4 Identifying and Describing Constructively Responsive Comprehension Strategies in New and Traditional Forms of Reading

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OUR GOALS FOR THE CHAPTER

We begin this chapter with a definition of constructively responsive reading comprehension strategies. We then describe the theoretical and practical significance of the investigation of strategies. Next, we consider the means to investigate these strategies, noting recent developments in new and mixed methodologies that help us catalog and describe the diverse constructively responsive reading comprehension strategies and their uses. We describe strategies of reading comprehension, with a focus on recent research of the strategies involved in reading multiple documents and in Internet and hypertext reading. We conclude by proposing future directions for research of the constructively reading comprehension strategies and for the methodologies that enable this inquiry.

A DEFINITION OF CONSTRUCTIVELY RESPONSIVE READING COMPREHENSION STRATEGIES

Reading comprehension strategies involve mindful plans that demand reader attention and resources, and are focused on the goal of constructing meaning (Kintsch, 1998). More specifically, reading strategies are “the reader’s deliberate, goal-directed attempts to control and modify their efforts to decode text, understand words, and construct meanings of text.” (Afflerbach, Pearson, & Paris, in press). Strategies figure largely when an elementary student effectively searches the Internet for information on the Nez Perce, and reads and understands text to learn new information that is used to help construct a diorama for a class project. The strategies help a middle school student reading two original source texts of the Boston Massacre, one each from newspapers in London and Boston, and analyzing and critically interpreting the texts for their provenance and accuracy. Strategies are essential for the high school student reading and studying for a unit test, realizing that little has been understood and remembered, and deciding to more carefully read the previous three pages. Strategies figure largely in an adult reading two opposing editorials on the war in Iraq to help shape a personal stance towards each editorial and towards the war itself.

Strategies are notable for their intentionality: the goal-directed and resourceful application of strategies distinguishes them from other reading processes, which can include perceiving of visual information from the page through the eye to the brain (McConkie, 1997) and the automatic retrieval of meaning from well-learned and rehearsed sight word vocabularies (Perfetti, 1985). Strategies vary in form and function. As well, they differ in the attention they demand of readers, highly practiced, oftentimes near automatic and operating at the edge of consciousness, while at other times deliberate and
resource consuming. Thus, particular reading strategies are most often surrounded by reading skills and other, related reading strategies, making the delineation and nature of each strategy an important research goal.

Strategies are developmental in nature: they may, in a reader’s initial uses, demand the reader’s full attention for successful implementation, and then require less attention as they are practiced and mastered. Thus, strategies can be “skills under consideration” (Paris, Lipson, & Wixson, 1983). Strategies are related to skills in that particular reading strategies, with practice, may become skills; those operations that are conducted by the reader without attention, and automatically. In challenging reading situations, strategies may morph from the quick and effortless use to the thoughtful and effortful application that characterize skill and strategy, respectively. The nature of a strategy is contextually determined in relation to the familiarity of the text topic, the genre of text, and the nature of the reading and reading-related tasks (e.g., read a chapter and answer a theme question). We may experience such a range of strategy use within one reading event, as when we effortlessly process known words, increase the time and attention given to summarizing text, and grind to a slow pace when trying to determine the meaning of unknown words.

Consider the following passage, taken from Afflerbach (1990), which when read silently helps us become reacquainted with some of those strategies that are raised to consciousness when the construction of even a literal meaning is challenging:

It is legitimate to further characterize the broadpoint appearance as a major archeological horizon marker for the eastern seaboard. In the terms of Willey and Phillips, a horizon is “a primarily spatial continuity represented by cultural traits and assemblages whose nature and mode of occurrence permit the assumption of a broad and rapid spread.” That a quick expansion of the broadpoint-using peoples took place is indicated by the narrow range of available radiocarbon dates, along with a correspondingly wide areal distribution of components. Once established, the broadpoint horizon developed as a “whole cultural pattern or tradition” in its own right by persisting and evolving over an expansive region for 500 to 1000 years. (Turnbaugh, 1975)

Attempts to understand the above text typically evoke constructively responsive reading comprehension strategies. These may include efforts to identify key vocabulary (e.g., broadpoint), to note the novel use of other vocabulary (e.g., horizon) and to engage appropriate prior knowledge (What do I know about radiocarbon dating?). These strategies are coordinated and used in conjunction with metacognitive strategies that include comprehension monitoring (realized in relation to re-reading and varying the rate of reading to accommodate the degree of comprehension) and parsing sentences in an attempt to make them more manageable for processing, as readers seek to construct meaning. We note that the text, which focuses on Native American broadpoint arrowheads, has been modified to eliminate some of the cues that readers typically use to help build meaning, including a title or topic sentence. This renders reading more difficult and helps bring cognitive strategies to the surface, allowing us to focus on and perhaps, scrutinize them. We believe that reading the above text excerpt illustrates well the fact that while we are talented and opportunistic strategy users, we may not always (or even frequently) be aware of the strategies we employ. Challenging reading can remind us of the sometimes arduous nature of strategy use.

Strategy use is a central feature of constructively responsive reading (Pressley & Afflerbach, 1995) in which successful readers

know and use many different procedures (strategies) in coming to terms with text: They proceed generally from front to back of documents when reading. Good read-
ers are selectively attentive. They sometimes make notes. They predict, paraphrase, and back up when confused. They try to make inferences to fill in the gaps in text and in their understanding of what they have read. Good readers intentionally attempt to integrate across the text. They do not settle for literal meanings but rather interpret what they have read, sometimes constructing images, other times identifying categories of information in text, and on still other occasions engaging in arguments with themselves about what a reading might mean. After making their way through text, they have a variety of ways of firming up their understanding and memory of the messages in the text, from explicitly attempting to summarize to self-questioning about the text to rereading and reflecting. The many procedures used by skilled readers are appropriately and opportunistically coordinated, with the reader using the processes needed to meet current reading goals, confronting the demands of reading at the moment, and preparing for demands that are likely in the future (e.g., the need to recall text content for a test). (pp. 79–80)

To summarize, constructively responsive reading comprehension strategies are used with effort and attention, in relation to a reader's goals and abilities. These strategies are developmental in nature, learned and then practiced by increasingly accomplished readers until fluency of strategy use is achieved. This creates the paradox in which the more successful we become with the use of particular reading strategies, the less aware we may be that we are using them. This should not belie the fact of reading strategies' importance to successful reading and the challenge they may present to developing readers. Strategies play a central role in traditional and recent contexts of literacy, and their use and effectiveness is determined always in relation to the complexity of the reading task.

THE VALUE OF STUDYING CONSTRUCTIVELY RESPONSIVE READING COMPREHENSION STRATEGIES

The past three decades have seen copious research on reading comprehension and the constructive nature of reading (Coiro & Dobler, 2007; Lorch & van den Broek, 1997; Pressley & Afflerbach, 1995; Snow, 2002; van Dijk & Kintsch, 1983). Our conceptualization of constructive reading comprehension strategies is always subject to modification and revision, evolving as our understanding of cognition, literacies and the contexts in which they operate contribute new information. There is much understood and agreed upon when it comes to conceptualizing and categorizing these strategies, yet the field will benefit from continuing efforts to further describe reading comprehension strategies, especially those involved in historically recent forms of reading.

Why study constructively responsive reading comprehension strategies? Beyond reminding us of the considerable achievement that reading represents (Huey, 1908), the continued study and explication of reading strategies has important theoretical and practical outcomes. Research on how people use strategies to construct meaning and how they use what is understood from reading can make ongoing contributions to theories of cognitive processes, strategy use in reading and the relation of strategy to other factors, such as readers' prior knowledge and affect in reading. Establishing this depth and breadth of knowledge helps us better understand these intricate workings of mind. The new information serves to replenish and extend our knowledge of the construct of reading. In turn, the refined understanding of basic psychological processes and the contexts in which constructively responsive reading strategies operate should have positive implications for how we conceptualize and foster students' reading development.

Knowledge of reading comprehension strategies, gathered through research, informs successful reading comprehension instruction programs (Pressley, 2000). This
knowledge helps us conduct task analyses of the things we would teach related to strategic reading and informs the manner in which we present and portray strategy use for students (Kucan & Beck, 1997). Further, clear understanding of these processes allows us to gauge comprehension instruction to readers' developmental levels, as along a novice-to-expert continuum. New knowledge helps us develop detailed approaches to teaching reading strategies that can include modeling, explanation and thinking aloud, as students engage in traditional and new forms of reading.

An overview of the methodologies of inquiry into reading comprehension strategies and their relation to theories of mind

There is an important relationship between the conception of mind and the means of inquiry used to investigate mind. With a historical perspective we can understand how behaviorists might describe thinking in terms of stimuli and response; under such a view reading involves a text and a reader's reaction to it. Information processing advocates could describe reading as the moving of considerable amounts of data from the text through the eye to the brain, with important text contents identified, learned and stored. And cognitive psychologists might consider these accounts as parts (and partial explanation) of the elaborate strategies that accompanied readers use to meld text with prior knowledge in the construction of meaning in relation to goals. Accompanying each of these perspectives are chosen methodologies, believed to be most appropriate for investigating particular phenomena.

The investigation of reading strategies (or mental operations, or moves, or processes) is influenced by contemporary conceptions of mind and accomplished through particular means of inquiry. In turn, investigations of psychological phenomena provide data, new information, that can change our conception of mind and suggest new areas and means of inquiry. Conception of mind and the characterization of readers as active processors, complex reactants, or absorbing sponges will, of course, influence our inquiry into their reading. For example, the idea that reading is enabled by sets of cognitive strategies and skills can be complemented by experimental methodologies that seek to identify individual strategies and skills, describe them in detail, chart their interrelationships and describe their workings in different contexts. Reading research has made considerable contribution to the first two areas, and is making inroads in the latter two. We note the reciprocity and recursivity of the paradigm-methodology dynamic: appropriate methodologies can provide data that contribute to paradigm revision and change, and this change can inform the future use of appropriate methodologies.

Reading comprehension strategies are invisible, and methodologies to investigate them must be designed to give us appropriate information from which we make inferences and hypotheses about strategy use and development. Across the centuries, we can trace efforts to better know what is going on in the human mind. Aristotle and Plato both encouraged colleagues to discuss their thinking; James (1890) and Wundt (1896-97) sought to determine and describe thinking and reading. A century ago, Thorndike (1912) produced descriptions of readers' comprehension processes that have considerable goodness of fit with contemporary narratives of reading and understanding. The dynamic nature of reading was explored using subjects' introspective reports (Huey, 1968; McCallister, 1930; Pickartz, 1954), despite the reign of behaviorism and the theoretical exclusion of verbalizations as data (Watson, 1913, 1920). Eye movement studies examined reading by collecting data on where readers' eyes tracked while reading (McConkie, 1997). Information processing models (LaBerge & Samuels, 1974) were applied to reading and research, along with ideas of the nature of working and long term memory. Problem-solving aspects of human cognition (Newell & Simon, 1972) were detailed, which contributed to the conception of reading as strategic problem-solving.
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(Olshavsky, 1976–1977). The role of reading strategies in processing text information was described in considerable detail by van Dijk and Kintsch (1983). Interest in metacognition (Brown, 1980; Flavell, 1979) further raised the need for online data (Ericsson & Simon, 1980) that helps describe how readers know their own thinking and in what way they control their mind processes (Paris & Alves, 2005; Veenman, VanHout-Wolters, & Afferbach, 2006). Most recently, inquiry into Internet reading comprehension strategies uses method that yields “a real-time movie of all online actions on the screen as well as an audio recording of verbal think-aloud data” (Leu et al, 2008).

One result of the past century’s work to describe reading is the robust accounting of reading strategies. This work suggests that reading behaviors are of notable consistency; it is the interpretive frameworks that we use to describe and define reading activity that change. Thus, we can review a century of reading research and interpret it according to salient paradigms and their accompanying research methods. We can consider periods including behaviorism, information processing and cognition, review this work and, based on our appraisal of the conditions and design under which data were gathered, recast findings in relation to our most recent understandings of reading.

Efforts to describe and detail the strategic work of reading often focus on accomplished readers, and this preference is intentional. More accomplished readers often are of higher verbal ability, they are more often successful in choosing and using reading strategies, and they may use more diverse reading comprehension strategies. Thus, these readers may be better able to describe and account for their strategies (when subjects are interviewed or asked to provide verbal reports), more efficient with strategy use (our models of reading comprehension assume success) and more diverse in the strategies they use (as we describe reading we attempt to be comprehensive and inclusive of successful strategy use). An ongoing focus on accomplished and expert reading can benefit developing readers. That is, as cognitive strategy research is charting the territories of expert performance, related efforts may inform approaches to reaching developing readers, in relation to the novice-expert paradigm. Here, the characterization of fledgling and accomplished reading can be used to so designate particular readers and then to speculate on the space between the two (Bruner, 1983). Determining this space is akin to identifying successive zones of proximal development (Vygotsky, 1979) for readers and considering appropriate strategy instruction in relation to this development.

SPECIFIC METHODOLOGICAL APPROACHES TO INVESTIGATING READING COMPREHENSION STRATEGIES

To date, researchers have used a variety of methods and data sources, including verbal reports and protocol analysis, theoretical task analyses, eye movements, protocol logs, observation of readers as they read and readers’ self-reports to examine reading comprehension strategies. Each of these methodologies and approaches is accompanied with contingent advantages and concerns. As important, each particular methodology may be used in relation to others, providing complementary accounts of reading comprehension strategy use and triangulating information so that our inferences about readers’ strategies may be bolstered. In this section we overview these different approaches and the manner in which they provide information about constructive reading comprehension strategies.

Verbal reports and protocol analysis

Verbal reports are spoken records of things that readers do and think related to their reading. Protocol analysis is the examination of verbal reports that allows us to describe
reader behaviors, specifically their strategies, plans and goals. Protocol analysis as methodology was systematically reviewed and carefully advocated by Ericsson and Simon (1980, 1993). They described the use of protocol analysis to explore information processing and cognition, and provided substantial evidence to support their claims of validity of the method. Aflerbach and his colleagues (Aflerbach, 2000; Aflerbach & Johnston, 1984; Pressley & Aflerbach, 1995) elaborated potential strengths of protocol analysis for describing readers' comprehension strategies, as well as caveats related to the methodology in reading inquiry. We believe that the verbal reporting approach to describing conscious processes in reading is best characterized as a maturing methodology, one which has demonstrated clearly its worth. The continued inquiry into strategic text processing with protocol analysis is enhanced by the rigor of methodological application (Veendman, VanHout-Wolters, & Aflerbach, 2006).

We are encouraged by the use of the verbal reporting methodology to explore newer literacies, including strategic processing in Internet and hypertext environments (Castele et al., 2008; Coiro & Dobler, 2007; Leu et al., 2008; Yang, 2003), the effect of epistemological understanding on metacognitive processes during online searching (Hofer, 2004), the influence of understanding diagrams on text comprehension processes (Butcher, 2006), and patterns of strategic processes when reading multiple documents (Wolfe & Goldman, 2005). Verbal reporting and protocol analysis are the source of considerable data that describes constructively responsive reading comprehension strategies. The methodology is well-suited to the task of providing descriptions of strategies of traditional reader-text interactions as well as more recently investigated acts of literacy involving readers with multiple texts and readers reading in Internet environments.

**Theoretical task analyses of reading comprehension strategies**

Theoretical analyses of reading comprehension strategies can help us predict what strategies readers will use in particular reading situations, as well as when and how readers will use the strategies. Task analysis should be conducted in relation to well-defined and detailed theories of reading comprehension. Cogent task analysis demands researchers to use state of the art knowledge about reading strategies, combined with our understanding of situational factors (including reader ability and affect, text components, and related task demands) to predict or infer readers' strategies, moves, and events. Diverse theories associated with individual differences, structures, and contents of materials, contextual factors surrounding subjects as well as target strategies should be comprehensively examined as a theoretical analysis is conducted. This will allow for the scaffolding of new understandings about reading strategies from the existing knowledge base. In either case, the triangulation provided by different data sources can provide information for which we have high faith, and this can be used to verify, revise, or amend our particular understandings of the nature of strategies.

Magliano and Graesser (1991) suggested a coordinated, three-pronged procedure that employs the theoretical task analysis of the readers' comprehension strategies, such as making inferences during comprehension. Also involved are the analyses of verbal protocols gathered online as subjects read, combined with data from offline measures such as readers' free recall of text and sentence reading times. Together, these data can be used to build more detailed accounts of reading strategy use and to provide evidence from each of the methodologies that is mutually supportive. Or, particular data may serve as the foil, disconfirming a hypothesis of reading comprehension strategy, based on conflicting information from the different methodologies. Each of the components in this three-pronged approach can play explorative, predictive, dispositive, or confirmative roles in helping us understand constructively responsive read-
ing strategies. Particularly, Magliano and Graesser emphasize that a finely detailed and well supported theory of text comprehension helps explain the missing or unclear information in analysis of verbal reports and behavioral tasks. In other words, the role of theoretical task analysis in studies on reading comprehension is to fill in gaps from experimental data with clearly specified theory of what may be occurring, while building an inferential bridge between real mental processes performed and verbal report data produced during the reading. Thus, a particular aspect of Magliano and Graesser’s approach is the anticipatory role that theoretical analysis can play in reading strategy specification.

Eye movement data and reading comprehension strategies

Studies of readers’ eye movements provide detailed information about reading as information processing (McConkie, 1997; Rayner, 1978, 1998; Rayner & Sereno, 1994). This research focuses on the behavior of the eye and allows inferences about readers’ strategies related to these behaviors. Rayner (1997) describes important eye movements that include fixations (where the reader’s eyes fix when reading), fixation durations (how long eyes remain fixed), saccades (the reader’s eye movement from fixation to fixation), and regressions (backward eye movements). Eye movements represent a mechanical and measurable aspect of reading from which inferences can be made about ongoing mental processes during reading (Just & Carpenter, 1980). Eye movement research provides data that can inform our descriptions of reading strategies. For example, eye-movement research provides an account of the physical moves of the eye when readers encounter and respond to new or inconsistent information in text (Hyona, 1995; Rayner, Chace, Slattery, & Ashby, 2006; Vauras, Hyona, & Niemi, 1992), when readers judge the relevance of text information (Rothkopf & Billington, 1979; Kaakinen, Hyona, & Keenan, 2002), and individual differences in strategy use (Hyona, Lorch, & Kaakinen, 2002).

Eye-movement research helps identify when and where accomplished readers consciously regulate their information processing, as when they regress in text to re-read. While eye-movement data may be less informative about the details and complexity of mental events during reading, they allow us to literally fixate on the places in text and time where readers “are.” With such information we may be in the position to make more informed inferences about reading comprehension strategies. Ongoing development with the eye movement methodology focuses on what may be more ecologically valid reading task situations, as when eye movements are examined in the reading of entire texts, as opposed to classic eye movement laboratory approaches in which readers read a series of single words or sentences (Hyona, Lorch, & Kaakinen, 2002; Hyona, Lorch, & Rinck, 2003).

Eye movements during the performance of mental tasks like reading are sometimes difficult to predict, and may be characterized by huge variability across readers. For example, the nature of eye regressions “has an infinite number of forms” (Paulson, 2005, p. 344). This may discourage researchers from predicting accurately the path of eye movements and at the same time quality interpretations in relation to their specificity and explanatory power. Although eye movements in reading are useful indicators, particularly in understanding the “where” in multimedia text processing (Kamil, 2004), the quantitative nature of the measurement limits the ability to address the qualitative questions of “how” and “why” processing and comprehension occur. Eye movement data are a potentially rich means of triangulating other reading process data. For example, combined with verbal reports, reading eye movement data can provide evidence of where readers’ eyes are, when they are there and how they operate in concert with readers’ reported strategies.
Self-reports of reading strategies: Process logs, interviews, questionnaires, and retrospective reporting

An entire class of data gathering processes involves readers’ reflective self-reports of strategy use. The assumption with such methodologies is that readers have access to knowledge of their strategy use and can reliably report their strategies. Although these approaches are subject to considerable skepticism (Veenman, 2005), they may provide useful information that helps us better understand the nature of strategic reading. Strategy process logs feature in writing research (Segev-Miller, 2007); they are typically used by writers as they reflect on the processes they use to create their texts. The use of process logs to study reading strategies involves readers reporting on the strategies they are aware of and remember using. As with verbal reports, readers’ verbal ability is implicated as reflective accounts demand from readers descriptive competence, to the point that accounts are helpful to the researcher. A further concern is the grain size of detail. That is, how and what is reported in a process log may vary in attention to detail and allegiance to the time frame in which self-reported strategies actually occurred. Finally, the retrospective nature of process logs can lead to memory influences on what is recorded and described.

Like process logs, interviews with readers and self-report questionnaires may provide information that is helpful in describing and conceptualizing reader strategies. Both interviews and questionnaires must be used and interpreted with care, as they often lack reliability. For example, in commenting on the relationship between self-reports of strategies and actual strategy use, Veenman (2005) found that readers “simply don’t do what they say they do.” Readers often fail to exhibit the strategies that they report they will use in prospective questionnaires and their performances often lack the breadth and frequency of the strategies claimed in retrospective questionnaires.

Whatever the insights provided by data from a particular methodology, they represent a single view to the complexity of accomplished reading strategy use, a view that should be complemented with data from other methodologies. Combined, different methodologies can assist us in developing highly refined interpretations of data and related models of readers’ cognitive strategies. While we have learned much about cognitive strategies in the last 30 years, we need still more rigorous interpretations to describe the complexity of reading strategies and the influence of contextual variables on them. For example, Kaakinen and Hyona (2005) experimented on the possibility of triangulation of verbal reports, eye-movement patterns, and recall rates to examine the effect of readers’ perspectives on comprehending relevant and irrelevant information from expository text. In this study, verbal reports help describe how readers deploy deeper processing strategies when reading a perspective-relevant sentence, and these conscious processes were substantiated by the measures of eye movements and recall rates. Leu et al. (2008) use Camtasia, a system that allows for videotaping readers as they interact with Internet texts while recording their think-aloud verbalizations. This information can be compared with records of students Internet navigation to create a thick description of strategies and the specific text environments in which they are used.

RECENT RESEARCH THAT DESCRIBES CONSTRUCTIVELY RESPONSIVE READING

The investigation of reading is almost as old as the field of psychology (Huey, 1908; James, 1890; Thorndike, 1917). An observation of a talented reader can reveal that there is something startlingly complex when the eye meets the page, and research increasingly informs us as to the inner workings of this impressive human accomplishment. Currently, two complementary forces guide our investigations of reading comprehension
strategies: one focuses on describing in increasing detail the cognitive strategies that readers use to construct meaning. The other seeks to contextualize this cognition in relation to the situations in which readers do their work.

Pressley and Afflerbach (1995) conducted a meta-analysis of research that uses think-aloud protocol data and created a comprehensive catalog of the strategies that readers use when reading conventional text. They analyzed 63 published research studies, synthesized findings across the studies, and developed a detailed description of constructively responsive reading. A thumbnail sketch of constructively responsive reading is presented in Table 4.1.

Pressley and Afflerbach (1995) characterized constructively responsive reading as expert and accomplished, involving three broad areas of strategy use: identifying and remembering important information, monitoring, and evaluating. For example, explicitly looking for related words, concepts, and ideas in text and using them to construct a main idea or summary statement is a strategy for identifying and remembering important information in text. Determining that a word is unknown and then re-reading to try to establish the word's meaning is an example of a monitoring strategy. Analyzing the nature of an author's claim and judging that the text provides sufficient evidence to support the claim is an evaluation strategy.

We do not intend to review Pressley and Afflerbach's (1995) work in this chapter. Rather, we aim to describe the research done since the publication of their book, examining especially acts of reading that are the focus of recent research. These include the reading strategies that may be specific to particular content domains, the reading of multiple documents, and reading with Internet and hypertexts. We replicated the

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<tr>
<th>Table 4.1: A Thumbnail Sketch of Constructively Responsive Reading Strategies</th>
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<tr>
<td>1. Overviewing before reading (determining what is there and deciding which parts to process).</td>
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<td>2. Looking for important information in text and paying greater attention to it than other information (e.g., adjusting reading speed and concentration depending on the perceived importance of text to reading goals).</td>
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<td>3. Attempting to relate important points in text to one another in order to understand the text as a whole.</td>
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<td>4. Activating and using prior knowledge to interpret text (generating hypotheses about text, predicting text content).</td>
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<td>5. Relating text content to prior knowledge, especially as part of constructing interpretations of text.</td>
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<td>6. Reconsidering and/or revising hypotheses about the meaning of text based on text content.</td>
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<tr>
<td>7. Reconsidering and/or revising prior knowledge based on text content.</td>
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<td>8. Attempting to infer information not explicitly stated in text when the information is critical to comprehension of the text.</td>
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<td>9. Attempting to determine the meaning of words not understood or recognized, especially when a word seems critical to meaning construction.</td>
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<td>10. Using strategies to remember text (underlining, repetition, making notes, visualizing, summarizing, paraphrasing, self-questioning, etc.).</td>
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<td>11. Changing reading strategies when comprehension is perceived not to be proceeding smoothly.</td>
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<td>12. Evaluating the quality of text, with these evaluations in part affecting whether text has impact on reader's knowledge, attitudes, behavior, and so on.</td>
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<td>13. Reflecting on and processing text additionally after a part of text has been read or after a reading is completed (reviewing, questioning, summarizing, attempting to interpret, evaluating, considering alternative interpretations and possibly deciding between them, considering how to process the text additionally if there is a feeling it has not been understood as much as it needs to be understood, accepting one's understanding of the text, rejecting one's understanding of a text).</td>
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<tr>
<td>14. Carrying on responsive conversation with the author.</td>
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<td>15. Anticipating or planning for the use of knowledge gained from reading.</td>
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methods of Pressley and Aflerbach, identifying research studies in reading, psychology, computer literacy, and related fields that examined reading strategies specific to a particular content domain, reading multiple texts and Internet and hypertext reading. Our synthesis of this research yields narrative descriptions of each of the above categories. As well, our synthesis is presented in Tables 4.2 and 4.3. To test the integrity of our meta-analysis and synthesis, we randomly selected research studies, isolated reported reading strategies and assigned them to the strategy categories listed in the two tables. These tests were successful, resulting in our confidence that the tables represent a comprehensive summary of reading in multiple text and Internet/hypertext environments.

Readers’ strategies in different content areas and knowledge domains

In spite of our considerable knowledge of individual reading strategies, we can benefit from more detailed understanding of how individual reading strategies are employed in the real-time of a reading event, and how domain knowledge and situational contexts influence reading strategy selection, use and success. Contextual variables that include task, reader ability, time, resources available, and present and anticipated human interactions may influence a reader’s choice of reading strategies and relative success in using them. An example comes from research on how readers employ strategies when reading history texts, one area of content-domain reading that has been relatively well-researched (VanSledright, 2002; Wineburg, 1998). General accounts of readers’ strategies include identifying and remembering important information in text, monitoring progress and accomplishment while reading and evaluating various aspects of the act of reading (Pressley & Aflerbach, 1995). For example, identifying and remembering important information in text includes using prior knowledge of language, content area and text structure as a filter for focusing on particular parts of text. We do not focus on articles (e.g., “the,” “an”) when we read a history text, just as we may not focus on a detailed explanation of the Boston Massacre if we believe that we already have an adequate understanding of it. However, history requires of readers special, domain-specific reading strategies that help them read like historians. To read like a historian is to understand the text and to construct meaning about when the text was written, who wrote it, and under what circumstances. This latter information, a type of subtext, is used by the historian to render judgments on the trustworthiness and reliability of the text and author. In addition, historians seek to identify text status. Thus, the history readers’ strategies may include searching for cues (including archaic vocabulary or syntax, text attribution, or author voice; Aflerbach & VanSledright, 2001) to determine if a text is a primary source text or a secondary source text. And this determination may then be used in developing an understanding of the trustworthiness of the author, the accuracy of the information, and the suitability of the resources used.

Each of the historian’s reading strategies relates to a more general characterization. For example, the strategies listed in the above paragraph, such as determining where information comes from and the trustworthiness of the information, fit easily within a category of critical and evaluative reading strategies (Pressley & Aflerbach, 1995). A concern is that these more general characterizations of reading strategy lack explanatory power because they are removed from the contexts and goals of history reading. Nevertheless, we do well to note commonalities of text structure and author approach and the readers’ strategies related to them. For example, the historian reads to find cues to determine whether he or she is reading a primary or secondary source text, and then makes a judgment about the accuracy of the author's portrayal, the truthfulness of the claims in relation to the historic record. Readers in science may search texts for evidence that serves to support an author's claim (in the form of scientific explanation) of why the moon looks larger when it is closer to the horizon. The reader who understands
what strategies to use to locate a claim in text, to search for evidence that supports the
claims and then to render judgment on the suitability of the evidence for supporting the
claim may do well not only when reading history and science, but also when reading
advertisements, political campaign material and other propaganda. To summarize, the
strategies used by readers in particular content domains appear to be a combination of
unique strategies with instantiations of more general strategies. Attention to how read-
ing comprehension strategies are used in content domains can inform our ideas about
families of strategies that cross content domains and reading tasks, and those iterations
of strategy that are particular to specific domain reading.

Reading comprehension strategies for multiple texts

In many reading situations, readers read sets of texts. They do so to compare and con-
trast author perspectives, to increase the depth and breadth of their knowledge, to write
reports or to prepare for exams. How do readers comprehend more than one text and
what strategies do they deploy? In relation to this question, research has identified mul-
tiple-document reading strategies. Readers of multiple documents are required to solve
the problems related to processing not only within a single text, but processing between
two or more texts to understand the whole set of documents meaningfully. As Perfetti,
Rouet, and Brit (1999) noted, in order for successful reading of multiple documents,
readers must use strategies to construct the document model, which comes from the
interaction between the situation model representing situated meaning from the texts
and the intertext model made of the connections among the different texts as well as
any additional information on the source, content, and goal of the texts.

Research exploring multiple-text reading demonstrates that a global understanding
(representing intertextual meaning across the different texts) is constructed by linking
activities which can be explained as comparing, contrasting, relating, and differenti-
ating information contained in each single text. For example, the strategic connecting
processes serve diverse sub-goals for learning from documents. Proficient readers
relate the currently read text to previous texts, extract related information by referenc-
ing, assemble the different ideas into globally coherent meaning (Hartman, 1995) and
continuously elaborate a cross-textual mental model by deploying linking strategies
(Wolfe & Goldman, 2005). Effortful strategies to piece together information from each
text contribute to the integrated understanding of all texts, and help readers monitor
their own comprehension strategies when attempting a particular reading task (Braten
& Stromso, 2003; Stromso & Braten, 2002; Stromso, Braten, & Samuelstuen, 2003).
Based on the links that they make across different texts, talented readers are able to not
only build an argument model of multiple sources and contents, but they also employ
the model to judge the usefulness and trustworthiness of the individual documents
(Rouet, Britt, Mason, & Perfetti, 1996; Rouet, Favart, Britt, & Perfetti, 1997; Wine-
burg, 1998). Even some fifth graders can evaluate reliability and validity of texts by
employing an event model structured in relation to the historical events described in

Reading multiple documents is the process of “deconstruction and reconstruction
of links among textual resources” (Hartman, 1995, p. 556), portrayed as a zigzagged
weave between one text and other texts or readers’ knowledge and text contents (Wine-
burg, 1998). At the beginning of reading several documents, readers may concentrate
on the current, single text whose reading will contribute to an initial, global representa-
tion. This representation may be referenced and revised in relation to the constructed
meaning of subsequent texts. Accomplished readers can rearrange their reading foci and
place increased attention on assembling meaning in different texts, and then attempt to
draw a mental bird’s eye view reflecting the global meaning structure across the texts as
they proceed to the subsequent readings. However, when readers lack prior knowledge and possess insufficient understanding of a previous or current text, they may reserve judgment of text contents and later try to solve the problem in the broad context constructed with intertextual connections (Wineburg, 1998). Consequently, linking strategies during the reading of multiple texts can serve to both revise and enhance meaning construction in a manner related to (and different from) single text comprehension.

Linking strategies are pivotal for understanding multiple texts, and constructively responsive reading strategies contribute to meaning construction, monitoring comprehension, and evaluating texts at the cross-textual level of reading. Based on work that classified reading strategies in broad groups (i.e., identifying and remembering important information, monitoring, evaluating; Pressley & Afflerbach, 1995), Table 4.2 extends that earlier work and contributes new information on reading strategies used with multiple texts.

Table 4.2  Constructively Responsive Reading Comprehension Strategies Used In Reading Multiple Texts

<table>
<thead>
<tr>
<th>1. Identifying and learning important information</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Reading and relating the current text to recently read (prior) texts</td>
</tr>
<tr>
<td>B. Predicting contents of current text based on understanding of previously understood text</td>
</tr>
<tr>
<td>C. Comparing and contrasting the content of the text being read with the content of related texts to develop a coherent account of cross-textual contents</td>
</tr>
<tr>
<td>D. Generating causal inferences by searching for relationships between texts and connecting information from current text with previous text contents</td>
</tr>
<tr>
<td>E. Elaborating with information from current act of reading (of two or more texts) to understand text contents by connecting ideas between texts</td>
</tr>
<tr>
<td>F. Identifying a theme or topic across multiple texts</td>
</tr>
<tr>
<td>G. Attending to an identified theme or topic across two or more texts to organize and remember this information</td>
</tr>
<tr>
<td>H. Organizing related information across texts by using related strategies (e.g., concept mapping, outlining, summarizing)</td>
</tr>
<tr>
<td>I. Activating knowledge acquired in previous readings to augment comprehension of the current text</td>
</tr>
<tr>
<td>J. Noting tentative meaning of texts and searching for information in other texts to reduce the ambiguity in this tentative meaning</td>
</tr>
<tr>
<td>K. Reading sections of different texts recursively, as required to solve problems across multiple texts</td>
</tr>
<tr>
<td>L. Building increased understanding of topic by re-reading the information contained in two or more texts</td>
</tr>
<tr>
<td>M. Using the increased understanding (new insights) to further learn from multiple texts</td>
</tr>
<tr>
<td>N. Taking notes to record information from current text and connect it to related information from previous texts</td>
</tr>
<tr>
<td>O. Focusing on gist information across multiple texts to recursively construct meaning</td>
</tr>
<tr>
<td>P. Rereading and linking text segments that were previously regarded as unrelated to finalize cross-textual meaning structures</td>
</tr>
<tr>
<td>Q. Identifying the unique and shared contributions of information to the constructed meaning of 2 or more texts</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Managing the local processing in one or multiple texts (e.g., constructing meaning from a paragraph) and the global processing in one or multiple texts (e.g., managing the synthesis of the constructed meaning of the paragraph with all related paragraphs to account for the entire reading)</td>
</tr>
<tr>
<td>B. Detecting a comprehension problem with a particular text and trying to solve the detected problem by searching for clarifying information in other available texts</td>
</tr>
<tr>
<td>C. Changing strategic processing foci from understanding within-text meaning to integrating across-text meaning by utilizing domain knowledge increased due to previous readings, during the sequential readings (i.e., decreasing links to primary endogenous resources and increasing connections to secondary endogenous resources when moving through the passages)</td>
</tr>
</tbody>
</table>
D. Monitoring comprehension strategies and meaning construction with current text in relation to constructed meanings of other relevant texts
E. Monitoring degree and nature of comprehension of a current passage by referencing exogenous sources, using knowledge established previously (beyond the current set of documents)
F. Regulating meaning construction strategies according to original task and goal and revised task and goal
G. Perceiving that multiple texts related to the same topic can provide diverse views about the topic, complementary information about the topic, or both
H. Managing meaning construction through understanding that different types of texts can contribute different types of knowledge to that meaning construction (i.e., in history, primary and secondary source texts may make different contributions to the construction of meaning)
I. Determining that existing content-domain knowledge or expertise, including specific strategies and knowledge, can be used when studying multiple texts in a specific domain

3. Evaluating
A. Using information about the source of each text to evaluate and interpret text contents
B. Perceiving and distinguishing the characteristics of different texts (e.g., text types, age, author, prose styles) and evaluating texts' accuracy
C. Perceiving and distinguishing the characteristics of different texts (e.g., text types, age, author, prose styles) and evaluating texts' trustworthiness based on these features
D. Perceiving and distinguishing the characteristics of different texts (e.g., text types, age, author, prose styles) and evaluating their usefulness for constructing meaning based on these features
E. Gestalt evaluation of text, employing a variety of criteria, to decide if text is useful in constructing overall meaning from several texts
F. Critically evaluating validity and reliability of texts by criteria of text contents, author's point of view, and context, using a cumulative representation of a whole document set
G. Conduct a text-to-text evaluation using a gestalt impression of each text
H. Evaluate one text in relation to another, using specific information in each text (e.g., comparing claim and evidence in two or more texts)
I. Judging usefulness of information provided by a single text in relation to other text
J. Evaluate contribution of single text to proximal and distal reading and task goals

Reading comprehension strategies for Internet and hypertext

Internet and hypertext reading are historically new forms of literacy, forms that are the focus of a considerable amount of research (Castek et al., 2008; Coito & Dobler, 2007; Yang, 1997). For this aspect of our investigation, we use what we believe to be an inclusive and general definition of hypertext:

Hypertext is made of blocks of text—in the form of written text, pictures, video and sound, chained together by electronic links. (Rasmussen, 2007)

This definition allows us to combine the work done in both Internet reading situations and other hypertext environments. We believe that hypertext and Internet reading represents a fundamental change in the architecture of acts of reading. With what can be called traditional reading, a reader interacts with a single text, applying strategies and skills with prior knowledge to construct text meaning. This construction of meaning occurs with in a problem space that allows for different single reader-single text interactions, but that is nevertheless bounded by the fact of the single text. Compare this with hypertext and Internet reading in which the same reader can face a number of unknowns related to possible links, possible texts, possible decisions and possible interactions. While readers can apply the strategies that work for traditional forms of reading, in hypertext, the reader-text(s) interactions may be more complex and demanding.

Hypertext reading presents particular challenges and students with fewer reading strategies (or less well-developed strategies) encounter difficulties when reading
in hypermedia environments. For example, searching for and locating information in hypertext challenges many readers' self-regulatory processes (Azevedo, Guthrie, & Seibert, 2004). In fact, a significant proportion of some students' cognitive capacity may be consumed by attempts to not get lost in the complex information structure of the World Wide Web (Eveland & Dunwoody, 2000). Hypertext introduces the need for readers to control uncertainty, as they move from a currently displayed text into a series of unknowns, encountering texts that may be both unhelpful and unnecessary to the task at hand. Further, readers must be strategic in maintaining a focus on the task at hand in a hypertext environment that may often distract.

As readers begin reading in hypertext environments, they must initiate a process that we characterize as realizing and constructing potential texts to read. By this, we mean that the rules of reading change: no longer is there one text, a given, for the reader. The reader must work to identify a series of links and texts that helps the reader move towards the particular goal attainment that is set prior to the commencement of reading. There is the potential for much uncertainty, given the ephemeral nature of reader choice, the degree of preciseness of search engines and strategies, and the universe of possible links to what may be related (or unrelated) texts.

Hypertext has the structure in which information units are multiply networked, and this feature demands readers' strategies for the processing of relationships among information (Alexander, Kulikowich, & Jetton, 1994; Balczytiene, 1999; Eveland & Dunwoody, 2000; Tremayne & Dunwoody, 2001; Yang, 1997; Wenger & Payne, 1996). Wenger and Payne (1996) demonstrated that for the effective learning from hypertext, readers need to attend to deciding and predicting connections that may exist between sites and their related information. In effect, inferences are educated guesses about unknowns that can include particular links, texts and solution paths. Readers must be able to anticipate and then contend with the reading space and path represented by hypertexts, and not just their content.

Alexander, Kulikowich, and Jetton's (1994) finding supports that hypertext readers tend to focus on how to access and relate textual information at the level of macroprocessing, in contrast to readers with linear text who attend to the processing of information at the micro-level. That is, during the hypertext reading, comprehenders use diverse linking activities for the construction of global meaning across networked-information in hypertext. Balczytiene (1999) observed that readers who have high metacognitive skills are able to allocate their cognition to construct a global mental model presented in hypertext structure, extracting the entire information and elaborating the mental representation in the relationships among sources. In this aspect, the reading of hypertext and multiple-texts are related in the use of strategies for relating information scattered in a complex reading environment.

While there are related strategies for multiple-document reading and hypertext reading, the latter may require particular metacognitive strategies to control the reading process (Eveland & Dunwoody, 2000; Tremayne & Dunwoody, 2001; Yang, 1997). This is because hypertext structure can have the characteristics of flexibility and complexity, simultaneously. With hypertext, reading text is a given, but what text is not. The possible flexibility of hypertext allows for readers to make particular choices on the path to constructing meaning, but this characteristic requires that readers not lose their way in a complex context in which a variety of irrelevant or seductive information may be linked, accessed, and therefore, presented.

Research shows that the product and process of comprehension with hypertext or the Web are influenced by text features, such as the internal information structure (McNamara & Shapiro, 2005; Salmeron, Cánas, Kintsch, & Fajardo, 2005; Schwartz, Anderson, Hong, Howard, & McGee, 2004; Shapiro, 1998, 1999) and the visualized functional structure or text format (Chen & Rada, 1996; Dee-Lucas & Larkin, 1995;
Hofman & van Oostendorp, 1999; Lee & Tedder, 2004), as well as interaction of these features with readers’ background knowledge or differences of cognitive processing styles (Baleviciene, 1999; Dunser & Jirasko, 2005). The structural uniqueness of hypertext requires specific, probably unique types of reading comprehension strategies when compared with more traditional text reading.

As Alexander et al. (1994) noted, dynamic information-presentation patterns in hypertext impose on readers a two-fold responsibility, which is to construct meaning and reduce the cognitive load. Skilled readers focus on constructing meaning in reading hypertext as long as few comprehension problems are detected. In contrast, as readers perceive a disorientation or that they are running askance of their plan, they allocate the cognitive resources to minimize the risk of hindering their comprehension, and becoming detached from the reading planned originally. In other words, hypertext readers need to draw on strategies for managing the information load to prevent disorientation (Tremayne & Dunwoodie, 2001; Yang, 1997). Cognitive strategies for orienting one’s self in hypertext reading compete for cognitive capacity that might otherwise be devoted to comprehension of text information (Eveland & Dunwoodie, 2000). Skilled readers are able to balance both demands for comprehending and orienting in hypertext. Recently, Leu et al. (2008) examined the strategies of Internet readers and proposed distinct families of strategy: Identifying a question of defining a problem, using the Internet to locate an information resource, critically evaluating information, and integrating information from multiple resources. They also examined the strategies used by readers related to communicating to share responses. Table 4.3 summarizes the constructive reading comprehension strategies used by readers during Internet and hypertext reading.

Table 4.3  Constructively Responsive Reading Comprehension Strategies Used during Internet Hypertext Reading

<table>
<thead>
<tr>
<th>1. Realizing and constructing potential texts to read</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Searching for relevant Web sites or information retrieval systems to access and overview possible target information</td>
</tr>
<tr>
<td>B. Reducing the range of possible information to be encountered by generating key words related to topic and focus of a particular task</td>
</tr>
<tr>
<td>C. Scrutinizing Internet hypertextual links to anticipate and judge the usefulness and significance of the information before accessing it, based on specific reading goals</td>
</tr>
<tr>
<td>D. Exploring and sampling goal-related information in Internet hypertexts at the initial stage of reading to establish a dynamic plan to achieve one’s own goal</td>
</tr>
<tr>
<td>E. Predicting utility of a link within Internet text when confronted with more than one hypertext link</td>
</tr>
<tr>
<td>F. Generating inferences about the relevance (or goodness of fit) of at least some of the other links on the pages visited prior to main act of reading</td>
</tr>
<tr>
<td>G. Choosing and sequencing the reading order by accessing links based on the criteria of coherence among links and relevance to situational interests</td>
</tr>
<tr>
<td>H. Conducting complementary searches with modified or revised keywords in order to better clarify suitability of links and potential reading path</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Identifying and learning important information</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Using navigation functions to select, structure, and create environments to assist in constructing text meaning</td>
</tr>
<tr>
<td>B. Using Web site structures to help construct meaning</td>
</tr>
<tr>
<td>C. Using Web site search engines to help construct meaning</td>
</tr>
<tr>
<td>D. Searching in Internet hypertext environments for information related to already established meaning</td>
</tr>
<tr>
<td>E. Linking to additional Internet sites to obtain more information that is related to but beyond the original goal (e.g., linking to Google and then to a listed Google website and then to subsidiary websites while searching for information because the links appear promising)</td>
</tr>
<tr>
<td>F. Using multilayered inferences across the three-dimensional space of Internet hypertext to anticipate meaning of texts that are hidden from view, or to be encountered</td>
</tr>
</tbody>
</table>

(continued)
Table 4.3 Continued

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>Retaining information (e.g., cutting and pasting or highlighting important information) using computer and software tools</td>
</tr>
<tr>
<td>H</td>
<td>Backlinking and revisiting pages to revise constructed meaning</td>
</tr>
<tr>
<td>I</td>
<td>Revising reading goals based on experiences and progress on hypertext path to resolution</td>
</tr>
<tr>
<td>J</td>
<td>Combining disparate forms of information to construct meaning, including text, graphics, illustrations, embedded video</td>
</tr>
<tr>
<td>3. Monitoring</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>Determining that an aspect of Internet hypertext reading needs attention</td>
</tr>
<tr>
<td>B</td>
<td>Determining that an alternative way to navigate Internet hypertext is needed because the current means of navigation is ineffective</td>
</tr>
<tr>
<td>C</td>
<td>Changing search engine to navigate Internet hypertext</td>
</tr>
<tr>
<td>D</td>
<td>Changing search strategy to navigate Internet hypertext</td>
</tr>
<tr>
<td>E</td>
<td>Determining that found Internet sites are not helpful to task or goal</td>
</tr>
<tr>
<td>F</td>
<td>Determining that Internet hypertext content is not comprehensible due to form, structure, new information, or combination of these</td>
</tr>
<tr>
<td>G</td>
<td>Noting disorientation due to difficulty in locating specific information in Internet hypertext</td>
</tr>
<tr>
<td>H</td>
<td>Noting disorientation due to problems using the application functions in Internet hypertext</td>
</tr>
<tr>
<td>I</td>
<td>Perceiving meaning construction problems due to diversity of information encountered</td>
</tr>
<tr>
<td>J</td>
<td>Perceiving meaning construction problems due to volume of information encountered</td>
</tr>
<tr>
<td>K</td>
<td>Perceiving meaning construction problems due to managing information overload</td>
</tr>
<tr>
<td>L</td>
<td>Noting problems while searching for information that is expected/anticipated and perceived to be valuable but is not found or available</td>
</tr>
<tr>
<td>M</td>
<td>Managing disorientation by increasing memory allocation to solve the problem of disorientation</td>
</tr>
<tr>
<td>N</td>
<td>Managing disorientation to refocus on original search plan and goal(s)</td>
</tr>
<tr>
<td>4. Evaluating</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>Evaluating the possible paths through Internet hypertext to successful completion of tasks, using standards of breadth and depth</td>
</tr>
<tr>
<td>B</td>
<td>Assessing relevance and usefulness of information, in relation to the tentative meaning constructed through the initial and ongoing exploration</td>
</tr>
<tr>
<td>C</td>
<td>Assessing credibility of information found in Internet hypertext environment</td>
</tr>
<tr>
<td>D</td>
<td>Assessing the clarity of information found in Internet hypertext environment</td>
</tr>
<tr>
<td>E</td>
<td>Evaluating the Internet hypertext links that the reader accesses in relation to an imagined or proposed solution path to achieve goals, using an anticipatory “goodness of fit”</td>
</tr>
<tr>
<td>F</td>
<td>Assessing relative value of websites and web pages that are determined to have related information</td>
</tr>
<tr>
<td>G</td>
<td>Evaluating URL of website to make determination of usefulness, suitability or trustworthiness of information</td>
</tr>
<tr>
<td>H</td>
<td>Evaluating entry shorthand (e.g., 10 sites per page listed by Google) to make determination of usefulness, suitability or trustworthiness</td>
</tr>
<tr>
<td>I</td>
<td>Evaluating nature, tone or feel of Website and deciding to use (or not use)</td>
</tr>
<tr>
<td>J</td>
<td>Evaluating the result of search or move in Internet hypertext</td>
</tr>
</tbody>
</table>

We end this section with the observation that Internet and hypertext readers appear to use strategies that address the considerable task of reducing unknowns as they read. In contrast to more traditional one reader/one text interactions, these readers must work to identify and move through a universe of many possible texts. They must ignore distractions, anticipate and predict meaningful moves with minimal text information. We believe that Internet and hypertext reading include a new generation of reading strategies that clearly reflect the role of the reader in the new architecture of reading.

CONCLUSIONS

Our investigation demonstrates that knowledge of reading strategies in “traditional” reading situations has considerable application to new and more recently researched
forms of reading. Thus, our understanding of constructively responsive reading can be regularly revisited and updated. While the evolution of understanding reading strategies continues apace, we acknowledge that there continues the need to conduct research in areas that are underspecified by research. These include reading strategies in particular content domains, reading strategies when reading multiple texts and hypertext reading environments. A synthesis of reading strategy research can help guide this inquiry into "new" literacies. The collection and interpretation of reader strategy data is not without challenges, but ongoing research experiences can provide good models of questions to ask and methodologies best suited to answering the questions. The challenge to describe reading strategies is met, in part, by the methodological tools used to reliably gather data and provide triangulation of information. There are numerous approaches to reading strategy data collection and it is important to consider the unique contributions that particular methodologies can make, as well as combinations of methodologies that can provide rich data sets, strengthen our inferences and bolster our confidence that data are describing true phenomena.

The studies synthesized here provide glimpses of new frontiers in reading and new takes on known constructively responsive reading strategies. Investigations of constructively responsive reading strategies will be well-situated when they reference the existing and considerable catalog of reading strategies for guidance on strategy categorization while simultaneously focusing on the novel or hybrid strategies that new reading situations create. We believe that Table 4.2 and Table 4.3 demonstrate this operational dynamic. Research of reading in new and varied formats provides the opportunity to toggle back and forth between precedent and novelty as we examine strategies.

FUTURE DIRECTIONS FOR RESEARCH ON CONSTRUCTIVELY RESPONSIVE READING COMPREHENSION STRATEGIES

In this chapter we identified three areas in which we expect ongoing, productive research: investigations of reading strategies particular to specific content domains (VanSledright, 2002), the reading strategies used when reading two or more texts (Hartmann, 1995), and the reading strategies involved in navigating and comprehending within hypertext environments (Leu et al., 2008). Each of these areas is worthy of extensive investigation that provides new information and connects results to existing research and knowledge. We also expect that important research will continue to describe the general classes of reading strategy, identifying and remembering important text information, monitoring reading and evaluating reading, as proposed by Pressley and Afflerbach (1995).

Future research on constructively responsive reading strategies should focus on the contextual influences on reading. We have some work in this area, but needed is more comprehensive approach to study of reading strategy use in traditional learning domains, including school content areas, and research in hybrid areas. This will help us examine the legitimacy of claims regarding general reading strategies and those strategies that appear to be unique for certain reader-text(task)-context(s) combinations. Also needed is research that describes the extent and orchestration of constructively responsive reading strategies across entire acts of reading. Research that focuses on particular types of strategies such as prediction or summarization can provide valuable information on such strategies. Yet, it may miss the big picture of how accomplished readers coordinate their strategies, or how they negotiate an entire text (or texts) in relation to task demands. Needed is focused work on reading strategies from the start to finish of acts of reading.

A valuable precedent of previous reading strategy research is the attention to translating research on readers' strategies to inform instruction so that developing readers
become highly strategic (Kucan & Beck, 1997; Pressley, 2000). The connection between success in life and individual's developed literacies is apparent, and students must be competent at reading complex text, understanding and comparing the content of several texts and comprehending well in hypertext environments. As well, they must learn the special strategies that mark accomplished reading in particular content domains, including history and science.

The literature we reviewed emanates from different traditions and interest groups, including literacy research, cognitive psychology, information systems research, web design research and library sciences research. It is not surprising that these groups are asking related questions and generating important results, but it is perhaps disappointing that so many efforts focused on related topics may not bear the full fruit of labor. We need to work to bring together these literatures, continue the synthesis of the important work from each tradition, building understanding across traditions of inquiry while maintaining the particular perspectives that the efforts represent. Research on constructively responsive reading strategies will help us address the issue of how new "new" literacy strategies are, or whether or not they are novel variations on a theme. This will carry on the strong tradition of conducting research to inform models of reading and thinking.

We are hopeful that the methodological choices made by researchers will reflect the best combination of means for inquiry into reading strategy use. Just as we learn more about strategies, we should learn about the appropriateness of methodology to assist us in answering our research questions.

NOTES


2. We note that hypertext and Internet reading often involve more than one text, document or page. Thus, strategies listed in Table 4.2 may be applicable to certain Internet hypertext reading situations.

3. The literature contributing to this inventory: Azevedo et al., (2004); Balcetiene, (1999); Castek et al., (in press); Charney (1987); Coiro (2003); Coiro & Dobler, (2007); Duke, Schmar-Dobler & Zhang (2006); Ebeling & Dunwoody (2000); Henry (2005, 2006); Hill & Hannafin (1997); Lacroix (1999); Lawless, Brown, Mills, & Mayall (2003); Leu et al., (2008); Leu, Kinzer, Coiro, & Camnack (2004); McEneany (1998); Protospalis and Bouki (2005, 2006); Puntambekar & Stylianou (2005); Ricardo (1998); Rouet (1992); Rouet & Passerault (1999); Salmeron, Kintsch, & Canas (2006); Salmeron, Canas, & Fajardo (2005); Salmeron, Canas, Kintsch, & Fajardo (2003); Schmar (2002); Sutherland-Smith (2002); Tabatabai & Shore (2003); Tosca (2000); Tremayne & Dunwoody (2001); Wenger & Payne (1996); Yang (1997).

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Responsive Comprehension Strategies in New and Traditional Forms of Reading


