

CHAPTER 4

Comprehension





COMPREHENSION

Executive Summary

Introduction

Comprehension is critically important to development of children's reading skills and therefore their ability to obtain an education. Indeed, reading comprehension has come to be viewed as the "essence of reading" (Durkin, 1993), essential not only to academic learning but to life-long learning. As the National Reading Panel (NRP) began its analysis of the extant research data on reading comprehension, three predominant themes emerged: (1) reading comprehension is a cognitive process that integrates complex skills and cannot be understood without examining the critical role of vocabulary learning and instruction and its development; (2) active interactive strategic processes are critically necessary to the development of reading comprehension; and (3) the preparation of teachers to best equip them to facilitate these complex processes is critical and intimately tied to the development of reading comprehension. With this as background, the NRP decided to organize its review and analysis of reading comprehension research in these three areas, and to address each in a subreport. This executive summary covers these three areas, and the format therefore differs slightly in organization from the other report executive summaries. Although the methodological issues pertinent to each of the three subareas are discussed in a common section, the results and discussion, as well as conclusions, implications for reading instruction, and directions for further research are combined under "Findings" for each of these three areas:

- Vocabulary Instruction
- Text Comprehension Instruction
- Teacher Preparation and Comprehension Strategies Instruction

This organization was adopted to accommodate the complexity of each of these subtopics. These reviews provide systematic evaluations and analyses of the research on these topics during the past 20 years.

Through the analyses, the Panel sought answers to this question: What methods are effective in teaching vocabulary and text comprehension and in preparing teachers to teach comprehension strategies?

Methodology

Database

To carry out scientific reviews, the NRP searched the research literature on vocabulary and text comprehension instruction from 1979 to the present. For vocabulary instruction, 47 studies met the NRP's scientific criteria. These studies included 73 grade-level samples, 53 of which were distributed from grades 3 to 8. For text comprehension instruction, 203 studies met the NRP's scientific criteria. These studies included 215 grade-level samples, 170 of which were distributed from grades 3 through 8. For preparation of teachers to teach text comprehension in naturalistic settings, the Panel intensively analyzed four relevant studies that appeared in the search of the text comprehension literature. These studies represent the only experimental attempts to prepare teachers to implement in naturalistic settings in the classroom instruction of proven text comprehension strategies that have evolved during the past 20 years. These studies also evaluated the effectiveness of the preparation on comprehension by the readers. The teacher preparation studies covered 53 classroom teachers from grades 2 to 11.

Analysis

The Panel performed extensive analyses on the research studies identified in each subarea under review. The levels of analyses are briefly stated below:

Vocabulary Instruction

An exhaustive inquiry into recent research in vocabulary instruction techniques failed to elicit a numerically large database of studies that satisfied the NRP criteria for inclusion. Three meta-analyses included in the original search were analyzed separately from the instructional research studies. Although these



analyses do not meet the formal criteria for inclusion in the analysis, they are relevant to the issues at hand. Consequently, they are included in the discussions of findings.

Text Comprehension Instruction

A study had to meet the following criteria to be included in the NRP review:

- Relevant to instruction of reading or comprehension. This criterion, in particular, excluded studies on comprehension instruction in reasoning and mathematics problem solving (Schoenfeld, 1985), physics (Larkin & Reif, 1976) and writing (Englert & Raphael, 1989; Scardamalia & Bereiter, 1985).
- The study has to have been published in a scientific journal. A few exceptions are dissertations and conference proceedings that were reviewed in two meta-analyses by Rosenshine and his colleagues (Rosenhine & Meister, 1994; Rosenshine, Meister, & Chapman, 1996).
- The study had to have an experiment that involved at least one treatment and an appropriate control group or it had to have one or more quasi-experimental variables with variations that served as comparisons between treatments. The latter were rare.
- Insofar as could be determined, the participants or classrooms were randomly assigned to the treatment and control groups or were matched on initial measures of reading comprehension. This criterion was relaxed in a number of studies in which random assignment of classrooms was not carried out.

The Panel coded and entered the coded contents of the 205 studies that met these criteria into a database to identify the types of comprehension instruction that were reported as effective. First, the abstracts of the studies were examined and the type of instruction was coded, as were experimental treatments and controls (independent variables), grade and reading level of readers, instructor (teacher or experimenter), assessments (dependent variables), and type of text. The studies were then classified and grouped based upon the type of instruction used. A total of 16 distinct categories of instruction was identified.

Teacher Preparation and Comprehension Strategies Instruction

A study had to meet the following criteria to be included in the review:

- It focused on the preparation of teachers for conducting reading comprehension strategy instruction.
- The study had to have been published in a scientific journal.
- It was empirical.
- It was experimental, using random assignment, or quasi-experimental with initial matching on the basis of reading comprehension scores.
- The complete set of results of the study was reported.

Four studies met these criteria. The Panel developed a detailed outline of each of the selected studies, organized to permit comparison across studies. The Panel reviewed the research in reading comprehension instruction broadly and also selected certain specific topics for a deeper focus, that is, vocabulary and teacher preparation for teaching reading comprehension strategies. It should be noted that there are other relevant aspects of comprehension instruction, for example, instruction in listening comprehension and in writing, that the Panel did not address. In addition, the Panel did not focus on special populations such as children whose first language is not English and children with learning disabilities. It did not review the research evidence concerning special populations and thus cannot say that its conclusions are relevant to them.

Consistency With the Methodology of the National Reading Panel

The methods of the NRP were followed in the conduct of the literature searches and the examination and coding of the articles obtained. However, in most instances, the wide variations in methodologies and implementations required the Panel to qualify the use of the NRP criteria for evaluating single studies, multiple studies, and reviews of existing studies. These departures from the stated NRP criteria are briefly stated below and are discussed in greater detail in each of the reports.



Vocabulary Instruction

A formal meta-analysis was not possible. Inspection of the research studies that were included in the database revealed a heterogeneous set of methodologies, implementations, and conceptions of vocabulary instruction. The Panel found no research on vocabulary measurement that met the NRP criteria; therefore, a detailed review of implicit evidence is presented.

For the analysis of research on vocabulary instruction, there were recent meta-analyses that dealt with only the variables amenable to a meta-analysis. For the most part, the experimental research in vocabulary instruction involves many different variables and methodologies. It was deemed inappropriate to analyze such disparate studies as a group. For comprehension instruction, there were simply too many studies involving too many variables to allow for a simple meta-analysis. The decision was made to do the preliminary work necessary to organize comprehension instruction research for possible future analyses. For research on preparation of teachers to teach comprehension, there were only four studies, and a meta-analysis was not possible. The general analysis of teacher education and professional development found too few studies on too many variables to conduct a formal meta-analysis. Similarly, for computer technology and reading instruction, there were relatively few studies, most of which used variables that differed from each other.

Text Comprehension Instruction

A formal meta-analysis was not possible because even the studies identified in the same instructional category used widely varying sets of methodologies and implementations. Therefore, the Panel found few research studies that met all the NRP criteria; however, to the extent possible, NRP criteria were employed in the analyses. NRP criteria for evaluating existing reviews of research were used in the analyses of the two Rosenshine and colleagues meta-analyses.

Teacher Preparation and Comprehension Strategies Instruction

A formal meta-analysis was not possible because of the small number of studies identified. However, comprehensive summaries according to NRP guidelines for each of the four studies are included in the report.

Vocabulary Instruction: Findings

The importance of vocabulary knowledge has long been recognized. In 1925, the National Society for Studies in Education (NSSE) Yearbook (Whipple, 1925) noted: “Growth in reading power means, therefore, continuous enriching and enlarging of the reading vocabulary and increasing clarity of discrimination in appreciation of word values.” (Davis, 1942, p. 76) presented evidence that comprehension comprises two “skills”: Word knowledge or vocabulary and reasoning. Vocabulary occupies an important position in learning to read. As a learner begins to read, reading vocabulary encountered in texts is mapped onto the oral vocabulary the learner brings to the task. The reader learns to translate the (relatively) unfamiliar words in print into speech, with the expectation that the speech forms will be easier to comprehend. Benefits in understanding text by applying letter-sound correspondences to printed material come about only if the target word is in the learner’s oral vocabulary. When the word is not in the learner’s oral vocabulary, it will not be understood when it occurs in print. Vocabulary occupies an important middle ground in learning to read. Oral vocabulary is a key to learning to make the transition from oral to written forms. Reading vocabulary is crucial to the comprehension processes of a skilled reader.

Vocabulary Instruction Methods

Five main methods of teaching vocabulary were identified:

1. Explicit Instruction: Students are given definitions or other attributes of words to be learned.
2. Implicit Instruction: Students are exposed to words or given opportunities to do a great deal of reading.
3. Multimedia Methods: Vocabulary is taught by going beyond text to include other media such as graphic representations, hypertext, or American Sign Language that uses a haptic medium.
4. Capacity Methods: Practice is emphasized to increase capacity through making reading automatic.
5. Association Methods: Learners are encouraged to draw connections between what they do know and words they encounter that they do not know.



Results of Vocabulary Instruction

There are age and ability effects learning gains that occur from vocabulary instruction. These findings point to the importance of selecting age- and ability-appropriate methods.

1. Computer vocabulary instruction shows positive learning gains over traditional methods.
2. Vocabulary instruction leads to gains in comprehension.
3. Vocabulary can be learned incidentally in the context of storybook reading or from listening to the reading of others.
4. Repeated exposure to vocabulary items is important for learning gains. The best gains were made in instruction that extended beyond single class periods and involved multiple exposures in authentic contexts beyond the classroom.
5. Pre-instruction of vocabulary words prior to reading can facilitate both vocabulary acquisition and comprehension.
6. The restructuring of the text materials or procedures facilitates vocabulary acquisition and comprehension, for example, substituting easy for hard words.
4. Vocabulary tasks should be restructured as necessary. It is important to be certain that students fully understand what is asked of them in the context of reading, rather than focusing only on the words to be learned. Restructuring seems to be most effective for low-achieving or at-risk students.
5. Vocabulary learning is effective when it entails active engagement in learning tasks.
6. Computer technology can be used effectively to help teach vocabulary.
7. Vocabulary can be acquired through incidental learning. Much of a student's vocabulary will have to be learned in the course of doing things other than explicit vocabulary learning. Repetition, richness of context, and motivation may also add to the efficacy of incidental learning of vocabulary.
8. Dependence on a single vocabulary instruction method will not result in optimal learning. A variety of methods was used effectively with emphasis on multimedia aspects of learning, richness of context in which words are to be learned, and the number of exposures to words that learners receive.

Implications for Reading Instruction

These results indicate that

1. There is a need for direct instruction of vocabulary items required for a specific text.
 2. Repetition and multiple exposure to vocabulary items are important. Students should be given items that will be likely to appear in many contexts.
 3. Learning in rich contexts is valuable for vocabulary learning. Vocabulary words should be those that the learner will find useful in many contexts. When vocabulary items are derived from content learning materials, the learner will be better equipped to deal with specific reading matter in content areas.
- ## Directions for Further Research
- The need in vocabulary instruction research is great. Existing knowledge of vocabulary acquisition exceeds current knowledge of pedagogy. That is, a great deal is known about the ways in which vocabulary increases under highly controlled conditions, but much less is known about the ways in which such growth can be fostered in instructional contexts. There is a great need for the conduct of research on these topics in authentic school contexts, with real teachers, under real conditions.
1. What are the best ways to evaluate vocabulary size, use, acquisition, and retention? What is the role of standardized tests, what other measures should be used, and under what circumstances?
 2. Given the preliminary findings that age and ability levels can affect the efficacy of various vocabulary instruction methods (Tomesen & Aarnoutse, 1998; Robbins & Ehri, 1994; Nicholson & Whyte, 1992; McGivern & Levin, 1983), what are the specific vocabulary instruction needs of students at different grade and ability levels?



3. What are the more general effects of vocabulary instruction across the grades?
4. Empirical support has been found for the facilitation of vocabulary learning with computers as ancillary aids and replacements of other technologies (Reinking & Rickman, 1990; Heise, 1991; Davidson et al., 1996). What is the optimal use of computer (and other) technologies in vocabulary instruction? What is the precise role of multimedia learning in vocabulary acquisition?
5. What is the precise role of multimedia learning in vocabulary instruction across the grades?
6. How should vocabulary be integrated in comprehension instruction for optimal benefit to the student?
7. What are the optimal combinations of the various methods of vocabulary instruction, including direct and indirect instruction, as well as different methods within these categories?
8. What sort of professional development is needed for teachers to become proficient in vocabulary instruction?

Text Comprehension Instruction: Findings

Comprehension is a complex process. There exist as many interpretations of comprehension as there are of reading. This may be so because comprehension is often viewed as “the essence of reading” (Durkin, 1993). Reading comprehension is further defined as “intentional thinking during which meaning is constructed through interactions between text and reader” (Durkin, 1993). According to this view, meaning resides in the intentional, problem-solving, thinking processes of the reader that occur during an interchange with a text. The content of meaning is influenced by the text and by the reader’s prior knowledge and experience that are brought to bear on it. Reading comprehension is the construction of the meaning of a written text through a reciprocal interchange of ideas between the reader and the message in a particular text (Harris & Hodges, 1995, definition #2, p. 39).

The bulk of instruction of text comprehension research during the past 2 decades has been guided by the cognitive conceptualization of reading described above. In the cognitive research of the reading process, reading is purposeful and active. A reader reads a text to understand what is read and to put this understanding to use. A reader can read a text to learn, to find out information, or to be entertained. These various purposes of understanding require that the reader use knowledge of the world, including language and print. This knowledge enables the reader to make meanings of the text, to form memory representations of these meanings, and to use them to communicate information with others about what was read.

Although instruction on text comprehension has been a major research topic for more than 20 years, the explicit teaching of text comprehension before 1980 was done largely in content areas and not in the context of formal reading instruction. The idea behind explicit instruction of text comprehension was that comprehension could be improved by teaching students to use specific cognitive strategies or to reason strategically when they encountered barriers to comprehension in reading. The goal of such training was the achievement of competent and self-regulated reading.

Readers normally acquire strategies for active comprehension informally. Comprehension strategies are specific procedures that guide students to become aware of how well they are comprehending as they attempt to read and write. Explicit or formal instruction of these strategies is believed to lead to improvement in text understanding and information use. Instruction in comprehension strategies is carried out by a classroom teacher who demonstrates, models, or guides the reader in their acquisition and use. When these procedures are acquired, the reader becomes independent of the teacher. Using them, the reader can effectively interact with the text without assistance.

Comprehension Instruction Methods

Analyses of the 203 studies on instruction of text comprehension led to the identification of 16 different kinds of effective procedures. Of the 16 types of instruction, 8 offered a firm scientific basis for concluding that they improve comprehension. The eight kinds of instruction that appear to be effective and most promising for classroom instruction are



1. Comprehension monitoring in which the reader learns how to be aware or conscious of his or her understanding during reading and learns procedures to deal with problems in understanding as they arise.
2. Cooperative learning in which readers work together to learn strategies in the context of reading.
3. Graphic and semantic organizers that allow the reader to represent graphically (write or draw) the meanings and relationships of the ideas that underlie the words in the text.
4. Story structure from which the reader learns to ask and answer who, what, where, when, and why questions about the plot and, in some cases, maps out the time line, characters, and events in stories.
5. Question answering in which the reader answers questions posed by the teacher and is given feedback on the correctness.
6. Question generation in which the reader asks himself or herself what, when, where, why, what will happen, how, and who questions.
7. Summarization in which the reader attempts to identify and write the main or most important ideas that integrate or unite the other ideas or meanings of the text into a coherent whole.
8. Multiple-strategy teaching in which the reader uses several of the procedures in interaction with the teacher over the text. Multiple-strategy teaching is effective when the procedures are used flexibly and appropriately by the reader or the teacher in naturalistic contexts.

Results of Comprehension Instruction

With respect to the scientific basis of the instruction of text comprehension, the Panel concludes that comprehension instruction can effectively motivate and teach readers to learn and to use comprehension strategies that benefit the reader.

These comprehension strategies yield increases in measures of near transfer such as recall, question answering and generation, and summarization of texts. These comprehension strategies, when used in combination, show general gains on standardized

comprehension tests. Teachers can learn to teach students to use comprehension strategies in natural learning situations. Furthermore, when teachers teach these strategies, their students learn them and improve their reading comprehension.

A common aspect of individual and multiple-strategy instruction is the active involvement of motivated readers who read more text as a result of the instruction. These motivational and reading practice effects may be important to the success of multiple-strategy instruction.

Multiple-strategy instruction that is flexible as to which strategies are used and when they are taught over the course of a reading session provides a natural basis for teachers and readers to interact over texts. The research literature developed from the study of isolated strategies to their use in combination to the preparation of teachers to teach them in interaction over texts with readers in naturalistic settings. The Panel regards this development as the most important finding of the Panel's review because it moves from the laboratory to the classroom and prepares teachers to teach strategies in ways that are effective and natural.

Implications for Reading Instruction

The empirical evidence reviewed favors the conclusion that teaching of a variety of reading comprehension strategies leads to increased learning of the strategies, to specific transfer of learning, to increased retention and understanding of new passages, and, in some cases, to general improvements in comprehension.

The important development of instruction of comprehension research is the study of teacher preparation for instruction of multiple, flexible strategies with readers in natural settings and content areas and the assessment of the effectiveness of this instruction by trained teachers on comprehension.

Directions for Further Research

The Panel's analysis of the research on instruction of text comprehension left a number of questions unanswered.



1. More information is needed on the effective ways to teach teachers how to use proven strategies for instruction in text comprehension. This information is crucial to situations in which teachers and readers interact over texts in real classroom contexts.
2. Some evidence was reviewed that indicated that instruction in comprehension in content areas benefits readers in terms of achievement in social studies. However, it is not clear whether instruction of comprehension strategies leads to learning skills that improve performance in content areas of instruction. If so, then it might be efficient to teach reading comprehension as a learning skill in content areas.
3. Instruction of comprehension has been successful over the 3rd to 6th grade range. A next step will be to determine whether certain strategies are more appropriate for certain ages and abilities, what reader characteristics influence successful instruction of reading comprehension, and which strategies, in combination, are best for younger readers, poor or below-average readers, or for learning-disabled and dyslexic readers.
4. It will be important to know whether successful instruction generalizes across different text genres (e.g., narrative and expository) and texts from different subject content areas. The NRP review of the research indicated that little or no attention was given to the kinds of text that were used and that there was little available information on the difficulty level of texts.
5. It will also be important to determine what teacher characteristics influence successful instruction of reading comprehension and what the most effective ways are to train teachers, both preservice and inservice.
6. Criteria of internal and external validity should be considered in the design of future research, to address problems that were noted in prior studies. Specifically, these issues were random assignment of students to treatments and control conditions; exposure of experimental and control participants to the same training materials; provision of information about the amount of time spent on dependent variable tasks; the study of fidelity of treatment and

analyzing teacher and reader performance during instruction; use of appropriate units (individual, group, classroom) in analyses; and assessment of either long-term effects or generalization of the strategies to other tasks and materials.

Teacher Preparation and Comprehension Strategies Instruction: Findings

The preparation of teachers to deliver comprehension strategy instruction is important to the success of teaching reading comprehension. As indicated by the Panel's review of text comprehension, reading comprehension can be improved by teaching students to use specific cognitive strategies or to reason strategically when they encounter barriers to comprehension when reading. The goal of such training is the achievement of competent and self-regulated reading. The research on comprehension strategies has evolved dramatically over the course of the last 2 decades. At first, investigators focused on teaching students one strategy at a time. A wide variety of strategies was studied, including imagery, question generating, prediction, and a host of others. In later studies, several strategies were taught in combination. However, implementation in the context of the actual classroom of this promising approach to comprehension has been problematic. Acquiring and practicing strategies in isolation and then attempting to provide transfer opportunities during the reading of text is not the kind of instruction that is required in naturalistic contexts. Proficient reading involves a constant, ongoing adaptation of many cognitive processes.

Thus, teachers must be skillful in their instruction and must respond flexibly and opportunistically to students' needs for instructive feedback as they read. To be able to do this, teachers must themselves have a firm grasp not only of the strategies that they are teaching the children but also of instructional strategies that they can employ to achieve their goal. Many teachers find this type of teaching a challenge, most likely because they have not been trained to do such teaching. The focus of the review was on four recent and promising studies that addressed the need for specific teacher preparation in the implementation of strategy instruction in naturalistic classroom contexts. In these four studies, teachers were trained to teach strategies, and the focus



was on the effectiveness of that training on students' reading. It is not surprising that only a few relevant studies have been done on this topic. Interest in the topic is rather new, and preparing teachers to deliver effective strategy instruction is a lengthy and complex process.

Methods of Teacher Preparation

There have been two major approaches to comprehension strategy instruction in the classroom: direct explanation (DE) and transactional.

The DE approach was designed to improve on the approach in which students are taught to use one or several strategies as described and reviewed in the previous section on text comprehension instruction. This kind of instruction did not attempt to provide students with an understanding of the reasoning and mental processes involved in reading strategically. Therefore, Gerald Duffy and Laura Roehler developed the DE approach. In this approach, teachers do not teach individual strategies but focus instead on helping students to (1) view reading as a problem-solving task that necessitates the use of strategic thinking and (2) learn to think strategically about solving reading comprehension problems. The focus is on developing teachers' ability to explain the reasoning and mental processes involved in successful reading comprehension in an explicit manner, hence the use of the term "direct explanation." The implementation of DE requires specific and intensive teacher training on how to teach the traditional reading comprehension skills found in basal readers as strategies, for example, to teach students the skill of how to find the main idea by casting it as a problem-solving task and reasoning about it strategically. The transactional strategy instruction (TSI) approach includes the same key elements as the direct explanation approach, but it takes a somewhat different view of the role of the teacher in strategy instruction. The TSI approach focuses on the ability of teachers to facilitate discussions in which students (1) collaborate to form joint interpretations of text and (2) explicitly discuss the mental processes and cognitive strategies that are involved in comprehension. In other words, the emphasis is on the interactive exchange among learners in the classroom, hence use of the term "transactional."

In both approaches, teachers explain specific strategies to students and model the reasoning associated with their use. Both approaches include the use of systematic practice of new skills, as well as scaffold support, in which teachers gradually withdraw the amount of assistance they offer to students. The different emphases of the two approaches (explanation vs. discussion) result in differences in the level of collaboration among students.

Results of Teacher Preparation

All four studies showed that teachers can be taught to be effective in teaching comprehension to their students in naturalistic reading contexts. These studies indicate that teaching teachers to use comprehension instruction methods leads to students' awareness of strategies and use of strategies, which can in turn lead to improved reading.

Implications for Reading Instruction

Teachers need training to become effective in explaining fully what it is that they are teaching (what to do, why, how, and when), modeling their own thinking processes for their students, encouraging students to ask questions and discuss possible answers and problem solutions among themselves, and keeping students engaged in their reading by providing tasks that demand active involvement.

There should be greater emphasis in teacher education on the teaching of reading comprehension. Such instruction should begin during preservice training, and it should be extensive, especially with respect to preparing teachers to teach comprehension strategies.

Directions for Further Research

It will be important to determine how well teachers maintain their effectiveness in the classroom after they have had preparation in teaching reading comprehension. Thus, several research questions remain to be investigated.

1. Which components of a successful teacher preparation program are the effective ones? These could include characteristics of the teacher preparation program itself, such as its focus or



intensity, as well as characteristics of the instruction delivered to the students, such as the amount of instruction provided, the particular strategies taught, and the amount of collaborative discussion involved.

2. Can instruction in reading comprehension strategies be successfully implemented and incorporated into content area instruction?
3. How should the effectiveness of strategy instruction be assessed, especially with respect to reading achievement and subject matter proficiency, but also with respect to student interest and teacher satisfaction?
4. Comprehension instruction research has been limited to grades 3 through 8. It will be important to examine comprehension instruction in the primary grades when children are mastering phonics and word recognition and developing reading fluency.
5. How should the effectiveness of strategy instruction be assessed, for example, by reading achievement or subject matter achievement?

6. Should the teaching of reading comprehension begin during preservice or inservice training or both, and how extensive should it be?

Conclusions

Vocabulary is one of the most important areas within comprehension and should not be neglected. The NRP found a variety of methods by which readers acquire vocabulary through explicit instruction and improve their comprehension of what they read. The Panel also found that although there has been considerable success in teaching a variety of effective text comprehension strategies that lead to improved text comprehension, the most promising lines of research within the reading comprehension strategies area focused on teacher preparation to teach comprehension. Teachers can be helped by intensive preparation in strategy instruction, and this preparation leads to improvement in the performance of their students.



COMPREHENSION

Introduction

Learning to read is one of the most important things children accomplish in elementary school because it is the foundation for most of their future academic endeavors. From the middle elementary years through the rest of their lives as students, children spend much of their time reading and learning information presented in text. The activity of reading to learn requires students to comprehend and recall the main ideas or themes presented in . . . text. (Stevens et al., 1991, p. 8).

Inherent in the view expressed by Stevens et al. (1991) in the preceding quotation is the critical importance of reading comprehension and the developmental view that children must first learn how to recognize and relate print to oral language knowledge and to make this recognition automatic through practice. Indeed, comprehension has come to be viewed as the “essence of reading” (Durkin, 1993), essential not only to academic learning but to lifelong learning as well. Despite the critical and fundamental importance of reading comprehension, comprehension as a cognitive process began to receive scientific attention only in the past 30 years.

As the National Reading Panel initiated its analysis of the extant research data on reading comprehension, three major themes emerged. First, reading comprehension as a process and an amalgam of complex skills cannot be understood without examining the critical role and importance of vocabulary and vocabulary instruction. Second, in contrast to earlier speculation that reading comprehension was a passive process, more recent data clearly indicate that robust comprehension is dependent on active and thoughtful interaction between the text and the reader. Therefore, the development and investigation of reading comprehension strategies now occupy a central role in teaching readers how to maximize their understanding of what is read and in explaining the different strategies that enable readers to optimally understand text. Third,

given the importance of comprehension strategies in fully understanding text, it is critical to know how teachers can best be prepared to teach their students specific strategies that will facilitate this understanding.

With this as background, this section of the NRP report is organized in three subsections. The first section examines specific evidence on the effects of vocabulary instruction on reading achievement, particularly text comprehension. In the second section, data relevant to the effects of different types of instruction to facilitate the comprehension of text are analyzed and interpreted. In the third section, available data on the preparation of teachers to teach reading comprehension strategies are reviewed and interpreted. In addition, a comprehensive description of the review methodology employed in the evaluation of studies relevant to vocabulary instruction, text comprehension instruction, and teacher preparation is provided in Appendix A of this report.

In contrast to the sections in the NRP report that address phonemic awareness, phonics, and fluency, studies undertaken with young children at risk for reading failure and older disabled readers were not reviewed and analyzed as part of the Comprehension report. Time and resource limitations prevented the Panel from examining this subtopic in an optimal manner. Thus, it was decided to examine only literature that pertained to the normal reading process.

The reader will also note that the organization of this section of the report differs from the structure employed in adjacent sections in that each subsection (Vocabulary Instruction, Text Comprehension Instruction, Teacher Preparation and Comprehension Strategies Instruction) provides a topic-specific introduction, an overview of methodology, results and discussion of the findings, implications for reading instruction, and directions for future research. This organization was adopted to accommodate the complexity of each of these subtopics and differences in the review and data analytic procedures employed for each of the topics.