Comprehension

What is comprehension?

Comprehension has come to be regarded as “the essence of reading” (Durkin, 1993). When we comprehend, we extract meaning from text. However, exactly how we do this have puzzled researchers for many decades.

Summary of the NRP findings

It was in the 1970’s that researchers such as Markman (1978, 1981) began to investigate whether or not readers were aware of their understanding during reading. Reading then came to be viewed as an intentional, active cognitive process in which the reader interacts with text during reading to construct meaning. This view led to the idea of a dynamic model of comprehension, such as that by Kintsch and van Dijk (1978), in which the reader forms mental representations of the meaning of a text that contain semantic interpretations and stores these representations in memory for later use. These cognitive theories of reading in which reading is active and purposeful and the goal of reading to understand continue to guide research studies today.

Comprehension strategy instruction was born of the idea that comprehension is a cognitive process. The NRP supports the theory that competent and self-regulated reading can be achieved by explicitly teaching students to utilize certain strategies while reading to improve their comprehension. Research has shown that when readers receive explicit comprehension strategy instruction instead of conventional comprehension instruction, they improve significantly on reading comprehension measures (Pressley et al., 1989; Rosenshine & Meister, 1994; Rosenshine, Meister, & Chapman, 1996). Teaching comprehension strategies is also a way to actively involve students in their own learning, thereby increasing student engagement (Mier, 1984).

Based on its analysis of over 450 scientifically published studies from the past two decades, the NRP panel found seven comprehension strategies that are most effective and most promising for instruction. They are: comprehension monitoring, cooperative learning, graphic and semantic organizers including story maps, question answering, question generation, and summarizing. Since reading requires the flexible use of many strategies, “multiple strategy” instruction (in which teachers and students interact with texts using a variety of strategies in natural learning situations) is also highly effective. The NRP specifically found two multiple strategy approaches to be effective: Reciprocal Teaching (RT; Palinscar & Brown, 1984) and Transactional Strategies Instruction (TSI; Pressley & Woloshyn, 1995). RT emphasizes four strategies: questioning, clarifying, predicting and summarizing. TSI teaches those strategies plus six more, including monitoring comprehension problems, using imagery, and reacting to text.

Effective comprehension strategy instruction occurs when teachers demonstrate, explain, model, and guide students to actively practice implementation of one or more strategies, following a model of gradual release of responsibility (Pearson & Gallagher, 1983). It also
requires that teachers devote sufficient classroom time to strategy instruction. Teachers must be aware of their own cognitive process during reading, and must be strategic readers and thinkers themselves, in order to be effective instructors of comprehension strategies. Being an effective strategy instructor is not easy. Effective comprehension strategy instruction requires teachers to know *when* to apply *what* strategy with *which* particular students (NICHD, 2000, pp 4-47).

Duffy (1993) asserts that effective reading instruction is associated more with independent teacher action than with lessons prescribed by a basal reading series. Several research studies have shown that when conscientious, dedicated, highly professional teachers implement strategy instruction in their classrooms, even when it is implemented imperfectly, students improve in reading comprehension (Bramlett, 1994; Dufy, 1993; Pressley, Johnson, Symons, McGoldrick, & Kurita, 1989). However, Pressley (1998) found that many classrooms he visited included comprehension strategy instruction only rarely. He observed more testing of comprehension than teaching of comprehension, and found that students were often asked to practice a comprehension skill, but were never actually taught the strategy itself, nor the reason to apply the strategy when reading.

The NRP panel concludes that, “teaching of a variety of reading comprehension strategies leads to increased learning of the strategies, to specific transfer of learning, to increased memory and understanding of new passages, and, in some cases, to general improvements in comprehension” (NICHD, 2000, pp 4-52).

**Summary of current research**

Research on the effectiveness of comprehension instruction is abundant. Although we know that comprehension strategy instruction can improve reading comprehension, we do not know why such instruction is effective. Some researchers’ findings suggest that strategy instruction may lead to better comprehension simply because it increases students’ engagement in text and helps them look at text in different ways, not because the students are actually making use of the strategies they have been taught. Metacognition is an important theme in current reading comprehension research, as well as how other aspects of reading affect reading comprehension (eg. decoding, vocabulary, and prior knowledge). In addition, a current research focus is on teaching reading comprehension in the lower primary grades.

**Implications for teaching**

*Comprehension instruction in the primary grades*

Prior to the NRP report, less attention in the research was given to comprehension instruction in the lower elementary grades. We still have much to learn about the developmental trajectory of comprehension, precursors of comprehension, effective assessments of comprehension, and scientifically valid comprehension interventions. However, while the lower grades might formally have maintained a focus on phonics and word recognition, current trends
deem strategy instruction in the primary grades important for later reading success. In fact, the RAND Reading Study Group (2002) suggests that reading comprehension instruction should begin in the primary grades in order to reduce later problems in comprehension.

K. Stahl (2004) conducted a review of research on comprehension strategies in the primary grades. She asserts that some strategies with a strong research-base in the primary grades are already widely used by teachers. These strategies include guided retelling, story maps, teacher-generated questions, Question-Answer Relationships (QAR), and Reciprocal Teaching (RT). Other strategies that are supported by research but are not widely used by teachers include targeted activation of prior knowledge, Text Talk, Directed Reading-Thinking Activity, literature webbing, visual imagery training, video, and Transactional Strategy Instruction. Stahl also mentions strategies that are often used by teachers, but for which she could not find a strong research-base in the primary grades. These strategies include selection of main idea, K-W-L, and picture walk. Student-generated questions and summarization also lacked a strong research-base in the primary grades, but she did not find these strategies to be used often by teachers. This is not to say that these strategies are not effective, but rather that more research is needed on how these strategies affect comprehension in the primary grades.

Paris & Paris (2007) specifically investigated the effects of five weeks of teaching strategies for narrative comprehension to first graders. They found that explicit narrative strategy instruction was effective for improving students’ recall and organization of story elements, as well as explicit and inferential understanding of pictorial information. These students also improved more in listening comprehension tasks as well as oral narrative production tasks as a result of the narrative strategy instruction, as compared with the control group. The results did not transfer to expository texts, leading the researchers to conclude that expository comprehension requires different cognitive processes, strategies, and genre knowledge than narrative genres.

Comprehension strategy instruction after the NRP

After the publication of the NRP report, many researchers began to further investigate the effectiveness of comprehension strategy instruction. Comprehension strategy instruction still maintains a strong research-base. Teachers should follow five steps when introducing a new strategy: 1) explicitly describing the strategy and stating when and how it should be used, 2) modeling using the strategy in action, 3) collaborative use of the strategy in action, 4) guided practice using the strategy with gradual release of responsibility, and 5) independent use of the strategy. (Duke, 2001).

Some studies conducted after the NRP report concluded that it may not be strategy instruction itself that improves reading comprehension. Allington and Johnson (2002) concluded that exemplary teachers spent more time engaging children around text, used open-ended questions, connected text to children’s lives, and used activities that got children involved in their reading, rather than teaching specific strategies. This type of instruction has come to be known as
cognitive engagement instruction. Taylor et al (2002) found that teachers who asked more higher level questions about text promoted more growth in reading comprehension than those who asked mostly lower level questions. In addition, Chinn, Anderson and Wagonner (2001) found that literature discussions that stressed collaborative reasoning about conflicts and tensions in a text fostered greater engagement and higher-level thinking in students than a control group.

Comprehension strategy instruction has also been criticized as being taught at the expense of content knowledge (Hirsch, 2006). McKeown, Beck and Blake (2009) conducted a study that compared fifth graders who received strategy instruction in order to help them comprehend text with those who received only content instruction around text. In a third condition, the students received lessons from the basal reading series. The researchers found that the students who received instruction on the text’s content performed best on several comprehension measures.

Palinscar, the author of Reciprocal Teaching, and Schutz (2011) recently published an article that attempts to reconnect strategy instruction with its theoretical roots. These authors argue that strategy instruction can be taught in powerful ways, and not at the expense of content instruction. They believe that students must learn tools to help them problem-solve when they encounter difficult text, since much of the text they will encounter as they progress through school will contain unfamiliar concepts and topics. These researchers recommend that teachers follow three principals for effectively teaching comprehension strategies.

First, teachers should choose related texts when using comprehension strategy instruction. Palinscar and Schutz found better success with Reciprocal Teaching when the students could integrate ideas across texts and participate in strategic learning as well as strategic thinking. Second, they recommend that teachers remain true to the main goal of strategy instruction, which is to equip students with a variety of tools they can use as they read. Activities where students are assigned a certain strategy to use at random do not support this idea. For example, if students are assigned “prediction”, yet the structure and content of the texts they are reading do not support making predictions, they are engaged in a meaningless activity that is not reinforcing the idea of being a strategic, competent reader, nor aiding comprehension of the text’s content. The third principle is that teachers should maintain focus on students building knowledge while reading. Teachers should first think about what knowledge they want their students to gain from a particular text, then consider what strategies they would need to employ in order to obtain that knowledge.

Guthrie and his colleagues (2004) investigated reading comprehension from an engagement and motivation perspective. Motivated students usually want to understand text fully and are more engaged with text, and this contributes to better comprehension. In the past, studies have found that comprehension strategy instruction increases students’ sense of self-efficacy (Bandura, 1997). Guthrie and his colleagues argue that when motivation practices are combined with strategy instruction, students’ reading comprehension is enhanced. They designed an instructional framework that incorporates strategy instruction with motivational practices, called Concept-Oriented Reading Instruction (CORI). Motivational practices included
in CORI are: a) using content goals for reading instruction, (eg. science integrated with reading), b) providing choices and control to students, c) providing hands-on activities, d) using interesting texts for instruction, and e) organizing collaboration for learning from text. In CORI, these practices were combined with the teaching of reading strategies in third grade classrooms. The researchers found that the students who participated in CORI outperformed students receiving only strategy instruction on comprehension passage measures, as well as on standardized tests. They also outperformed students in a control group that used the traditional basal reading series in both measures.

Garcia, Taylor, Pearson, Bauer and Stahl (2011) adhere to a socio-constructivist theory of reading instruction, in which an emphasis is placed on expert modeling, social interaction, collaborative learning, and authentic instructional contexts. These researchers discuss what can happen when a socio-constructivist theory of reading instruction guides a teacher’s implementation of either cognitive engagement instruction or comprehension strategy instruction. They believe that reading instruction must include higher-order thinking and conversations about text, as well as meaningful and authentic learning experiences and interesting, rich reading material. However, they also discuss school, district, and statewide issues that can affect reading comprehension instruction. Research has shown that it can take more than a year to become a proficient teacher of reading comprehension. Teachers who have the opportunity to participate in sustained professional development following a socio-constructivist perspective will be better prepared to be effective teachers of reading. The professional development should be collaborative, ongoing, and job-embedded.

**Implications for assessment**

A renewed focus on assessing reading comprehension has come to exist in the research since 2000. The RAND Reading Study Group (2002) expressed the need for better reading comprehension assessments, and many researchers support this view. While it may be easy to assess something like word recognition, assessing comprehension is much more difficult because comprehending is not an overt process. In general, what we know about what a person understands when reading is still limited.

**Informal assessments**

Informal assessments used in the classroom that assess reading comprehension include informal reading inventories, guided reading practices, and other dynamic assessments such as reading conferences and response to literature. Most comprehension measures take place after reading; however, there are researchers who believe that reading comprehension measures should be administered during reading in order to get an accurate assessment (eg. Millis, Magliano, & Todaro, 2006).

In order to assess a reader’s use of strategies during reading, Paris and Flukes (2005) identified three types of assessments commonly used by researchers. First, the student may be
required to stop and “think aloud” while reading. This can provide a window into the student’s thought processes and emerging use of strategies. However, this can also interrupt the natural reading process, which may influence the results. Another assessment method is to conduct an interview before, during, or after reading, to find out about the strategies the student will (or did) use to monitor comprehension. The third method is to administer reading surveys. Unlike the first two methods, reading surveys can be administered to a group of students all at once. The surveys are not tied to a specific text. However, when using reading surveys there is more room for students to report answers that inaccurately reflect their actual practices.

Formal assessments

Formal reading comprehension measures generally follow either a multiple choice, retell, or cloze format. Some assessments also incorporate short answer questions. Formal reading comprehension tests are often used interchangeably and assumed to test the same thing. Keenan, Betjemann, and Olson (2008) analyzed four commonly used standardized comprehension assessments in order to test the validity of this supposition. They were also curious about the extent to which the same thing is measured when students of different ages and developmental levels take a comprehension test.

The comprehension assessments they analyzed are the Gray Oral Reading Test - 3 (GORT; Wiederholt & Bryant, 1992), the Qualitative Reading Inventory - 3 (QRI; Leslie & Caldwell, 2001), the Woodcock-Johnson Passage Comprehension subtest (WJPC) from the Woodcock-Johnson Tests of achievement – III (Woodcock, McGrew, & Mather, 2001), and the Reading Comprehension subtest from the Peabody Individual Achievement Test (PIAT; Dunn & Markwardt, 1970). The GORT requires the student to read expository and narrative passages out loud and then answer multiple choice questions read aloud to him by the experimenter. The QRI consists of leveled narrative and expository passages that the student reads aloud, and then the experimenter uses a retell checklist as well as short-answer comprehension questions to assess the student’s understanding. The WJPC has students read a passage silently and then provide a missing word to demonstrate comprehension. On the PIAT, students read a sentence silently and then choose one of four pictures that represent the meaning of the sentence.

Whereas assessments of other aspects of reading (such as word recognition) are highly correlated with one another, Keenan and colleagues found that the four comprehension assessments were not. Comprehension scores were greatly affected by decoding ability on two of the tests (the WJPC and the PIAT), and not so on the others. They also found that the age and reading level of the students affected the scores more dramatically on some tests than others.

Students’ scores on comprehension assessments can be affected by deficits in their decoding ability or vocabulary knowledge. Some researchers from the Center for the Improvement of Early Reading Achievement (CIERA) institute found that young students’ comprehension of television programs and wordless picture books was correlated with their reading comprehension. New reading comprehension measures that can accurately reflect comprehension processes and depth will no doubt be the subject of further research.
Implications for intervention

We cannot assume that students with poor comprehension skills will “catch up” over
time. Studies have shown that students who do not receive intervention to develop
metacognition skills will not develop these skills on their own. Several packaged reading
intervention programs include a comprehension component. Specific interventions that only
target comprehension, however, are difficult to find. According to the research reviewed here,
focused small group comprehension instruction is effective in increasing reading achievement.
The intervention instruction should be meaningful, engaging, and promote metacognitive
awareness and discussion. It may also include vocabulary instruction as well as augmentation of
prior knowledge prior to reading.

Several studies have shown that rich literature discussions are an effective tool to aid
comprehension, especially among diverse and disadvantaged students. Almasi and O’Flahavan
(2001) later investigated the fact that, despite much research to show the effectiveness of group
discussions around literature, there is little implementation of this technique in the classroom.
Having frequent opportunities to discuss text with peers within a supportive collaborative
learning environment has been found to be especially important for ELL students.

Raphael’s Question-Answer Relationship intervention (QAR; 1984) continues to be
supported by research today. QAR helps students use information in the text as well as their own
personal knowledge to comprehend text by classifying questions into one of four types. Right
There questions can be answered by finding a single word or sentence in the text. Think and
Search questions require answers from across multiple sections of the text. Author and You
questions require the reader to infer the answer because it is not explicitly stated in the text. And
On My Own questions require the reader to use his or her prior knowledge and experience to
answer. QAR has been shown to be effective with students of all ability levels, and effects of QAR
last over time and are applicable to both narrative and expository text.

Metacognition

Following the NRP report, metacognition was recognized as an important aspect of
reading comprehension. Baker (2008) analyzed five intervention studies that included multiple
strategy instruction, with an emphasis on metacognition. These studies consistently found that
small-group interventions in which students are taught comprehension strategies in addition to
metacognitive strategies to monitor their own thinking resulted in increased metacognitive
knowledge and self-monitoring. Three of the four studies that measured general reading
comprehension also found that the interventions resulted in increased reading comprehension
scores on standardized tests, even on delayed post-assessments.
References


