using the Internet?
What is the purpose of having a webzine?
Who will be the audience of the webzine?
What kinds of grades do you usually get?
What do you like about being in seventh grade? Dislike?
What do you like about Language & Literature class? Dislike?
Do you consider yourself to be a good reader? Why or why not?
What kinds of things do you like to read?
Why do people read?
Do you consider yourself to be a good writer? Why or why not?
What kinds of things do you like to write about?
Why do people write?
Do you consider yourself to be a good speaker? Why or why not?
What kinds of things do you like to talk about?
Why do people talk?
Do you consider yourself to be a good listener? Why or why not?
What kinds of things do you like to listen to?
Why do people listen?
Is there anything else you’d like to share about reading, writing, language or computers? Anything else?

**Exit Interview Framework**
How did you feel about being a part of the zeen project?
What was it like being a zeen editor?
What do you feel you have learned because of being a part of this project?
Describe any difficulties you had while working on this project.
What advice would you give to another school that was making an online magazine?
What did you like most about this project?
What did you like least about this project?
What could we have done differently to improve this project?
If you knew you were going to write something for an online magazine, what would you do differently?
How do you think the zeen project helped your writing?
How do you think the zeen project helped your reading?
How do you think the zeen project helped your listening?
How do you think the zeen project helped your speaking?
How do you think the zeen project helped your ability to work with other people?
Would you like to design more web pages in the future?
Is there anything else you’d like to share about the project?
APPENDIX D

Teacher Interview Protocols

Entry Interview Framework

Tell me about yourself. Who is Staci Markham?

How do you feel about being a teacher?

What other responsibilities do you have at the school?

What attracts you to teaching junior high? To language arts?

What are your goals for your language arts students?

How do you go about planning the curriculum?

How do students decide what kinds of things to read/write in your class?

What is your experience using computers/Internet?

How do you feel about computers?

Why do people make webpages?

How you see computer technology fitting into your instructional goals for language arts? How will the webzine project fit in?

Who are some kids who are really successful in your third period class? What makes them successful? Who are the unsuccessful students? Why?

What is literacy? Why is literacy important?

Do you consider yourself to be a good reader? Why or why not? What kinds of things do you like to read? Why do people read? How do you teach reading?

Do you consider yourself to be a good writer? Why or why not? What kinds of things do you like to write about? Why do people write? How do you teach writing?

Why do people talk & listen?
Is there anything else you’d like to share about reading, writing, language or computers?

*Exit Interview Framework*

How would you define literacy?

What is multimedia literacy?

What happens when multimedia projects are brought into the language arts classroom?

Is there any difference between a printed composition and a multimedia composition?

Did students write any differently for the zeen than usual? In what way?

How did the zeen project fit into your language arts curriculum?

What did the zeen editors gain from the experience?

What did you gain from the experience?

What advice would you give other schools that want to start webzines?

How did the zeen editors feel about the project?

How did the rest of the class feel about the project?

How do you feel about the zeen project?

Describe any difficulties you had with the project.

Is there anything else you’d like to share?
APPENDIX E
Interest Survey

What are your favorite colors?
Do you play any sports? Which ones?
What are your hobbies?
What kinds of music do you like?
What kinds of books do you like?
Do you read any teen zines? Which ones?
What are your favorite TV shows?
What are your favorite movies?
Who are your favorite celebrities?
Who are your best friends?
Do you have any brothers or sisters? What are their names and ages?
Do you have any pets? What are their names and kinds?
What else is important to know about you???
APPENDIX F
Literacy Survey

1. I like to use computers. 
   Yes  No
2. I use a computer at home. 
   Yes  No
3. I can get on the Internet at home. 
   Yes  No
4. I know what a web page is. 
   Yes  No
5. I am a good reader. 
   Yes  No
6. I am a good writer. 
   Yes  No
7. I am a good speaker. 
   Yes  No
8. I am a good listener. 
   Yes  No
9. I am good at working with other students. 
   Yes  No
10. I think computers are useful in school. 
    Yes  No

11. Circle the things you have done with computers:
    typed a paper  fixed a computer
    sent email    surfed the Internet
    made a webpage used clip art
    made a banner or sign used a database
    loaded software used a draw/paint program
    used a scanner played a game

12. Why do you think kids like computers?

13. Do you think computers can be useful in language class?  Yes  No
    Why/why not?
14. Do you like to read?  Yes  No  Why or why not?

15. What kinds of things do you like to read?

16. Do you like to write?  Yes  No  Why or why not?

17. What kinds of things do you like to write about?

18. What would be some good reasons to create a webzine?

19. Are you interested in contributing some of your writing to the webzine? If yes, why?

20. Are you interested in helping to design the webzine? If yes, why?
Cory: I don’t want to go to lunch. I’m not hungry.
Cory to Maya: Can we stay in here and keep working?
Maya: It’s up to you. I don’t mind staying.
(Cory gets out his spiral and begins brainstorming interview questions for the People page).
Cory: What do you think about the government? What do you do in your spare time? What do you think about the educational system? Is there a better word for educational system?
Cory: Where do you think the education is going today?
Cory to Alan: Which one do you like?
(Staci comes in): Ask them what they think about vouchers, private schools, public schools.
Cory: What do you think is better for the student, public school or private?
Cory to Alan: Do you like that?
Cory: I guess we don’t need to ask about hobbies cause we already have “What do you do in your spare time?”
Alan: They’re pretty much the same thing.
Maya: What questions do YOU have for parents? What do you REALLY want to know?
(Long silence while they ponder this seemingly radical invitation to authentic inquiry).
Cory: How can you make them happy so they’ll give you money? How do
they keep track of all their bills? How do you do your taxes?

Alan: Why do they hate taxes? Don’t talk to my dad when he’s doing taxes.

Cory: I just wonder how they keep track of their receipts. How do you handle your finances?

Cory: So now we got education, government, hobbies, finance. How do you balance your personal life with your work life?

Cory to Alan: Do you like it?

Cory: I just really like doing this!

Alan: I just like doing computers.

Cory: Cause I think that is a good question, cause my dad, he works from 8:00 until like 6:00, comes home, then he goes out to work again. And then he has time to be with his girlfriend, even though he won’t admit it’s his girlfriend.

Maya: I wonder if we can use these questions with everyone [not just parents]. Cause these are such profound questions.

Cory: Who made God? I’d like to ask religious questions, but some people might get a little offended. I don’t want to get anybody mad. Well, it depends on what the question is asking.

Alan: That would be an interesting question to ask Miss Markham. She’d go on and on.

Maya: If you could get one question to ask, what would it be?

Cory: Do you think there is a God? Do you think there is one god or many gods? Do you think there is more than one god?

Alan: Do you think there is a god, and if so, is there one or many?

Cory: I think we should have at least ten [questions].

Alan: What is the meaning of life? That’s kinda interesting.
(Cory writes it down).

Alan: I'd like to ask my brother that.

Cory: What do you think about love? Do you think you have a soul mate?

Alan: What is love?

Cory: I like soul mate, he likes love. Why can't we have both?

Cory: I think we need one more. I think we need something recent, like what's going on now. Something about Clinton.

Alan: What do you think about Bill Clinton in general?

Cory: Do you think we are ruining the Earth?


Cory: Something about the environment. You think of a question, I'm always thinking of questions! I'm thinking and you're stinking.

Alan: Is there gonna be a WW III?

(Cory writes it down).

Alan: Do we think we should practice the interview?

Cory: I think we should go ask Mr. Jones if he thinks these are good questions.
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