Editor’s Message

In his *Critique of Pure Reason* (1929, Palgrave; http://www.arts.cuhk.edu.hk/Philosophy/Kant/cpr), Immanuel Kant showed how it can be that all our knowledge begins with experience, yet in order to make sense of those experiences we must know other things first. He focused especially on the fact that we frame experiences in space and time but cannot derive the ideas of space and time out of experience. His analysis provided the foundation for the constructivist educational theories of Jean Piaget, Lev Vygotsky, and John Dewey.

Kant’s conception of how an individual constructs knowledge out of internal representations has since been extended to models of how the individual makes use of socially constructed representations. A fundamental idea in this work is that the ways we represent knowledge shape what it is possible to know and what we need to know. We are both empowered by our representations and limited by them. In today’s realm of learning technologies, we would say that representations provide both affordances and constraints for sense-making.

This is why the new representational means of digital technologies can be so important. Although we cannot go beyond our human capacities in terms of space and time, we can use new media to engender experiences that enlarge the possibilities for making meaning. Hypertext is one such medium that has expanded those possibilities, and now, with hypermedia, the expansion continues.

In this month’s column, Jamie Myers and Rick Beach ask how hypermedia can foster critical literacy. They emphasize the social aspects of inquiry afforded by the new media. Drawing from their new book (Beach & Myers, 2001), they examine how new tools enhance the possibilities for six major dimensions of inquiry-based learning. They use examples from language arts classrooms to show that critical awareness and engagement are called for in the new literacy and in turn are fostered by immersion in new forms of representation.
How Hypermedia Fosters Critical Literacy

Hypermedia combines hypertext (texts linked together by multilinear nodes) and multimedia (e.g., photos, video, art, audio, text) to produce an interactive media experience for participants. Because hypertext allows participants to choose optional paths through multimedia, participants can construct and respond to hypermedia interactively. Literacy instruction has recently been enabled and broadened enormously through the rapidly developing array of technological tools used to create hypermedia. Our representations of the world are viewed electronically as quickly as we move whole paragraphs to change the flow of words and the position of graphics. Discussion groups and live chat rooms provide wide-open spaces for the negotiation of subjectivities and the construction of our possible identities. The image, the animation, video, and music spill in and out of our desktop computers contributing to the expanding intertext we create to name ourselves, others, and the world. It will be just as critical in the next 10 years, as it has been in the last 10, to constantly remind ourselves that the power of technology is generated within our cultural uses of these tools and not simply determined by the nature of the tools themselves.

That said, we cautiously set out in this column to highlight some pedagogical frameworks in which we believe students have used hypermedia tools such as Storyspace™, HyperStudio™, HyperCard™, and various Web authoring programs to generate a practice of critical literacy (McKillop & Myers, 1999; Myers, Hammett, & McKillop, 1998). Our underlying assumption is that our uses of representational tools to signify and negotiate meanings are embedded in larger socially constructed literacy practices in which our symbolic activity helps us to (a) achieve the culturally valued purposes of a community and (b) negotiate the opposing values of multiple communities.

How we speak, dress, gesture, listen to music, and use texts from print to video provide the symbolic tools through which we interact and interpret one another and the world. Our ongoing symbolic interactions and activity within a community, or what we refer to as a social world, not only result in our implicit acquisition of the symbolic tools needed to keep the community going, but also construct the ideology of possible identities, relationships, and values realized within that community. Hypermedia authoring for critical literacy pushes this one
layer further when students create hypermedia texts to explicitly reflect on how symbolic interactions construct community and ideology.

The hypermedia practices we highlight, therefore, evidence the use of technology in which authors use symbolic tools to name, critique, and negotiate the underlying ideologies constructed and often contested through symbolic interaction within or between multiple social worlds. As Edelsky (1999) noted,

> Studying systems—how they work and to what end—focusing on systems of influence, systems of culture, systems of gender relations...being critical means questioning against the frame of system, seeing individuals as always within systems, as perpetuating or resisting systems. Being noncritical...means seeing individuals as outside of...[and] separate from systems and therefore separate from culture and history. (p. 28)

Because acts of critical literacy are embedded in larger cultural practices that circumscribe how and why we create and use texts, we must pay particular attention to the pedagogical frameworks in classrooms in which we ask students to author hypermedia as critical literacy.

**Critical Inquiry Into Social Worlds**

The first pedagogical frame for hypermedia construction asks students to look into how words, symbols, and actions construct our social worlds as systems. Our book (Beach & Myers, 2001) more fully describes the curricular framework we advocate for English language arts classrooms. Briefly, this inquiry-oriented curriculum involves six recursive inquiry strategies that are involved in hypermedia productions.

1. **Immersing**—entering into the activities of a social world, experiencing the social world as a participant, or observing a social world. Students may use hypermedia software to collect and link images and texts (e.g., those of adolescent females scanned from teen magazines and ads).

2. **Identifying**—defining concerns, issues, and dilemmas that arise in a social world, or from conflict across multiple social worlds. In identifying various intertextual patterns evident in the images of adolescent females, students identify the issue of how these magazines portray females to achieve the purposes of the beauty-industry system.
3. **Contextualizing**—explaining how the activities, symbols, and texts used in one or more social worlds produce the components of a social world—purposes, roles, rules, beliefs, and traditions operating in a system. By pulling images and texts out of their original context and recontextualizing them in a new hypermedia context, students become more aware of how the magazine images of adolescent females reflect an ideology of commercialism and consumerism in which their possible identities, relationships, and values are positioned.

4. **Representing**—using symbolic tools to create a text that represents a lived social world or responds to a represented social world. Students use hypermedia to represent their own beliefs or to explain how texts are used to represent worlds to achieve certain purposes. They juxtapose pictures and video from their own lives that resist and oppose other commercialized images of females.

5. **Critiquing**—analyzing how a representation of a social world privileges particular values and beliefs; analyzing how particular literacy practices within a social world promote certain meanings while marginalizing other possibilities. In hypermedia projects this is most often accomplished by setting contesting texts in juxtaposition to create a critique of opposing values and identities.

6. **Transforming**—revising one’s meanings for the components of a social world, changing one’s actions and words within a social world to construct more desirable identities, relationships, and values. Through hypermedia authoring students both identify and experience how symbolic interactions and texts construct the ideologies of their social worlds, thus generating the power within them to use words, symbols, texts, and actions with others in alternative ways that seek to transform problematic social worlds.

Ninth graders at State College High School used a range of hypermedia tools to inquire into various social worlds in which they were members (http://www.ed.psu.edu/k-12/socialworlds). Three of the projects introduced students to specific hypermedia software while the fourth involved students videotaping themselves playing computer video games. Across the projects, as students analyzed multimedia texts and created new texts to represent their ideas...
about a social world, they engaged in a critique of the values constructed within
a social world.

One student examined the social world of peer groups in the high school. She
took many digital photos of groups in action during the school day. Using
Adobe Photoshop™ she edited these images to grayscale and colorized specific
objects that signified group belonging or exclusion. Through her final photo essay,
projected through the computer, she represented the complexity of peer group
relationships:

My favorite picture is one of a group of girls standing together in the bathroom. Every
girl in there is from a different group, and yet the girls all mingle and talk. This is one
of the best examples of an objective group because, although I know this sounds
odd, no one is judged in the bathroom.

By highlighting how our uses of specific symbols in particular spaces con-
struct our social relationships, this student’s project generates the possibility of
transforming the symbolic interactions that construct future peer relationships
beyond the bathroom.

Several of the ninth graders used the software Adobe Premiere™ to author
QuickTime movies from still images, video clips, and music. By juxtaposing a series
of images set to specific types of music and song lyrics, the final hypermedia
product focused on a value, identity, or relationship significant within a social
world. One of the boys used scenes from the movie Days of Thunder (1990; Tony
Scott, Director) and clips from the song “The Distance” by Cake to represent how
a “romantic interest will drive an athlete to perform better than he has before
and strive to be the best. On the other hand, if the athlete is in a troubled rela-
tionship…performance will suffer notably.” While there is much to the ideology
underlying competitive sports left unexamined in this hypermedia project, the
intent to reveal an underlying value, and the analytical processes engaged to
construct the hypermedia representation of this value, initiated the practice of a
critical literacy.

Students also used SoundEdit 16™ software to isolate lyrics in popular songs
in order to explain how the words represented significant experiences in social
worlds. By far the most popular with the ninth graders was the critique of how
songs represented the various aspects of relationships and identity within the
social world of romance. One girl used popular music to represent how “people care
for other people by their words and actions” in various romantic relationships.
Because she believed that romance meant many different things, she used the power of sound editing to juxtapose short clips from popular songs to explore how “within each relationship some kind of conflict occurs” and how “people might change the aspects of this social world by doing something different in a romance.” The critical literacy practice initiated through this technology tool is one that teachers often struggle with when they ask students to specifically explain why they like or do not like a song, movie, or text. Here, the student was able to isolate specific meaningful excerpts and, in juxtaposing them with other clips, explicitly identify the words and actions that promote particular underlying values, forms of relationship, and possible identities.

The ability to digitize video from handheld cameras gives students an important tool for analyzing interactions and activity in a social world. When two boys examined their own video game playing, they noted how particular behaviors were constructed, “such as attitude change, relationship depletion (for short periods of time) and anger and/or celebration.” Here is an important instance of how students can engage in a critique of their own use of a highly popular technology tool by using another technology tool to capture, analyze, and represent their critique. The students noted how the different video games constructed feelings of success and power as they escaped the pressures of outside social worlds—particularly school and family worlds.

Important to the construction of a critical consciousness is how these technology tools allowed students to focus on specific symbolic actions and words and to explicate how our uses of texts construct the ideologies underlying social worlds. With this awareness comes the hope of greater consciousness and agency in interpreting and authoring texts and, thus, the ability to transform future social worlds to achieve higher levels of social justice and equity.

**Critical Response to Literature**

Students also use hypermedia to construct critical responses to literature (Landow, 1997; McKillop & Myers, 1999). Technology tools allow readers to connect to the text a vast array of multimedia life experiences that become relevant through their response to the text. They may construct their own hypertext versions of texts, including thematic/lexical annotations or intertextual links or paths/trails to related texts, themes, topics, biographical information, or historical contexts. Although much of talk or writing about texts focuses simply on response to a
text, hypermedia invites students to explain their textual experience within the larger cultural and ideological contexts that shape their interpretations. For example, in studying Daniel Defoe’s *Robinson Crusoe* students used hypermedia to post alternative versions of the story that reversed the master/servant roles of Crusoe and Friday, along with background cultural information about Western imperialism (Soetaert & Mottart, 1999).

Students have used QuickTime videos to interrogate or challenge implied ideological stances evoked by literary texts. In response to Ray Bradbury’s *Fahrenheit 451*, two teachers had small groups create QuickTime videos about a significant theme in the novel: individuality, knowledge as power, censorship, utopia, or thought control. Using the software Avid Cinema™, 15 groups of students extended these ideas into images, movies, music, and words drawn from their own everyday lives. Their movies (http://www.ed.psu.edu/k-12/fahrenheit) became opportunities to express their own ideologies as they layered personally significant experiences with popular culture onto the literary experience of the novel while simultaneously reinterpreting the potential meanings of the texts in reference to it. The small-group structure also forced the students to continually negotiate the potential meanings for (a) each text used in their video and (b) the meaning constructed across the sequence of juxtaposed clips.

In these hypermedia productions, the concrete portrayals of experience in sound, music, or video clips play an important role in fostering critical analysis. Employing particular graphic material invites students to go beyond easy generalities about an issue to grapple with the everyday realities portrayed in the clips. As Halio (1996) notes, “the more particular and specific writers are when they construct possible worlds, the more general and applicable the meanings of these texts become” (p. 345). She cites the examples of students portraying the effects of television violence on children:

> Those who added sounds of children playing violent kicking games after watching the Power Rangers, or playing peaceful creative games prior to watching television, were able to move beyond generalities into specifics. Rather than standing off from the scene and observing clinically, the authors moved into their texts, orchestrating effects—talking about particular children and particular television shows. (p. 345)

Students have also used sound and music as ironic or contradictory comments against the official meanings associated with the image or text. In a literature-of-wars project in Browning’s (2000) class, students opened the project on the literature of war with Jimi Hendrix’s version of “The Star Spangled Banner.” Ironic
juxtapositions were generated often in an extensive class response to William Shakespeare’s *Romeo and Juliet* (http://www.ed.psu.edu/k-12/culture/roj). Songs such as “Some Enchanted Evening” sung by Frank Sinatra and “Come to My Window” by Melissa Etheridge became the soundtracks for digital images of the students enacting the masked ball and a video clip of Romeo climbing to Juliet’s balcony. The greatest irony was generated when two additional soundtracks were offered for Juliet’s funeral scene, creating two entirely new moods for the visual experience of the event.

Constructing these intertextual and intercontextual links between texts and cultural contexts leads students beyond the text to examine how they are being positioned in a media culture to adopt certain ideological stances. (For additional examples of critical hypermedia in response to literature, see http://www.ed.psu.edu/k-12/culture.) They must then grapple with the question, What must a reader believe or value to have this response to the text? Answering this question leads them to critique the underlying ideologies that frame the interpretation of a text. Creating alternative anti-imperialist versions of Robinson Crusoe leads them to entertain tensions between contesting ideologies rather than the textual artifact alone.

*Going beyond illustrations to interrogations.* Students often initially use hypermedia simply to annotate or graphically illustrate a text. For example, in response to E. Annie Proulx’s *The Shipping News*, a class of central Pennsylvania undergraduates in English education formed small groups and also built websites in response to the novel (http://www.ed.psu.edu/k-12/shippingnews). These students responded to more traditional literary aspects such as character, theme, and style. In webpages about the main character Quoyle, students connected his circumstances, motivations, and development to other characters in other stories, movies, and music. Other students responded to themes of death and romance, connecting other multimedia texts that offered similar perspectives. Many students responded to the language used in the novel and created sites to focus on knots and other stylistic elements, making connections to similar texts. However, although these students generated an interesting intertextual array of texts for interpreting the novel, their juxtapositions did not seem to intentionally attempt to expose problematic representations or contest underlying ideologies between the text and their own lives.

In contrast, in responding to the same novel, a group of university students in Newfoundland, Canada, constructed a hypermedia website
(http://lord.educ.mun.ca/educ4142) that represented a more critical interrogation of the text (Hammett & Barrell, 1999). On the basis of instruction about ideological stances evoked by texts, many of the students resisted the portrayals of their home, Newfoundland, in the novel and, working through this response, created websites full of images and text that read against depictions in the novel. The hypermedia representational tools provided an opportunity for students to explore their own identities and communities and to juxtapose images and texts based in ideologies that contested those attributed to Proulx through her text.

One reason that the Newfoundland students adopted a more critical stance than the Pennsylvania students was that they framed their representing and contextualizing in terms of the issue of Proulx’s misrepresentation of their own cultural world. When critical literacy practices emerge from authoring hypermedia in response to literature, the exposure, exploration, and juxtaposition of one’s own life experiences to offer contrasting meanings is always present (Myers, Hammett, & McKillop, 2000).

Knowledge Construction in the Classroom Through Hypermedia

In this pedagogical frame, students author hypermedia to construct knowledge about the world or alternative perspectives about different phenomena.

Poetic devices knowledge base. McKillop (McKillop & Myers, 1999) taught seventh graders to use StorySpace™ to build hypermedia knowledge bases in which students combined original poems, images, and QuickTime movies (using Adobe Premiere) to explain the various literacy devices used in poetry. While the analysis of the multimedia pages and hypertext links found many media connections functioning as simple iconic illustrations of ideas in poems (e.g., the picture of a bird because the poem mentions a bird), some instances of critical thinking occurred when students juxtaposed texts to generate contested meanings. One of the best examples involves the juxtaposition of a student’s poem originally titled “The Springs” with an excerpt of a nature video of a bear catching and eating fish. By changing the title of the poem to “The Crying Fish” the student intentionally sought to resist the intended meaning of the nature video by making the bear’s actions problematic.

Cultural literacy practices. Graduate students at WooSong University, South Korea, authored websites based on their inquiries into cultural literacy practices
Various small groups explicated how cultural identities, relationships, and values were constructed through symbolic interactions with particular texts. The students examined how the issue of Korean reunification is represented by media texts in juxtaposition to personal opinions; how the use of hand phones and the advertising of cellular services constructs particular values, relationships, and identities; and how texts construct such a high value for Pikachu among Korean children. The influx of Japanese animation, environmental water issues, pressures to be a sports hero, and the use of children’s literature in schools are among other knowledge bases constructed about Korean literacy practices.

**Teen issues.** Thirty small groups of ninth graders published a website (http://www.ed.psu.edu/k-12/teenissues) about teen issues around four main themes: fitting in, family and friends, romance, and out in the world. Each small group published webpages with essays and a QuickTime video to explore several aspects of their life experience as teenagers.

**American history/culture.** Patterson’s (2000) middle school students at Portland Middle School, Portland, Michigan, used Storyspace™ to construct hypertexts based on research on U.S. history and culture (http://angelfire.com/mi/patter/america.html). In a joint project with students in Ghana, Africa, the African students wrote the first part of a story about a slave captured in Africa, and the Portland students completed the story with the slave’s experience in America. Students then created hypertext narratives with links to information about slavery. Others created biographical webs for Sitting Bull and for Sacagawea—the Native American who accompanied the Lewis and Clark expedition—again with links to historical events. Some students used Native American poetry to create poetry webs with links to information about Native American history and culture. As Patterson noted (http://www.npatterson.net/mid.html), working with Storyspace™ shifted students away from simply rehashing information about persons to understanding people and events as shaped by historical and cultural forces.

**Other Views**

**Hypermedia/Hypertexts**

We have illustrated several instances in which hypermedia authoring generates what we define as a form of critical literacy. We are less sanguine about
the degree to which students will adopt a critical stance in responding to hypermedia/hypertexts produced by others. Students may be so mesmerized or overwhelmed by navigating the many options and paths in these texts that they may focus more on structural cues for activating links than on critically responding to texts (Douglas, 2000; Goldman & Rakestraw, 2000). They may choose only links consistent with their own beliefs and attitudes, mitigating any potential tension between their own and the text’s ideological stances. This role of reader as active constructor of texts raised the question for Landow (1997), who asked “WHO controls the text?” (p. 267). In their critique of uses of hypermedia in the classroom, Palumbo and Prater (1993) argued that the creation of alternative links/pathways makes for highly disorienting experiences with users becoming “lost in hyperspace” through “cognitive overload, user disorientation, superficial browsing, and disinterest” (p. 67). Landow (1997) took a different perspective, perceiving the role of disorientation as “pleasurable, even exciting” (p. 117).

In the midst of this debate between advocates of print versus hypermedia, Ryan (1999) was wary of the “either/or” essentializing of oppositions between print texts (e.g., linear, ordered, sequential, having authorial authority and pre-determined meaning, hierarchical, logical) and electronic texts (e.g., spatial, de-centered, bottom-up, playful, fluid, interactive). She noted that these features can also be applied to both electronic and print text. She expressed concern that hypertext theory has too often resorted to an “End of the Book” rhetoric that doomed to extinction the pleasures and modes of thinking associated with the print medium. This rhetoric has done more to turn off amateurs of literature than to promote electronic textuality (p. 104).

Theorists have also raised questions about how hypermedia expropriates and refashions traditional media. Bolter and Grusin (2000) examined the ways in which new digitalized hypermedia refashion or “re-mediate” more traditional forms of media-television, film, radio, or print texts, creating hybrid mixtures of the old and the new. (See http://www.lcc.gatech.edu/%7Ebolter/remediation/book.html for a summary and video clip about their book.) For example, in the United States a Cable News Network webpage refashions on-the-spot television news coverage by continually updating information, simultaneously providing information on alternative topics, and even engaging users through polling. At the same time, the old media draw from the new media to keep their audiences. Film incorporates
computer digitizing to create virtual realities; television news includes computer read-outs and graphics and refers viewers to its own webpages.

A central element of the new digital hypermedia is “hypermediacy,” which Bolter and Grusin (2000) defined as a fascination with the media form itself and its immediacy of presentation that evokes an immediate, emotional response. Hypermediacy equates this emotional experience as highly mediated by hypermedia with a sense of reality, raising interesting questions about reality (or virtual reality) and truth.

In an essay about the pedagogical implications of this shift toward hypermedia, Bolter (1998) argued that hypermedia challenges the traditional emphasis in literacy instruction on understanding or producing unified coherent texts based on a definitive single perspective. Drawing from Landow, he called for an alternative focus on teaching a “rhetoric of expectations and arrivals” (p. 10) that helps students understand where certain links may take them and how they should respond to their destination. Given the important role of graphic representations in hypermedia, he posited the need for often marginalized art and video-production instruction to help students respond critically to images.

These portrayals of a hypermedia world suggest the need for major changes in literacy instruction to provide students with a range of tools for interrogating their social worlds. The three pedagogical frames described in this column illustrate how hypermedia authoring invites students to connect their media-rich everyday lives to the print-dominant texts of school learning and, in doing so, to negotiate fuller meanings for all texts in terms of the possible identities, relationships, and values promoted within the literacy/mediacy experience. As students use hypermedia authoring tools to focus and juxtapose particular words, images, symbols, and sounds, they can generate critiques of the ideologies that define their contested meanings and shared social lives. Within such a critical literacy practice, hypermedia authoring constructs the critical consciousness and agency required to transform the texts of our lived and represented world.

**Website of the Month**

A primary tool employed to construct hypermedia and hypertexts is Storyspace™ (Bolter, Smith, & Joyce, 1990) published by Eastgate. The Eastgate webpage (http://www.eastgate.com) describes various uses of Storyspace™ in the writing classroom as a tool for constructing hypertexts. Storyspace™ allows students to
develop and link multimedia material within windows that can include or be embedded in other hierarchical windows. Students can continually view their work from linear, hierarchical, tree, or network perspectives that serve as a tool for defining and revising their intertextual links.

Readers of hypertexts created with Storyspace™ can keep track of the lexia or pages they have visited using the Roadmap feature. Storyspace™ has been easy for middle school and high school students to learn, equally appealing for college students and teachers, and it provides better dynamic organization with a more Web-like presentation than software like Hyperstudio™. Projects can be exported to HTML files for Web publishing. (The PC version of the software, however, does not handle QuickTime video or sound-file embedding as well as the Macintosh version does.) The Eastgate webpage also contains numerous links (under “Courses”) to largely college course syllabi describing various uses of hypermedia and hypertext in the classroom.

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**Glossary**

**Hypermedia**: a combination of hypertext and multimedia that creates interactive experiences with media.

**Hypertexts**: texts linked together with various navigational tools so that users can select a range of different paths or trails.

**Lexia**: the different pages linked together in hypertext, triggered by clicking on words or buttons.

**Multimedia**: music, sound, images, artwork, graphics, or video, for example, incorporated into hypermedia.

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