Middle School Hypermedia Composition: A Qualitative Case Study

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During a six-month naturalistic study, the author conducted an ethnographic examination of a seventh grade hypermedia unit. Beginning with the global question, “In what ways are computers used to support the education of middle school students?” the researcher coded and analyzed observations, interviews and projects. Three themes emerged: the seventh graders’ understanding of electronic conventions, their ability to demonstrate awareness of audience, and the curricular communication climate in the school. The fact that students were developing significant compositional skills in the computer lab, went unnoticed by the literacy teachers. The potential for better and more integrated core discipline learning cannot be reached by perpetuating the traditional isolation of computer skills. This study carries implications not only for computer technology teachers but also for curriculum directors, administrators and college of education faculty members.

Background

In the late 1980s, language arts teachers began to see the simple benefits of electronic editing and sharing of resources (Grabe, 1996). Since then, the meaning of text has been broadened as seen in David Bolter’s (1991) Writing Space: The Computer, Hypertext and the History of Writing:
A hypermedia display is still a text, a weaving together of elements, treated symbolically. Hypermedia extends the principles of electronic writing into the domain of sound and image. The computer’s control of structure promises to create a synaesthesia in which anything that can be seen or heard may contribute to the texture of the text. (p. 27)

Likewise, the concept of writing has been expanded. Dahl and Farnan (1998) defined writing as “composing and expressing ideas through letters, words, art, or media and print, something that only occurs when mental operations (processes) are mobilized for the purpose of composing and expressing ideas” (p. 3).

Several researchers and theorists examined the hypermedia authoring process from this perspective (Ayersman, 1996; Chen & McGrath (2003); Doering & Beach, 2001; Dwight, & Garrison, 2003; Lehrer, 1993; Reinking, 1997; Wilhelm & Friedemann, 1998). Instead of focusing on the mechanics of writing, Herrmann (1990) proposed that researchers look at different types of questions: are students more engaged in composing (than previously) or have they met the unique challenges of the digital world? While not advocating the view that computers inherently offer a means of enhancing the complexities of teaching composition, this qualitative case study suggests that it makes sense to employ tools that appeal to the wired generation. For students composing in a computer environment, the use of multimodal elements has the potential of adding dimensions of meaning for both the creator and the reader.

When using naturalistic qualitative methods, a researcher does not attempt to construct experimental testing situations. Instead, the goal is to gain a deeper understanding of phenomena in naturally occurring settings. As Patton (1990) explains,

The evaluator sets out to understand and document the day-to-day reality of the setting or settings under study, making no attempt to manipulate, control, or eliminate situational variables or program developments, but accepting the complexity of a changing program reality. The data of the evaluation include whatever emerges as important to understanding the setting. (p. 41)

The general research question for this qualitative case study was, “In what ways are computers used to support the education of middle school students?” The researcher spent six months as an ethnographic observer in two
seventh-grade classes and in this case study has attempted to draw a rich, descriptive picture of the compositional process and products of a hypermedia project in one middle school. Observation and data collection spanned the course of two trimesters in a middle school located in a small town in northeastern United States. However, this article describes only one of the units in which students composed projects using HyperStudio. (This hypermedia software called a project a stack, which is composed of a series of cards that are linked by buttons.) Three types of data from 32 students (14 girls and 18 boys) were collected: direct observations, digital projects, and in-depth, open-ended interviews. When the data was transcribed, coded, and triangulated (Patton, 1990), three prominent themes emerged from the general research question: electronic conventions, audience awareness and the curricular isolation of this particular computer teacher. Once the first two themes were identified, the researcher used Kommers, Grabinger & Dunlap’s (1996) categories of electronic conventions and Ryder, Lei and Roen’s (1999) theory of cueing techniques for audience awareness for further analysis. This data revealed a triptych of perspectives: the composer, the reader and the context.

The town of Menton was predominately white (97.6%) with small populations of Native American (0.6%), Asians (0.5%) and Other (0.5%). The median annual family income was less than $37,000. For seventh graders at Menton Middle School, the first two blocks of each day consisted of 45-minute sessions of related arts. These included music, life skills, art, physical education and computer skills. Each trimester, one third of the students were scheduled for computer class every day, second period. The other related arts classes rotated on a three-day cycle. The core curriculum was taught in the afternoons with a study hall last period. Menton Middle School had a strong language arts program. Teachers were passionate about their professional development and both seventh grade literacy teachers incorporated computer applications in their classrooms. The researcher observed 26 language arts classes, a seventh grade team meeting and various other school activities, in addition to observing computer classes.

Mr. Miles was the computer teacher at Menton Middle School. In the computer lab, he taught lessons on word processing, desktop publishing, basic graphic manipulations and the popular software, HyperStudio. Mr. Miles’ underlying curriculum focused on problem solving, generalizing skills and composing with hypermedia. He began this unit with a skills-focused stack called the “Animals of Africa.” A longer, free-choice project followed. (Pseudonyms are used throughout and students’ writing is presented verbatim.)
**Jungle Vines: Focus on the Composer**

Often, people consider that words are a writer’s only tool. However, many non-verbal, visual conventions have evolved to aid readers’ understanding, such as spaces between words, the indentation of a new paragraph or the outline shape of the table of contents. A concrete poet uses physical layout as a communicative device. Yet as students typically progress through the grades, reliance on non-textual, visual cues are considered progressively undesirable (Daiute, 1992). Modification of this traditional pedagogical value is seen in such documents as the Visual Literacy resolution of the National Council of Teachers of English (Day, 1997). As the researcher analyzed the data in this study, the various ways that the visual elements of composition were translated into a digital environment emerged as a theme.

Mr. Miles taught basic hypermedia skills via the “Animals of Africa” unit, a topic generated from the software itself which included clip art and sounds of lions, elephants, parrots and monkeys. The students were directed to make their stacks for a hypothetical second grade audience and Mr. Miles explained specific expectations in a series of mini-lessons. As long as the minimum components were met, students could customize as they wished. During the introductory lessons Mr. Miles made suggestions, such as, “Keep your vocab simple but not too simple” and, “Allow more flexibility for the user - that’s the key!” Such admonishments were not restricted to general imperatives. Mr. Miles primed students by inquiring about their own interests in the second grade. “What made you smile? Who was your second grade teacher?” He waited a moment for them to ponder and then he asked what this meant in terms of their stacks. One student suggested that the “size of things is important; graphics and text should be large.” Another offered, “Multi-colorful. I liked color when I was little!”

Given the pre-made graphics and the tightly defined criteria, one might expect that students’ stacks would vary only by the three individually chosen facts. However, this was not the case. Analysis showed three categories of ways that students used the multimedia tools. Strong patterns emerged regarding student-originated graphic variations; use of sound and conventions of electronic text (directionality, and linearity).

**Customizing Canned Clip Art**

Students individualized the clip art in a number of ways. Among them:

- Marcus splashed jungle vines across the backgrounds.
- Jay created diagonal lines radiating from the corners of his text boxes, which created a three dimensional appearance.
- Susie sprayed splotches of color around the animals producing a delightful, whimsical appearance.
While each of these variations may seem like small innovations, they indicate that even within quite restrictive parameters many students used the available tools in creative and personalizing ways.

On a more substantive level, some students created obvious interactions between the graphics and their words. Bolter (1998) referred to such adaptations as a "cooperative relation with verbal text" (p. 8). To accompany a fact about talking parrots, one girl erased a portion of the beak giving the appearance of catching the bird mid-speech. Occasionally a student would situate the graphic so that there was a visual interplay between the words and the images. For instance, an elephant's ear artfully overlapped a text box, a parrot perched precariously on a letter, or a lion stepped out of the text box (all in Rachel's stack). Alexia's hand-drawn house cat made not only a visual connection between a lion and the cat family but also between her text and the illustration. One student explicitly referred to her illustration to support second graders' learning: "ELEPHANT TUSKS ARE MADE OF IVORY. TUSKS ARE THE LITTLE WHITE THINGS NEAR THE TRUNK IN THE PICTURE."

The data in this study demonstrated that these students found ways to individualize even canned clip art and to coordinate the text with the illustrations. Those who learn to repurpose and effectively communicate with visual information extend their communication tools. Chair of NCTE's Assembly for Computers in English, Michael Day (1993) charged teachers to understand the rhetorical power of visuals “lest our students fail to see, understand and learn to harness the persuasive power of visual media” (¶ 3). A hypermedia author draws not only from a palette containing text, colors, images, graphs, but also sounds and video.

Conventions of Electronic Literacy

Elizabeth Eisenstein’s (1979) The Printing Press as an Agent of Change traces the radical advent of diagrams, drawings and other visual aids into classical texts. Early scholars preferred verbal descriptions, scorning illustrations, in part due to the fragility of the drawings themselves. Particularly in botanical works, ignorant scribes neglected or lost manuscripts which sent subsequent editors back to living specimens. When their “descriptive vocabulary” failed to communicate fine distinctions, the editors resorted to illustrations (p. 485). Today, most people don’t question the value of illustrative publications yet the general trend in education (outside of mathematics and the sciences) is that older students must leave behind a reliance on pictures.
In early literacy programs, teachers note the importance of young children recognizing the meaning of “golden arches” or other such logos. Just as there are conventions of print involving symbols or symbolic spacing, our culture is forming new conventions of electronic literacy such as (a finger pointing left) means go back. Not surprisingly, many of these conventions have roots in print literacy. “Looking at the history of writing - the common way the transitions work is that the new technology mimics the old - at least for a while” (Bolter, 1991, p. 24).

Though electronic representational conventions are continuously evolving, the data from this study demonstrated examples of each of Kommers, Grabinger, & Dunlap’s (1996) six groups of electronic conventions.

1. **Chunking of information.** In traditional texts the author selects blocks of information to make into chapters, or subsections. In an electronic environment these tend to become smaller units called cards, screens, or slides. *Menton data:* Each student placed one African animal on each card.

2. **Directionality:** Left typically indicates previous material (back), right new material (forward.) *Menton data:* Twice as many students who used directional icons to indicate forward placed them in the lower right rather than in the center or on the left.

3. **Non-linearity:** The author and readers are not required to follow a straight path through a hypermedia project. *Menton data:* This may seem contrary to the concept of Directionality, but hypermedia allows these concepts to co-exist. Only two students indicated that the reader would progress through the stack in a specific order. However, both of these students created non-linear access as well.

4. **Legibility:** Readability. *Menton data:* For the most part, students took Mr. Miles’s advice when he stressed that large and uncomplicated fonts would be most understandable to second graders.

5. **Facilitation of navigation:** ease of use. *Menton data:* A standard menu page and the control panel on each card were set requirements, and all students included them.

6. **Aesthetic Quality:** artistic creativity. *Menton data:* Susie’s cards were a good example of aesthetic design; she punctuated the white spaces with sprays of color. Other seventh graders consciously matched the background with an animal’s color; gray for the elephant and tawny colors for the lion were the most common.

7. **Visual Clues:** The researcher added this seventh category to incorporate the notion of reader support. *Menton data:* Seventh graders employed other visual clues in their communication strategies, such as numbering or bulleted their facts.
“You Have Just Entered The Jungle Adventure:” Focus on the Reader

In face-to-face conversation, the speaker relies on shared contexts and numerous verbal and non-verbal clues to determine the level of the listener’s comprehension. Details or explication may be omitted if understanding is obviously shared. The language arts’ interest in audience awareness stems from a conviction that writers use their understanding of an intended audience to make decisions that shape writing. Teachers focus on this awareness because it “can help young writers figure out what to include, what to leave out, and how to present their ideas” (Dahl, 1998, p. 51). Most of the studies reported in Dahl’s *Children’s Writing: Perspectives From Research* (1998) found support for the developmental concept that young children generally direct writing towards self instead of showing awareness of an eventual audience. As children move out of these early stages, they begin to put themselves into the place of others, adopting the perspectives of a presumed audience. “The sense of audience is revealed by the manner in which the writer expresses a relationship with the reader in respect to his (the writer’s) understanding” (Britton, Burgess, Martin, McLeod & Rosen, 1975, p. 65).

At the most basic level, a writer demonstrates a sense of audience by acknowledging a point of view other than his or her own. This can be accomplished either in content or in tone, and increases along a continuum as the author negotiates and coordinates the inferred perspectives of readers with the writer’s perspectives. Awareness of audience is a factor that can shape composition.

In addition to encouraging that the writer to exploit its visual potential, hypermedia composition also makes other demands on authors. Unless the composer is toying with the reader (and purposefully hiding links) buttons need to be labeled, and they need to be labeled in such a way that the reader is able to anticipate what will be at the other end of the link.

While this notion is developmental, Dahl (1998) noted that fifth graders could write for different audiences but they did not consider audience awareness a general strategy for composing. Perhaps the lack of students’ attention to future audiences is due to the lack of teacher guidance and expectations. Dahl suggests that any communicative environment offers ideal conditions for children to explore the realm of other perspectives. “It therefore appears that certain instructional processes, such as authors’ theater experiences, may help young writers think about their audience as they sort out ways to tell their stories” (Dahl, p. 53).

In fact, Cohen and Reil (1989) documented the benefits of focusing on audience needs in a study of 44 seventh grade students. Teachers found that papers written explicitly for a grade scored lower than those written to
share the students’ lives and culture with distant readers. “The compositions written to communicate with peers were better organized and dealt with the content in a more informative and elaborate fashion” (p. 154). Such results aren’t isolated. Goldstein and Carr (1996) correlated student responses with their NAEP (National Assessment of Educational Progress) scores. “Students of teachers who always encourage particular elements of process writing, such as planning and defining purpose and audience, were found to be generally better writers than students of teachers who reportedly never encourage these activities” (p. 5).

Several studies obliquely related to audience awareness in hypermedia composers. One self-selected group of middle school students built hypermedia/multimedia kiosks for a zoo’s facilities (Beichner, 1994). This group spent many hours over a two-year period on this project. The researcher reported that students were very enthusiastic about the project, often coming in early or skipping lunch. It was observed that students developed a keen sense of audience and a critical evaluation of the subject matter during the authoring of their project. For example, students deleted narrative they suspected would be too detailed for the anticipated reader. They discussed the color and form of informational screens in specific relationship to the zoo visitors’ reactions.

The data in this study were categorized using Ryder, Lei and Roen’s (1999) four strategies that composers use to cue their readers:

1. **Naming Moves** - Using specific nouns and pronouns to signal the stance they believe the reader will assume.
2. **Context Moves** - Including or excluding information depending on what the audience knows.
3. **Strategy Moves** - Using specific tactics that draw upon the readers’ attributes so that they feel the piece was written for them.
4. **Response Moves** - Stating (even rebutting, conceding to) perceived concerns or arguments.

**Making the Textual Moves on Audience Awareness**

When interviewed, many students demonstrated that they were conscious of their audience and could easily talk about this awareness when prompted with a generic “Tell me about your stack.” Typical answers included, “Well, on the opening page, I made it colorful – like a jungle. And I used big, bold letters which make it easier to read.” When the researcher commented on the effect produced by a textured background behind the elephant he replied, “Yeah - I thought that looked realistic. [Pause] I didn’t
want to make the words too complicated. I’m not sure about TRANSPORTATION, that may be too hard of a word.” Susie, on the other hand, discarded information based on her perception of the audience’s knowledge. “I was going to tell them that monkeys caused AIDS virus, but I don’t think they’d be interested in that. Actually, I don’t think they’d even know what the AIDS virus is.”

Luther made one of the most creative projects. One unusual feature was his menu bar which was programmed to disappear because “I was testing it out as if I’m a second grader.” During his interview he read his lion card out loud and pointed to the quotations marks around “king” of the jungle because “it’s not really a ‘king.’” How ironic that, later on same day a teacher commented on Luther’s abilities, “He has some good ideas but he really struggles with language. He struggles to complete a thought.” Another teacher referred to him as “disorganized” and not “able to put everything together. His thoughts are too unrelated.” The disparity between Luther’s composition and his teachers’ afternoon evaluations was striking.

**Naming Moves**

Ryder et al. (1999) used the term *naming moves* for a writer’s explicit cues regarding his or her stance towards the reader (p. 57). The seventh graders indicated their audience by directly addressing them both in text and with auditory messages. They also used verbal naming moves such as: “Hello, boys and girls;” “Hi welcome to ‘Animals of Africa’ this program is easy to use and I hope it will help you learn a little about these animals so let’s get started click on the Let’s Go! button & get ready to be a smart kid … “

Just as commonly, the writer indicated the reader as “you:” a relationship of a “wise” older student teaching the younger. For example, Brianna wrote, “Did you know [parrots] can talk? Do you know what Parrots eat? Well for the people that doesn’t know they eat seeds.” Occasionally the use of the second person perspective took the tone of a warning as in Beatrice’s “SOME MONKEYS CAN KILL. SO WATCH OUT!” or Ron’s “Parrots are very smart, they can repeat what there owner says. So don’t say anything bad when you’re near a parrot.”

Two students successfully developed a more sophisticated naming move by assuming the persona of a guide. Using the second person point of view and stylized language they alerted readers that they were entering a choose-your-path adventure. José wrote,

> Hi, and welcome to ‘Animals of Africa.’ On this program I will take you on an African adventure to see some cool animals. We will learn many interesting facts about these animals. My name is José and I will be your
guide on this incredible journey. Now click on the animal you want to visit first and we will be on our way.

First and second person voices (naming moves) signal the expected role of the reader. The seventh grade composers used other ways of indicating their audiences. Imperatives such as “Have fun” also set the tone of a more sophisticated writer to a less sophisticated reader. One student took on the identity of programmer. Descriptive adjectives were commonly used, such as “wild journey” or if you “saw a large golden ‘cat’ you would be looking at a lion” (Marcus). All too often the only audience a student has in mind is the teacher – in an evaluative role. Early on, students sized up what the teacher expects. “Student writers need to have direct experiences with audiences, not just an audience” (Ryder et al. 1999, p. 64). The HyperStudio projects showed a rich array of textual audience considerations. (See Table 1.) Educators need to provide opportunities for their students to write for a variety of specific audiences. This will position students to better understand that different readers have different expectations and reactions.

Context Moves

A second level cueing technique involves including or excluding information based on what the audience knows or doesn’t know: context moves. Although Kommers et al. do not mention it, the researcher noted that context moves depend on the author’s perception of what information the reader possesses. All students received similar instruction regarding the hypothetical second grade audience, yet there is a wide range in what they think a second grader knows or doesn’t know. For example, questionable words used by seventh graders were: “dominating” (Luther); “taratorial” (territorial, Abe); “predators” (Marcus); and “siblings” (Angie). But it was clear that the majority of students were careful to use appropriate vocabulary or to define difficult words.

The dominant way that composers addressed their young audiences was to include definitions. The favored structure was “x is called y” with some students employing this method more than once. For example, “Male lions have thick hair called manes. They are meat eaters, called carnivores.” “They live in packs of lions, each one called a Pride.” Failure to proofread resulted in some interesting images: “.... Lion babies are called cubes and loins are the biggest cats in the world!”
### Table 1
Levels of Audience Awareness

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<tr>
<th>EXAMPLES OF AUDIENCE AWARENESS MOVES</th>
<th>ELECTRONIC CONVENTIONS</th>
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<tbody>
<tr>
<td>Naming</td>
<td>Context</td>
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<tr>
<td>Definitions</td>
<td>Naming</td>
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<tr>
<td>“Yo, Boys, Safari Time” (Nigel)</td>
<td>“Tusks are really overgrown teeth.” (Bob)</td>
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<tr>
<td>Jungle Safari in second person (Luther)</td>
<td>“Men have beards called a Mane” (John)</td>
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<tr>
<td>“Have Fun!” Older student to younger students signs introduction with “The Programmer.”</td>
<td>“Territorial” (Abe)</td>
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<td></td>
<td>“predators” (Marcus)</td>
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<td>Deferred definition of food chain (Luther)</td>
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<tr>
<td></td>
<td>Mostly used simple words.</td>
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<td>Exceptions: “dominating” (Luther)</td>
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<td>“Tusks are really overgrown teeth!” (Bob)</td>
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A few students used an instructional tactic that sought to dispel perceived misinformation: “[The elephant’s] tusk[s] are really overgrown teeth!” “A parrot can copy or mimic a sound or voice. People buy parrots because they do this. Very few parrots can really learn” (Bob). Torey wrote, “But you’ve probably heard the phrase Lions are king of the jungle but that’s not really true but the lion’s cousin, the Tiger is the one who lives in the jungle.” Torey continued teaching on the parrot card, “First parrots can’t talk like us people can but you can teach them how to repeat certain things like your name or little phrases like I love you or my name is Paulie.” And in an-
other part of Torey’s stack, “First of all elephants aren’t afraid of mice that’s fiction. also elephants may have big ears but they can’t fly they weigh waaay too much like thousands of pounds that is alot.”

Several other definitional examples are worthy of note. John’s use of anthropomorphism (“The men have beards called a mane.”) was interesting, although it is not clear whether this was used purposely for young audiences or for another reason. Luther realized that he might be using an unfamiliar concept but he deferred an explanation: “[The lion] is at the top of the food chain (you will learn about that later :-)“ Quite apart from the deferral of information, Luther’s sideways smiley face, a convention of electronic literacy was worth noting. In the world of HTML and email such emoticons are popular; however, in HyperStudio he could easily have drawn it right side up.

Pete used a conversational style when giving a definition. After several facts about lions, he indicated that he has finished with that card, “Well I’ve got to go. My Lion cub is calling for me. Oh ya a cub is a baby Lion. Bye!” In a similar way Marcus wrote: “You would see a large piece of hair around its’ neck. That is called a MANE. You also see that the lions are in a group or a PRIDE. The little smaller ones that are in the group are called cubs. They are little and playful just like you.” Marcus’s last sentence slides into the territory of strategy moves.

**Strategy Moves**

Writers use this third category to draw on audience attributes in order to engage the reader by appealing to emotions, praising readers, or suggesting readers’ choices. Many students phrased their openings in ways they thought would appeal to a young audience. Examples:

- “Yo boys, safari time.” (Nigel)
- “Jumbo Bob speaking here from Africa to teach you about four African Animals.”
- “Want to hear the roar of a lion or the trumpet of an elephant [?] Want to see a parrot or a monkey[?] want to learn about a elephant or a lion[?] well click on the animals that you want to learn about and your all set “ (Mitchell).

Rhetorical questions as a vehicle for delivering information appeared frequently, posed twice as often by girls as boys. Examples included: “Did you know the lion is a mammal? How about that the male lion has a mane, and the female doesn’t?” and, “Wow, look at that elephant! Did you know that elephants walk about 30 miles a week in the dry season?”
Rhetorical questions were also offered to appeal to a reader’s likes or dislikes or to make the information more immediate to the reader on a personal level. Such as:

- “Do you like bananas?” (Brianna)
- “Have you ever seen a elephant? Elephants are also gray. Did you know that? They like to go in the water to get cool! Do you like to go in the water?” (Brianna)
- “Have you had a good day? This will make you fell better.” (Nigel)

Occasionally the composer attempted to bridge the connection between author and reader by adding personal information or commentary.

- “I LIKE MONKEYS Do YOU LIKE THEM TOO?” (Mindy)
- “Did you come to see my animals? YOU DID! Alright! All you have to do is click on a animal and we are on are our way!” (Rocky)
- “Hi, It’s Lio the Lion here again. Here we are going to be learning about Lions! ... Did you know that us Lions nap up to 20 hours a day, wow! That must make me not grumpy at all. We also eat up to 90 pounds of meat a week! Personally I only eat 50.” (Doug)

Torey’s hypermedia work demonstrated exemplary context moves in audience awareness. She appealed to the reader’s self-confidence, “get ready to be a smart kid.” Torey furthermore considered the readers’ interests by referring to popular culture: a contemporary movie, The Lion King, the classic film Dumbo, and the children’s book Curious George. In trying to convey the concept of an elephant’s immensity, she added an editorial comment and a comparison: “The average male elephant can eat 50 something pounds of food a day thats enough to feed a starving family for about a month Wow!” On her monkey page, Torey issued a warning, “Monkeys are very crafty so if you ever go to a monkey zoo watch your wallets, cuz the monkeys will steal them. monkeys can bite so don’t offend them.some monkeys are cute but you would rather have a dog for a pet, not Curious George.”

Alexia also spoke to her young audience with personal comparisons and directives.

- “The normal elephant weighs 5,000 pounds in short that is about 100 of you put toghether! They are one of the largest land animals! And they have large trunks they move things with and even take baths with! Would’nt that be fun!”
• “Parrots are in the bird family. And if you like fruits than a parrot would love to eat with you! They also can talk, so next time you see a parrot say hello! “

Other students made vivid comparisons as well:
• “They weigh about as much or more than your family car” [Susie].
• “Hay, look a lion! did you know that lions eat about 90 pounds of meat a week! That is almost as much as I weigh.” (Abe).

Strategy moves revolving around these rich comparisons (both personal and factual) indicated a fairly sophisticated awareness of audience.

“Yo boys, Safari Time!” Auditory Reader Support

Reinking & ChanLin’s (1994) conceptual framework for examining the differences between print and electronic texts espouses that electronic texts allow an opportunity to blend visual, verbal and auditory information. In the “Animals of Africa” project, students were taught several methods of adding sound but were required to use only one: when an animal’s button was clicked it had to make the sound of the animal. All except two students followed these directions, but both renegades adopted other reader-support variations. Clicking on the monkey picture on Ron’s menu card made a harp-like sound instead of the expected chattering “che-che-che.” This unexpected sound connected with his text: “They are very small and agile.” Luther’s variation was structural. Replacing the required animal sound Luther’s first button connected the reader to a story – not to a list of facts. Luther’s voice set the tone:

It is a hot day on the plains, all the animals are under the cover of the trees and you decide to go on a safari. As you start off you see some animals in the drinking pond. you can follow only one of the four animals, the lion, elephant, parrot or the monkey. (Click on one to follow it)

Luther managed to blend nonfiction and second person fiction, a difficult voice to develop.

The majority of students recorded their own voice as invitations to the reader.
• A button text: read, "Come on in!" but the voice says, "Yo boys, Safari Time!"
• "Hey, kids. Are you ready to take a wild journey [through] the deepest part of Africa?"

José’s stack was unique in the way he gave auditory support to his young readers. On three animal cards, the reader could click an arrow that
read (with a computer-sounding voice) the words that José had typed. He purposefully constructed this to assist reluctant readers.

**Unexpected Allies: Focus on the Context**

Digital writing becomes powerful because it has the potential to meld easily verbal, visual and auditory communication: a see-saw between abstract (lingual modes) and intuitive (graphic arts modes.) Kinzer and Leu (1997) stated it bluntly, “[Language arts teachers] will be challenged to thoughtfully guide students’ learning within electronic information environments that are more complexly networked than traditional print media, presenting potentially richer and more integrated learning opportunities for both teachers and students” (p. 126).

The Menton students’ motivation for hypermedia work was high. While they were creating their stacks, they were much less likely to inquire about grades than with any other unit. All teachers received a periodic memo of school-wide discipline problems. The researcher was in the classroom when one arrived and Mr. Miles showed it to her. Although the names of several students from the computer class appeared on the list, never once in three months did the researcher observe any of them being disruptive in the computer lab. All students were absorbed in their work that actively engaged their attention.

Mr. Miles and the English language arts teachers were all on a friendly basis but the culture of this school isolated computer skills from the core curriculum. When one of the English teachers was asked about cooperation between the language arts program and the computer classes, the only communication example given was a request for Mr. Miles to teach students how to write a business letter. Business letters were a part of the English curriculum that the language arts department did not wish to teach.

Mr. Miles’ intent for “Animals of Africa” was for students learn hypermedia skills within the framework of general problem solving. During instruction, Mr. Miles promoted the concept of composing for an audience, and his students embraced this notion with a variety of techniques and a high measure of success. Students accepted the challenge of filtering their thoughts through the readers’ needs and probable experiences; they expressed a relationship with their audience. Mr. Miles recommended a specific audience that helped students resist the developmental impulse to write whatever pops in their heads. Yet Mr. Miles explicitly denied teaching anything related to writing. Language arts teachers highlight audience awareness because it assists composers in focusing their work. Yet during this unit, the language arts teacher was unaware of the seventh graders’ focus on audience.
The necessity of an integrated school-wide schedule formed a barrier for computer integration in core subjects. Menton teachers were happy with the trimester system. While this type of scheduling has positive effects on the curriculum, there are serious drawbacks as well. At any given time, two-thirds of the students were not participating in computer instruction. So, if the language arts teacher were to build lessons on the solid understanding of audience awareness (albeit using hypermedia), he would face students who either hadn’t had lab yet or had experienced it months ago.

DISCUSSION AND CONCLUSIONS

This ethnographic research was undertaken in order to identify significant patterns in a naturally occurring classroom setting. Under ethnographic analysis three strong themes emerged. First was the ways in which hypermedia enabled composers to focus on electronic literacy skills as they learned to communicate with a full palette of text, sound and image tools. These electronically literate students could manipulate a variety of verbal and non-verbal clues to identify and assist their readers, such as bulleted items, using voice-overs, and employing assistive design elements. In a knowledge-based culture, educators need to promote the ability to communicate with these tools. Lest specialized hypermedia programs as HyperStudio, EZedia, or MicroWorlds be thought too esoteric for literacy teachers to use, this study does have implications beyond specific software. The ability to link information, topics, and ideas now extends beyond highly technical programming to webpage construction software, presentation tools, and even typical word processing software, thereby placing the communication potential of video, graphs, color and sound at any author’s fingertips. These enhancements of commonplace software are immensely significant for language arts teachers as an intriguing and promising environment for enhancing students’ communication skills.

Secondly, the data strongly showed that after instruction, students were quite capable of focusing on a specific audience using sophisticated cueing strategies. Insight into the readers’ needs is a crucial piece of any compositional process (Cohen & Riel, 1989; Dahl, 1998). Hypermedia, in general, demands that for every change in link, button or sequencing structure, the author must consider how, why, and when the reader/user will interpret or activate it. Our understanding of hypermedia’s value in language arts most often stresses the role of hypermedia as it relates to the user (reader) and not the author (writer) (Ayersman, 1996). Composing with a multi-media palette
can offer benefits to the composer, especially within the process of finding, rejecting or selecting images, effects and sound. By reflecting on how these elements relate to the audience’s needs, interests, or moods can assist in a composer’s recursive process of determining what to include or exclude. Today’s writers are acquiring new semiotic tools, tools that can support audience awareness. Even more significant than students’ use of naming or context moves was the more sophisticated concept of strategy moves (in which the author uses attributes of the audience to make structural decisions). The “Animals of Africa” unit was extremely rich with these. Students used rhetorical questions, captivating comparisons, sincere warnings and proffered personal likes and dislikes.

This study carries implications not only for computer technology teachers but also for curriculum directors, administrators and college of education faculty members. The final triptych panel may contain the most powerful implication of this case study. The seventh-grade students gained significant writing skills while ostensibly learning computer skills. Yet the lines of communication between the computer teacher and core curriculum teachers were so minimal that Mr. Miles’ potential influence was largely untapped; no connections were made between what happened in the computer lab with what language arts teachers taught. Whether educators intend it or not students are developing, revising, and absorbing concepts about writing when they compose with hypermedia. It may be educationally valuable for language arts to know about the influences on composition in their buildings. School-wide conversations could greatly enhance the instruction in separate disciplines as well as supporting foundational literacy goals. Mr. Miles had the type of influence on students that would benefit his colleagues, but no one asked, and he was reluctant to offer or make suggestions. The potential for better and more integrated learning of core curriculum is not reached by perpetuating the traditional isolation of computer skills.

References


