

This report presents a proposed reading research agenda drafted by the RAND Reading Study Group (RRSG). It addresses issues that the community of reading researchers urgently needs to address over the next 10 to 15 years. As a basis for the proposed agenda, this report maps the fields of knowledge that are relevant to the goal of improving reading outcomes and identifies some key areas in which research would help the education community reach that goal. The major challenges in the area of reading education include understanding how children learn to comprehend the material they are reading, how to design and deliver instruction that promotes comprehension, how to assess comprehension, and how to prevent poor comprehension outcomes. This report outlines a research agenda that will help the education profession meet these challenges.

STUDY METHODOLOGY

RAND and the RRSG engaged a wide range of people in the development of this report. This level of input was intended to both expand the study group's thinking and contribute to the development of informed research and practice communities. The initial draft of this report was released in February 2001 and was widely distributed. The draft was also published on RAND's public Achievement for All website (www.rand.org/multi/achievementforall) along with external reviews from eight experts in reading research and practice. The website encouraged visitors to comment directly on the draft report and to participate in discussions about key issues related to reading. In addition, the draft report was the subject of discussion at many professional meetings. The RRSG used the public critiques to guide the *Plan for Revision*, a second version of the draft report, which was posted on the Achievement for All website in April 2001.

This report incorporates both the ideas offered in the *Plan for Revision* and additional deliberation by the RRSG. It is intended to provide a baseline for future documents that the education field should regularly produce and revise over the course of a long-term program of research and development (R&D) for im-

proved reading comprehension. This report addresses the issue of promoting proficient reading, while focusing on the development of reading comprehension and the capacity to acquire knowledge through reading.

Various models of reading comprehension are supported by empirical evidence. However, the sizable gaps in the knowledge base make it difficult to choose among the models or to see how the models fit together to form a larger picture of proficient reading. Some of these gaps, furthermore, have real consequences for the capacity of the education community to improve reading outcomes. Thus, although research has provided some amount of knowledge about the domain of comprehension, it has been insufficient in providing a basis to redesign comprehension instruction. Addressing the gaps in the knowledge base will require, among other things, developing networks of communication among researchers currently working in several different research traditions relevant to comprehension. Closing the knowledge gap will also require working with teachers and teacher educators to build rigorous knowledge bases for both research and practice that are mutually accessible and usable.

RESEARCH CHALLENGES

What is the core challenge facing those in the field of research on proficient reading? It is the widely held belief that proficient reading is the natural, and perhaps inevitable, outcome when good reading instruction is available through grade 3. The core challenge is to help researchers, practitioners, and policymakers understand that marshaling the forces of both reading researchers and educators to ensure that all children are reading at the third-grade level by grade 3 is only the first step in promoting proficient reading. Some of those good third-grade readers will progress on their own to proficiency in reading, but many will not. Many will need explicit, well-designed instruction in reading comprehension to continue making progress. Yet, we¹ do not have an adequate research base for designing and implementing effective reading comprehension instruction.

A core problem for researchers interested in the issue of reading comprehension is the absence of an adequately rich set of theories and models to provide a coherent foundation for their work. This set of theories needs to be sufficiently complex to encompass the array of factors involved in proficient reading; simultaneously, it needs to be informed by the multiple perspectives (including educational, cognitive, linguistic, sociolinguistic, discourse analytic, and cultural perspectives) that have been brought to bear in the design and conduct of literacy research. Considerable research has been directed at issues of reading

¹The first-person plural when used in this report refers to the RRSG as a group.

comprehension, but those research efforts have been neither systematic nor interconnected.

Thus, when a sixth-grade teacher turns to published research with the question “What should I do with my students who don’t understand their history texts or can’t learn from reading science texts?” no consensus answer is available. Teachers with such questions encounter only a partial knowledge base, and one that does not sufficiently acknowledge the exigencies of the classroom.

Research-based knowledge about comprehension does not simultaneously attend to the demands of reading to learn during content-area instruction while still learning to read, and it does not incorporate responses to the reading profiles of many of the students in today’s classrooms. Given the enormous educational importance of promoting both reading comprehension and learning among elementary and secondary students, it is crucial to organize what we know about these topics, define what we need to know, and pursue the research that will be most important for improving teacher preparation, classroom instruction, and student achievement.

The goal the RRSg set for itself, then, was to summarize the state of research and research-based practice in the field of reading comprehension as a prerequisite to generating a well-founded agenda for future research that will inform practice in this area. The proposed research agenda builds on a number of recent efforts to summarize the knowledge base in the field of reading. These efforts include the National Research Council report *Preventing Reading Difficulties in Young Children* (Snow, Burns, & Griffin, Eds., 1998); the report of the National Reading Panel, *Teaching Children to Read: An Evidence-Based Assessment of the Scientific Research Literature on Reading and Its Implications for Reading Instruction* (NRP, 2000); and the recently published edition of the *Handbook of Reading Research* (Kamil, Mosenthal, Pearson, & Barr, Eds., 2000). Given the availability of these and other older sources, the RRSg did not attempt an exhaustive synthesis of the knowledge base concerning reading and its implications for instruction and assessment of the general population; in many cases, the RRSg provides examples to support its claims instead of documenting them comprehensively. Thus, the research agenda presented in this document should be seen as a stimulus to ongoing discussion rather than a summative statement.

The program of reading research that the RRSg is proposing fits into the larger context of research on reading in the United States. Robust efforts funded in large part through the National Institute of Child Health and Human Development (NICHD) originally focused on beginning reading instruction but are now being expanded to include the literacy development of preschool-aged, adolescent, and adult literacy learners. The Office of Bilingual Education and

Minority Languages Affairs funded an initial study on bilingual readers, and NICHD together with the Department of Education's Office of Educational Research and Improvement (OERI) subsequently launched a substantial effort focused on analyzing the transfer from reading in Spanish to reading in English. Future funding will not be limited to Spanish-English bilingual readers. The Interagency Education Research Initiative (IERI)—funded jointly by the National Science Foundation, OERI, and NICHD—is funding efforts that bring early research to scale with some emphasis on the use of technology. Thus, the reading research program we propose seeks to fill gaps left by the existing research efforts, while being cohesively organized around a central set of issues facing practitioners.

The remainder of this chapter presents the RRSB's motivation for its focus on reading comprehension and Chapter Two presents our formal definition of reading comprehension. Chapter Three examines the variability in each element of reading comprehension incorporated in our definition; the brief overviews of research included in Chapter Three are supplemented by Appendix A, in which the research base in each domain of reading comprehension is more systematically reviewed. In Chapter Four, we justify and discuss the three critical components of a long-term research agenda for improving reading comprehension: classroom instruction, teacher preparation and professional development, and appropriate assessment. Finally, in Chapter Five, we discuss some strategies, criteria, and prerequisites for the successful pursuit of this agenda.

THE ISSUES MOTIVATING THIS STUDY

The proposed research agenda is built on a number of overarching issues of concern to the research and practice communities.

The demand for literacy skills is high and getting higher. The U.S. economy today demands a universally higher level of literacy achievement than at any other time in history, and it is reasonable to believe that the demand for a literate populace will increase in the future. An employment market with few blue-collar jobs but many service-related and information-based jobs is increasingly demanding high school graduation as the minimum educational credential for employment. Moreover, advanced vocational or academic training is a requirement now for a wide variety of positions that previously might have gone to high school dropouts. Thus, ensuring advanced literacy achievement for all students is no longer a luxury but an economic necessity. Using computers and accessing the Internet make large demands on individuals' literacy skills; in some cases, this new technology requires readers to have novel literacy skills, and little is known about how to analyze or teach those skills.

The level of reading skills remains stagnant. Reading scores of high school students, as reported by the National Assessment of Educational Progress (NAEP), have not improved over the last 30 years. Although mathematics scores have improved, reading scores stubbornly remain flat. In fact, the reading achievement of grade 12 students has recently decreased significantly. With few exceptions, indicators of achievement in states and school districts have shown no or only slow growth across grades in the past ten years.

Further, in international comparisons of performance on reading assessments, U.S. 11th graders have placed very close to the bottom, behind students from the Philippines, Indonesia, Brazil, and other developing nations. This poor performance contrasts with rankings in grade 4, when U.S. students have placed close to the top in international comparisons. These findings confirm teachers' impressions that many students who read well enough in the primary grades confront difficulties with reading thereafter.²

Reading comprehension instruction is often minimal or ineffective. Teachers often assume that students will learn to comprehend merely by reading. Although some will, many others will not. Teaching children to comprehend is challenging because reading is complex. Students who are good comprehenders use strategies in reading to learn new concepts, get deeply involved in what they are reading, critically evaluate what they read, and apply their new knowledge to solve practical as well as intellectual problems. But many students fail at doing these things. One problem is that classroom materials are often so difficult to comprehend or uninteresting that many students cannot or will not read them. Moreover, comprehension instruction tends to be emphasized less in subject-matter classrooms where teachers are focused on content. Sometimes children miss early opportunities to learn because comprehension instruction is delayed until the later elementary grades, even though a focus on comprehension is desirable from the very beginning of reading instruction. In the absence of a consensus on standards for comprehension achievement and instruction throughout the elementary, middle, and secondary grades, it would not be surprising if a child's access to excellent reading comprehension instruction were not systematic or sustained.

Reading instruction is seldom effectively integrated with content-area instruction. Children need to read well if they are to learn what is expected of them in school beyond grade 3. Teaching in the content areas relies on texts as a major

²The fall in rankings from grade 4 to grade 11 may reflect the fact that more U.S. students continue their education, so more students were included in the secondary education scores than were included in the primary school scores. However, the current insistence on "educating all students" implies that we cannot hide behind selection bias as an excuse for the poor performance of high school students.

source of instructional content. These texts are not designed as a context for comprehension instruction, but comprehension instruction that uses these texts may be crucial if students are to understand or learn from them. Content-area teachers presuppose adequate literacy skills among their students and they are typically not well prepared to teach students with below-average literacy skills, despite the aspiration voiced by noted educator Sterl Artley: “every teacher a teacher of reading.” At the same time, specific reading comprehension tasks must be mastered in the context of specific subject matter. Learning discipline-specific vocabulary words, text structures, methods, and perspectives involves acquiring both content knowledge and reading skills simultaneously. The relatively poor performance of U.S. middle school and secondary school students in comparisons of international science and reading scores likely reflects in part their poor performance as readers.

The achievement gap between children of different demographic groups persists. Attention to reading comprehension is crucial in a society determined to minimize the achievement gaps between European-American children and those from groups historically ill served in U.S. schools, between suburban and urban or rural children, and between middle-class and working-class children. NAEP scores, for example, show that 17-year-old African-American students score at the level of 13-year-old European-American students—a gap that has decreased only minimally in the past 20 years. This large and persistent gap in reading achievement in the later elementary and secondary grades relates to differences in achievement in other content areas and to differences in high-school dropout and college entrance rates.

The explanations for these differences in reading achievement vary. Some portion of the gap may be explained by cultural and social issues, reflected in the increasing difficulty of making school-based literacy relevant to learners from some groups. For example, different readers interpret the reading task differently in ways that are socially and culturally influenced, or are confronted with school-based definitions of literacy that are not congruent with those learned at home or in their local communities. A large portion of the gap in reading achievement can be related to the greater likelihood that Latino and African-American students are growing up in poverty and attending schools with fewer resources, fewer experienced teachers, and that have less of a focus on academics. Members of some ethnic and racial groups, even if they are middle class, are less likely to have access to excellent instruction than are European-American children; they are also likely to face lower performance expectations from teachers and school administrators.

Second-language students face particular challenges in the later grades when they are pushed beyond the simple second- and third-grade English texts. The texts they encounter in the later grades often incorporate sophisticated vocabu-

lary and complex linguistic and discourse structures that second-language speakers have not yet mastered. In addition, the greater amount of cognitive effort required when reading in a second language may discourage second-language learners from engaging in the reading practice they need to become more proficient. From a sociocultural perspective, both the process (the way in which the instruction is delivered and the social interactions that contextualize the learning experience) and the content (the focus of instruction) are of major importance in helping explain group differences in outcome.

High-stakes tests are affecting reading comprehension instruction in unknown ways. The standards-based movement in education is an effort to improve schooling for all children by establishing clear achievement standards. Children are tested to provide information to parents, teachers, and schools about the degree of compliance with the standards. Increasingly, the failure to meet the standards is being associated with child-specific sanctions, such as retaining the child in grade or withholding a high school diploma. The achievement tests to which these high stakes are attached often reflect reading comprehension ability, even when the specific goal of the test is to assess knowledge in the content areas. The data available to date about the effect of high-stakes tests on student achievement are insufficient and conflicting. No research has addressed how poor comprehenders are selectively affected either by the tests themselves or by the various consequences associated with them.

The preparation of teachers does not adequately address children's needs for reading comprehension instruction. Research has shown that child outcomes are related to the quality of the instruction they receive, which in turn reflects teacher preparation and ongoing teacher professional development. Yet teacher preparation and professional development programs are inadequate in the crucial domain of reading comprehension, in part because the solid, systematic research base that should provide a foundation for teacher preparation does not exist.

Making good on the federal investment in education requires more knowledge about reading comprehension. Recent federal legislation focused on literacy has had as a major goal the introduction of instructional practices that are based on well-founded research. Efforts funded through the Reading Excellence Act (REA), for example, are focused on beginning reading instruction. However, a child who successfully develops beginning reading skills may not automatically become a skilled reader. Large numbers of children who have successfully acquired beginning reading skills later fall behind in their ability to deal with school reading tasks—a phenomenon that experienced teachers call the “fourth grade slump.” Explicit instruction in reading comprehension is essential for many children to ensure their transition from beginning reading to reading proficiently. Presently, the research base necessary to inform teachers and

schools about best practices for teaching reading in the post-primary grades is not adequately developed. The recent federal investment through the REA and its successor programs, Reading First and Early Reading First (totaling more than \$5 billion over the next five years), will be lost unless the knowledge base on reading comprehension is further developed.

MUCH IS ALREADY KNOWN ABOUT IMPROVING COMPREHENSION

Given the overarching issues presented in this chapter, the task of developing a research agenda that will contribute to improved reading instruction may seem formidable. Nonetheless, we are encouraged by the fact that much is already known about addressing the practical challenges of improving reading comprehension outcomes.

First, research has provided some of the prerequisites to successful reading comprehension. For example, reading comprehension capacity builds on successful initial reading instruction and the fact that children who can read words accurately and rapidly have a good foundation for progressing well in comprehension. We know that children with good oral language skills (large oral vocabularies and good listening comprehension) and with well-developed stores of world knowledge are likely to become good comprehenders. We know that social interaction in homes and classrooms, as well as in communities and in the larger sociocultural context, enhances students' motivation and their participation in literate communities and helps form students' identities as readers, thus increasing their access to written text. We know that children who have had a rich exposure to literacy experiences are more likely to succeed. We know about several instructional practices that are related to good reading outcomes, although such knowledge is much more extensive for initial reading than it is for later reading. Finally, we know that instruction based on an appropriate and well-articulated alignment between curriculum and assessment can improve performance in reading as well as in other areas.

We also know about several approaches to education and to reading instruction that do not work. We know, for example, that many approaches to compensatory education for socially, economically, and educationally disadvantaged groups do not promote success in reading comprehension. We know as well that identifying children as learning disabled, without offering specific instructional treatments tailored to their individual needs, fails to generate reading comprehension gains. We know that current approaches to teaching second-language learners, whether in English as a Second Language (ESL), bilingual, or all-English settings, often do not address the particular challenges of reading comprehension.

We know that teaching is so complex that the current teacher education programs cannot adequately prepare novice teachers to engage in practice that reflects the existing knowledge base about reading. We know that this situation is particularly critical for special education, ESL, and bilingual teachers. Although these teachers require an even deeper understanding of reading, language, curricula, and instructional practices than do mainstream teachers, in fact they have even fewer opportunities in their preparation programs to acquire this expertise. We know that pre-service preparation and professional development in the domain of early reading instruction are improving and are increasingly incorporating information from research about the characteristics of good instruction. However, such is not the case for reading comprehension instruction in the later elementary grades.

We know that retention in grade (an increasingly frequent consequence of failure on high-stakes assessments) does not improve long-term reading achievement without specialized instruction. Finally, although we have a fairly long list of instructional strategies that have been shown to be effective in targeted interventions or experimental settings, we need to know how to implement these teaching approaches on a large-scale basis in a coherent reading program that spans the elementary, middle, and high school grades.

THE NEED FOR A DEFINITION OF READING COMPREHENSION

The larger agenda that concerns the RRSB is the promotion of proficient reading. The RRSB sees achieving reading proficiency as a long-term developmental process; what constitutes “reading well” is different at different points in the reader’s development. The end point—proficient adult reading—encompasses the capacity to read, with ease and interest, a wide variety of different kinds of materials for varying purposes and to read with comprehension even when the material is neither easy to understand nor intrinsically interesting. Adult reading involves reading for pleasure, learning, and analysis, and it represents a prerequisite to many forms of employment, to informed participation in the democratic process, to optimal participation in the education of one’s children, and to gaining access to cultural capital.

A formal definition of reading comprehension may seem unnecessary because the term is used so widely and its meaning is assumed to be generally understood. Teachers think of reading comprehension as what students are taught to do in reading instruction during the early school years and as the reading capacities they are expected to display throughout the middle and high school

years.³ Taxpayers and employers think of reading comprehension as one of the capabilities that high school graduates should have acquired during their years in school. University faculty view high levels of reading comprehension as a prerequisite to a student's success. Yet, coming to a formal definition that is widely accepted turns out to be rather difficult. We believe that it is necessary, as a prerequisite to mapping the domains of knowledge relevant to formulating a research agenda in this area, to define comprehension in a way that clearly specifies its key elements. In the next chapter, we present such a definition, which we elaborate on in Chapter Three by describing variability within the elements of the definition.

³Reading comprehension is usually a primary focus of instruction in the post-primary grades, after readers have largely mastered word recognition skills, although comprehension of text should be an integral part of reading instruction with beginning readers as well. Instruction in oral language, vocabulary, and listening comprehension should be a focus starting in preschool and continuing throughout the elementary grades.