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Introduction to the Reading for Understanding Initiative

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INTRODUCTION

In 2009, the U.S. Institute of Education Sciences (IES) announced the Reading for Understanding (RfU) research initiative. The RfU was a remarkably ambitious project. By educational research standards, it represented a huge investment (approximately $120 million) in a fairly well-specified scope of work, which was identified as "(a) examining underlying processes of reading comprehension and identifying malleable processes that may be targets of interventions for enhancing reading comprehension, and (b) developing and testing interventions intended to improve reading comprehension" (IES, 2009, p. 5). The ultimate goal defined in the call was to redress the disappointing performance of students in the United States on national assessments of reading.

Grant applicants were to identify whether they were applying to become a core team or an assessment team; core teams were to propose reading comprehension research that covered a range of at least five grades, while assessment teams were to design reading comprehension measures for pre-kindergarten (pre-K) through grade 12. Core team applicants were required to propose an iterative design process that would culminate in a reading comprehension intervention that would be the subject of an efficacy study; furthermore, core teams were expected to use the measures designed by the assessment team in their research.

Invoking the model used by the National Aeronautics and Space Administration (NASA) in its mission to the moon, the RfU research was to be conducted by multidisciplinary, networked groups of researchers in partnership with practitioners. In the call, IES signaled that it would foster ongoing collaboration across the research groups for the duration of the 5-year awards in an effort to accelerate the pace of the research.

Ultimately, awards were made to five core teams and one assessment team. Collectively, the teams studied the development, instruction, and assessment of reading comprehension from pre-K through grade 12. In 2016, following the 5-year award period, and as the RfU teams were continuing to analyze data and add to the more than 200 publications already generated, IES funded a National Academy of Education (NAEd)-invited proposal, *Reaping the Rewards of the Reading for Understanding Initiative*, to lead an effort to:

- Articulate findings and common themes across the RfU projects to contribute to a full-range view of reading development;
- Identify obstacles to on-time reading achievement, as well as factors supporting success;
- Examine cross-project findings to identify areas of agreement and productive tension; and
- Find common principles underlying instructional programs across projects.

In that spirit, NAEd engaged in a collaborative effort, bringing together representatives of each of the six teams, joined by others, to produce a summary report informed by the publications prepared by the RfU teams, as well as proceedings of meetings. This volume reports on the results of the NAEd effort.

We began our work by convening a 3-year working committee with leaders of the six RfU teams and scholars who are in the field but not directly involved in the RfU initiative. The 11-member steering committee was co-chaired by Annemarie Sullivan Palincsar (University of Michigan) and P. David Pearson (University of California, Berkeley). The six team directors were members of the steering committee: Susan Goldman, University of Illinois at Chicago (Reading, Evidence, and Argumentation in Disciplinary Instruction [READI]); Laura Justice, The Ohio State University (Language and Reading Research Consortium [LARRC]); Christopher Lonigan, Florida State University (Florida Center for Reading Research [FCRR]); John Sabatini, The University of Memphis (Educational Testing Service [ETS]); Catherine Snow, Harvard University and Strategic Education Research Partnership (SERP) (Catalyzing Comprehension through Discussion and Debate [CCDD]); and Sharon Vaughn, The University of Texas at Austin (Promoting Adolescents' Comprehension of Text [PACT]). Other steering committee members not directly involved in the RfU included Donald Compton (Florida State University), Kenji Hakuta (Stanford University), and Glynda Hull (University of California, Berkeley).

The steering committee guided the work of this report, including organizing the synthesis around the three main topics of development, assessment, and instruction; producing relevant research articles to ground each topic; and providing necessary feedback to identify common themes and findings. Specific details regarding the processes we used to conduct the RfU synthesis are presented in Appendix 1-1. At this point, we introduce the reader to the stars of this volume: the six Reading for Understanding teams.

THE SIX TEAMS

This section provides a brief description of each team that was awarded IES funding through the RfU research initiative. Each team is identified by the original title provided to IES, the awardee, and, where appropriate, the team or project name commonly used in the research literature to identify the team's work.[1] We present the teams in the order that reflects the age/grade span that was central to their work, beginning with preschool and concluding with the assessment team that addressed all age/grade spans.

The Language Bases of Reading Comprehension, The Ohio State University, LARRC

This project investigated the role of lower- and higher-level language skills in the development of listening and reading comprehension for pre-K through grade 3 general education students, as well as English learner students. The team explored which language skills had the greatest leverage in promoting reading comprehension

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[1] These descriptions are based on IES grant summaries, team websites, and research publications.

in grade 3. The Language and Reading Research Consortium (LARRC) team, based on the results of their longitudinal cognitive studies, developed a set of classroom-based interventions designed to increase comprehension skills; the intervention was called Let's Know! (LK). The LK curriculum used core content as a base for developing foundational reading comprehension with a systematic scope and sequence of instruction designed to build students' language skills with units spanning one academic year for each grade, pre-K through grade 3.

LARRC researchers conducted a culminating randomized controlled trial (RCT) to investigate the influence of the LK curriculum on students' comprehension and comprehension-related skills (comprehension monitoring, understanding narrative and expository text through inferencing and text structure knowledge) and vocabulary.

Research partners in this team include researchers at The Ohio State University, University of Nebraska–Lincoln, University of Kansas, Arizona State University, Florida State University, Lancaster University in the United Kingdom, and Massachusetts General Hospital Institute of Health Professions.

Examining Effective Intervention Targets, Longitudinal Intensity, and Scaling Factors in Pre-K to Grade 5 Student Comprehension, Florida State University, FCRR

The Florida Center for Reading Research (FCRR), using a cross-sectional longitudinal study, identified critical linguistic, cognitive, and basic word-level components of reading for understanding in pre-K through grade 6. They investigated differences in oral and text comprehension explained by these components and examined how earlier developing skills are related to later skills. Their goal was to look at early developing correlates of reading comprehension—the key points at which educators are able to make a difference—with a commitment to designing and evaluating the impact of interventions aimed at those key points.

Based on the data from the longitudinal study, the FCRR team created and evaluated several integrated, component (or multicomponent) instructional interventions, most focusing on one or more linguistic or cognitive skills to support students' proficient oral and text comprehension and reading for understanding in pre-K through grade 4. The collection of interventions is called Comprehension Tools for Teachers.

FCRR also worked with the ETS team to develop assessment tools (as described below) as well as developed the Florida Center for Reading Research Reading Assessment (FRA). With FRA K–2 and FRA Grades 3–12 assessments, FRA assesses the alphabetic principle, knowledge of word meanings or lexical quality, syntactic awareness, and reading comprehension.

Catalyzing Comprehension Through Discussion and Debate, Strategic Education Research Partnership Institute, CCDD

The Catalyzing Comprehension through Discussion and Debate (CCDD) team developed and evaluated multiple programs that rely on discussion and debate to catalyze the growth of academic language skills, perspective-taking ability, and complex reasoning for students in grades 4–8. The researchers argued that, compared to

elementary school, at the middle school level, students read topics that may be less compelling to them, and sentences and words are used to present more complex ideas, with more unfamiliar and polysemous words, and more metaphors.

The team developed two cross-content programs to use discussion and debate to support and develop reading comprehension skills. The first suite of programs, Word Generation (WG), is a set of tier 1, cross-content-area programs for students in grades 4–8. The WG suite is comprised of WordGen Weekly, Science Generation, Social Studies Generation, and WordGen Elementary. WordGen Weekly is a middle school program that exposes students to academic vocabulary, builds perspective-taking skills by providing multiple viewpoints on high-interest, controversial topics, and motivates complex reasoning through the demands of discussion, debate, and writing. To extend WG into more in-depth treatment of content-area topics in middle school, the team developed units in social studies and science. The team also developed a tier 2 program—the Strategic Adolescent Reading Intervention (STARI)—that targets middle school students reading several grade levels below expectation. It is intended to build their deep comprehension skills at the same time as more basic reading skills are addressed. STARI also relies on high-interest topics and uses discussion and debate to actively engage students in perspective taking, complex reasoning, and the use of academic language. The team also developed professional development materials needed to implement WG and STARI. CCDD work culminated with an RCT to evaluate the impacts of two refined and extended versions of WG on grades 4–7 students' learning outcomes over two academic years and an RCT to examine the impact of STARI versus business as usual in middle schools.

Partners in this team include researchers at SERP, Harvard, and Lectica.

Understanding Malleable Cognitive Processes and Integrated Comprehension Interventions for Grades 7–12, The University of Texas at Austin, PACT

The Promoting Adolescents' Comprehension of Text (PACT) project was designed to study the roles of cognitive processes, motivation, and engagement in reading comprehension and develop interventions, based on the understandings of these roles, to improve reading comprehension specifically for students with reading comprehension difficulties in grades 7–12. In order to design the interventions, the team had to gain a better understanding of "malleable" factors that distinguish good from poor comprehenders and aim interventions at those factors. Thus, prior to developing interventions, PACT spent significant time identifying these distinguishing factors and determined, among other findings, that motivation is important (students need to believe that they can become better readers) and that support for inference making from texts is critical.

The team focused interventions on English language arts classrooms as well as in the content area of social studies for grade 8 students. PACT researchers developed two major multicomponent interventions: PACT, with a focus on reading comprehension and knowledge acquisition within history classes, and Comprehension Circuit Training (CCT), which incorporated word identification, vocabulary enhancement, and comprehension and metacognition strategy development, within English language arts

classrooms. A major component of both PACT and CCT was team-based learning, a collaborative structure for promoting student-to-student support of learning. The team's work culminated with three RCTs in the area of grade 8 American history.

Research partners in this team include researchers from The University of Texas at Austin, Texas A&M University, University of Texas Health Science Center, University of Houston, and Florida State University.

Reading for Understanding Across Grades 6–12: Evidence-Based Argumentation for Disciplinary Learning, University of Illinois at Chicago, Project READI

Project READI (Reading, Evidence, and Argumentation in Disciplinary Instruction) took up the challenge of designing and researching learning environments that would support adolescent students in building the requisite knowledge, strategies, and dispositions that comprise 21st-century competencies as learners engage in evidence-based argumentation across multiple information resources. They proposed to develop instructional interventions in three disciplines (history, science, and literary analysis) for adolescent learners in grades 6–12. This team was concerned with how students select, analyze, synthesize, and evaluate information from text for purposes of accomplishing tasks that are authentic to the epistemic aims of each discipline. The rationale for Project READI was two-fold: (1) citizens must engage with multiple information resources (e.g., traditional text, multimedia, and graphics and other forms of visual representations) to accomplish academic, professional, and personal goals; and (2) national and international indicators show that current educational practices are not producing citizens with the skills to do so effectively. The READI team argued that there are multiple reasons for this, including increased demands of the information resources (hereafter referred to as texts) that convey disciplinary concepts and principles, and the absence of explicit instructional attention to these conceptual and textual demands, in conjunction with failure to recognize that different disciplines present different sources of conceptual and textual difficulty for adolescents (Goldman, 2012; Goldman et al., 2016; Schoenbach & Greenleaf, 2009). The consequences of lack of attention to differences among disciplines in the literacy demands of the texts, tasks, and purposes of reading more often than not result in content-area teachers assuming that "reading is reading" and reading instruction is the job of the English teacher. Consequently, the READI team asserts that adolescents are never taught *how* to read in the various disciplines in which they are being asked to read, nor how the goals of reading are different in different disciplines. The goal of Project READI was to develop and investigate approaches to improving learning in each discipline by focusing on the knowledge, heuristics, discourse, and reading practices relied upon in sense making and argumentation in literary analysis, history, and science.

Primary research partners in this team include researchers at the University of Illinois at Chicago, Northern Illinois University, Northwestern University, WestEd, and Inquirium LLC. Additional partnering researchers were at DePaul University, University of Chicago, and University of Pennsylvania.

Assessing Reading for Understanding:
A Theory-Based, Developmental Approach,
ETS

When funding the RfU initiative, IES determined that it would fund one team to develop a new summative assessment of reading comprehension in pre-K through grade 12. This team, led by ETS, developed and evaluated a new system of assessments for pre-K through grade 12 students. ETS strove to design assessments that are aligned with current theoretical constructs and empirical findings pertaining to both reading comprehension and performance moderators, are sensitive to changes in development in reading comprehension, emphasize strategic reading processes empirically supported in the literature, provide greater information for guiding instruction (especially for students struggling to reach proficiency), and are comprised of texts and tasks that represent a range of purposeful literacy activities in which 21st-century students are expected to read texts for understanding. The assessments culminating from their research and development are scenario based and technology rich, focus on collaboration and communication, include meaningful structure and sequence, and include component measurements.

The construct ETS chose to evaluate was identified broadly as *reading literacy* and was measured by two assessment types: (1) components of reading, focusing on foundational skills, assessed with the Reading Inventory and Scholastic Evaluation, and (2) global reading literacy, focusing on higher-level and goal-directed reading comprehension, assessed with the Global Integrated Scenario-Based Assessment (GISA).

Research partners include researchers at Florida State University/FCRR, Arizona State University, and Northern Illinois University.

SETTING THE CONTEXT FOR THE RFU EFFORT

The RfU call did not spring from fallow ground; in fact, there were a number of initiatives that provided context for and, indeed, motivated the call for the RfU project. As Dr. Karen Douglas, the project officer for the RfU grants, noted:

> We knew researchers had made progress on the more fundamental skills of reading (e.g., decoding) but that did not lead to better reading comprehension across the age levels. IES had the opportunity to bring major resources to a problem and they chose reading because it is so important for learning and life, but also because they felt that the reading field was deep and broad enough, and sufficiently advanced as a research area. (personal communication, June 7, 2017)

We review a sample of these projects for the purpose of providing backdrop and characterizing the Zeitgeist at the time of the RfU call. However, not everything that was "in the air" at the time of the RfU Request for Application (RfA) influenced the RfU call or the RfU research. Furthermore, there was not a natural "progression" to the unfolding of ideas across these efforts. We present the work as a chronology, selecting those deliberations and findings that are germane to setting the stage for the RfU grants.

For a comprehensive treatment of the history of reading comprehension, the reader is referred to Pearson and Cervetti (2017). They propose four periods:

> [the first of which] tracks the evolution of reading comprehension instruction before the beginning of the revolution in cognitive psychology that led to a paradigm shift in how we think about comprehension and its instruction—roughly the first 75 years of the 20th century. The second period is a short 15 years, from 1975 to the early 1990s; it examines the theoretical and research bases of the instructional activities and routines spawned by the cognitive revolution. The third period is even shorter, from the early 1990s, but with strong roots in the 1980s and even the 1970s, to the end the Bush administration and the dominance of No Child Left Behind. And the fourth and final period, while it has roots in the1970s, 1990s, and 2000s, comes into relief in 2010 with the publication of the CCSS [Common Core State Standards]. (p. 13)

In this chapter we focus principally on the third period, which was most contemporaneous with the RfU initiative.

The National Research Council Report
Preventing Reading Difficulties in Young Children

The committee that generated the 1998 *Preventing Reading Difficulties in Young Children* report (NRC, 1998) was convened by the National Academy of Sciences at the request of the U.S. Department of Education and the U.S. Department of Health and Human Services. The charge to this interdisciplinary group was to identify, through a consensus-building process, the effectiveness of interventions designed for young children at risk of having difficulties learning to read and to translate those research findings for parents, educators, publishers, and others.

The study group concluded that effective reading instruction is built on a foundation that assumed that reading ability is determined by multiple factors. Furthermore, they asserted that adequate initial reading instruction required that children use reading to obtain meaning from print; have frequent and intensive opportunities to read; are exposed to frequent, regular spelling-sound relationships; learn about the nature of the alphabetic writing system; and understand the structure of spoken words (NRC, 1998, p. 3). They further suggested that adequate progress to learn to read beyond the initial level depended on having a working understanding of how sounds are represented alphabetically, sufficient practice to achieve reading fluency with a range of texts, sufficient background knowledge and vocabulary to render written texts meaningful and interesting, control over procedures for monitoring comprehension and repairing misunderstandings, and interest and motivation to read for a variety of purposes (NRC, 1998, p. 4).

Given its charge, the committee further suggested that children most likely to experience reading difficulties were those who entered school with less prior knowledge and fewer skills in the areas of general verbal ability, attending to the sounds of language, familiarity with the basic purposes and mechanisms of reading, and letter knowledge. At the heart of the committee's recommendations was the critical importance of providing excellent reading instruction to all children—instruction that would only be enabled by well-prepared, knowledgeable, and well-supported teachers. Furthermore,

adopting a systems perspective, the committee acknowledged that schools needed to be organized to optimally support the instruction advocated (through curriculum and support services) and that students' home languages needed to be taken into consideration when planning instruction.

Specific to comprehension, the committee referenced van Dijk and Kintsch (1983), calling out the distinction between the reader's understanding of the text base (i.e., what the text says) and the situation model (i.e., what the text is about). They acknowledged that concept development and knowledge of word meanings are important parts of comprehension. Prefiguring a prominent focus in the RfU research, the *Preventing Reading Difficulties* report acknowledged that many basic cognitive processes were shared during reading and listening, including syntactic and inferential processes, as well as background knowledge and word knowledge. They noted that the correlation between reading and listening rose from grades 1–6. However, the committee introduced three cautions when interpreting data regarding the relationship between listening and reading comprehension. First, there are fundamental differences between written and oral language in terms of their social processes. Second, high correlations between reading and listening comprehension occur after the child has learned to decode. And the final caution is that correlations are useful to understanding variations across a population and not within specific individuals; hence, the gap between specific children's listening and reading comprehension could, in fact, be quite large even while the correlation between the two, generally speaking, is quite high.

The National Reading Panel

The National Reading Panel (NRP) began its work in 1998, which was the year that *Preventing Reading Difficulties in Young Children* was published. In an unprecedented move, the National Institute of Child Health and Human Development (NICHD) was charged by President Clinton and the U.S. Congress to gather a diverse group of scientists and practitioners to identify research findings specific to the best ways to teach reading. In contrast to being charged to come to consensus (as was true of the *Preventing Reading Difficulties* committee), the NRP was charged with conducting a systematic review of the empirical literature germane to reading instruction.

While 30 topics were initially considered for inclusion, the panelists determined that there was an adequate research base to address findings in six areas: phonemic awareness, phonics, oral reading fluency, encouraging children to read, vocabulary, and comprehension strategies. They focused on research in grades K–12.

In this report, reading comprehension was defined as the act of understanding and interpreting the information in text. The panelists concluded that there were many avenues to enhancing reading comprehension, including through the teaching of phonemic awareness, phonics, oral reading fluency, and vocabulary. The panel reviewed 205 studies of reading comprehension instruction; typically, these were studies of strategy instruction taught singly or in a combination. The panel reported finding evidence for positive effects of teaching: question asking, monitoring, summarizing, story mapping, the use of graphic organizers, and cooperative grouping. Furthermore, they reported that the most powerful effects were obtained when multiple strategies were taught together. In contrast to the *Preventing Reading Difficulties* report, which treated reading

in a wholistic manner, discussing the interplay of the component skills of reading, the NRP report was organized by the six areas on which it focused, muting the synergistic nature of these areas. The 2000 NRP report became the cornerstone of the Reading First program, which we describe next.

Educational Policy Specific to Reading Instruction in the United States

By the early 1990s, recognition of policy incoherence as an obstacle to educational reform in the United States led to a systemic reform movement: a logic of improvement focused on using a small set of policy instruments (e.g., content standards, performance standards, and accountability assessments) to coordinate system-wide reform activity (Fuhrman, 1991; Smith & O'Day, 1991). The logic of systemic reform was instrumental in shaping a series of federal policies that sought to effect coordinated, integrated improvements, including the Reading Excellence Act of 1998, and the reauthorization of the Improving America's Schools Act as the No Child Left Behind Act of 2001 (NCLB). One of the cornerstone programs of NCLB was the Reading First (RF) program. NCLB has been widely recognized as the most ambitious federal intervention into K–12 schooling in the history of U.S. public education, with operational implications for states, districts, and schools.

The Reading First program sought to promote instructional practices that had been validated by scientific research, which was explicitly defined in the legislation (NCLB). The Act legislated that RF funding was to be used for (1) reading curricula and materials that focus on the five essential components of reading instruction, as identified by the NRP (NICHD, 2000): (a) phonemic awareness, (b) phonics, (c) vocabulary, (d) fluency, and (e) comprehension; (2) professional development and coaching for teachers regarding how to use scientifically based reading practices, and how to work with struggling readers; and (3) diagnosis and prevention of early reading difficulties through student screening, interventions for struggling readers, and monitoring of student progress. States were permitted flexibility with regard to allocating resources across these three categories, and local decisions could be made regarding specific choices within the categories (i.e., which curricula, assessments, and models of professional development would be used). The RF grants were made available to states between July 2002 and September 2003. By April 2007, states had awarded subgrants to 1,809 school districts, which had provided funds to 5,880 schools. By design, districts and schools demonstrating the greatest need, as measured by student reading proficiency and poverty status, were to receive the highest funding priority.

What did we learn? The Reading First Impact Study (Gamse, Jacob, Horst, Boulay, & Unlu, 2008) used a regression discontinuity design to control statistically for all systematic preexisting differences between the two groups of schools being compared in the study: those that received RF funds, and those that were eligible for funding but did not receive funds. In this manner, non-RF schools played the same role as control schools would play in a randomized experiment. There were 18 study sites: 17 school districts and 1 statewide program.

Direct observations and surveys to assess instruction and program implementation revealed that RF produced a positive and significant impact on the amount of instructional time spent on the five essential components in grades 1 and 2. The impact was

equivalent to an effect size of 0.33 standard deviation in grade 1 and 0.46 in grade 2. In addition, RF produced a positive and significant impact on multiple practices promoted by the program, including professional development, support from coaches, amount of reading instruction, and supports for struggling readers. RF produced a positive and significant impact on decoding (using the Test of Silent Word Reading Fluency) among first graders tested in one school year (spring 2007), with an effect size of 0.17 standard deviation. However, RF did not produce a significant impact on student reading comprehension test scores (measured using the Stanford Achievement Test) in grades 1, 2, or 3. Furthermore, the average grades 1, 2, and 3 student in RF schools was reading at the 44th, 39th, and 39th percentile, respectively, on the end-of-year assessment.

The failure to find any effect of RF on reading comprehension was, of course, a disappointing outcome considering the $6 billion investment that RF represented. On the other hand, there were lessons to be learned from this initiative that had important implications for future large-scale efforts to improve instruction for struggling readers. While RF did change the amount of time dedicated to reading instruction, as well as the nature of teacher practices, RF had no statistically significant impact on student engagement with print; it has long been recognized that opportunities for students to read self-selected text, and to read widely, has a significant effect on reading achievement (e.g., Nagy, Herman, & Anderson, 1985). Furthermore, the RF impact study found no evidence of differentiated instruction for struggling readers. As we will see when reviewing the RfU research, differentiation of reading instruction is necessary to optimize student achievement.

In addition, the National Reading Panel report, which shaped the architecture of RF interventions, represented comprehension instruction in terms of the teaching of individual strategies, noting seven strategies in particular. A number of reading researchers have expressed concern regarding the appropriate place of strategy instruction in the teaching of reading comprehension (e.g., McKeown, Beck, & Blake, 2009). When first conceived, strategy instruction was designed to engage readers in monitoring how well they were understanding text and to support them in regulating their reading of text for the purpose of building meaning. Strategies were designed to be a means to an end—comprehension—and not an end in and of themselves. The RF Impact Study was not designed to assess the quality of comprehension instruction; hence, a hypothesis to be explored in the RfU research was whether teachers engaged in forms of comprehension instruction that did not promote understanding and learning from text, and how to optimize the teaching of strategic reading. Related to this point is the fact that the focus on language arts instruction, legislated by RF, reduced the amount of time that primary grade students spent learning science and social studies content. Given the role that knowledge plays in supporting comprehension, this was an unfortunate by-product of RF.

An additional conceivable explanation for the disappointing finding regarding comprehension is that the primary measure of reading deployed across districts implementing RF was the Dynamic Indicators of Basic Early Literacy Skills, a measure that places a premium on reading speed rather than comprehension. Finally, while the *Preventing Reading Difficulties* report signaled the importance of attending to students' home language in planning reading instruction, the National Reading Panel report, as well as RF, was virtually silent on the instruction of English language learners.

In closing, RF changed the struggling reader landscape; despite its limitations, it focused attention on the need for teachers to receive professional development specific to early reading instruction and struggling readers. In addition, it acknowledged that classroom-level change in curriculum and instructional practice is key to improving the performance of struggling readers. It certainly provided grist for the RfU effort in terms of the questions it raised about what constitutes quality comprehension instruction and how comprehension should be assessed.

The New London Group's *A Pedagogy of Multiliteracies*

In 1996, an international group of 10 scholars met and spent more than 1 year developing new ways of thinking and talking about the rapidly changing social contexts of literacy learning and teaching. Building on concepts advanced by the critical literacy and New Literacy Studies movements, the New London Group (NLG) proposed the term *multiliteracies* to summarize the confluence of increased cultural and linguistic diversity, globalization, and rapid advancements in technologies for multimodal communication.

The NLG focused on the multiplicity and value of diverse linguistic, cultural, communicative, and technological resources and argued that one literacy—that is, academic literacy—cannot support all of the communicative needs of varied social groups. A multiliteracies approach viewed literacy as dependent on contexts, purposes, tools, and skills available for meaning making, and being literate as the ability to create and comprehend meanings made available through multimodal forms of communication.

One outcome of the work of this group was the articulation of a pedagogic model that addressed how these significant sociocultural changes were affecting and, indeed, challenging classroom teaching and learning. Referred to as *A Pedagogy of Multiliteracies* (NLG, 1996), it promoted a critical, socially just orientation to teaching that explicitly acknowledges possible convergences of diversity and multimodal communication channels that can empower young people and pave the way for new social futures.

There were numerous implications from the work of this group that relate to comprehension, including expanding notions of text; attending to the relationships among school-based learning, work life, citizenship, and private life; and calls for literacy pedagogies that turn interpretive authority over to students, support students to connect goal-driven meaning making to action, and foster students' critical understanding of text.

A central concern of the NLG was "the plurality of texts that circulate" in "increasingly globalized societies" (NLG, 1996, p. 61). Countering traditional notions of texts (e.g., alphabetic texts), the NLG advanced a more expansive notion of text that encompassed "the burgeoning variety of text forms associated with information and multimedia technologies," as well as "representational forms that are becoming increasingly significant in the overall communications environment, such as visual images" (p. 61). Drawing on a social semiotic lens (Kress & Van Leeuwen, 2001), the NLG underscored the salience of multiple communicative modes for meaning making, including image, gesture, sound, written language, speech, gaze, and music. An aim of the multiliteracies pedagogic model was to attend to this plurality of meaning-making resources and to expand conceptions of text to include the multiple and multimodal texts that young

people construct and comprehend through a wide range of everyday literacy practices. As the NLG explained, multiliteracies "create a different kind of pedagogy, one in which language and other modes of meaning are dynamic representational resources, constantly being remade by their users as they work to achieve their various cultural purposes" (p. 64).

What does the NLG have to do with the RfU initiative? The NLG makes salient the fact that the RfU call was focused on traditional academic texts, rather than the expansive view of texts proposed by the NLG; there was, however, some RfU research and development that did hew to the NLG call, namely, the work conducted by READI. We revisit the NLG in Chapter 6, in which we consider future directions for reading comprehension research.

The RAND Reading Study Group

The RAND Reading Study Group (RRSG) was charged by the U.S. Department of Education's Office of Educational Research and Improvement to propose strategic guidelines for a long-term research and development program specifically for the purpose of supporting the improvement of reading comprehension. The 14 experts who served on this study group represented a range of disciplinary and methodological perspectives. The group convened in 1999 and published its report, *Reading for Understanding: Toward an R&D Program in Reading Comprehension*, in 2002.

As we describe the contributions of the RfU teams, we make reference to this document; in this introduction, we identify several contributions of the RRSG. One contribution was its definition of reading comprehension as "the process of simultaneously extracting and constructing meaning through interaction and involvement with written language" (RRSG, 2002, p. 11). Furthermore, the study group proposed a heuristic suggesting that comprehension is influenced by the interaction of the reader who is doing the comprehending, the text that is to be comprehended, and the activity in which comprehension is a part, all of which occur within larger sociocultural contexts that influence and are influenced by the reader and that interact with each of the three elements. The Study Group wondered what a focused program of research might reveal about the influence of each of these factors on comprehension. In fact, in a 36-page appendix, the Study Group identified a host of dimensions associated with variability in readers, text, and activity that might be productively examined in depth.

The RRSG called for a significant focus on classroom instruction grounded in the belief that good instruction is the most powerful means of developing proficient comprehenders and preventing the development of reading comprehension problems. Indeed, the RfU RfA required that each grantee's program of research culminate in an efficacy study of comprehension instruction, informed by the findings of each team's research on the malleable factors that contribute to comprehension. Dr. Karen Douglas, the IES project officer for the RfU grant, noted that "The RAND report wasn't explicitly referred to in the RfA, but … it was an important resource for thinking about the aspects of reading instruction that should be considered in improving reading comprehension" (personal communication, June 17, 2017).

Initiatives Regarding Adolescent Literacy

Snow and Moje (2010) published an essay in *Phi Delta Kappan* titled "Why Is Everyone Talking About Adolescent Literacy?" Such a title might sound a bit hyperbolic, but, indeed, as the RfU research was launching, there was a good deal of activity in the area of adolescent literacy, much of it driven by the recognition that adolescent literacy had received short shrift in preceding initiatives. In addition, there was increased disenchantment with generic content-area reading approaches. Snow and Moje (2010) argued that there were three components essential to the design of literacy instruction for adolescents: (1) continued development of general language and literacy skills, (2) incorporating literacy into content-area instruction, and (3) supporting struggling readers. In addition, the field was beginning to attend to the developmental needs of adolescents in terms of what would be both motivating and engaging to youth, as well as likely to prepare them for postsecondary education and career readiness. For example, Moje and colleagues documented the ways adolescents used reading and writing to participate in social networks and to enhance their social capital (e.g., Moje, Overby, Tysvaer, & Morris, 2008).

Disciplinary literacy, as contrasted with content-area literacy, arose, in part, in response to an emerging consensus that decades of research and best practices regarding content-area literacy had not done enough to influence instruction or outcomes in content-area learning at the secondary level (Carnegie Council on Advancing Adolescent Literacy, 2010; Heller & Greenleaf, 2007; Schoenbach & Greenleaf, 2009; Wise, 2009). These reports pointed to the importance of teaching discipline-specific reading and writing, as well as continuing to support students' development of literacy skills beyond the early elementary years. These calls were bolstered by research, such as the study reported by Shanahan and Shanahan (2008), documenting how reading approaches differ among the disciplines and demonstrating the need for reading strategies that would engage readers in internalizing the core principles of the disciplines. Moje (2008), for example, argued that a disciplinary perspective involved a "turn toward literacy as an essential aspect of disciplinary learning" such that literacy "becomes an essential aspect of disciplinary practice."

There was another landmark report and policy initiative germane to adolescent literacy that also deserves attention. *Reading Next*, commissioned by the Carnegie Corporation of New York (Biancarosa & Snow, 2004), reported on the results of a consensus study of adolescent literacy research. The report begins by making a persuasive case for the importance of focusing on adolescent literacy, including the facts that (around 2004) more than 8 million students in grades 4–12 were classified as "struggling readers," and that the majority of the more than 3,000 students who dropped out of high school were most often identified as lacking the literacy skills to meet increasingly complex demands associated with literacy in contemporary society. The authors concluded that the problem of adolescent literacy attainment was both complex and multifaceted and called for the careful blending of instructional and educational infrastructure solutions. Instructional improvements meriting attention included direct, explicit comprehension instruction; effective instructional principles embedded in content; attention to motivation and self-directed learning; opportunities for text-based collaborative learning; the use of strategic tutoring; the inclusion of diverse texts; intensive writing;

the use of technological tools as scaffolds and technology as content; and ongoing formative assessment of students. The suggested infrastructure improvements included extended time for literacy engagement, professional development for middle school and secondary educators, ongoing summative assessment of students and programs, and leadership committed to a comprehensive and coordinated literacy program.

In 2006, shortly before the launch of the RfU initiative, Striving Readers Comprehensive Literacy discretionary grants were awarded by the U.S. Department of Education, on a competitive basis, to states, which in turn awarded funding to local educational agencies. The awards were initially to be used to mount comprehensive school-wide literacy programs to advance literacy skills—including preliteracy skills, reading, and writing—for students from birth through grade 12, including limited-English-proficient students and students with disabilities. By 2009, the awards were dedicated to supplementary literacy interventions targeted at children and youth reading significantly below grade level with a particular focus on middle and high school students' literacy levels in Title I–eligible schools. Furthermore, the goal for the duration of the grant was to build a strong, scientific research base for identifying and replicating strategies that improve adolescent literacy skills. There was a total of 16 Striving Readers grantees and there were 10 different reading interventions that were studied in grades 6–10. Independent evaluators, using the What Works Clearinghouse criteria, determined that 12 studies met criteria without reservations, 3 met criteria with reservations, and 2 did not meet criteria. The results were complex and spoke clearly to the contextual issues that stand to influence the outcomes of any intervention; of the 10 interventions studied, 6 had no discernible effects, and the remaining 4 had mixed effects. These findings prefigure outcomes of the RfU studies that inform our understanding of contextual features that influence reading comprehension.

Evolving Ideas About the Nature of Reading Comprehension Reflected in Assessments

In addition to the landmark reports and policy initiatives described thus far, another source of evidence regarding evolving conceptualizations of reading comprehension can be derived from large-scale assessments. The Reading Framework of the National Assessment of Educational Progress (NAEP) (NAGB, 2017) is regularly updated using expert consensus regarding relevant research findings. Examination of the NAEP definition of reading demonstrates the field's evolving conceptualization of comprehension. The 1992–2000 NAEP Reading Framework proposed that reading comprehension was comprised of the following "Reading Stances": (a) *initial understanding*, the preliminary consideration of the text as a whole; (b) *developing an interpretation*, discerning connections and relationships among ideas within the text; (c) *personal reflection and response*, relating personal knowledge to text ideas; and (d) *critical stance*, standing apart from the text to consider it objectively (NAGB, 1992). This characterization reflects the influence of research and theories from the fields of information processing, cognition, and literary criticism and reflects a static product of reading; reading "ends" when comprehension of text is attained—a sort of "comprehension for comprehension's sake."

In contrast, the current NAEP Reading Framework, which is the same as the 2009 NAEP Reading Framework, maintains a focus on reading comprehension as the construction of meaning with text, but includes the following:

> "Reading is an active and complex process that involves
> • Understanding written text,
> • Developing and interpreting meaning, and
> • *Using meaning as appropriate to type of text, purpose, and situation*"[2] (NAGB, 2017).

The current definition represents a significant change in perspectives on comprehension, and reading for understanding; reading involves not only the *construction of meaning*, but also the *use of the meaning that is constructed*. Readers' strategies, skills, reading experiences, and domain prior knowledge fuel the meaning making that results in comprehension. Furthermore, the current NAEP Framework acknowledges what readers do with comprehension; for example, they analyze text content (Prior & Bazerman, 2004), identify claims and supporting evidence (NRC, 2005), apply what they learn from text to solve problems and ask questions (Hinchman & Appleman, 2017), establish epistemic stances toward the processes and contents of reading (Bråten, Braasch, Strømsø, & Ferguson, 2015), synthesize information from within and across texts (Coté, Goldman, & Saul, 1998), interrogate author motive and craft (Beck, McKeown, Sandora, Kucan, & Worthy, 1996), and critique and evaluate text contents and structures (Vasquez, Harste, & Albers, 2010). This expanded notion of comprehension has important implications for instruction as well as the assessment of comprehension, which we will see reflected in a number of the RfU studies.

Static Reading Scores in the Face of Rising Demands for Comprehension

To further appreciate the impetus for the 2009 RfU call, it is instructive to consider trends in NAEP reading scores in grades 4, 8, and 12. While the 2009 average grade 4 reading score (221 on a 0 to 500-point scale) was statistically significantly higher than the 2002 score (219), the average grade 8 score was the same (at 264) in 2002 and 2009, and the average grade 12 score was statistically the same in 2002 and 2009, according to data from the NAEP. Moreover, on the NAEP in 2009, only 33 percent of grade 4 students, 33 percent of grade 8 students, and 38 percent of grade 12 students were determined to be proficient or higher in reading skills.[3] In both reading and content domains that demand reading, NAEP student scores are flat and suggest that substantial numbers of students struggle to achieve basic levels of reading comprehension. For example, on the 2010 NAEP in the area of United States history, only 20 percent of fourth graders, 17 percent of eighth graders, and 12 percent of 12th graders demonstrated proficiency (NCES, 2011). The intractability of performance on comprehension measures, in hand with increasing expectations both within school and in the postsecondary worlds of work and tertiary education (NGA & CCSSO, 2010), regarding (a) the types of complex

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[2] Italic in quote added for emphasis.
[3] Retrieved from https://www.nationsreportcard.gov/reading_2017/nation/scores?grade=4; https://www.nationsreportcard.gov/reading_2017/nation/scores?grade=8; https://www.nationsreportcard.gov/reading_math_g12_2015/#reading; and https://nces.ed.gov/programs/coe/pdf/coe_cnb.pdf.

texts students will encounter, and (b) the complex purposes for using text, brought into sharper relief the importance of a rigorous and comprehensive program of research to study the development, instruction, and assessment of comprehension.

Theoretical Perspectives of Reading Instruction

The RfU RfA noted that the prevailing theory informing reading instruction at the time of the call was grounded in the "Simple View of Reading" (Gough & Tunmer, 1986). This model suggests that reading comprehension emerges from two distinct—but requisite—strands of knowledge: (1) word recognition and language comprehension skills, and (2) the skills necessary to integrate oral language knowledge with word recognition skills. In conceptualizing the RfU RfA, IES extended the Simple View to include text processing skills. Citing Perfetti's (1999) cognitive model of reading comprehension, the architects of the call noted that reading comprehension depends on word knowledge to support both word recognition and comprehension processes, with word recognition including a mapping from the visual presentation of the word to the phonological representation of the same word. Furthermore, Perfetti's model signaled the role of mapping the visual representation of the word to the word's meaning. In this manner, the process of word recognition informs (and is informed by) comprehension processes. As the RfU RfA concluded: "comprehension processes, in turn, depend upon the reader's ability to use word level information to build a representation of the text being made, to draw inferences from the text, and to represent the meaning of the text … comprehension depends upon the reader's linguistic and general knowledge" (IES, 2009, p. 7). As the reader will soon discern, RfU researchers continued to invoke—and problematize—the Simple View of Reading.

CONCLUSION

In summary, as we entered the RfU era, the field was informed by substantial research-based knowledge of reading comprehension. From the 1970s to the 1990s, we had gained increased understanding of how comprehension was orchestrated by readers as a process with many constituent parts (Anderson et al., 1985; Pressley & Afflerbach, 1995). We were, with the help of sociocultural perspectives (Gee, 2001; Luke, 1991; Purcell-Gates, Melzi, Najafi, & Orellana, 2011), gaining knowledge of the contexts in which comprehension may be best taught—or learned, and used. Yet, this research and theory had not mattered much in relation to improving many students' comprehension performance. That was the context in which the RfU initiative was initiated. The RfU teams were asked to change the pattern of performance that fell short of expectations; it is to their work that we now turn our attention.

REFERENCES

AERA (American Educational Research Association), APA (American Psychological Association), & NCME (National Council on Measurement in Education). (2014). *Standards for educational and psychological testing*. Washington, DC: AERA.

Anderson, R. C., Hiebert, E. H., Scott, J. A., Wilkinson, I. A. G., Becker, W., & Becker, W. C. (1985). Becoming a nation of readers: The report of the Commission on Reading. *Education and Treatment of Children, 11*(4), 389–396.

Beck, I. L., McKeown, M. G., Sandora, C., Kucan, L., & Worthy, J. (1996). Questioning the author: A yearlong classroom implementation to engage students with text. *The Elementary School Journal, 96*(4), 385–414.

Biancarosa, G., & 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.

Bråten, I., Braasch, J. L., Strømsø, H. I., & Ferguson, L. E. (2015). Establishing trustworthiness when students read multiple documents containing conflicting scientific evidence. *Reading Psychology, 36*(4), 315–349.

Carnegie Council on Advancing Adolescent Literacy. (2010). *Time to act: An agenda for advancing adolescent literacy for college and career success.* New York: Carnegie Corporation of New York.

Coté, N., Goldman, S. R., & Saul, E. U. (1998). Students making sense of informational text: Relations between processing and representation. *Discourse Processes, 25*(1), 1–53.

Fuhrman, S. H. (Ed.). (1991). *Designing coherent education policy: Improving the system.* San Francisco: Jossey-Bass.

Gamse, B. C., Jacob, R. T., Horst, M., Boulay, B. & Unlu, F. (2008). *Reading First impact study final report* (NCEE 2009-4039). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education.

Gee, J. P. (2001). Reading as situated action: A sociocognitive perspective. *Journal of Adolescent & Adult Literacy, 44*(8), 714–725.

Goldman, S. R. (2012). Adolescent literacy: Learning and understanding content. *The Future of Children, 22*(2), 89–116.

Goldman, S. R., Britt, M. A., Brown, W., Cribb, G., George, M., Greenleaf, C., et al. (2016). Disciplinary literacies and learning to read for understanding: A conceptual framework for disciplinary literacy. *Educational Psychologist, 51*(2), 219–246.

Gough, P. B., & Tunmer, W. E. (1986). Decoding, reading, and reading disability. *Remedial and Special Education, 7*(1), 6–10.

Heller, R., & Greenleaf, C. L. (2007). *Literacy instruction in the content areas: Getting to the core of middle and high school improvement.* Washington, DC: Alliance for Excellent Education.

Hinchman, K. A., & Appleman, D. A. (Eds.). (2017). *Adolescent literacies: Handbook of practice-based research.* New York: Guilford Press.

IES (Institute of Education Sciences). (2009). *Request for applications: Reading for Understanding research initiative, CFDA Number: 84.305F.* Retrieved from https://ies.ed.gov/funding/pdf/2010_84305F.pdf.

Kress, G., & Van Leeuwen, T. (2001). *Multimodal discourse: The modes and media of contemporary communication.* London: Edward Arnold.

Luke, A. (1991). Literacies as social practices. *English Education, 23*(3), 131–147.

McKeown, M. G., Beck, I. L., & Blake, R. G. (2009). Rethinking reading comprehension instruction: A comparison of instruction for strategies and content approaches. *Reading Research Quarterly, 44*(3), 218–253.

Moje, E. B. (2008). Foregrounding the disciplines in secondary literacy teaching and learning: A call for change. *Journal of Adolescent & Adult Literacy, 52*(2), 96–107.

Moje, E., Overby, M., Tysvaer, N., & Morris, K. (2008). The complex world of adolescent literacy: Myths, motivations, and mysteries. *Harvard Educational Review, 78*(1), 107–154.

NAGB (National Assessment Governing Board). (1992). *Reading framework for the 1992 National Assessment of Educational Progress.* Washington, DC: Author.

NAGB. (2017). *Reading framework for the 2017 National Assessment of Educational Progress.* Washington, DC: Author. Retrieved from https://www.nagb.gov/content/nagb/assets/documents/publications/frameworks/reading/2017-reading-framework.pdf.

Nagy, W. E., Herman, P. A., & Anderson, R. C. (1985). Learning words from context. *Reading Research Quarterly, 20*(2), 233–253.

NCES (National Center for Education Statistics). (2011). *The nation's report card: U.S. history 2010 (NCES 2011–468).* Washington, DC: Institute of Education Sciences, U.S. Department of Education.

NGA & CCSSO (National Governors Association Center for Best Practices and Council of Chief State School Officers). (2010). *Common Core State Standards*. Washington, DC: National Governors Association Center for Better Practices and Council of Chief State School Officers.

NICHD (National Institute of Child Health and Human Development). (2000). *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. Reports of the subgroups* (NIH Publication No. 00-4754). Washington, DC: U.S. Department of Health and Human Services.

NLG (New London Group). (1996). A pedagogy of multiliteracies: Designing social futures. *Harvard Educational Review, 66*, 60–92.

NRC (National Research Council). (1998). *Preventing reading difficulties in young children.* Washington, DC: National Academy Press.

NRC. (2005). *How students learn: History, mathematics, and science in the classroom*. Washington, DC: The National Academies Press.

Pearson, P. D., & Cervetti, G. N. (2017). The roots of reading comprehension instruction. In S. E. Israel (Ed.), *Handbook of research on reading comprehension* (pp. 12–56). New York: Guilford Press.

Perfetti, C. A. (1999). Comprehending written language: A blueprint of the reader. In C. M. Brown & P. Hagoort (Eds.), *The neurocognition of language* (pp. 167–208). New York: Oxford University Press.

Pressley, M., & Afflerbach, P. (1995). *Verbal protocols of reading: The nature of constructively responsive reading*. Hillsdale, NJ: Erlbaum.

Prior, P. A., & Bazerman, C. (2004). *What writing does and how it does it: An introduction to analyzing texts and textual practices*. Hillsdale, NJ: Erlbaum.

Purcell-Gates, V., Melzi, G., Najafi, B., & Orellana, M. F. (2011). Building literacy instruction from children's sociocultural worlds. *Child Development Perspectives, 5*(1), 22–27.

RRSG (RAND Reading Study Group). (2002). *Reading for understanding: Toward a research and development program in reading comprehension.* Santa Monica, CA: RAND Corporation.

Schoenbach, R., & Greenleaf, C. (2009). Fostering adolescents' engaged academic literacy. In L. Christenbury, R. Bomer, & P. Smagorinsky (Eds.), *Handbook of adolescent literacy research* (pp. 98–112). New York: Guildford Press.

Shanahan, T., & Shanahan, C. (2008). Teaching disciplinary literacy to adolescents: Rethinking content-area literacy. *Harvard Educational Review, 78*(1), 40–59.

Smith, M. S., & O'Day, J. (1991). Systemic school reform. In S. H. Fuhrman and B. Malen (Eds.), *The politics of curriculum and testing: The 1990 yearbook of the Politics of Education Association* (pp. 233–267). New York: Falmer Press.

Snow, C., & Moje, E. (2010). Why is everyone talking about adolescent literacy? *Phi Delta Kappan, 91*(6), 66–69.

van Dijk, T., & Kintsch, W. (1983). *Strategies for discourse comprehension*. San Diego, CA: Academic Press.

Vasquez, V., Harste, J., & Albers, P. (2010). From the personal to the world wide web: Moving teachers into positions of critical interrogation. In E. A. Baker (Ed.), *The new literacies: Multiple perspectives on research and practice* (pp. 265–284). New York: Guilford Press.

Wise, B. (2009). Adolescent literacy: The cornerstone of student success. *Journal of Adolescent & Adult Literacy, 52*(5), 369–375.

Appendix 1-1
Description of Procedural Elements
for Developing This Report

This report summarizes hundreds of journal articles and technical reports produced over the course of several years and supported by approximately $120 million in research funding from the U.S. Institute of Education Sciences (IES). Given the importance, broad scope, and mandate of this project, we, as the editors and authors of the report, believe it is imperative to create an archive in which we describe in detail the methods we employed in compiling and synthesizing this extensive body of work. We begin by restating our mandate (as expressed in Chapter 1), but we expand on the work of the steering committee and the editorial and writing teams. We then briefly describe specific methodological decisions made for each chapter. We hope, through this appendix, both to provide a transparent roadmap of what we did to maximize the integrity of the effort and to provide guidance for future projects.

OVERVIEW

In 2009, IES announced the Reading for Understanding (RfU) research initiative. The RfU was a remarkably ambitious project. By educational research standards, it represented a huge investment (approximately $120 million) in a fairly well-specified scope of work, which was identified as "(a) examining underlying processes of reading comprehension and identifying malleable processes that may be targets of interventions for enhancing reading comprehension, and (b) developing and testing interventions intended to improve reading comprehension" (RfA, 2009, p. 5). The ultimate goal defined in the call was to redress the disappointing performance of students in the United States on national assessments of reading.

Grant applicants were to identify whether they were applying to become a core team or an assessment team; core teams were to propose reading comprehension research that covered a range of at least five grades, while assessment teams were to design reading comprehension measures for pre-kindergarten (pre-K) through grade 12. Core team applicants were required to propose an iterative design process that would culminate in a reading comprehension intervention that would be the subject of an efficacy study or a randomized controlled trial (RCT); furthermore, core teams were expected to use the measures designed by the assessment team in their research.

Invoking the model used by the National Aeronautics and Space Administration (NASA) in its mission to the moon, the RfU research was to be conducted by multi-disciplinary networked groups of researchers in partnership with practitioners. In the call, IES signaled that it would foster ongoing collaboration across the research groups for the duration of the 5-year awards in an effort to accelerate the pace of the research. Ultimately, awards were made to five core teams and one assessment team. Collectively,

the teams studied the development, instruction, and assessment of reading comprehension from pre-K through grade 12.

In 2016, following the 5-year award period, and as the RfU teams were continuing to analyze data and add to the more than 200 publications already generated, IES funded a National Academy of Education (NAEd) invited proposal, *Reaping the Rewards of the Reading for Understanding Initiative*, to lead an effort to:

- Articulate findings and common themes across the RfU projects to contribute to a full-range view of reading development;
- Identify obstacles to on-time reading achievement, as well as factors supporting success;
- Examine cross-project findings to identify areas of agreement and productive tension; and
- Find common principles underlying instructional programs across projects.

In that spirit, the NAEd engaged in a collaborative effort, bringing together representatives of each of the six teams, joined by others, including members of the Academy, to produce a summary report that was informed by the publications prepared by the RfU teams, as well as proceedings of meetings. This volume reports on the results of the NAEd effort.

We began our work by convening a 3-year steering committee with leaders of the six RfU projects and scholars in the field who were not directly involved in the RfU initiative. The 11-member steering committee was co-chaired by Annemarie Sullivan Palincsar (University of Michigan) and P. David Pearson (University of California, Berkeley). The six team directors were members of the steering committee: Susan Goldman, University of Illinois at Chicago (Reading, Evidence, and Argumentation in Disciplinary Instruction [READI]); Laura Justice, The Ohio State University (Language and Reading Research Consortium [LARRC]); Christopher Lonigan, Florida State University (Florida Center for Reading Research [FCRR]); John Sabatini, The University of Memphis (Educational Testing Service [ETS]); Catherine Snow, Harvard University and Strategic Education Research Partnership (SERP) (Catalyzing Comprehension through Discussion and Debate [CCDD]); and Sharon Vaughn, The University of Texas at Austin (Promoting Adolescents' Comprehension of Text [PACT]). Other steering committee members not directly involved in the RfU included Donald Compton (Florida State University), Kenji Hakuta (Stanford University), and Glynda Hull (University of California, Berkeley).

The steering committee guided the work of this report, including organizing the synthesis around the three main topics of development, assessment, and curriculum and instruction (C&I); securing relevant research articles to ground each topic; providing necessary feedback to identify common themes and findings; and reviewing work products, including the chapters in this volume.

The steering committee met on three occasions, each a 2-day, in-person meeting. The agenda of the first steering committee meeting (February 22–24, 2017) included several goals: (a) provide an update of the work of each RfU team; (b) fine-tune the goals of the project, including syntheses and dissemination activities; and (c) form three sub-committees and identify potential experts for commissioned papers. The steering committee identified three topics for the commissioned papers (development, assessment,

and C&I). The steering committee also expanded the scope of the final synthesis report, which, in addition to covering the work of the RfU projects through commissioned papers, would also address what we now know about reading comprehension that we did not know when the seminal RAND report was written in 2002 as well as reviewing literature on multimodal and digital literacies, which did not figure prominently in the RfU Request for Applications (RfA). In preparation for this additional coverage, Palincsar and Pearson agreed to oversee a literature review conducted by Jennifer Higgs (University of California, Berkeley) and Miranda Fitzgerald (University of North Carolina at Charlotte).

The steering committee decided to form subcommittees to guide the work of the commissioned papers, which were originally written to guide the work of the final synthesis, but, as described below, were in fact turned into the chapters of this volume. The paper topics and authors are (a) development, by Gina N. Cervetti, University of Michigan; (b) assessment, by Panayiota Kendeou, University of Minnesota; and (c) C&I, by Peter Afflerbach, University of Maryland. The subcommittees guiding the development of the commissioned papers consisted of (a) development: Annemarie Sullivan Palincsar (co-chair), Catherine Snow, Laura Justice, and Chris Lonigan; (b) assessment: P. David Pearson (co-chair), John Sabatini, and Don Compton; and (c) C&I: Annemarie Sullivan Palincsar (co-chair), P. David Pearson (co-chair), Susan Goldman, and Sharon Vaughn. Additionally, each paper author was provided with two consulting editors, one RfU team member and one NAEd member with expertise in the topic. The consulting editors were (a) development: Laura Justice (RfU member) and Walter Kintsch, University of Colorado Boulder (NAEd member); (b) assessment: John Sabatini (RfU member) and Joan Herman, National Center for Research on Evaluation, Standards, and Student Testing at the University of California, Los Angeles (NAEd member); and (c) C&I: Carol Lee, Northwestern University (RfU member who is also a NAEd member) and Richard Anderson, University of Illinois (NAEd member).

In preparation for the work of drafting the commissioned papers, representatives from all of the RfU teams provided seminal papers in each of the three paper topic areas. These articles served as the foundation for the commissioned papers.

The second steering committee meeting was held March 1–2, 2018, to discuss the commissioned papers as well as the objectives for the final report. Prior to the second committee meeting, the synthesis paper authors shared drafts with their consulting editors, obtained feedback, and incorporated the feedback, as appropriate, into second drafts of their papers. These papers were then shared with the steering committee members prior to the second meeting in order to prepare for discussion and critique. We also engaged the assistance of Gina Biancarosa, University of Oregon, as a consultant to support the research, analysis, and written work for this initiative.

During the second steering committee meeting, the paper authors presented their papers, providing the following information to the committee: (a) what they examined, (b) how they synthesized/addressed the materials, (c) what they planned to continue to address to complete their papers, and (d) how the committee could assist them in completing the synthesis effort. Pre-identified steering committee members served as discussants for particular papers and provided initial feedback at the meeting. Discussion by the entire steering committee ensured that insights and implications for policy and practice across the RfUs were identified in each paper topic area.

After the second steering committee meeting, the editors of the final report (P. David Pearson, Annemarie Sullivan Palincsar, Gina Biancarosa, and Amy I. Berman) continued to provide feedback to the commissioned paper authors, as did the consulting editors. Additionally, the model for the final summary report was modified in response to issues that surfaced in the process of drafting the various chapters. The original model was to have three free-standing commissioned papers that would inform a single synthesis document. Instead, the co-chairs, after reaching out to the entire steering committee for feedback as well as the commissioned paper authors and Rebecca Kang McGill-Wilkinson (IES program officer), determined that a better course would be to have an edited volume with an introduction and conclusion written by the editors and the three papers repurposed as core chapters within the volume. This decision was largely informed by the realization that summarizing the commissioned paper summaries was not a worthwhile endeavor. The editors worked closely with the chapter authors to ensure consistent, accurate, and informed chapters. Moreover, it allowed the editorial team to focus on summarizing across chapters (see Chapter 6).

The editorial team met regularly by videoconference to oversee the development of the report and also convened for an intensive drafting and editing session in Berkeley, California, December 14–15, 2018. In particular, during this meeting, the editors focused on the content for the introduction and conclusion chapters of the report, as well as overseeing the successful review and integration of the three commissioned chapters.

The full steering committee met for the third time October 3–4, 2019. Prior to the meeting, a draft of the full volume (except for the Executive Summary) was shared with the steering committee. The purpose of this meeting was to closely review the completed and in-progress draft chapters and to develop an outline for the Executive Summary. The steering committee was charged with ensuring (a) the accuracy of the factual statements, (b) the validity and trustworthiness of the interpretive and evaluative claims and recommendations, and (c) the accessibility and usefulness of the report. Over 2 days, the steering committee discussed the report, chapter by chapter. The committee also discussed potential additions to the report, such as quotes from RfU team leaders and teachers. During the meeting and after it, the committee members continued to share relevant articles and information.

In addition to the extensive review delineated above and significant additional editing and review across chapters by authors and editors, the volume underwent NAEd internal review. Judith Warren Little, the chair of the NAEd Standing Review Committee, requested that NAEd members Kenji Hakuta and Glynda Hull review the entire volume paying special attention to the Executive Summary, and introductory and concluding chapters. Hakuta and Hull reviewed the volume and provided feedback that was incorporated into the report.

Table Appendix 1-1 provides a summary of the individuals and groups who were involved in writing and reviewing various parts of the report.

TABLE APPENDIX 1-1 Authors and Reviewers for the Chapters of the Report

Chapter	Chapter Title	Author(s)	Review/Editorial Team	
			Steering Committee	Consulting Editors
	Executive Summary		Collaborated on by the entire committee as well as part of the final review of the volume by outside peer reviewers selected by the NAEd standing review committee (Kenji Hakuta and Glynda Hull)	
1	Introduction to the Reading for Understanding Initiative	Annemarie Sullivan Palincsar, P. David Pearson, Amy I. Berman, and Peter Afflerbach	Reviewed by the entire committee as well as part of the final review of the volume by outside peer reviewers selected by the NAEd standing review committee (Kenji Hakuta and Glynda Hull)	
2	The Nature and Development of Reading for Understanding	Gina N. Cervetti	Annemarie Sullivan Palincsar, Catherine Snow, Laura Justice, and Chris Lonigan	Laura Justice and Walter Kintsch
3	The Assessment of Reading for Understanding	Panayiota Kendeou	P. David Pearson, John Sabatini, and Don Compton	John Sabatini and Joan Herman
4	Teaching Reading for Understanding: Summarizing the Curriculum and Instruction Work of the Five Core Reading for Understanding Teams	Gina Biancarosa, Peter Afflerbach, and P. David Pearson	Annemarie Sullivan Palincsar, P. David Pearson, Susan Goldman, and Sharon Vaughn	Carol Lee and Richard Anderson
5	Teaching Reading for Understanding: Synthesis and Reflections on the Curriculum and Instruction Portfolio	Peter Afflerbach, Gina Biancarosa, Matthew Hurt, and P. David Pearson	Annemarie Sullivan Palincsar, P. David Pearson, Susan Goldman, and Sharon Vaughn	Carol Lee and Richard Anderson
6	Taking Stock of the Reading for Understanding Initiative	P. David Pearson, Annemarie Sullivan Palincsar, Peter Afflerbach, Gina N. Cervetti, Panayiota Kendeou, Gina Biancarosa, Jennifer Higgs, Miranda Fitzgerald, and Amy I. Berman	Reviewed by the entire committee as well as part of the final review of the volume by outside peer reviewers selected by the NAEd standing review committee (Kenji Hakuta and Glynda Hull)	

NOTE: All chapters were reviewed by the entire steering committee.

Now we turn to a more detailed description of the process followed by the core chapter authors.

Chapter 2: The Nature and Development of Reading for Understanding

This review of the RfU research is based on a set of studies nominated by the RfU teams as those that addressed issues of the development of comprehension. From among the nominated papers, a small number were ultimately excluded because they focused on outcomes other than reading comprehension, such as word reading skills, reading fluency, or oral language. Following the initial nomination process, additional requests for newer studies were extended to the RfU teams, and searches of academic journal databases were used to identify relevant studies.

We summarized each of the identified studies. In addition, key information was recorded in a table, using descriptive statements and, in some cases, descriptive codes. The table included information regarding the focus (e.g., language, cognitive skills), participants, design, and findings.

A series of clusters was created by sorting the studies according to broad focus. We wrote descriptively about the findings within these clusters and also used a question-driven, qualitative examination to derive a set of overall findings. The analytic questions included the following:

- What skills and knowledge are concurrent correlates of reading comprehension at different stages of reading development?
- What characteristics distinguish more and less successful comprehenders?
- What are early predictors of later comprehension?
- What is the dimensionality of enabling skills that underlie successful comprehension?

Guided by these questions, we used a variation of the constant comparative method, in which we developed themes, read further into the data, and either added evidence or refined the themes accordingly.

Chapter 3: The Assessment of Reading for Understanding

Writing of the assessment chapter followed a systematic, iterative, and integrative approach that focused on the minimum assessment criteria put forth by the RAND Research Study Group (2002), current trends in reading comprehension research, and an in-depth review of each assessment. The review of each assessment (what is now included as an appendix to Chapter 3) focused on the conceptual framework guiding development, content and sample items, administration and scoring guidelines, and evidence for technical quality focusing specifically on validity, reliability and precision, fairness in testing, and intended use of scores. A distinction was made between the assessments that emerged from the core assessment mission versus those developed to allow researchers to measure key facets of their interventions. Nonetheless, we applied the same standards to all of the assessments introduced in this chapter. Through this iterative, integrative evaluative process, nine themes emerged that summarize the contributions of the RfU assessment research. The chapter includes a discussion of each of those theme contributions as well as directions for future research.

Chapter 4: Teaching Reading for Understanding: Summarizing the Curriculum and Instruction Work of the Five Core Reading for Understanding Teams and Chapter 5: Teaching Reading for Understanding: Synthesis and Reflections on the Curriculum and Instruction Portfolio

When we began this effort we anticipated one chapter on C&I. However, once the scholar recruited to draft the C&I chapter, as well as the editors, began to grasp the C&I portfolio it became clear that one chapter could not capture the volume and complexity of the literature.

Additionally, in trying to follow the model of synthesizing across the work of the five teams, we felt we were losing the "identity" of the C&I portfolio of each team. When we were operating at a very high level of synthesis, we found ourselves moving toward high-level generalizations that, in our view, did not convey a sense of the vividness and vitality of the approaches that had proved successful within each site. While we wanted to document high-level generalizations that held across the work of the five teams, we felt that such claims would be more credible if readers knew more about the work of each team.

So we revised our plan for the C&I portfolio of work. We settled on a two-stage synthesis of the C&I work of the five teams. In stage one, we would first synthesize the work of each team. Our reasoning was that if we could tell the story and reveal the essence and core of each team's effort, we would set the stage for a more meaningful cross-team synthesis. Our narrative would be better grounded—more firmly situated in the details of the RfU work. Optimistic about the utility of such an approach, we went back to reread the pool of studies we had gathered in 2017 and 2018; we scoured the archival literature for additional work that we would need to take into account, and repeatedly checked in with each team to acquire new work.

When we started to reread old (and read new) entries, we were faced with another realization: within each team, we found another layer of heft and complexity, making even site-specific summaries challenging. The work of two of the teams, Language and Reading Research Consortium (LARRC) and Reading, Evidence, and Argumentation in Disciplinary Instruction (READI), was reasonably focused and integrated across the 5-year cycle of work; they had what we came to call a "long runway." The work of another team, Florida Center for Reading Research (FCRR), anchored the "diverse portfolio" end of the continuum, with at least eight "variations" on its C&I theme. Catalyzing Comprehension through Discussion and Debate (CCDD) and Promoting Adolescents' Comprehension of Text (PACT), each with at least two major strands of parallel research, landed somewhere in the middle. So we searched for a way to provide greater focus for these site-specific syntheses.

In the end, we settled on a very specific review strategy based on a contractual requirement of the grant. Each team was required, by the final (fifth) year of its life, to conduct an RCT on a significant pedagogical intervention; more specifically, it was supposed to be an intervention that represented the insights that had been gained from other sorts of preliminary efforts (their developmental work examining relations among key pedagogical and outcome variables) and their experimental lead-ins to the RCT(s) (usually some combination of design-based research to fine-tune the interventions, pilot studies to test specific components, and short-term efficacy studies of early versions of the intervention(s)). Given this requirement, along with the knowledge that each team

had, in fact, conducted one or more major RCTs, we decided to use the RCT effort of each team as a focus for conveying the core of each site's efforts in C&I. We therefore began with the RCT(s) and worked our way back into the C&I efforts that led up to the RCT(s). This approach subsequently led to Chapter 4. Chapter 5 follows with a cross-site synthesis, informed by our work in Chapter 4, of what the RfU accomplished, both in developing and evaluating new ways of improving reading comprehension from pre-K through grade 12.

In summarizing the work of each team's C&I work in Chapter 4, we did not impose a common organizational framework on the five narratives, mainly because we felt that each site followed a unique trajectory. The variability was reflected in the sheer number of experimental and quasi-experimental analyses completed; two sites completed a single RCT, while other sites conducted more than a dozen. Some sites emphasized the development of the interventions over their evaluation, while others employed the reverse emphasis. Accordingly, we let the structure of each narrative follow from an attempt to capture the site's pedagogical identity and research process. That said, we did impose two common "text features" on the story of each site: (1) each narrative begins with an overview of the key goals, findings, and conclusions from that site's pedagogical work—a kind of mini Executive Summary for the site, and (2) to ease the readerly burden of all of the "numbers" that are needed to convey the magnitude and significance of the findings (all of the p-values and effect sizes), we have organized them into tables that report the most relevant effect sizes and statistical significance of each pedagogical project that underwent an efficacy study for each RfU team. We would note that the number of tables for any particular team does not reflect the amount of work a team conducted, but rather it reflects the team's approach to the research process (i.e., multiple pedagogical products and/or multiple efficacy studies versus one focal product and/or study).

Chapter 5 served as a synthesis of the work across the sites. It begins with a statistical analysis of intervention effects from the RCTs across all five sites before moving on to a synthesis of themes—what we learned when we read across the work in the pedagogical portfolios of the five teams. They take the form of important findings, themes, and insights about how to improve comprehension, focusing on the common threads that inform the design, delivery, and effectiveness of practices and programs. Chapter 5 concludes by addressing a set of dilemmas and limitations in conducting this sort of pedagogical research. The chapter is essentially an account of what was learned, along with a discussion of ongoing issues, concerns, and directions to consider in light of the progress achieved by this unprecedented effort to improve reading comprehension pedagogy and achievement.

Methodologically, the authorship team for Chapter 4 engaged in these steps, more or less in this order, but with a lot of traversing up and down the steps as needed to summarize the work of each site:

1. Ask the five sites for a list of their most important curriculum and instruction studies—those that absolutely had to be included in our summary.
2. Scan the key journals in the reading pedagogy archival literature at regular intervals, looking for additional publications from the various teams.

3. Divide the sites across reviewers and do a close reading, resulting in a short summary of key methods, findings, and conclusions for each entry in the list.

4. Assign the entries to one of two broad categories: intervention development (studies that lay the groundwork for an eventual intervention) and intervention evaluation (mainly RCTs, or large efficacy studies), in which the efficacy of an intervention was compared to one or another counterfactual (usually a business-as-usual control group but sometimes an alternative treatment group).

5. In cases in which there were multiple interventions, group the entries by program. For example, READI completed a single RCT, while LARRC completed a few RCTs on a single program. CCDD studied two interventions, PACT three, and FCRR at least eight.

6. Record (or compute if necessary) effect sizes for key outcome variables for each intervention for each site.

7. Summarize the effect sizes in a table for each intervention.

8. As an authorship team, discuss and interpret the results for each intervention and then for each site.

For Chapter 5, we took a distinct approach, both for our statistical synthesis and our thematic synthesis. The two syntheses employed completely different methods.

For the statistical synthesis, we created two grand synthesis tables of effect sizes, one each for direct effects on comprehension (listening or reading; see Table 5-1), including the orchestration of comprehension for applied tasks, and components of comprehension (see Table 5-2), such as vocabulary, morphology, or metacognition. Within each table, we distinguish between effects on measures that were researcher designed (rows labeled "R" in Tables 5-1 and 5-2) and those that were more widely available and normed (rows labeled "P" in Tables 5-1 and 5-2), and we note the magnitude and statistical significance of effects. For the latter, we adhered to Cohen's rule of thumb about small, moderate, or large effect sizes, with the following amendments: Because effects on the broadest general outcome measures were typically so small in the empirical studies, we created another category for *weak effects*, defined as 0.07 to 0.19. We otherwise adopted Cohen's definitions of small (0.20 to 0.49), medium (0.50 to 0.79), and large (0.80 or above) effects. In interpreting these effects, however, we must emphasize that the average effects for randomized trials typically fall within the small category, making even medium effects impressive (or at least rare) in comparison.

For the thematic synthesis, we adopted a completely different and, we think, complementary set of methods. It was a classical discovery of themes driven by conceptual analysis of the pedagogical practices themselves. We read and reread the very same manuscripts that formed the basis of our earlier summary of the five teams. But in this reading, we read across teams, trying to ferret out shared curricular and instructional features across this highly varied landscape of interventions. In a sense, this decidedly qualitative analysis (it was akin to an ethnography of the research articles themselves) was designed to answer the following question: What did we learn about the consistency of features of effective reading comprehension pedagogy across the RfU initiative?