

The Progress and Promise of the Reading for Understanding Research Initiative

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## The Progress and Promise of the Reading for Understanding Initiative

### Abstract

Decades of reading research have improved our understanding of the ways that young children learn how to read and of the component skills that support the ongoing development of reading and reading comprehension. But while these investments have transformed reading instruction and reading outcomes for many learners, too many children are not reading at the basic level nor are they reading with understanding. The Institute of Education Sciences created the Reading for Understanding Research Initiative in 2010 to fund a set of connected projects that would enrich the theoretical frameworks that undergird efforts to improve deep comprehension and to design and test new interventions and assessments to improve reading for understanding across all grades in U.S. schools. This article describes the central themes that guided the design of the Reading for Understanding Initiative and the work underway by the six research teams funded under this program.

Keywords: reading comprehension, cognitive processes, assessment, educational intervention

### **Why Support a Reading for Understanding Research Initiative?**

Decades of reading research have improved our understanding of the ways that young children learn how to read and of the component skills that support the ongoing development of reading and reading comprehension (National Reading Panel, 2000; Rayner, Foorman, Perfetti, Pesetsky, & Seidenberg, 2001; Snow et al., 1998). These essential components of high quality reading instruction, as described by the National Reading Panel, include explicit instruction in phonemic awareness, systematic phonics instruction for K-6<sup>th</sup> and struggling readers, vocabulary instruction, support for increasing reading fluency, and teaching students to use comprehension strategies as they read. At the same time, each of these research summaries acknowledged that the research base supporting reading comprehension, and specific guidance about which instructional practices were most effective for improving vocabulary knowledge, fluency, and use of comprehension strategies, was less robust than the evidence supporting the use of explicit and systematic instruction in phonemic awareness and phonics to help learners master the foundational skill of decoding. Recognizing the need for additional research investment in reading comprehension, the Office of Educational Research and Improvement (OERI), the predecessor office to the Institute of Education Sciences (Institute) within the Department of Education, created a grant competition in 2002 intended to “expand scientific knowledge of how students develop proficient levels of reading comprehension, how reading comprehension can be taught most optimally, and how reading comprehension can be assessed in ways that reflect as well as advance our current understanding of reading comprehension and its development.”<sup>1</sup>

The PRRC was the Institute’s initial investment in reading comprehension research. Since 2002 the Institute has supported reading research across multiple portfolios in support of the

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<sup>1</sup> Federal Register, 2002, pg. 2865

overarching goal to support research that will enable all students to read for understanding. Interested readers are referred to a recent synthesis of the research supported by the Institute (Connor, Alberto, Compton & O'Connor, 2014a) for an overview of what our ongoing program of research has contributed to knowledge in this area. Accumulating evidence suggests that research knowledge about how to support learning to read has transformed much reading instruction and supported the acquisition of foundational reading skills for many learners (Lemons, Fuchs, Gilbert, & Fuchs, 2014; Gamse, Jacob, Horst, Boulay, & Unlu, F., 2008), especially for struggling readers. However, this knowledge and accompanying changes in classroom instruction have not resulted in expected improvements in reading comprehension outcomes for many children in the early grades (Gamse, Jacob, Horst, Boulay, & Unlu, F., 2008). And there is limited evidence as to how best to teach adolescent readers as they seek to acquire the skills needed to read the more challenging texts they encounter as they advance through school (Biancarosa & Snow, 2006). In 2009, when the Institute's Request for Applications for the Reading for Understanding Research Initiative (RfU) was released, the latest data from the National Assessment of Educational Progress showed that 1 out of 3 fourth-graders and 1 out of 4 eighth-graders were not able to read at the basic level. That is, when reading grade appropriate material, these students did not understand what they read. Notwithstanding our ongoing investment in reading research, these data supported a persistent and urgent need to increase the number of students who read for understanding. The Institute responded to this need by funding RfU to provide rigorous research to guide the development of better interventions and assessments across the full grade span.

One impediment to moving what we were learning in research into interventions that could be tested and used in classrooms is the long timeline needed to move from foundational research to tests of efficacy to routine implementation of efficacious interventions in typical instructional practice. The Institute believed that there was a need for a novel approach to tackling this problem, and so created a research program with several unique features that the Institute believed had the potential to identify solutions to this seemingly intractable problem. First, as a whole, the Reading for Understanding (RfU) Research Initiative was to tackle reading comprehension as a *developmental challenge*. Individual students learn to read over time, but curriculum, instruction, and research projects are often focused on what happens at a particular moment in developmental time. The RfU Initiative was intended to create a network of scholars and practitioners who together would examine both how reading for understanding developed and how it could be supported/improved from prekindergarten to grade 12, thus tackling the apparent lack of success in translating improvements in early reading instruction into successful instruction in the later grades. Second, although the RfU Initiative was intended to help all students read with better understanding, there is particular urgency to helping *struggling comprehenders*. Third, the teams were asked to examine *oral language*, general knowledge of the world, and text processing skills in relationship to reading comprehension. Many theoretical frameworks (e.g., Gough & Tunmer, 1986; Kintsch, 1998; Perfetti, 1999; van den Broek et al, 1999; Cromley & Azevedo, 2007) have called these out as critical dimensions of reading for understanding, but it was unclear as to whether systematic intervention on these components (as compared to decoding) would improve reading comprehension. Fourth, there was a call for *multidisciplinarity* at multiple levels. Given the scope of work proposed, individual teams necessarily were composed of researchers with different areas of academic expertise and

practitioners from multiple locations in the education system. Across the teams, we anticipated that the RfU Initiative itself would reflect the multiple theoretical and empirical orientations of reading researchers and practitioners. And, acknowledging the reality that reading for understanding occurs across multiple content areas in schools, the teams were required to study reading in at least two different academic content areas. Finally, there was a desire to *accelerate* the research process, by supporting projects that were tightly linked – both within and across projects – with the goal of developing, piloting, and testing the efficacy of interventions across multiple grade levels and content areas within a five-year time period.

In this introduction we begin with a brief description of the six teams that comprise the RfU Initiative<sup>2</sup>. We then illustrate the work in progress across the RfU Initiative and the ways in which the vision laid out in the Request for Applications is being realized in the work of the RfU teams in regard to these five features. Given the large scope of work underway by each of the teams, it is not feasible to provide an exhaustive description of the ways in which these features are present in the work of the RfU Initiative. Rather, we cite a few examples of the ways in which the RfU teams are addressing these features.

### **Overview of the Reading for Understanding Research Initiative**

The Reading for Understanding Research Initiative includes six, large multidisciplinary teams. The grants were awarded based on the outcome of the Institute's external peer review process, during which the scientific merit of each application was evaluated. More than 130 researchers are part of these teams and implementing their research projects at over 25 institutions dispersed

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<sup>2</sup> Full abstracts for each grant along with links to their project websites are available at <http://ies.ed.gov/ncer/projects/program.asp?ProgID=62>.

across the United States. The teams began their work in July of 2010, and are now entering the last year of their five-year awards. Each grantee is studying five or more consecutive grade levels from prekindergarten through high school and each grade is a focus of study for more than one grantee. Five of the grantees (referred to as ‘core’ teams) are conducting studies to explore basic processes in reading for understanding, developing and refining new interventions, and testing the interventions for efficacy. One grantee is developing new assessments of basic reading skills as well as reading for understanding from prekindergarten through high school to provide better measurement for diagnostic and evaluation purposes. Each RfU team includes researchers from an array of disciplines, including reading experts, speech-language pathologists, linguists, cognitive and developmental psychologists, methodologists, assessment specialists, and psychometricians. The theoretical models that undergird the work of each team (e.g., Gough & Tunmer, 1986; Kintsch, 1998; Perfetti, 1999; van den Broek et al, 1999; Cutting & Scarborough, 2006; Cromley & Azevedo, 2007) as well as research questions and study designs, reflect the diverse perspectives of researchers on each team. All the teams include integral partnerships with teachers and schools in the development and refinement of their interventions and assessments as a means of maximizing their feasibility and impact.

A high-level description of the studies being conducted by each of the RfU teams follows, and an overview of the age groups and interventions that are the focus of each team is summarized in Table 1.

INSERT TABLE 1

The two teams focused on younger students – LARRC and FSU -- are conducting studies with both overlapping and complimentary foci. The LARRC team is studying the oral and print skills of native-English speaking students and English Learners in both exploration and intervention studies. The team is following multiple cohorts of students from prekindergarten through third grade in a large, cohort sequential study and is collecting multiple indicators of many constructs. This study is designed to contribute to basic knowledge about how young children (both native-English speakers and English Learners) develop in regard to language, listening and reading comprehension, the influence of associated cognitive and behavioral factors (such as working memory and motivation), and the effects of environmental factors on language development. The interventions designed by LARRC include attention to oral language, text structure, comprehension monitoring, inferencing, and discussion using both informational and narrative texts.

The Florida State University (FSU) team is exploring the oral and print skills of students in pre-kindergarten through fifth grade. FSU researchers are administering an extensive battery of assessments in a large longitudinal study of students to measure multiple indicators of basic reading skills and cognitive processes. A subset of students in the longitudinal study is also participating in basic processing studies using experimental studies and eye-tracking methodologies to explore how students access text. Findings from these studies are informing the design of a suite of Tier 2 interventions to provide targeted instruction for students struggling with components of reading comprehension, which could serve as the basis for an online resource for teachers to use in differentiating use of the interventions to meet the needs of each student. The FSU interventions target oral language, background knowledge, text structure,

syntax, and comprehension monitoring. The team first tested each of the component intervention components separately and is currently testing combinations of interventions for efficacy. An intervention for use by all students in the classroom, called *Content Area Literacy Instruction (CALI)* has also been developed for use in teaching science and social studies content.

The CCDD team is bridging elementary and middle school in the design of new interventions for students in fourth through eighth grade. A school-wide intervention that builds on the existing *Word Generation* program has been developed and is currently being tested. The new intervention, *Word Generation – Enhanced*, adds curricular materials in science and social studies built around timely topics to stimulate classroom discussion and debate. A second intervention, *Strategic Adolescent Reading Intervention (STARI)*, provides additional support for students in sixth through eighth grade who are behind grade level in reading. Both interventions focus on perspective-taking, reflective judgment, and academic language as a means of improving reading for understanding, but *STARI* also incorporates a focus on basic decoding and word-level skills. The team has invested substantial effort in developing measures of the three constructs for use in evaluating the impact of the new interventions, and is studying the impact of the *Word Generation – Enhanced* intervention when implemented across the curriculum over multiple years in the same schools.

The remaining two core teams, PACT and Project READI, are engaged in work with adolescent readers. The PACT team seeks to identify the cognitive and reading skills that differentiate good and poor comprehenders, with a particular focus on the influence of motivation to read. PACT completed a large-scale, cross-sectional study of students in seventh through twelfth grade that

collected an extensive battery of cognitive and reading assessments with the goal of identifying the processes that differentiate good and poor comprehenders. The team is developing interventions for use in social studies classes in middle and high school that incorporate a new approach to peer learning called "Team Based Learning (TBL)." The features and value of TBL in improving content acquisition and reading comprehension is described in an article by Roberts and colleagues in this issue, as well as in a study that reports findings from efficacy trials of the PACT social studies intervention (Wanzek et al., 2014). The PACT team is also designing new interventions for use in English Language Arts classes in middle and high school, as well as interventions for struggling readers built on findings from cognitive processing and motivation studies.

The Project READI team is focusing on how to help adolescent readers learn to evaluate and integrate information across multiple sources of written information in science, history, and literature. The Project READI team first formulated developmental frameworks that describe how knowledge is generated and evaluated in each of the disciplines and how students progress in their ability to reason in each of these disciplines from middle through high school. Curricular modules are being designed for use in each content area to support students in engaging in evidence-based argumentation to answer a central question addressed by a set of texts. Evidence-based argumentation (EB-A) involves making a claim that is supported by information in the text(s), and requires students to analyze, synthesize, and evaluate information to reach a reasoned conclusion. Development of the modules and assessments includes experimental studies to explore the best ways to structure tasks and essay prompts to engage students in EB-A. The development of the modules and accompanying professional development involves close

collaborations with networks of teachers. The team is also conducting a multi-year intervention study in a charter school in Chicago in which the basic Project READI materials are augmented with additional activities to provide social support for students.

Although there has been some convergence of models of reading comprehension, evaluations of reading comprehension assessments indicate that there is variation in the underlying constructs that are tapped by different measures (e.g., Cutting & Scarborough, 2006; Keenan, Betjemann, & Olson, 2008). In addition, the associations between component skills (e.g., phonemic awareness, listening comprehension) and overall reading comprehension varies across tests, and those associations are in turn moderated by the age and skill level of the reader. In conjunction with the call for new interventions to improve reading for understanding, the Reading for Understanding Request for Applications called for the development of a new summative measure of reading comprehension. A team at the Educational Testing Service (ETS) was funded to develop this new assessment as well as a theoretical framework to describe the development of reading for understanding from prekindergarten through high school. This framework is described in a series of publications that outline a definition of reading for understanding, critical features in its development, and factors that moderate performance. (O'Reilly & Sabatini, 2013; Sabatini & O'Reilly, 2013; Sabatini, O'Reilly & Deane, 2013). This framework has guided the creation of a new, computer-based assessment called the *Global, Integrated Scenario-Based Assessment (GISA)*. *GISA* consists of scenarios which are situated in a meaningful social context and provide various scaffolds to support student performance. The scenarios lead the student through a series of tasks designed to account for important moderators of performance, such as background knowledge, self-regulation, use of strategies, and motivation. *GISA* scenarios have been

developed in a number of content areas and genres and include a variety of text types (such as email and Wiki posts). A sample *GISA* item for middle school students can be viewed on the ETS website.<sup>3</sup> Building an assessment of reading for understanding that can be tailored for use in evaluating a particular intervention is a key focus of work (O'Reilly, Weeks, Sabatini, Steinberg & Halderman, 2014) by the assessment team. As part of the grant to ETS, a team of researchers at the Florida Center for Reading Research (FCRR) is developing a computer-adaptive measure of basic skills for use with students from prekindergarten through high school. The FCRR team conducted a longitudinal study in which students took an extensive set of assessments as a first step in identifying skills for the new battery.

In addition to creating new interventions to improve reading for understanding, the grantees in the RfU Initiative are building new knowledge about how students learn to read with understanding. The teams are developing assessments capable of measuring basic reading skills and reading comprehension across the curriculum. New instruments to measure core constructs - such as perspective-taking and academic language – and observational tools to measure classroom discourse have also been developed by the teams and will enrich the field of reading research. The teams are attending to the feasibility and fidelity of use of the interventions through thoughtful design of intervention materials and/or extensive professional development opportunities for teachers.

### ***How Does Reading for Understanding Develop?***

Attention to the development of reading for understanding and the skills that support it is evident in the work of the RfU teams through each team's scope of work, the collaboration across the

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<sup>3</sup> [http://www.ets.org/research/topics/reading\\_for\\_understanding/assessments/gisa\\_samples/](http://www.ets.org/research/topics/reading_for_understanding/assessments/gisa_samples/).

RfU teams, and the work of the assessment team. As illustrated in Table 1, each RfU team is developing interventions and creating materials to meet the needs of students for multiple grade levels. The RfU teams have met regularly over the past four years to share findings and plans for future studies, and this sets the stage for conversations about what they are learning about reading from the early to the later grades. The assessment team developed a theoretical framework that encompasses the development of reading for understanding from children's first experiences with formal education all the way through high school. We believe that this opportunity for researchers to focus their attention on how reading develops across this broad spectrum of grades is one of the unique features of the RfU Research Initiative.

In addition to the focus of each team on designing interventions for multiple grade levels, several teams are conducting longitudinal studies to inform our understanding of how reading for understanding develops within individual students. As noted above, the FSU and LARRC teams are following cohorts of prekindergarten and elementary students over multiple years in studies of basic processes and reading skills. The ETS team conducted a similar study that follows students from prekindergarten through high school over time. The Project READI team is following students and teachers in a charter high school over multiple years, and the PACT team is collecting follow-up assessments to determine whether effects of interventions persist over time. Finally, the CCDD team is studying the impact of their new interventions for teachers and students who participate in the intervention over several school years.

***What Does Oral Language Contribute to Reading for Understanding?***

The Simple View of Reading (Gough & Tunner, 1986) depicts reading comprehension as a product of decoding and listening comprehension. Oral language skills are key components in listening comprehension, and have most often been conceptualized and measured in terms of vocabulary knowledge. Reflecting the extant literature, research in vocabulary instruction was highlighted in the National Reading Panel (National Reading Panel, 2000) and vocabulary knowledge undoubtedly plays an important role in both listening and reading comprehension. However, several RfU teams are also exploring the contributions of other aspects of oral language, such as knowledge of syntax, morphology, and semantics to reading for understanding in basic, development, and assessment studies. The new component assessment system developed by the FCRR/ETS team measures syntax in addition to word knowledge. Results from the large-scale, longitudinal and cross-sectional studies conducted by FSU, LARRC, PACT and ETS will shed light on these facets of oral language at different grade levels, and the contribution of oral language skills to reading for understanding over and above a host of basic word-level (e.g., decoding) and cognitive (e.g., working memory, attention) skills. New interventions developed by FSU attempt to improve student knowledge of sentence-level syntax, morphological awareness, and listening comprehension skills. Findings in LARRC pilot studies (Pratt & Logan, 2014) support the conclusion that interventions can be developed that improve the level of language used in classrooms which may in turn improve comprehension.

Several RfU teams studying adolescents focus on oral language through improving the level of discourse in classrooms, and use classroom discussion, and in some cases debate, to raise oral language skills. The CCDD intervention focuses on building vocabulary knowledge but with additional activities to improve the level of classroom talk in order to strengthen students' skills

in analysis and perspective-taking. Classroom discourse is also a central focus of the interventions being developed by the READI team in improving student skills to construct arguments as a vehicle for understanding text and multimedia materials as well as in the PACT interventions to improve student reading in social studies.

### ***How Can We Best Help Struggling Comprehenders?***

The need to improve reading for understanding for students who are not reading at grade level is particularly urgent as many of these students continue to fall further behind as they progress through school. Interventions to help them catch up in later grades must be very powerful, requiring the accelerated acquisition of skills and content taught in earlier grades concurrent with mastery of current grade-level work. Three of the RfU teams are designing interventions specifically for struggling comprehenders as a central component of their work. The suite of Tier 2 interventions under development by the FSU team targets the individual needs of students in prekindergarten through middle elementary school who are behind grade level in reading skills. As described by Connor et al (2014b), each of these interventions provides intensive practice on one aspect of oral language. For example, Morphological Awareness Training (MAT) focuses on helping students to learn the rules for affixes; Language in Motion (LiM) targets knowledge of syntax; Comprehension Monitoring and Providing Awareness of Story Structure (COMPASS) focuses on helping students to monitor their comprehension and also provides instruction on text structure in narrative text; and Teaching Expository Text Structure (TEXTS) targets text structure for informational text. The CCDD team *Strategic Adolescent Reading Intervention (STARI)* intervention for middle school students incorporates both attention to word-level skills as well as discourse skills exhibited through discussion and debate to improve reading for

understanding for struggling comprehenders. The PACT team is designing an intervention specifically for ninth graders with basic decoding skills but who struggle with comprehension.

Several teams have used findings from basic and small-scale experimental studies to look for new malleable factors to improve reading comprehension, or further clarify known factors, to guide the development of interventions to help struggling readers. In addition to their longitudinal study of the components of reading, the FSU team is conducting studies with a subset of students from this study that experimentally manipulate aspects of texts and tasks to identify new factors that may influence reading comprehension. Several of these studies use eye-tracking methods to collect on-line information on how students interact with texts that vary in consistency and other characteristics (Vorstius, Radach, Mayer & Lonigan, 2013). The PACT team is conducting small-scale experimental studies of cognitive processes to gather evidence on what differentiates poor and good comprehenders and whether the factors that contribute to reading for understanding differ for the two groups of readers. The ETS team (Sabatini, O'Reilly, Halderman & Bruce, 2014) conducted a study comparing the performance of adolescents, some of which were struggling readers, on the RISE (a battery that measures component reading skills) to that on the new *GISA* assessments. Findings indicate that although struggling readers were able to complete some aspects of this complex assessment, difficulties in basic reading skills limited successful comprehension.

Many English language learners (ELLs) struggle to read with understanding in English, and this difficulty increases as they progress in school and are faced with reading more challenging academic text. The work of three RfU teams will inform both theoretical frameworks and the

identification of malleable factors for helping ELLs. The LARRC team is following a cohort of prekindergarten ELs as they progress through grade 3 and collecting a large battery of assessments to measure language and literacy skills in both English and Spanish. LARRC has also developed a Spanish version of the new intervention for prekindergarteners. Many of the schools in which the CCDD team is working have a substantial percentage of ELLs, and findings from their studies may shed light on the impact of their interventions for ELLs. The PACT team invested additional time and resources in providing additional components for their social studies interventions and is testing the impact of the revised interventions on reading outcomes for adolescent ELLs.

Struggling readers not only lack reading skills, but frequently lack motivation to read and this is particularly true for adolescent readers. The PACT team has embedded attention to motivation in their studies, and is developing a new set of interventions with a focus on both cognitive processing and engagement. A new self-report measure of motivation was developed (Wolters, Denton, York & Francis, 2013) to measure thirteen different aspects of motivation to read. Survey responses by adolescents indicate that the measure is useful for differentiating good and struggling readers on a number of scales, and that some aspects of motivation predict comprehension skills. Attention to motivation is also evident in the selection of topics for intervention materials developed by CCDD for *Word Generation – Enhanced*<sup>4</sup> and Project READI modules on evidence-based argumentation. In addition, ETS created scenarios based on topics thought to be of high interest to students and uses data collected during the assessment to measure motivation and engagement.

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<sup>4</sup> Examples of topics for curriculum can be viewed at <http://wg.serpmedia.org/>

*How Does a Multidisciplinary Network Support New Knowledge Development?*

The design of the Reading for Understanding Research Initiative is predicated on the idea that creating innovative interventions to improve reading for understanding will be expedited by providing the resources for researchers to work closely with others from different disciplines, studying different ages, and simultaneously exploring reading across different content areas. Collaboration among researchers from different disciplines is central to the work of each team, and occurs across the RfU network at regular meetings of researchers. Recognizing the challenge of building common languages and shared understandings across disciplinary boundaries, the Institute requires the teams to meet in DC at least twice and up to four times per year for the duration of the Initiative. Each of the RfU teams is comprised of researchers who come from different disciplines, and who have skills in designing and conducting research studies to answer questions at a different grain size. For example, researchers on the Project READI team conducted small-scale studies to inform the design of their interventions. Levine (2014) explored strategies for helping students interpret poetry, and Braash, Goldman, and Wiley (2013) studied the influence of text and reader characteristics in helping students to correct misconceptions in science. Findings from these studies were used in the design of Project READI tasks and assessments.

As students move into the higher grades, they spend their time in content classes in which the teaching of reading is not expected nor supported. The multidisciplinary nature of RfU is also evident in work across content areas. Each of the RfU teams studying adolescents is developing interventions to support disciplinary reading. The PACT team is addressing this reality by

developing interventions in social studies and literature (Fogarty et al, this issue; Roberts et al., 2014; Vaugh et al., 2013). The CCDD team is designing curricular materials to strengthen and expand on the *Word Generation* program in science and social studies. Project READI is developing evidence-based argumentation modules in literature, science, and social studies to help middle and high school students read with understanding in each of these content areas.

Examples of the potential benefit of including researchers from different disciplines are also apparent in the progression of studies for the RfU teams. For example, collaboration between cognitive psychologists and reading researchers has resulted in the strategic use of experimental studies to investigate aspects of tasks and assessments to inform the design of interventions, and in turn, the design of experimental studies to further explore findings from design and efficacy trials.

Importantly, the design of the RfU initiative reflects the belief that the creation of potent interventions that are feasible and practical relies on the essential involvement of practitioners and school-based personnel from the earliest stages of work. All of the RfU teams have integrally involved teachers in the formulation of development studies and the design and refinement of interventions. For example, the LARRC team convened advisory panels comprised of teachers, administrators, and principals in the first year of the grant to provide input to guide the content and design of their interventions. The CCDD team worked closely with teachers to create professional development materials to help teachers lead meaningful classroom discussions and manage student debate activities. The Project READI team relied on regular meetings of teacher networks to conceptualize, design and refine the evidence-based

argumentation modules. Teachers have reviewed the new scenario-based assessments developed by the ETS team and provided feedback on their feasibility and content.

***What Will We Learn From RfU About Acceleration of Research?***

Time will tell whether the RfU investment will result in the creation of better interventions and assessments to help all students read with better understanding. Providing the structure and funding for the RfU teams to flexibly engage in basic, development, and efficacy studies within one grant has created the opportunity for researchers to use basic research to inform the design of interventions, and conversely to conduct basic studies to clarify what is learned in design studies, much more rapidly than our usual grant funding mechanisms. Compared with other funding mechanisms at the Institute, the RfU teams will have moved from exploratory to development to efficacy studies in a shorter period of time – five years compared with what would minimally require at least eight years (and typically much longer) to accomplish a much narrower scope of work in other Institute grant programs. Several RfU teams have used findings from large-scale efficacy trials to refine interventions and then conduct further design studies. For example, findings from efficacy trials conducted by the PACT team informed the redesign of their English Language Arts intervention. The FSU team used findings from efficacy trials to inform their next steps in intervention development. Collaboration between the core RfU teams and the assessment team increased the likelihood that the new assessments will be relevant and useful to researchers and educators. In addition to the substantive findings from RfU regarding reading for understanding, experience with the benefits and challenges of the Reading for Understanding Research Initiative may be useful to others in future efforts to construct similar research initiatives.

The RfU Initiative may also shed light on potential strategies for leveraging collaborative activities. In addition to the within-team collaborations requested in the Request for Applications, regular meetings of the RfU teams provide the forum for teams to share what they are learning from their studies in the earliest stages with the goal of both informing the work of other teams and also gaining insight to further guide their own work. For example, the Request for Applications highlighted the importance of learning more about the relationship of oral language to reading for understanding and each of the RfU teams proposed studies related to oral language. The interventions developed by the RfU teams all incorporate attention to oral language, and discussions at the RfU meetings have highlighted the commonalities and differences in the influence of oral language at different ages. The Request for Applications required that each of the core teams use the new measure designed by the assessment team in intervention studies. This has resulted in close and on-going collaboration between ETS and the core teams since the beginning of the RfU Initiative to maximize the relevance of GISA in assessing the impact of the new interventions.

## **Conclusion**

This brief overview cannot do justice to the depth and breadth of work underway across the RfU Initiative. Table 2 illustrates the body of work underway by researchers in the Reading for Understanding Initiative and the anticipated outcomes of that research. In addition to the multiple interventions being created to support reading for understanding from PK to grade 12, the RfU teams are creating new knowledge about the cognitive and linguistic processes that support

reading for understanding from the time children have their first experiences with formal education through high school graduation.

INSERT TABLE 2

This work is congruent with the new standards for college and career-readiness that are driving the priorities of teachers and schools, and addresses the needs of students to read text in every discipline. Results from studies will provide evidence with which to evaluate existing theories of reading using an expansive set of student characteristics and skills based on models using latent constructs that can reduce the influence of measurement error. New interventions to improve reading for understanding are in various stages of development, and as described in the studies by RfU teams in this issue, some interventions have already shown promising effects on reading for understanding and/or component skills in pilot studies or large-scale randomized field trials. In sum, the RfU Initiative is poised to produce a number of new interventions for use in general classroom settings and as targeted interventions for struggling students in prekindergarten through high school. A number of innovative assessments of new constructs have been created, as well as new tools for studying classrooms. The creation of a theoretical framework encompassing pre-kindergarten through high school creates the basis for studying the skills that must be mastered at each stage of development in order to support the levels of reading for understanding necessary for success in school and career. The new *GISA* assessments and adaptive component battery of basic skills will provide researchers and schools with the capacity to evaluate whether students are gaining skills in deep comprehension that are the focus of new standards. The inclusion of students from diverse backgrounds and locales as well as English

language learners increases the potential benefits of the new tools, interventions, and assessments for a wide variety of educational contexts. Finally, attention to building interventions that are engaging for students and feasible for teachers and schools increases the future use and impact of the products of the RfU Initiative.

Table 1: Overview of Interventions Developed by the Reading for Understanding Teams by Grade Level of Study

Prekindergarten -----Grade 12		
<p><i>The Language Bases of Reading Comprehension (LARRC)</i> Ohio State University <a href="http://larrc.ehe.osu.edu/">http://larrc.ehe.osu.edu/</a></p>	<ul style="list-style-type: none"> <li>• Curriculum including whole-class and small group instruction called <i>Let's Know</i> designed to improve reading and understanding narrative and informational text in young children</li> <li>• Bilingual curriculum for prekindergarteners</li> </ul>	
<p><i>Examining Effective Intervention Targets, Longitudinal Intensity, and Scaling Factors in PreK Through 5<sup>th</sup> Grade (FSU)</i> Florida State University <a href="http://rfu.fcrr.org/index.htm">http://rfu.fcrr.org/index.htm</a></p>	<ul style="list-style-type: none"> <li>• Suite of Tier 2 interventions each designed to improve some aspects of linguistic, comprehension monitoring, and text structure skills for struggling comprehenders</li> <li>• Small group intervention called <i>CALI</i> designed to improve reading for understanding in elementary school social studies and science classes</li> </ul>	
<ul style="list-style-type: none"> <li>• <i>Word Generation – Enhanced</i>, designed to improve comprehension across the curriculum through use of classroom discussion and debate. Additional curricular materials are provided in social studies and science.</li> </ul>	<p><i>Catalyzing Comprehension Through Discussion and Debate (CCDD)</i> Strategic Education Research Partnership Institute <a href="http://ccdd.serpmedia.org/">http://ccdd.serpmedia.org/</a></p>	<ul style="list-style-type: none"> <li>• <i>STARI</i>, intended to increase comprehension and basic reading skills for struggling middle school readers using partner activities and discussion and debate</li> </ul>
<ul style="list-style-type: none"> <li>• Middle and high school curricula in social studies and English Language arts designed for use with native-English speakers and social studies curricula designed for use by English Learners</li> <li>• Interventions for struggling readers incorporating attention to cognitive processes and motivation.</li> <li>• Intervention specifically designed for struggling readers in ninth grade who have basic decoding skills</li> </ul>	<p><i>Understanding Malleable Cognitive Processes and Integrated Comprehension Interventions for Grades 7-12 (PACT)</i> The University of Texas at Austin <a href="http://www.meadowscenter.org/projects/detail/promoting-adolescents-comprehension-of-text-pact">http://www.meadowscenter.org/projects/detail/promoting-adolescents-comprehension-of-text-pact</a></p>	
<ul style="list-style-type: none"> <li>• Professional development for teachers and exemplar modules</li> </ul>	<p><i>Reading for Understanding Across Grades 6 Through 12: Evidence-Based Argumentation for Disciplinary Learning (Project READI)</i></p>	

<p>designed for teaching evidence-based argumentation in middle and high school science, social studies, and literature classes</p> <ul style="list-style-type: none"><li>• A school-wide intervention model intended to provide additional instructional and social support for secondary schools in challenging settings</li></ul>	<p><b>University of Illinois at Chicago</b> <a href="http://www.projectreadi.org/">http://www.projectreadi.org/</a></p>
<p><i>Assessing Reading for Understanding: A Theory-Based, Developmental Approach (ETS)</i> <b>Educational Testing Service</b> <a href="http://www.ets.org/research/topics/reading_for_understanding/">http://www.ets.org/research/topics/reading_for_understanding/</a></p> <ul style="list-style-type: none"><li>• Scenario-based assessments called <i>GISA</i> administered via computer in a variety of genres and content areas. <i>GISA</i> is designed to assess reading for understanding using a novel set of items that assess background knowledge; structure tasks around authentic purposes and text types; and provide scaffolds to support student performance.</li><li>• Computer-adaptive battery to assess basic reading skills across PK-12<sup>th</sup> grade</li></ul>	

Table 2: Expected Contributions of the Reading for Understanding Teams

<p><b><i>The Language Bases of Reading Comprehension (LARCC)</i></b></p> <ul style="list-style-type: none"> <li>• A description of the role of lower- and higher-level language skills in the development of listening and reading comprehension for prekindergarten through third grade for native-English speaking and English language learners derived from a cross-sequential longitudinal study.</li> <li>• A set of classroom-based interventions designed to increase comprehension skills in prekindergarten through third grade. Two approaches to instruction will be developed: a broad curriculum that targets all key aspects of language (broad version) and an in-depth curriculum that targets select skills (in-depth version). For prekindergarten ELLs, an intervention focusing on the use of bilingual instruction in Spanish and English will be developed.</li> <li>• Evidence of the efficacy of the LARCC interventions when implemented with a geographically and demographically diverse sample of students in prekindergarten through third grade.</li> </ul>
<p><b><i>Examining Effective Intervention Targets, Longitudinal Intensity, and Scaling Factors in PreK Through 5th Grade (FSU)</i></b></p> <ul style="list-style-type: none"> <li>• Identification of critical linguistic, cognitive, and basic word level components of reading for understanding using a cross-sequential longitudinal study to investigate the proportion of variance in oral and text comprehension explained by these components, and to examine how earlier developing skills are related to the development of later skills.</li> <li>• Increased understanding of the basic cognitive and linguistic processes that influence the development of reading for understanding using experimental and eye-tracking methodology. These processes include inhibitory processes, attention regulation, use of contextual clues, dialect shifting, and comprehension monitoring.</li> <li>• Classroom-based interventions designed to increase comprehension skills in social studies and science for students in kindergarten through fourth grade. These interventions build background and academic content knowledge.</li> <li>• A suite of Tier 2 interventions for use in grades prekindergarten through grade 4, each targeted to increase specific skills in areas related to reading for understanding, such as text structure, morphological awareness, and syntax.</li> <li>• Evidence of the efficacy of the fully developed interventions, both when implemented individually and in combination.</li> </ul>
<p><b><i>Catalyzing Comprehension Through Discussion and Debate (CCDD)</i></b></p> <ul style="list-style-type: none"> <li>• <i>Word Generation – Enhanced</i>, an intervention for use in grades 4 through 8 across content-area classes, designed to enhance student skills in reading for understanding in fourth to</li> </ul>

eighth grade both in paper and online formats.

- An extended version of *Strategic Adolescent Reading Intervention* (STARI) which is intended to help middle school students reading several grade levels below expectations build comprehension skills as well as basic reading skills.
- A set of assessments targeting perspective-taking, complex reasoning, and academic language for use with students in fourth to eighth grade.
- Deeper and more elaborated understanding of the ways and means by which teachers develop professional practices and pedagogy required to support complex reasoning, perspective taking, and academic language.
- Web-based resources to support teachers to improve instruction in each of these skills.
- Evidence of efficacy for all interventions, including tests of the benefits of experiencing *Word Generation – Enhanced* for multiple school years.

***Understanding Malleable Cognitive Processes and Integrated Comprehension Interventions for Grades 7-12 (PACT)***

- Increased fundamental understanding of the role of text processing, motivation and engagement, word knowledge, background knowledge, inferential skills, and working memory on reading comprehension.
- Increased knowledge of the malleable factors that distinguish between good and poor comprehenders.
- A set of classroom-based interventions designed to increase comprehension skills in middle and high school students in social studies and English Language Arts classes. Interventions incorporate a new approach to peer learning called *Team Based Learning* and are developed for use with the general student population, struggling readers, and English language learners.
- A prototype of a new intervention for struggling readers that integrates cognitive and motivational processes.
- A measure of motivation to read for use with adolescents.
- An intervention specifically designed for ninth-graders with basic decoding skills who are struggling with reading comprehension. grade.
- Evidence of the efficacy of the fully developed interventions for both immediate and longer-term reading outcomes.

***Reading for Understanding Across Grades 6 Through 12: Evidence-Based Argumentation for Disciplinary Learning (Project READI)***

- Increased knowledge of the skills and processes students engage in when building representations of texts from multiple sources in the disciplines of science, history, and English literature.

- Guidelines for the developmental appropriateness of tasks and texts for readers in sixth through twelfth grade.
- Exemplar curriculum modules for middle school and high school content area classes built on developmental progressions in history, science, and literature. Worked examples of the units, including videotaped instruction, student work samples, and lesson designs for use in professional development and dissemination.
- Professional development materials designed to increase teachers' skills in helping students engage in evidence-based argumentation.
- A set of formative assessments intended to document student learning and guide instructional planning for the evidence-based argumentation (EBA) curricular units.
- *SenseMaker*, a computer-based tool for supporting EBA in the disciplines, specifically Literature and History.
- Evidence of the efficacy of the intervention in improving reading for understanding in science, specifically 9th grade biology.

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

- A theoretical framework which describes the development of reading for understanding from prekindergarten through high school.
- A set of global, integrated summative assessments (GISA) for use in prekindergarten through grade 12 designed to assess reading for understanding. The GISA forms cover a student's proficiencies in constructing different levels of representations (e.g., textbase, situation, and multiple source), familiarity with text structure and genre differences, deployment of executive/metacognitive processes, and application of strategies for attaining a purpose for reading.
- A computer-adaptive battery designed to measure the component skills of reading in prekindergarten through grade 12. Intended primarily for use with non-proficient readers, this battery provides additional information that can be used to identify or rule out potential bases for comprehension difficulties and predict achievement trajectories.

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