

# **Research Supporting The Key Three Routine: Comprehension Strategy Instruction**

## **A history of reading comprehension research**

The notion that children should be taught how to comprehend what they read and learn from their reading has been around for a long time (Williams, 2003). In 1909, Dr. Frank McMurry, a professor of elementary education at Teachers College Columbia University, wrote a book *How to Study and Teaching How to Study*. It was a scholarly analysis as well as an instructional guide. He posed the question, “Can children study, and if so, how can they be taught to do so?” He reviewed the research literature that was available at the time, along with empirical data, to investigate the study strategies of successful learners, and then tried to determine whether children could benefit from learning similar strategies. Dr. McMurry came to the conclusion not only that children can and do learn to study, but also that there are effective ways to teach them.

In 1928 Bessie Stillman, Anna Gillingham’s colleague and co-author, wrote about the need for teaching study strategies to elementary children “It is a mistake to suppose that a child who is given no suggestions as to methods of study but time and again is merely told to study such and such a lesson, will go about it with any definite plan” (Stillman, 1928). She advocated for and wrote about teaching children how to organize ideas, take notes, use reference skills, remember, and develop positive attitudes about learning.

Reading comprehension strategies in particular have been studied for many decades, and research has revealed a great deal of information about the kinds of instructional activities that are most successful at helping students comprehend and remember what they read. For many years (including the 1970s), reading comprehension instruction was based on a concept of reading as the application of a set of isolated skills such as finding main ideas, identifying cause and effect relationships, comparing and contrasting, and sequencing. It was thought that comprehension could be taught by providing specific instruction in these discrete skills (National Reading Panel, 2000; Texas Education Agency, 2002). In the 1970s, a classroom study found that typical comprehension instruction followed what the study called a “mentioning, practicing and assessing” procedure (Durkin, 1978-1979). With this approach, teachers mentioned a specific comprehension skill that students should apply, had the students practice the skill by completing workbook pages, then tested them to see if they could use the skill correctly. Durkin found that this type of instruction did little to help students learn how or when to use the skills, and these skills were not shown to enable comprehension.

Throughout the 1980s, research began to focus on how people think and learn (cognitive science). Several reading studies focused on how readers construct meaning as they read. These studies showed that reading is a complex, strategic, and active process of constructing meaning, not simply skill application. As early as 1984, Annemarie Palinscar and Ann Brown published a landmark study showing that at-risk readers benefited from explicit instruction in strategic reading (Palinscar & Brown, 1984). Studies of good readers also identified a number of comprehension strategies that were shown to be especially helpful and to lend themselves particularly well to instruction (Dole et al, 1991). These include activating and using background knowledge, generating and asking questions, making inferences, predicting, summarizing,

visualizing, and comprehension monitoring. Since that time, these studies have been replicated repeatedly.

Although there is much more for researchers to learn about enhancement of reading comprehension in the classroom, researchers agree that the goal of comprehension is more likely attained when students are actively involved in seeking, organizing, and reformulating information in their own words. Written responses demand the mental transformation of ideas and foster ownership of learning (Stotsky, 2001; Duke, Pressley & Hilden, 2004; Moats & Sedita, 2005).

Several recent reviews and syntheses of research offer key information about effective comprehension strategy instruction. These reviews by Alvermann and Moore (1991), The National Reading Panel (2000), The RAND Reading Study Group (Snow, 2002), Carlisle and Rice (2002), Curtis (2002), Meltzer, Smith and Clark (2003), and others examine hundreds of scientific and quasi-scientific studies and conclude that comprehension can be enhanced by teaching a relatively small set of comprehension strategies. The consensus of opinion is summarized well by Noles and Dole (2004):

“Researchers have collected much evidence that supports explicit strategy instruction... The teaching of strategies empowers readers, particularly those who struggle, by giving them the tools they need to construct meaning from text. Instead of blaming comprehension problems on students’ own innate abilities, for which they see no solution, explicit strategy instruction teaches students to take control of their own learning and comprehension” (p. 179).

### **Research-based effective comprehension instruction**

Research has identified the following comprehension strategies as being most effective for improving comprehension:

Comprehension monitoring. Readers learn to react if they do not understand, rather than passively “skipping” or abandoning material that has not been understood. They approach at text with a sense of purpose and adjust how they read.

- Use of graphic semantic organizers (including story maps). Readers create or complete graphic or spatial representations of the topics and main ideas in text, showing how those topics or ideas are related to one another.
- Question answering. Readers answer questions posed by the teacher or by peers and receive immediate feedback on their responses. They know whether the answer to a question is located in the text or if the answer must be inferred.
- Question generation. Readers ask questions of themselves or their peer group before, during, and after reading. They learn to consider what type of question is being asked according to a framework (such as Bloom’s taxonomy) and to anticipate test questions they may be asked.
- Story Structure. Students use the structure of the story to help predict or recall story content in order to retell, summarize, or answer questions about what they have read.

- Summarization. Readers select and paraphrase the main ideas of expository text and integrate those ideas into a brief paragraph or several paragraphs that capture the most important propositions or ideas in the reading.
- Cooperative learning. Students learn strategies together through peer interaction, dialogue with each other, and with the teacher in whole-group activities.

The Key Three Routine incorporates all of the strategies noted above. Activity 1 (create a topic web) incorporates the use of graphic organizers and story maps as a pre-reading strategy before reading, as an organizing strategy during reading, and as a summarizing strategy after reading. Activity 2 (use main ideas to generate questions), Activity 3 (turn paragraph main ideas from the left column into questions), and Activity 5 (review and revise notes), incorporate question generation and answering strategies. Activities 3 and 4 (note taking and summarizing) incorporate main idea and summarizing strategies.

### **Strategy instruction for adolescent readers**

The research literature identifies several specific skills that were found to be effective when teaching reading to adolescent students. Curtis and Longo (1999) describe the reading curriculum for adolescent, struggling readers used at the Boys Town Reading Center in Nebraska and replicated in affiliated public schools. Their research found that the students made impressive gains in reading (about two years for every year of instruction), and it was possible to bring most of them up to grade level. In addition to instruction in word identification and word analysis, fluency, and vocabulary skills, the following comprehension and study skills used in the program were found to be most effective:

- Teaching the difference between topics and main ideas
- Teaching that there are many study skills with different functions, and these tools that can be used during both reading and writing
- Teaching the two-column note taking technique
- Teaching mapping, hierarchies, and other kinds of graphic organizers
- Teaching students to generate their own questions during reading, and providing them with the skills to answer these questions

Alvermann and Moore (1991) identified the following specific skills as effective in building independence in reading and studying in adolescent students:

- Rehearsing (underlining, taking notes verbatim)
- Elaborating (taking notes by paraphrasing text, forming mental images, creating an analogy, summarizing)
- Organizing (outlining, mapping)
- Comprehension monitoring (meta-cognitive training, self questioning)

Of these four skills, Alvermann and Moore found that summarizing tends to be the most difficult strategy for students to master. However, it becomes easier when explicitly taught over time and scaffolded before students perform the skill on their own.

All of the specific skills noted above are embedded in one or more activities of the Key Three Routine.

### **Using more than one strategy at a time**

Research has also shown that although each of the strategies is beneficial when used alone, instruction is even more effective when several strategies are combined or used together in a flexible, responsive interaction between the teacher and the students (Gaskins, 1998; Pressley, 2000; Duke et al., 2004,). The National Reading Panel (2002) specifically found that when used in combination, the use of strategies can improve results in standardized comprehension tests. The Key Three Routine encourages the use of several strategies at the same time.

### **Teaching strategies in the content classroom**

Research further indicates that teachers who provide comprehension strategy instruction that is deeply connected within the context of subject matter learning, such as history and science, foster comprehension development (Snow, 2002; Biancarosa & Snow, 2004)). If the students learn that strategies are tools for understanding the conceptual context of text, then the strategies become more purposeful and integral to reading activities. Unless the strategies are closely linked with knowledge and understanding in a content area, students are unlikely to learn the strategies fully, may not perceive the strategies as valuable tools, and are less likely to use them in new learning situations with new text.

Curtis and Longo (1999) note that even more important than the specific study technique is the ability to practice it with a purpose. They found that students need to be given numerous opportunities to apply the different strategies they are learning, and that the practice must take place in situations that are meaningful to students. The research does not show strong results for students who learn skills in isolation and then are expected to apply or transfer those skills appropriately at their own discretion (Meltzer et al., 2003). In their summary of the research on secondary school teaching specific to reading, Alvermann and Moore (1991) concluded that the use of strategies such as taking notes, mapping, and paraphrasing should be built into the curriculum of all content areas, and that it is a program outcome for which all educators are responsible.

The Key Three Routine embeds strategy instruction in content classroom lessons using content-specific texts and other reading materials. Students see the immediate application and benefit of using the strategies to help them read, organize, and study content information that is necessary to succeed in their major content classes.

### **Explicit, systematic instruction and modeling**

The National Reading Panel (2000) found that while some readers acquire strategies informally, explicit strategy instruction has been shown to be highly effective in enhancing comprehension.

The RAND study (Snow, 2002) found that for students with learning problems, successful instruction is characterized by explicit modeling by the teacher, additional opportunities for practice with feedback, skillful adjustments to the learner's level, and the reader's mindful engagement with the purpose for reading. In her synthesis of the research on adolescent literacy, Curtis (2002) found that:

“Higher order strategic processing is responsive to instruction, particularly when the instruction is long-term, includes modeling of the strategy, provides frequent and informed practice of the strategy use, and emphasizes when and where the strategy can be used ... information that seems to be best gained when teachers and students model the process and talk about its use.” (p.6)

Explicit or formal instruction of comprehension strategies is believed to lead to improvement in text understanding and information use. The National Reading Panel states:

“Instruction in comprehension strategies is carried out by a classroom teacher who demonstrates, models, or guides the reader on their acquisition and use. When these procedures have been acquired, the reader becomes independent of the teacher. Using them, the reader can effectively interact with the text without assistance. Readers who are not explicitly taught these procedures are unlikely to learn, develop, or use them spontaneously.” (p. 4-40)

The Key Three Routine provides explicit strategy instruction embedded in the context of specific academic areas. As each skill or activity is taught, it is modeled by the teacher and practiced as a class. Students are then encouraged to practice the application of the strategies independently. Because the strategies can be used in all subject areas, students practice employing them in multiple contexts with texts from a variety of genres and subject areas.

### **The use of cooperative learning activities**

Cooperative learning activities are promoted in the Key Three Routine. After teachers have introduced and modeled strategies, they should encourage students to work together in small groups or pairs to develop topic webs, turn main ideas into questions, take two-column notes, and generate summaries. Cooperative learning leads to active engagement by all students, increased participatory time, the development of problem-solving skills, and improved social behaviors. Cooperative learning is effective in diverse classrooms that include a wide range of achievement levels, and has been recommended by experts in fields of multicultural education, English as a second language, special education, and general education (Klingner et al., 2001).

The National Reading Panel (2000) found that readers need to learn to work in groups, listen to and understand their peers as they read, and help one another promote effective reading comprehension. Readers who participate in cooperative learning activities learn to focus and discuss reading materials. The panel also found that readers learn comprehension strategies and do better on comprehension tests when they participate in cooperative learning activities. When teachers provide the cognitive structure and instruct students to interact over the use of reading comprehension strategies, this leads to an increase in the learning of the strategies, promotes intellectual discussion, and increases reading comprehension. Cooperative learning procedures save teacher time and give the students more control over their learning and social interactions with peers.

In their book *Collaborative Strategic Reading: Strategies for Improving Comprehension*, Klingner et al. (2001) review the research that validates the effectiveness of comprehension strategy

instruction and the use of cooperative learning approaches. They found that cooperative learning to teach comprehension has improved the learning opportunities for students with learning disabilities, and ESL (English as a second language) students. They also found that peer interaction increases opportunities for meaningful communication about academic content. Klingner’s Collaborative Strategic Reading model combines reading comprehension strategies with cooperative learning groups or paired learning. Four reading strategies are taught within CSR (Preview, Click and Clunk, Get the Gist, and Wrap Up), and students work cooperatively through discussion in small groups. Investigations of CSR’s effectiveness have consistently yielded positive results. One study in particular (Bryant, Ugel, Hougen, Hamff, & Vaughn, 1999) found that CSR enhanced reading outcomes when implemented by middle school teachers across content area classes.

Several of the activities in the Key Three Routine address the same strategies as the four CSR strategies, as noted below.

<b>CSR Strategy</b>	<b>Key Three Routine Activity</b>
<b>Preview:</b> Before reading – Brainstorm and Predict	<p><b>Activity 1:</b> Create topic webs,</p> <p><b>Activity 2:</b> Turn main ideas into questions</p> <p><i>Used to generate background knowledge and help students predict what they will learn</i></p>
<b>Click and Clunk:</b> During reading – Identify parts that were hard to understand (clunks) and use fix-up strategies.	<p><b>Activity 2:</b> Turn main ideas into questions</p> <p><b>Activity 3:</b> Develop two-column notes</p> <p><b>Activity 5:</b> Review and revise notes, create study questions</p> <p><i>Used during and after reading to aid in comprehension monitoring</i></p>
<b>Get the Gist:</b> During reading – Identify the most important person, place, or thing in the reading and the most important idea about the person, place, or thing.	<p><b>Activity 1:</b> Create a topic web</p> <p><b>Activity 3:</b> Develop two-column notes</p> <p><b>Activity 4:</b> Generate a summary using the main ideas</p> <p><i>Students identify main ideas and hierarchies of main ideas during and after reading</i></p>
<b>Wrap Up:</b> After reading – Ask and answer questions, review what was learned.	<p><b>Activity 2:</b> Turn main ideas into questions and then answer</p> <p><b>Activity 4:</b> Generate a summary using the main ideas</p> <p><b>Activity 5:</b> Review and revise notes</p> <p><i>Students review key information and write about it in their own words</i></p>

## **The need for professional development in strategy instruction**

A major finding of the National Reading Panel (2000) was that professional development is essential for teachers to develop a knowledge of reading comprehension strategies, to understand which strategies are most effective for different students, and to learn how to teach and model strategy use. The panel found that teaching reading comprehension at all grade levels is complex. The RAND Reading Study Group (Snow, 2002) noted that recent studies have underscored the importance of teacher preparation as a way to deliver effective instruction in reading comprehension strategies, especially when the students are low performing.

The recommended professional development model for implementing the Key Three Routine (see Chapter 9) provides the in-depth, hands-on training that enables teachers to apply the research on reading comprehension strategy instruction in their classrooms. The initial training reviews how comprehension relates to other reading components (phonemic awareness, word study, fluency, vocabulary), factors that contribute to comprehension difficulties, and the research base supporting effective strategy instruction. It also offers teachers guided practice for developing lessons and activities using their content material to teach strategies. The recommended follow-up meetings with the building-based facilitator and small groups of teachers provide the sustained reinforcement of the instruction model and emphasize peer interaction and sharing.

## **References**

- Alvermann, D.E. and Moore, D. (1991). "Secondary school reading." In R. Barr, M.L. Kamil, P. Mosenthal, and P.D. Pearson (eds.) *Handbook of Reading Research 2* : 951-983. White Plains, NY: Longman.
- Biancarosa, G., and Snow, C.E. (2004). *Reading next: A vision for action and research in middle and high school literacy: A report from Carnegie Corporation of New York*. Washington, DC: Alliance for Excellent Education.
- Bryant, D.P., Ugel, N., Hougen, M., Hamff, A., and Vaughn, S. (1999). *The effects of Collaborative Strategic Reading on reading outcomes of seventh grade students with learning disabilities in general education classes*. Unpublished manuscript.
- Carlisle, J. and Rice, M. (2002). *Improving reading comprehension: Research-based principles and practices*. Baltimore: York Press.
- Curtis, M.E., and Longo, A.M. (1999). *When adolescents can't read*. Manchester, NH: Brookline Books.
- Curtis, M.E. (2002). *Adolescent reading: A synthesis of research*. Presentation at the conference "Adolescent Literacy – Research Informing Practice: A Series of Workshops," May 20, 2002, Baltimore. Sponsored by The Partnership for Reading.
- Dole, J.A., Duffy, G.G., Roehler, L.R. and Pearson, P.D. (1991). "Moving from the old to the new: Research on reading comprehension instruction." *Review of Educational Research*, 66, 239-264.

Duke, N. K., Pressley, M., and Hilden, K. (2004). Difficulties with reading comprehension. In C.A. Stone, E.R. Silliman, B.J. Ehren, and K. Apel (eds.). *Handbook of language and literacy: Development and disorders*, 501-520. New York: Guilford Press.

Durkin, D. (1978-1979). "What classroom observations reveal about reading comprehension instruction." *Reading Research Quarterly*, 15. 481-533

Gaskins, I.W. (1998). "There's more to teaching at-risk and delayed readers than good reading instruction." *The Reading Teacher*, 51(7), 534-547.

Klingner, J.K., Vaughn, S. and Schumm, J.S. (1998). "Collaborative strategic reading during social studies in heterogeneous fourth-grade classrooms." *Elementary School Journal*. 99 (1), 3-22.

Klingner, J.K., Vaughn, S., Dimino, J., Schumm, J.S., and Bryant, D. (2001). *Collaborative strategic reading: Strategies for improving comprehension*. Longmont, CO: Sopris West Educational Services.

McMurray, F.M. (1909). *How to study and teaching how to study*. Boston: Houghton Mifflin. From Project Gutenberg eBooks (2002). <http://www.gutenberg.org>

Meltzer, J., Smith, N.C., and Clark, H. (2003). Adolescent literacy resources: Linking research and practice. Providence, RI: Northeast and Islands Regional Educational Laboratory at Brown University.

Moats, L., and Sedita, J. (2005). *LETRS(Language essentials for teachers of reading and spelling) Module 11: Writing: A road to reading comprehension*. Longmont, CO: Sopris West Educational Services.

National Reading Panel. (2000). *Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction*. Washington, DC: National Institute of Child Health and Human Development.

Noles, J.D. and Dole, J.A. (2004). "Helping adolescent readers through explicit strategy instruction." In T.L. Jetton & J.A. Dole (eds.). *Adolescent literacy research and practice*. New York: Guilford Press.

Palinscar, A.S. and Brown, A.L. (1984). "Reciprocal teaching of comprehension-fostering and comprehension-monitoring activities." *Cognition and Instruction*. 1, 117-175.

Pressley, M. (2000). "What should comprehension instruction be the instruction of?" In M. Kamil, Mosenthal, P., Pearson, P.D. and Barr, R. (Eds.), *Handbook of reading research 3*: 545-561. Hillsdale, NJ: Erlbaum.

Snow, C. (2002). (Chair). *RAND reading study group: Reading for understanding: Toward an R&D program in reading comprehension*. Santa Monica, CA: RAND.

Stillman, B.W. (1928). *Training children to study: Practical suggestions*. New York: D.C. Heath and Company.

Stotsky, S. (2001). "Writing: The royal road to reading comprehension." In S. Brody (ed.), *Teaching reading: Language, letters, and thought*. Milford, NH: LARC Publishing.

Texas Education Agency. (2002). *Comprehension instruction*. Austin, TX: Texas Education Agency.

Williams, J.P. (2003). "Study and organization skills: Practical suggestions and sensible plans." *Perspectives – International Dyslexia Society*, 29 (1), 1-4.