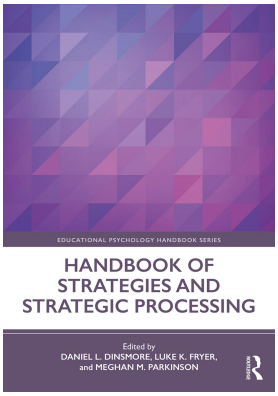

Handbook of Strategies and Strategic Processing

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Reading Comprehension Strategy Instruction

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READING COMPREHENSION STRATEGY INSTRUCTION

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READING COMPREHENSION STRATEGIES: CLARIFICATIONS AND CHALLENGES TO EFFECTIVE INSTRUCTION

Prior to our consideration of reading comprehension strategy instruction, we want to make several points related to the term *strategies*. First, *strategies* are not consistently defined or characterized in the professional literature, in theoretical models and in related reading instruction materials. In fact, the words *strategies* and *skills* are sometimes substituted for one another. Consider how *strategies* is used interchangeably with *skills* in the influential National Reading Panel Executive Summary Report (National Institute of Child Health and Human Development, 2000):

> The rationale for the explicit teaching of *comprehension skills* is that comprehension can be improved by teaching students to use specific *cognitive strategies* or to reason strategically when they encounter barriers to understanding what they are reading.
>
> (p. 14; italics added)

There are important differences between strategies and skills (although they are closely related) and consistency of use of these words should be a goal. This can contribute to clarity in theoretical constructs, models of reading comprehension and the instruction that derives from them. In this chapter, we use the following definitions of strategies and skills (Afflerbach, Pearson, & Paris, 2008):

> *Reading strategies* are deliberate, goal-directed attempts to control and modify the reader's efforts to decode text, understand words, and construct meanings of text. *Reading skills* are automatic actions that result in decoding and comprehension with speed, efficiency, and fluency and usually occur without awareness of the components or control involved.
>
> (p. 368)

A further concern is the conflation of reading strategies, teaching strategies and classroom supports related to students' reading comprehension strategy development. For example, the National Reading Panel (NICHD, 2000) states:

> The seven individual strategies that appear to be effective and most promising for classroom instruction are (in alphabetical order) comprehension monitoring, cooperative learning, graphic and semantic organizers including story maps, question answering, question generation, and summarization.
>
> (pp. 4–42)

Several notes are in order—the first being that not all of the above are strategies. For example, "graphic and semantic organizers including story maps" may be used in concert with students' reading comprehension strategies (or teachers' instructional strategies), but they are not strategies—they are tools. "Cooperative learning" is a means of constructing knowledge that typically involves classmates and that may involve reading activities, but it is not a strategy. "Comprehension monitoring" is certainly comprised of strategies and actions (e.g., goal setting, calibration, progress tracking, using fix it strategies), as is "summarization." "Question generation" is possibly a strategy. Question answering typically involves the demonstration that comprehension has occurred; how it qualifies as a strategy needs explication. Finally, there is a lack of distinction between reading comprehension instruction strategies (used by teachers) and reading comprehension strategies (used by student readers). When archival, research-related documents are unclear as to the nature of reading comprehension strategies, we may expect confusion in related realizations of instruction.

The Report of the National Reading Panel was a major influence on reading policy, including the No Child Left Behind and Reading First legislation. The fact that reading comprehension strategies were not clearly and consistently defined (nor suitably distinguished from other important aspects of reading instruction) has contributed to confusion in related reading comprehension strategy instruction. Consider information provided on the Reading Rockets website, which is frequented by many teachers seeking ideas for reading instruction, and which describes itself as:

> Reading Rockets is a national multimedia project that offers a wealth of research-based strategies, lessons, and activities designed to help young children learn how to read and read better.
>
> (Available from www.readingrockets.org/)

Reading Rockets proposes "Seven Strategies to Teach Students Text Comprehension:" the strategies are monitoring comprehension, metacognition, graphic and semantic

organizers, answering questions, generating questions, recognizing story structure and summarizing. This list of "Strategies to Teach" raises concerns similar to those of the National Reading Panel report—lack of clarity on what a strategy is (e.g., how is "answering questions" a strategy?), and conflation of reading strategies with teaching and learning tools (again, how are "graphic and semantic organizers" a strategy?). "Monitoring comprehension" is an integral aspect of "metacognition," and it is not apparent why the two are listed separately. Further, teaching reading strategies divorced from specific purposes for reading, the disciplines in which reading occurs, and particular reading-related tasks, fuels criticism that generic reading comprehension strategy instruction is insufficient for students' needs.

In the extreme, a "more is better" perspective informs recommendations for reading comprehension strategy instruction. Consider the following claim that it is possible to teach the following "25 reading strategies that work in every content area:"

> Reread, activate prior knowledge, use context clues, infer, think aloud, summarize, locate key words, make predictions, use word attack strategies, visualize, use graphic organizers, evaluate understanding, question the text, stop!, monitor & repair understanding (while reading), paraphrase, annotate the text, adjust reading rate, prioritize information, use graphic notetaking, predict, set a reader purpose, text-connections (text-to-self, text-to-text, text-to-world), skim, and SSQ (Stop, Summarize, Question).
>
> (Retrieved from www.teachthought.com/literacy/25-reading-strategies-that-work-in-every-content-area/)

While acknowledging that the effective use of reading comprehension strategies is context-dependent, the website also provides erroneous prescriptions of student readers' strategy use for particular reading situations. If reading comprehension strategy instruction is to be based on research findings, what research suggests the following?

> This all makes reading strategies somewhat content area specific. *Stopping* (maybe the most undervalued strategy ever) and *Rereading* might make more sense in science, while *Visualization* and *Text Connections* may make more sense reading literary works. *Questioning the Text* may make equal sense in both.
>
> (Retrieved from www.teachthought.com/literacy/25-reading-strategies-that-work-in-every-content-area/)

In summary, while reading comprehension strategy instruction is present in most all elementary classrooms, there may be accompanying confusion. Reading strategies are variously defined, mischaracterized, used interchangeably with reading skills, and conflated with teaching strategies and teaching tools. Tying comprehension strategies to instruction, but leaving them untethered to specific reading contexts and tasks, limits the value of instruction. Going forward, clarity as to what strategies are, the role of particular strategies in acts of reading and how strategies are supported by readers' knowledge is necessary to realize the promise of comprehension strategy instruction.

AN OVERVIEW OF READING COMPREHENSION STRATEGY RESEARCH AND INSTRUCTION

The achievement of reading is considered among humankind's loftiest (Huey, 1908) and it has the potential to greatly impact individuals' life accomplishments. Successful reading results in the comprehension of text. Over centuries, with different language systems, and across varied instructional approaches, readers have learned to comprehend text. We note that comprehension strategy instruction is a relative newcomer to reading pedagogy, and that vast numbers of readers have developed fully without the benefit of a single reading comprehension strategy lesson. Nevertheless, we propose that strategy instruction makes more efficient the process of becoming an accomplished reader, as well as the process of reading (Edmonds et al., 2009; Goldman, Snow, & Vaughn, 2016; Pressley et al., 1992).

Our understanding of reading comprehension, like the construct of reading, evolves. In parallel, reading comprehension strategy instruction should reflect these changes. Durkin (1978) investigated reading comprehension instruction in upper elementary (grades 3 through 6) social studies classrooms. A predominant finding was that instruction consisted largely of teachers asking students questions about text content—as if posing a question somehow taught students how to understand text, and to answer the question. The questioning that Durkin observed was not Socratic questioning—with which students might gain new insights, or be led to use complex, higher-order strategies by the vector of the question. Rather, the questions focused on literal recall of facts: names, dates, places and actions as stated explicitly in the text. One conclusion drawn from Durkin's study was the need to rethink how reading comprehension was "taught," and what was taught.

The determination that asking questions is not an adequate teaching approach served as impetus for research intended to inform effective reading comprehension strategy instruction. What would comprise this instruction? How might comprehension be taught? Since the late 1970s, research has provided considerable insights into the nature of expert readers' comprehension strategies, including how, when, where, and why they are used. This has contributed detail needed to develop instruction, including the classification of reading strategies and how they are used. For example, Pressley and Afflerbach (1995) examined think-aloud studies of expert readers' and identified three overarching categories of reading strategy: *identifying and remembering important information*, *monitoring acts of reading*, and *evaluation* (Table 7.1).

Afflerbach and Cho (2009) and Cho and Afflerbach (2017) introduced a fourth category, *realizing and constructing potential texts*, which included the strategies used by readers as they negotiate the multiple texts, spaces and reading choices encountered in Internet and multimedia reading. Within these general groups of strategy reside specific strategies such as inferencing, summarizing and comprehension monitoring. The understanding of reading comprehension strategies gained through think-aloud protocols maps well onto detailed models of comprehension (Kintsch, 1998; Van Den Broek, Young, Tzeng, & Linderholm, 1999).

In many cases, reading comprehension strategy instruction derives from walking backwards on the path to expertise. That is, developmental trajectories and milestones

Table 7.1 A Thumbnail Sketch of Constructively Responsive Reading Strategies

- Overviewing before reading (determining what is there and deciding which parts to process).
- 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).
- Attempting to relate important points in text to one another in order to understand the text as a whole.
- Activating and using prior knowledge to interpret text (generating hypotheses about text, predicting text content).
- Relating text content to prior knowledge, especially as part of constructing interpretations of text.
- Reconsidering and/or revising hypotheses about the meaning of text based on text content.
- Reconsidering and/or revising prior knowledge based on text content.
- Attempting to infer information not explicitly stated in text when the information is critical to comprehension of the text.
- Attempting to determine the meaning of words not understood or recognized, especially when a word seems critical to meaning construction.
- Using strategies to remember text (underlining, repetition, making notes, visualizing, summarizing, paraphrasing, self-questioning, etc.).
- Changing reading strategies when comprehension is perceived not to be proceeding smoothly.
- Evaluating the qualities of text, with these evaluations in part affecting whether text has an impact on reader's knowledge, attitudes, behavior, and so on.
- 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).
- Carrying on responsive conversation with the author.
- Anticipating or planning for the use of knowledge gained from reading.

Source: *Verbal protocols of reading: The nature of constructively responsive reading* (p. 105), by M. Pressley and P.Afflerbach, 1995, Mahwah, NJ: Erlbaum Associates. Copyright 1995 by Lawrence Erlbaum Associates, Inc. Reprinted with permission.

for student readers' growth are deduced from research data on experts' reading, including think-aloud protocols and retrospective accounts of strategy use. Instruction is developed around these markers and includes strategies like previewing, clarifying, summarizing, predicting text contents (and other forms of inferencing), re-reading and varying the rate of reading dependent on the reading task. More recently, research describes the nature of reading comprehension strategies beyond the reading of a single, traditional print text, including those involved in multimedia reading (Mayer, 2014), Internet reading (Cho, 2014) and the reading of multiple documents (Rouet & Potocki, 2018).

Thus, expert reader research informs our understanding of reading comprehension strategies in mature and successful form (Afflerbach & Johnston, 1984) and suggests critical foci for reading comprehension strategy instruction. Detailed accounts of successful strategy use inform approaches to comprehension instruction (Dole, Duffy, Roehler, & Pearson, 1991; Duke, Pearson, Strachan, & Billman, 2011; Wilkinson & Son, 2011). We can theorize about how these strategies develop, their relative complexity, and the timing and sequencing of comprehension instruction to best help student readers (Pressley, 1990).

In addition to providing detail on the *what* of reading strategy instruction, there is ample guidance on the *how* of this instruction which focuses on the pedagogical means to introduce, explain, think-aloud, model and scaffold ephemeral comprehension

strategies, so that their nature and use is tangible to students (Almasi & Fullerton, 2012; Palincsar & Brown, 1984). For example, explanation and modeling are at the center of successful reading comprehension strategy instruction. Winograd and Hare (1988) proposed five elements that comprise effective teacher explanation: what the strategy is, why a strategy should be learned, how to use the strategy, when and where the strategy should be used, and how to evaluate use of the strategy. Detailed understanding of the nature of reading strategies, combined with effective instruction, improves reading comprehension (Rosenshine & Meister, 1994) and does so for both younger and older students (Edmonds et al., 2009).

Evolving Ideas about the Nature of Reading and Reading Comprehension Ongoing research contributes to continuous theory building and the evolving understanding of the reading comprehension construct. This knowledge should, ultimately, inform strategy instruction. Consider the case of the Reading Framework of the National Assessment of Educational Progress (National Assessment Governing Board, 2017). This Framework is regularly updated based on consensus, relevant research findings. Examination of current and prior NAEP conceptualizations of *reading* and *reading comprehension* illustrates this evolution. An earlier iteration of the NAEP Reading Framework (1992–2000) proposed that reading comprehension was comprised of the following "Reading Stances" for both expository and narrative texts:

- *initial understanding*, the preliminary consideration of the text as a whole
- *developing an interpretation*, discerning connections and relationships among ideas within the text
- *personal reflection and response*, relating personal knowledge to text ideas
- *critical stance*, standing apart from the text to consider it objectively.

(National Assessment Governing Board, 1992)

The above depiction of reading reflects the influence of research and theories from the fields of information processing, cognition (van Dijk & Kintsch, 1983) and literary criticism (Rosenblatt, 1938). It is notable that the reading processes and stances described above sum to a relatively constrained set of reading products. That is, acts of reading are deemed complete when comprehension of text is attained and readers reflect on their understanding, or position themselves in relation to their understanding of text. This conceptualization of reading implies that reading comprehension strategies and related instruction should focus on the construction of meaning from text.

In contrast, the current NAEP Reading Framework (2017) adds the results of recent research and theory building, and reflects the evolution of our understanding of comprehension. The Framework maintains a focus on reading comprehension as the construction of meaning with text, but adds a major new component:

Reading is an active and complex process that involves:

- understanding written text
- developing and interpreting meaning
- *using meaning as appropriate to type of text, purpose, and situation*.

(Retrieved from www.nagb.gov/content/nagb/assets/documents/publications/frameworks/reading/2017-reading-framework.pdf, italics added)

The above definition represents a significant change: reading involves not only *the construction of meaning* but also *the use of the meaning that is constructed*. Readers, including student readers, are expected to do things with the meaning that they construct. This "use of comprehension" is demonstrated as students analyze text contents (Bazerman & Prior, 2004), identify claims and supporting evidence (Wineburg, 2001), apply what they learn from the text to solve problems (Hinchman & Appleman, 2017), establish epistemic stances towards the processes and contents of reading (Bråten & Strømsø, 2010), synthesize information within and across texts (Coté, Goldman, & Saul, 1998), interrogate author motive (Beck & McKeown, 2006) and critique text contents and structures (Vasquez, Harste, & Albers, 2010). Each of the above signals the use of higher order thinking strategies during reading.

The expanded notion of reading—including readers' use of what is comprehended—has important implications for reading comprehension strategy instruction. Namely, it forces a focus on what reading comprehension "is" and what strategies are appropriately situated under the umbrellas of reading comprehension and reading comprehension instruction. If reading does not "end" with a reader's establishment of understanding (i.e., constructing a situational model of text; Kintsch, 1998), then comprehension can be considered a mid-point in many acts of reading. And, the strategies involved in using the meaning that is constructed through reading become instructionally important. Determining where comprehension of text "ends" and where related, reading task strategies "begin" is important for both theory and reading comprehension strategies instruction.

To address contemporary accounts of reading, including the model of reading proposed by NAEP, we believe the traditional foci of reading comprehension strategy instruction, including prediction, summarization and comprehension monitoring, should be complemented by instruction that focuses on strategies to use that which is comprehended. Students construct meaning and then use that meaning with related strategies, such as those for analyzing claims and supporting evidence, applying what is learned from text to solve problems, establishing appropriate epistemic stances towards texts, synthesizing information from within and across texts, interrogating author motive and craft, and critiquing and evaluating texts. Instruction should be situated so that these natural counterparts of strategy instruction are taught, learned and practiced together.

COMPREHENSION STRATEGIES ARE NECESSARY FOR STUDENTS TO SUCCEED WITH INCREASINGLY CHALLENGING TEXTS AND RELATED READING TASKS

That current reading comprehension strategy instruction is not helping all students develop into accomplished readers is a near inference we can make from reading achievement performance on national and international assessments, including the NAEP (2017) and the PISA (Programme for International Student Assessment). We possess considerable knowledge about reading comprehension strategies and comprehension development, but this knowledge is not consistently translated into reading comprehension instruction that boosts students' reading performance. NAEP Reading scores in grades 4, 8 and 12, as well as NAEP scores in content areas that require

substantial student reading, do not describe a nation of consistently comprehending readers. Consider that 4th and 8th-grade students' reading comprehension performances on NAEP in 2017 (with both grades mean reading achievement scores situated between "basic" and "proficient" levels) were not measurably different from the 2015 scores. Students' performance on NAEP tests in content domains that require considerable amounts of reading is unsettling:

> [o]nly 17% of eighth graders demonstrated proficiency in the area of United States History according to the most recent National Assessment of Educational Progress.
>
> (Retrieved from www.nationsreportcard.gov/)

In both reading and content domains that demand significant amounts of student reading, NAEP scores are at best stagnant. Substantial numbers of students struggle to achieve basic levels of reading comprehension, and fewer still reach proficient or advanced levels.

While test results indicate flat or declining reading achievement, many students face increased reading comprehension demands in school. The Common Core State Standards and other standards-based initiatives are intended to influence what students do and learn in classrooms. The Standards reflect a conceptualization of reading in common with the NAEP Reading Framework (National Assessment Governing Board, 2017). Namely, they share the idea that reading involves reader, text, activity and context, and the expectation that readers will use that which they comprehend in related tasks. In both the current NAEP Reading Framework and the Common Core State Standards, comprehension is the salient outcome of reading. However, the evolution of our conceptualization of reading is reflected in the fact that comprehension is no longer considered an end in itself, but rather a requisite component of larger acts of literacy. This places new and often complex demands on students' strategy use.

Consider the following Common Core State English/Language Arts Standard for informational reading, and the reading strategies that are implied for students' success:

> Integration of Knowledge and Ideas:
>
> CCSS.ELA-LITERACY.RI.6.8
>
> Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not.
>
> (Retrieved from www.corestandards.org/ELA-Literacy/RI/6/)

A task analysis of the above grade 6 Common Core State Standard indicates the assumption of strategy use that allows students to construct literal and inferential understanding of text—the situational model of text (Kintsch, 1998). However, comprehension is but a prerequisite for further strategic reading performance on the standard. In this case, readers' strategic behavior requires the higher order thinking of identifying claims made in the text, and evaluating claims to determine if they have sufficient evidence to warrant them (Afflerbach, Cho, & Kim, 2015). The implications

for reading comprehension strategy instruction are considerable—more, and more complex strategies are needed for student success in reading.

In summary, as our conceptualizations of reading evolve, so too should our ideas related to teaching reading strategies. A prominent example of this evolution is evident in the current definition of reading that anchors the National Assessment of Educational Progress (2017). According to this contemporary view of reading, readers construct meaning and then use this constructed meaning to perform tasks that involve complex reasoning and problem solving. This idea is woven into contemporary standards initiatives, including the Common Core State Standards. A resulting need is development of students' comprehension strategies to both construct meaning and use that meaning in a reading-related task.

WHICH APPROACH TO READING COMPREHENSION STRATEGY INSTRUCTION?

There is substantial knowledge that can inform reading comprehension strategy instruction, and a clear need for effective instruction. However, there is no agreement on the optimal means of this instruction. We noted earlier that much of the detail of reading comprehension strategy instruction derives from analyses of expert readers' strategy use. This research has been situated in specific disciplines, or content domains, including anthropology and chemistry (Afflerbach, 1990), law (Lundeberg, 1987) and history (Wineburg, 2001). A tendency in the development of reading comprehension instruction has been to identify the strategies that are used by accomplished readers "across" disciplines. The apparent universality of a reading comprehension strategy, across readers and texts, becomes an argument for inclusion of that strategy, and it is taught. Thus, while important information about the nature of reading comprehension strategies has been gained through examination of expert readers, derivative instruction has tended to ignore the discipline-specific nature of strategy use and has focused on commonalities across disciplines.

A result is the prevalence of strategies such as prediction, summarization and inferencing—regularly used by accomplished readers, regardless of discipline—in most reading instruction programs (Dewitz, Jones, & Leahy, 2009). These strategies are assumed to be of value to students whose primary reading tasks are to learn and remember literal information from the text, and they are typically taught with a "one size fits all" approach. However, this approach may overlook what can be subtle or more obvious differences in the nature of strategies and how they are used within particular disciplines.

Students' general reading comprehension strategies may not work in more nuanced content area reading, including history, science and literature (Goldman et al., 2016). For example, a generic strategy that serves a student well in summarizing the contents of a textbook chapter on the Revolutionary War is not sufficient when the student attempts to summarize and reconcile two opposing accounts of a related, historic event (e.g., the Boston Tea Party; the Boston Massacre; VanSledright, 2014). Rather, the accomplished student reader must be able to (among other demands) source the different texts, determine their trustworthiness, note similarities and differences in factual and rhetorical information, and render judgment on which text (if either) is more reliable.

The fact that different disciplines may demand appropriately distinctive strategies, or different "takes" on the same strategy, has prompted a focus on disciplinary approaches to promoting student understanding of text. With such an approach, comprehension strategies are viewed as tied to the reading, reasoning and culture of particular disciplines or content domains, including history, science and literature (Afflerbach & VanSledright, 2001; Kim et al., 2016; Lee, Goldman, Levine, & Magliano, 2016). Unfortunately, the discipline-based aspect of reading comprehension strategy instruction often competes for instructional time with coverage of content—say, World War Two, ecosystems, or novels and short stories. Teachers whose students may not be reading at grade level expectation are fully engaged with trying to cover curricular content and help students meet more basic reading achievement levels, so attending and teaching more complex, discipline-related reading strategies is not always possible.

A second concern with reading comprehension strategy instruction relates to the claim that strategies are given more time and instructional focus than is needed, and that content area knowledge is a more important factor than strategy use in students' successful comprehension of texts (Willingham & Lovette, 2014). From this perspective, having students front-load considerable amounts of content area knowledge may be more effective than extended instruction and practice time with reading strategies, if comprehension of content area text is the goal. Student exposure to key ideas and concepts (and the vocabulary that represents them) is proposed as a superior means for preparing students to learn from reading (Willingham, 2017). A difficulty with this view is that the *raison d'etre* for school is student learning, and much of this learning emanates from reading. As noted by Goldman and colleagues (2016):

> A significant challenge is that the texts they (students) will be asked to read contain unfamiliar content in complex language forms. Many school texts intentionally introduce new topics and concepts to teach new content knowledge. Precisely because the content is new, students' familiar strategy of using their prior knowledge to make inferences and connections, effective for texts about familiar topics and situations, fails.
>
> (p. 2)

It is not clear how students, without reading, are to gain the requisite content area knowledge that would allow them to learn the remaining, new content area knowledge. Willingham's suggestions amount to radical change in how content area information might be learned by students—with a major emphasis on imparting knowledge by means other than student reading. This, of course, stands as able argument for reducing attention to reading strategy instruction because reading itself assumes a considerably lesser role in learning in school (Greenleaf & Valencia, 2017). However, we approach the issue with the idea that learning comprehension strategies that allow us to read independently and successfully in areas replete with new information is of utmost value.

A final concern with reading comprehension instruction is the tendency to introduce, teach and have students practice single comprehension strategies. Students are taught, in a strategy-by-strategy manner (Dewitz et al., 2009), how to make inferences and predictions, how to determine important information and summarize text, and how to set goals and monitor progress towards goals. That these important but

individually taught strategies will eventually sum to successful strategic reading may be wishful thinking, because accomplished reading demands both a suitable array of strategies and the ability to carefully coordinate them in relation to the specifics of the reading situation. Consider the following account of strategic reading provided by Pressley and Afflerbach (1995):

> [s]killed readers know and use many different (strategies) in coming to terms with text: They proceed generally from front to back of documents when reading. Good readers 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 [strategies] 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)

Successful reading strategy instruction should contribute to the development of the strategic readers described above, and such successful reading is tied to students' opportunities to learn and practice diverse strategies as they are coordinated in real-time reading.

To summarize, there are several critiques of contemporary reading comprehension strategy instruction worthy of consideration. First, there is the claim that strategy instruction is too generic and not context specific. This is a result of choosing comprehension strategies to be taught based on their omnipresence in strategy reports from expert readers, and not necessarily in relation to the discipline-specific reading topics, tasks and contexts found in school. Second, there is the claim that reading strategies are over taught, and that the key to content area reading success lies in providing students with ample prior knowledge in the content areas, as this helps students read best. Prior knowledge is essential for comprehension, yet reliance on non-reading sources to gain knowledge can lead to further avoidance of reading and strategy development. Further, students are in school to learn, and the vast stores of information that students are expected to comprehend, learn and remember are delivered by texts. How to draw the line between the prior knowledge necessary to learn new information and the new information itself remains unspecified. A third concern is that reading comprehension strategy instruction is marked by the teaching and learning of single, often unconnected strategies, while reading comprehension demands coordinated suites of strategies to succeed. Certainly, the development of accomplished strategic reading is the result of extensive use and practice of sets of strategies.

THE KNOWLEDGE NEEDED FOR SUCCESSFUL READING COMPREHENSION STRATEGY INSTRUCTION AND LEARNING

In the section that follows and in relation to the above concerns, we propose that instruction can be optimized as we consider five types of knowledge related to students' reading comprehension strategy development and use. These types of knowledge should be considered essential to successful reading comprehension strategy instruction. Reading comprehension strategy instruction typically focuses on helping students learn and use procedural knowledge. This procedural knowledge provides students with strategic approaches to reading that should yield declarative knowledge—most often the "stuff" of content area curricula, and the focus on high-stakes tests. This knowledge has a wide range and can include letter names, dictionary definitions of words, a list of genre names for memorization, events and figures in history, prey and predator in science, or distinguishing characteristics of sonnets, epic poems and haiku in literature.

However, we suggest that effective reading comprehension strategy instruction attends to five types of knowledge—*declarative*, *procedural*, *conditional*, *epistemic* and *disciplinary*—that support and ultimately shape students' ongoing strategy use and development. While these types of knowledge may overlap in particular circumstances of reading (e.g., the construction of literal meaning from text involves declarative, procedural and conditional knowledge), we believe that they merit separate consideration due to their role in students' strategy use.

Declarative Knowledge

The knowledge gained from the majority of school reading tasks is *declarative knowledge*. Declarative knowledge involves knowing things: that lions, cheetahs and leopards are cats, that the Declaration of Independence was signed in Philadelphia in 1776, and that haiku typically have a 5-7-5 syllable structure. Knowing that prediction is a reading strategy also qualifies as declarative knowledge. Much schooling focuses on students' acquisition of declarative knowledge. Students are expected to read and learn, and declarative knowledge is the product of the learning processes that students employ. Most tests, local and high stakes, focus on declarative knowledge—the product (and not the processes) of comprehension. As students matriculate through school, the accumulation of declarative knowledge from reading is taken as indication that procedural knowledge (i.e., students' comprehension strategies) is operating, and operating well.

Increased declarative knowledge is the primary result of much school reading: students learn new information in the content areas. However, declarative knowledge is also a prerequisite for comprehension itself. Student readers' existing declarative knowledge serves as a bridge from known to new. As described by Marzano (2004), "What students *already know* about the content is one of the strongest indicators of how well they will learn new information relative to the content." Readers who bring such prior knowledge to acts of reading possess the means to interpret and understand text (Anderson & Pearson, 1984). Moreover, prior knowledge provides a cognitive "place" for the new knowledge gained through reading to be stored (Bartlett, 1932).

Thus, successful reading strategy instruction will be based on a foundation of requisite declarative knowledge that helps students construct meaning. For example, students learning about predators and prey in a savannah environment need a rudimentary understanding of ecosystems for comprehension to occur and have a meaningful afterlife. As meaning is constructed, a reader's existing declarative (or "prior") knowledge serves as the bridge between prior learning and newly learned material. Thus, declarative knowledge is a prerequisite for, and result of, successful reading.

Procedural Knowledge

Learning and accumulating declarative knowledge through reading is enabled by readers' *procedural knowledge*—including the comprehension strategies that readers use to construct meaning. Paris, Lipson, and Wixson (1983) define procedural knowledge as knowing how a "strategy operates and how to use various steps or procedures that are part of the strategy." By making inferences, identifying and remembering important information, monitoring comprehension and summarizing texts, readers use procedural knowledge in the form of strategies to construct the model of text (or texts) that they are reading (Kintsch, 1998; Pressley & Afflerbach, 1995; Rouet & Britt, 2011).

In relation to contemporary accounts of reading (National Assessment Governing Board, 2017) and reading standards initiatives (Common Core State Standards, 2010), successful student readers must possess two types of procedural knowledge: that which pertains to reading comprehension strategies, and that which pertains to strategies used in reading-related tasks. The former are strategies for constructing meaning; the latter for using that constructed meaning. For example, establishing literal understanding of a content area text is a universal reading demand, one regularly met by many students using reading comprehension strategies. Related, identifying a claim-evidence structure in that same text, and determining whether or not the text is trustworthy, is an important reading task strategy. Both rely on students' procedural knowledge.

With reading, procedural knowledge in the form of strategies may be assigned "reading comprehension" or "reading comprehension-related" labels. Whatever the formalities of assigning terms and labels to these related strategy groups, it is sensible to teach them in tandem. This allows students to develop strategies as they are related in the real time of reading and using what is understood from reading. Both types of strategy—to construct meaning and to use constructed meaning—are amenable to teachers' modeling and explaining. As noted earlier, an expected benefit of the development of students' procedural knowledge of reading is growth in declarative knowledge—successful use of reading strategies begets the construction of meaning, which results in new knowledge in the content areas or disciplines.

Conditional Knowledge

A third influence on learning and using reading comprehension strategies is *conditional knowledge*, which often relates to knowing when, why and how to use declarative and procedural knowledge (Alexander, 2008). In the case of reading, conditional knowledge is used to mediate reader-text interactions, and it provides executive control over the strategies for constructing meaning (Bakracevic-Vukman & Licardo,

2010). For developing readers, managing reading comprehension strategies can be a taxing proposition. There is only so much bandwidth (working memory resource) for students to determine what strategy (or strategies) to use, deploy them and then monitor their appropriateness and success, and gain declarative knowledge. A result is that developing readers have much to attend to as they endeavor to learn new content, new reading strategies and the means to manage their acts of reading.

Conditional knowledge is reflected in a reader's situational understanding of reading, and involves metacognition, as decisions are made to set goals, calibrate performance, apply strategies and assess progress (Baker, 2009). Conditional knowledge reflects a student's understanding of why a strategy is important and when it should be used (Paris et al., 1983). Conditional knowledge is necessary to inform student readers' increasingly independent actions—as they initiate reading, monitor comprehension and conclude acts of reading (Dinsmore, Alexander, & Loughlin, 2008). In addition, conditional knowledge is necessary for students' appropriate framing of the epistemological nature of reading—if a text or author is to be challenged, or if the contents of text is trustworthy. With the advent of the Common Core State Standards, and with increasingly complex reading and reading-related tasks demanded of students, the centrality of conditional knowledge for success is apparent.

Epistemic Knowledge

A fourth type of knowledge is *epistemic knowledge*. Kuhn and Park (2005) describe four levels of epistemic development, and related stances towards knowledge. The *realist stance* assumes that "knowledge comes from an external source and is certain"—a reader assuming this stance has no need for critical thinking and related strategies. The *absolutist stance* assumes that "knowledge comes from an external source and is certain but not directly accessible, producing false beliefs." Accordingly, critical thinking strategies are a vehicle for comparing assertions to reality and determining their truth or falsehood. The *multiplist stance* assumes that "knowledge is generated by human minds and therefore uncertain," and readers' critical thinking is irrelevant. The *evaluativist stance* assumes that "knowledge is generated by human minds and is uncertain but susceptible to evaluation," and critical thinking strategies are necessary for readers to construct and evaluate meanings (Kuhn & Park, 2005, p. 113).

The development of student readers' critical and evaluative reading strategies must be accompanied by epistemics: an understanding of the nature of knowledge (Cho, Woodward, & Li, 2018; Elby & Hammer, 2010; Greene, Sandoval, & Braten, 2016). Specific to reading, epistemic knowledge helps the reader develop an appropriate stance towards texts and tasks, and this stance influences reading strategy choice. Epistemic knowledge also helps readers "frame" their approach to both texts and tasks.

Consider the interactions of reading strategies with epistemic knowledge related to two texts: political propaganda and a chapter about an unfamiliar topic. Students, using conditional knowledge, must determine the strategic and epistemic approach they will adopt with each text. Skepticism related to propaganda may trigger a student reader to take an evaluative stance with a series of analytical strategies that focus on constructing meaning *and* determining if there is evidence to support a series of outrageous claims. With the second text containing unfamiliar content, student readers

are reduced to using comprehension strategies to construct literal understanding, and information will be taken at face value. Students are unable to conduct critical appraisal of text because they have an insufficient declarative knowledge base with which to make judgment of the text's accuracy and trustworthiness, and their epistemic stance-taking is therefore limited.

Disciplinary Knowledge

The fifth and final type of knowledge that figures in reading comprehension strategy use is *disciplinary knowledge*. This knowledge may be required of students when they read in school content areas. For example, history as a school subject and discipline has evolved in some classrooms to include "reading like a historian"—wherein students focus on interpreting different texts, identifying text sources, determining the trustworthiness of the texts, constructing understanding within and across texts, and making judgments about which historical accounts contained in the text are most reliable. Students' ability to do so is tied to the strategies particular to the discipline:

> Successful readers of history are aware of the intertextual nature of history and are adept at noting conflicting accounts, reconciling contrasting views, and synthesizing information from complementary sources.
>
> (Afflerbach & VanSledright, 2001, p. 697)

Disciplinary knowledge guides this inquiry—student readers employ reading comprehension strategies in accordance with the culture and established practices of the discipline. The more "true" to the discipline, the more need for discipline-specific reading strategies. And, the more discipline-dependent, the more we should expect curriculum and instruction to help acculturate students to the discipline (Moje, 2015). Goldman et al. (2016), reporting on their work with reading comprehension and disciplinary knowledge, describe this as such:

> [t]he members constitute a discourse community and share a set of conventions and norms regarding valid forms of argument and communication. These norms reflect the field's epistemology—the nature of the disciplinary knowledge and how new knowledge claims in that discipline are legitimized and established … Thus, in addition to knowing the concepts and principles of their discipline, community members have knowledge about their discipline that supports engaging in the reading, reasoning, and argumentation practices.
>
> (p. 6)

Disciplinary knowledge is based on students' experiences and learning, and represents the broadest set of understandings that student readers must have and use to be successful with reading comprehension strategies. Disciplinary knowledge involves declarative, procedural, conditional and epistemic knowledge. For example, beginning a unit on ecosystems, students must have a rudimentary knowledge for science—a bridge between what students already know and what they must learn in the unit. Procedural knowledge is evinced as students use the scientific method to investigate

predator-prey relationships in a nearby pond. Conditional knowledge assists students in choosing appropriate strategies, using them as necessary, and monitoring the construction of meaning and the related task work. Epistemic knowledge guides students as they approach science—is the content of reading selections comprised of undisputed facts, models and examples of predators and prey?

In summary, different types of knowledge operate in concert with students' reading comprehension strategies, and this knowledge is necessary in all acts of reading. Our theoretical perspective suggests that identification and characterization of these different types of knowledge will benefit reading comprehension strategy instruction. Each of these types of knowledge develops as students learn. Thus, determining the presence of these types of knowledge and their level of development is essential for reading success.

CONCLUSIONS

Effective reading comprehension strategy instruction fosters student development and contributes to independence in reading. There is a considerable lack of consistency in defining and describing reading comprehension strategies, and there is sometimes conflation of these strategies with teaching strategies and teaching tools. This can contribute to a lack of clarity in instructional goals and approaches.

A core of well-researched and widely taught reading comprehension strategies derives from research that documents the use and utility of identifying and remembering important information, monitoring all aspects of the act of reading, and evaluating—progress towards goal, veracity of text and author ability. While many comprehension strategies are used universally, their utility may be limited if they are introduced and taught as generic strategies—usable in each and any act of reading. Instead, it is sensible to consider nuanced strategy use as situated in different content areas or disciplines. Reading and reading-related tasks typically increase in complexity as students matriculate, and research demonstrates that students' reading comprehension strategy must develop in at least two ways: increased sophistication of the core, universal strategies and development of additional strategies that are central to reading and learning in particular content areas or disciplines.

The question of "how much reading comprehension strategy instruction is sufficient?" does not have a conclusive answer. Learning and application and the opportunity to practice and transfer strategies from general to discipline-specific reading tasks is important. As well, describing instruction with optimal combinations of strategy and prior knowledge is necessary, especially when reading is the main vehicle for learning.

There are diverse types of knowledge that surround reading comprehension strategy development and use. Much of contemporary schooling is built on the "procedural knowledge begets declarative knowledge" premise: reading strategies help students gain knowledge in the content areas. Yet, this is only a partial portrayal of the knowledge involved in successful strategy use. Conditional knowledge, in the form of metacognition and executive functioning, is necessary for students' independent initiation, working through and completion of reading tasks. Epistemic knowledge and disciplinary knowledge also come into play as students matriculate towards increasingly complex content area reading demands.

A final note is that the development of strategic student readers is not solely attributable to the effectiveness or quality reading strategy instruction. The fact that not all students read strategically and successfully may be taken as prima facie evidence that strategy instruction is not fully effective. However, there are numerous factors that influence reading development—indeed, human learning in general—including prior reading experiences and related knowledge and experience, and students' affective and conative profiles related to motivation and engagement, and self-efficacy. Further, the influence of factors such as poverty or English learner status can skew perceptions of success or failure of particular approaches to reading comprehension strategy instruction.

FUTURE DIRECTIONS

An important focus for future research is identifying developmental progressions in students' reading comprehension strategies. We noted that most strategy instruction is based on accomplished or expert reader performance. From these performances we better understand an individual strategy's function and contribution to comprehension. However, we lack understanding of the progression of student readers' strategy development. Likewise, we have not identified which strategies might be best candidates for teaching first, or if such sequencing makes sense. An additional area of research should focus on the development of suites of strategies—how students gain the ability to coordinate and use multiple strategies. A further focus for future research should be determination of complementary strategies—those for constructing meaning and those that are involved in using that constructed meaning. Should determination of claim and evidence accompany or follow strategy instruction that focuses on constructing accurate literal understanding? Finally, should strategies be taught based on seeming universality of use (and usefulness) and then be followed by discipline-specific application?

A second general area is determination of the optimal blend of reading comprehension strategy instruction and related knowledge—including knowledge for the content or topic of text, knowledge for managing acts of reading, knowledge for taking appropriate stances towards particular texts and tasks, and knowledge of how strategies operate within the culture of particular learning disciplines. These types of prior knowledge can surround and enhance reading comprehension strategy use. Relevant research can investigate how that prior knowledge is gained and established, to what extent prior knowledge should be provided, activated and used as a scaffold and resource for productive and engaged meaning making, and how instruction helps students learn to spontaneously monitor the construction of meanings, and to constantly revise and elaborate what they know as they construct meaning.

An ongoing challenge relates to strategy instruction within content areas or disciplines. Many content area teachers are not familiar with reading strategy instruction, yet it is in content area reading that powerful and nuanced reading strategies should be introduced, encouraged and grown. In addition, most school curricula in the content areas are already full. This works against the idea of teachers in middle and upper grades finding the time and developing the means to effectively teach reading comprehension strategies. We described five types of knowledge that should surround strategy

instruction, yet addressing these types of knowledge as appropriate to the reading situation places further burden on content area teachers. That said, a research focus should include when and how strategy instruction helps students learn, consult and reason about multiple texts and sources of knowledge for content learning in discipline-specific ways. Also, it would be valuable to examine how strategy instruction in and across content areas and the strategic reading experiences may help students assess which strategy may or may not work as they are working on a particular knowledge problem beyond subject-matter classrooms.

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