National Center for Education Research (NCER)

The following are summaries of all grants, contracts, and cooperative agreements in excess of $100,000 funded through NCER and awarded in fiscal years 2011 and 2012, as required by the Education Sciences Reform Act of 2002.

Grants

Cognition and Student Learning

University of Kentucky Research Foundation
Principal Investigator: Elizabeth Lorch
Amount: $1,481,432
Award Number: R305A120171
Period of Performance: 3/1/12-2/28/15
Description: *A Narrative Comprehension Intervention for Elementary School Children At-Risk for Attention-Deficit Hyperactivity Disorder* — Children with Attention-Deficit Hyperactivity Disorder (ADHD) often have cognitive processing deficits which may contribute to their well-documented academic difficulties. Additionally, traditional treatments for ADHD do not show sustained positive impacts on children's academic outcomes. This project examines a set of cognitive impairments related to difficulties that children with ADHD demonstrate with narrative/story comprehension: (1) understanding the causal relations between events in a story; (2) using the characters' goals to understand the story; (3) identifying and using important information to guide story recall; and (4) making inferences and monitoring their own comprehension. In this project, the team will develop a supplemental after-school intervention aimed at improving these areas of impaired cognition and increasing narrative comprehension for second- and third-grade students at risk for ADHD.

Carnegie Mellon University
Principal Investigator: Vincent Aleven
Amount: $1,500,000
Award Number: R305A120734
Period of Performance: 9/1/12-8/31/15
Description: *Combining Advantages of Collaborative and Individual Learning with an Intelligent Tutoring System for Fractions* — In this project, the research team will combine features of separate individual and collaborative learning interventions with evidence of efficacy into a revised version of a current web-based intelligent tutoring system. Based on the Cognitive Tutor technology, the revised tutoring system will cover a comprehensive set of topics in fourth- and fifth-grade fractions learning.

Temple University
Principal Investigator: Jennifer Cromley
Amount: $906,433
Award Number: R305A120471
Period of Performance: 7/1/12-6/30/15

Description: *Coordinating Multiple Representations: A Comparison of Eye Gaze Patterns of High School Students Who Do and Do Not Enroll in Calculus* — Calculus is a critical "gateway" course for science, technology, engineering, and mathematics (STEM) learning in the undergraduate years. Better preparation at the high school level is associated with better achievement at the undergraduate level and increased persistence in STEM majors. Recent research has identified some variables that may explain why some students do not succeed and persist whereas others do. Prominent among these individual difference variables are spatial abilities, graph/table skills, background knowledge, cognitive capacities such as working memory and visuo-spatial working memory, prior math ability, and motivational variables. The overall purpose of this project is to explore the ways in which individual differences such as these are associated with students' ability to coordinate multiple representations of problems, a potentially malleable component of many calculus classrooms and texts.

University of North Carolina, Chapel Hill
Principal Investigator: Peter Ornstein
Amount: $1,199,987
Award Number: R305A120402
Period of Performance: 7/1/12-6/30/15
Description: *Developing a Teacher-Based Intervention Involving Memory-Relevant Language During Instruction* — Given the importance of remembering for success in school, it is essential that children develop strategies for remembering. With increases in age, children become more proficient in the use of strategies or plans for the storage and retrieval of information, but little research has explored whether teachers can influence children's acquisition of memory strategies. Previous longitudinal findings by this research team reveal clear differences in the use of "memory talk" across teachers, as well as linkages between teachers' *mnemonic style* and children's memory and academic performance. Children taught by teachers whose talk during instruction in mathematics and language arts reflects a "*high mnemonic"* orientation show better skill in the use of strategies than do their peers who are taught by teachers who are "*low mnemonic*" in their orientation. Moreover, the researchers have found that teachers can be taught to teach in either a high or a low *mnemonic style* and that the language of instruction was associated with differences in children's strategy knowledge and use. The purpose of the current project is to develop and pilot test an intervention intended to improve both teachers' *mnemonic style* and children's memory and academic performance.

Research Foundation of State University of New York (SUNY)
Principal Investigator: Kenneth Kurtz
Amount: $754,846
Award Number: R305A120554
Period of Performance: 7/1/12-8/31/15
Description: *Enhancing Learning and Transfer of Science Principles via Category Construction* — Poor academic performance has been linked to the tendency of students to focus on surface level characteristics of information during learning and when encountering new situations. To combat the often inaccurate and inaccessible concepts that result from this tendency, the researchers will develop an intervention based on an established psychological task known as category construction. The goal of category construction is to guide students in scientific thinking in much the same way that natural object categories (e.g., dog, chair) guide learners in making sense of everyday experiences. In this project, researchers will develop and test a set of

tasks in which middle school students who are learning evolution concepts classify relevant science text passages written on note cards by organizing them according to common characteristics.

Board of Trustees of the Leland Stanford Junior University
Principal Investigator: James Gross
Amount: $1,048,201
Award Number: R305A120671
Period of Performance: 7/1/12-12/31/14
Description: *Improving Academic Achievement by Teaching Growth Mindsets about Emotion* — Middle school represents a critical transition for students, and many students show a decline in academic achievement and emotional well-being during this time. At the same time, research suggests that students' beliefs about their ability to change their personal attributes (i.e., emotion regulation) play a key role in their academic achievement. While some students believe that personal attributes are fixed, those who believe their personal attributes are more malleable—students with a "growth mindset"—demonstrate superior academic performance. The purpose of this grant is to create an intervention designed to teach sixth- and seventh-graders a growth mindset of emotion regulation, with the goal of improving academic performance.

University of California, Los Angeles
Principal Investigator: Philip Kellman
Amount: $1,991,881
Award Number: R305A120288
Period of Performance: 7/1/12-6/30/16
Description: *Perceptual Learning Technology in Mathematics Education: Efficacy and Replication* — An important expertise in mathematics is the rapid pick-up of task-relevant patterns and structures. Yet such skills are seldom taught explicitly and studies of mathematics learning point to persistent problems in student learning, including difficulties in retention, failure to transfer, lack of fluency, and poor understanding of the conditions of application of knowledge that may be related to students' difficulty at identifying task-relevant patterns and structures in mathematics. The perceptual learning modules (PLMs), developed under a previous IES grant, incorporate principles of perceptual and adaptive learning in a set of modules that support students' ability to identify task-relevant patterns and structures as they seek to master conceptually difficult areas of the middle school mathematics curriculum related to fractions and measurement. In smaller scale classroom based efficacy studies, the PLM modules have shown robust and durable gains in student learning. The goal of this study is to test the efficacy of the PLMs to improve student learning.

Vanderbilt University
Principal Investigator: Gautam Biswas
Amount: $1,218,424
Award Number: R305A120186
Period of Performance: 6/1/12-5/31/15
Description: *SimSelf: A Simulation Environment Designed to Model and Scaffold Learners' Self-Regulation Skills to Optimize Complex Science Learning* — Cognitive, metacognitive, motivational, and affective self-regulated learning (SRL) processes have been identified as critical for solving complex science problems. Self-regulated learners monitor their own

cognitive activities and use appropriate regulatory processes when a problem has been detected. Developing and using these key processes is critical to academic achievement and lifelong learning. This project team will work with middle school students who tend to rely on a few suboptimal self-regulatory processes when learning science. Prior evidence suggests that adaptive scaffolding that addresses both science domain content and the processes of SRL to solve challenging science problems can enhance current learning while also preparing students for future learning. This research team will design, develop, and evaluate SimSelf, a new multi-agent, adaptive, scalable, computer-based learning environment with components that can track, model, and support students' metacognitive, motivational, and affective regulatory processes and improve content knowledge during complex science learning and problem solving.

Michigan State University
Principal Investigator: Kelly Mix
Amount: $1,531,180
Award Number: R305A120416
Period of Performance: 7/1/12-6/30/16
Description: *Spatial Ability as a Malleable Factor for Math Learning* — Previous research shows that children and adults who perform better on spatial tasks also perform better on tests of mathematical ability. However, the relation between spatial ability and math performance is not yet well understood. The purpose of this project is to clarify which aspects of spatial ability relate to which aspects of math performance, and gather evidence regarding whether training to improve spatial ability also improves math performance. Results will lay the groundwork for the development of future interventions for mathematics that are based on specific kinds of spatial training.

Northwestern University
Principal Investigator: Steven Franconeri
Amount: $1,598,108
Award Number: R305A120531
Period of Performance: 7/15/12-7/14/16
Description: *Teaching Perceptual and Conceptual Processes in Graph Interpretation* — Science inquiry standards and curricula emphasize the importance of developing the skills needed to comprehend graphically presented data throughout K–12 education. Learning to extract relational information from graphs requires specialized processing and both conceptual and perceptual skills. At the core of this study is the examination of the process by which the visual system transforms pictorial representations into a set of relations among objects. This project will explore how students extract these relations (e.g., through a serial inspection of one object or value at a time) and whether the order of this serial inspection influences comprehension relations among the objects—what the researchers call a "visual routine." The researchers will explore the role that learning specific visual routines for extracting relational information from graphs plays in acquiring scientific knowledge. They will also test whether these routines differ across ages and levels of expertise, and explore ways of teaching students to use routines effectively.

Johns Hopkins University
Principal Investigator: Mariale Hardiman
Amount: $687,690
Award Number: R305A120451
Period of Performance: 7/1/12-6/30/14
Description: *The Effects of Arts-Integration on Retention of Content and Student Engagement* — There is theoretical and empirical justification for the idea that arts-integrated instruction may improve student learning. For example, a number of researchers argue that the use of activities that incorporate the visual and performing arts may separately improve retention of instructional content by leveraging a variety of cognitive practices related to long-term memory, including: rehearsal, elaboration, generation, enactment, oral production of information, effort after meaning, emotional arousal, and the use of pictorial representations. All of these factors have been shown to increase the strength of long-term memory over and above what is achieved through purely textual presentations of information. In addition, arts-integrated instruction may be more engaging and enjoyable, especially for those who may not normally excel in school settings. However, prior research is limited. The goal of this project is to develop arts-integrated curricular units and matched control units that can be implemented in classrooms in the same school, and then to gather preliminary evidence about whether arts integration enhances student engagement and retention of instructional content.

University of North Carolina, Chapel Hill
Principal Investigator: Stephen Hooper
Amount: $3,106,789
Award Number: R305A120145
Period of Performance: 3/1/12-2/29/16
Description: *Written Language Problems in Middle School Students: A Randomized Trial of the Self-Regulated Strategy Development (SRSD) Model Using a Tier 2 Intervention* — Writing may be considered a problem solving process because it requires the higher order cognitive activities of planning and knowledge transfer. Success at writing may require explicit writing instruction, explicit self-regulation instruction (including the development of strategies such as goal setting and self-monitoring), and the development of positive self-efficacy about writing. The Self-Regulated Strategy Development (SRSD) model encompasses each of these aspects of learning to write. The purpose of the study is to examine the efficacy of a SRSD intervention in a randomized trial using small groups of sixth-grade students. The project has three goals: (1) to test the efficacy of the SRSD on the development of writing in students at-risk for writing difficulties; (2) to test whether the SRSD treatment effect is moderated by covariates such as students' gender, race, socioeconomic status, attention/hyperactivities, reading ability, classroom climate, and cognitive functioning; and (3) to test whether the positive impact of the SRSD intervention is mediated through changes in attention/executive function.

University of Georgia Research Foundation, Inc.
Principal Investigator: Martha Carr
Amount: $588,847
Award Number: R305A110920
Period of Performance: 7/1/11-6/30/14
Description: *A Longitudinal Study of 3-D Spatial Skills and Mathematics Development in Elementary School Children* — The research to date on the relationship between mathematics

skills and spatial skills has primarily focused on older students and adults. The goal of this project is to explore the development of and relationship between mathematics and spatial skills in early elementary school students. The team will consider whether (and if so, how) cognitive factors such as verbal working memory and inhibition, and student characteristics such as gender and income, moderate identified relationships. The researchers will examine how the pattern of development of spatial skills and number sense influence performance on fourth-grade state-mandated mathematics competency tests; and whether development trajectories vary as a function of gender, income status, inhibition and verbal working memory.

Florida State University
Principal Investigator: Faranak Rohani
Amount: $2,097,419
Award Number: R305A110121
Period of Performance: 3/1/11-2/28/14
Description: *An Alternative Statewide Assessment Strategy that Uses Test Results to Support Learning and Includes Measures of Problem Solving* — Research has found that assessments are most useful in supporting learning when they play a formative role (i.e., what to focus on to improve teaching and learning) instead of a summative one (i.e., what students already know). Thus, the purpose of this research is to develop a method of assessing students for teachers to use that balances the need for both summative and formative information. This new assessment strategy will allow teachers to measure the competencies measured by statewide assessments as well as those competencies that such assessments cannot measure but that are relevant to student achievement.

The Learning Partnership
Principal Investigator: Steven McGee
Amount: $1,107,530
Award Number: R305A110810
Period of Performance: 7/1/11-6/30/15
Description: *An Examination of the Qualities of Interactive Science Learning Environments That Promote Optimal Motivation and Learning* — Although interest and learning are believed to be intrinsically linked, a gap exists between research on learning and research on interest. The purpose of this project is to test the effects of task features within a web-based learning program on both learning and interest in order to address this gap, and to test whether these effects vary depending on pre-existing knowledge and interest.

University of Chicago
Principal Investigator: Sian Beilock
Amount: $1,157,723
Award Number: R305A110682
Period of Performance: 6/15/11-6/14/14
Description: *An Exploration of Malleable Social and Cognitive Factors Associated with Early Elementary School Students' Mathematics Achievement* — Individuals who have negative attitudes about mathematics are often high in mathematics anxiety. Math anxious individuals also tend to have poor math knowledge and often avoid math courses and math-related career paths. Thus, negative math attitudes can have an adverse effect on students' mathematics and science achievement. The goal of this project is to explore how young students' mathematics

anxiety and attitudes relate to their mathematics achievement, as well as the cognitive factors that mediate identified anxiety-achievement relations. In addition, the researchers will explore the relation between teachers' math anxiety and students' math achievement.

University of Houston
Principal Investigator: Paul Cirino
Amount: $1,468,996
Award Number: R305A110067
Period of Performance: 8/15/11-8/14/15
Description: *Arithmetical and Cognitive Antecedents and Concomitants of Algebraic Skill* — Algebra is a prerequisite for access in science, technology, engineering, and mathematics. Yet many high school students do not take or are unable to complete a course in algebra, and few high school students are proficient at multi-step problem solving and algebra. The purpose of this project is to explore if algebraic proficiency comprises both procedural skill and conceptual knowledge. Each of these skills is separate and measureable, and although they are related, these types of abilities have overlapping and different sets of immediate and earlier predictors. This project will address this gap by conducting a series of studies that explore students' conceptual and procedural knowledge of algebra and related concepts.

Carnegie Mellon University
Principal Investigator: Anna Fisher
Amount: $1,571,973
Award Number: R305A110444
Period of Performance: 7/1/11-6/30/15
Description: *Classroom Environment, Allocation of Attention, and Learning Outcomes in K–4 Students* — Current research on cognitive development suggests distractibility decreases markedly with age. However, young elementary-school children frequently learn in classrooms containing distracting visual materials not relevant to the on-going instruction (e.g., colorful posters, alphabet charts, and maps). The negative relationships between distractibility, off-task behavior, and learning outcomes have been documented in many contexts. The goal of the proposed research is to study in-depth the classroom visual environment, a malleable factor with the potential to influence distractibility, off-task behavior, and ultimately student achievement. The proposed project will focus on studying the degree to which visual materials that are not directly relevant to the on-going instruction present a distraction for young learners and how off-task behavior related to the classroom visual environment influences learning. Researchers will investigate how the specific features of visual displays in classroom environments influence distractibility, the mediating role that student effects play in different forms of distraction, and the degree to which students may acclimate to the classroom visual environments.

University of Michigan
Principal Investigator: Susan Neuman
Amount: $696,124
Award Number: R305A110038
Period of Performance: 7/1/11-6/30/13
Description: *Cognitively Challenging Child-Directed Language as a Mechanism for Literacy Development in Kindergarten* — This project seeks to explore mechanisms influencing children's vocabulary knowledge and literacy development. In particular, the researchers will explore how

children's development is related to their experiences with naturally occurring language. This research is designed to address how the cognitively challenging conceptual features of child-directed speech are related to children's language development, the interactive relations between parents' and teachers' speech and children's vocabulary knowledge and emergent literacy skills, and the contextual factors associated with parents' and teachers' use of cognitively challenging child-directed speech. By identifying the malleable factors associated with naturally occurring child-directed language and determining the relative influence of these factors on child outcomes, this exploratory research serves as an essential step for work aimed at improving literacy outcomes.

Boulder Language Technologies, Inc.
Principal Investigator: Rodney Nielsen
Amount: $1,816,191
Award Number: R305A110811
Period of Performance: 7/1/11-6/30/14
Description: *Comprehension SEEDING: Comprehension Through Self-Explanation, Enhanced Discussion and Inquiry Generation* — Self-explanation has been shown repeatedly to be a contributing factor in deep learning of curriculum material. Research on tutoring benefits suggests that modeling good question asking and reasoning skills encourages deeper student comprehension, yet much of classroom instruction continues to use a teacher-led, didactic approach. This project will develop and pilot test a computer-based system and instructional method for simultaneously engaging all classroom students in self-explanation of science concepts. The system will enable teachers to pose deep questions frequently throughout a class and to immediately organize discussion around the diverse views present in student responses.

Washington University, St. Louis
Principal Investigator: Henry Roediger III
Amount: $1,903,829
Award Number: R305A110550
Period of Performance: 8/1/11-7/31/14
Description: *Developing a Manual for Test-Enhanced Learning in the Classroom* — This project builds on earlier IES-funded work on Test-Enhanced Learning (TEL), a method for improving students' retention of knowledge in many different subject matters. Evidence to date indicates that TEL enhances student learning in science, social studies, and vocabulary (English and Spanish) in the middle school curriculum. In this project, researchers will create a TEL teacher manual for middle and high school teachers designed to help them integrate TEL into their classroom practices.

Arizona State University
Principal Investigator: Michelene Chi
Amount: $1,399,212
Award Number: R305A110090
Period of Performance: 8/15/11-8/14/14
Description: *Developing Guidelines for Optimizing Levels of Students' Overt Engagement Activities* — "Active learning" is often defined as engaging students in more meaningful learning. A variety of concrete activities are offered in the literature for ways that students can be more cognitively engaged while learning in a variety of instructional contexts, such as asking

questions and taking notes. However, there are no criteria for determining what constitutes a cognitively engaging activity. Also, there are no recommendations for which student activities are more engaging than others nor concrete guidelines for teachers to know how they can improve their routine activities so students become more engaged. To address these needs, the research team will develop guidelines that specify how teachers can modify student activities to optimize their engagement, provide this information to teachers in the form of a short web-based module, and evaluate student learning outcomes associated with teachers' improvement of students' activities.

Education Development Center, Inc.
Principal Investigator: Pamela Buffington
Amount: $1,597,694
Award Number: R305A110360
Period of Performance: 3/1/11-2/28/15
Description: *Eliciting Mathematics Misconceptions (EM2): A Cognitive Diagnostic Assessment System* — Understanding rational numbers is an important prerequisite for success in higher level mathematics, yet many students and adults often struggle with such concepts. In particular, they have great difficulty with fractions, decimals, and percentages. Despite this, there are currently few assessments that allow teachers to determine students' misconceptions. The purpose of the EM2 project is to address this need by applying recent advances in cognitive science and mathematics education research to develop EM2, a cognitive diagnostic assessment system appropriate for use in a variety of classroom settings and available online. This system will enable teachers to quickly and effectively diagnose commonly held student misconceptions and overgeneralizations in the areas of fractions, decimals, and operations with fractions and decimals.

Chancellor, Masters, and Scholars of the University of Cambridge
Principal Investigator: Michelle Ellefson
Amount: $1,049,094
Award Number: R305A110932
Period of Performance: 7/1/11-6/30/14
Description: *Exploring the Malleability of Executive Control* — The link between executive control and achievement has prompted researchers to investigate whether executive control (EC) is malleable. A handful of studies on preschool and early elementary school programs incorporating techniques designed to improve executive control in the curriculum demonstrate significant improvements in early literacy and numeracy, and some even indicate sustained achievement gains in subsequent years. However, research exploring the malleability of executive control in the upper elementary grades is limited. As such, the current project will explore the malleability of EC in the context of an experimental training program that incorporates a variety of executive control tasks in the process of learning to play chess, and will monitor how changes in executive function are related to school achievement.

Regents of the University of Colorado
Principal Investigator: Donna Caccamise
Amount: $1,694,353
Award Number: R305A110467
Period of Performance: 7/1/11-6/30/14

Description: *Fostering Comprehension and Knowledge-Building in Middle-School Struggling Readers* — This project will develop and refine an intervention designed to improve reading for struggling readers through explicit comprehension instruction in a content-area context. The intervention, called Literacy Navigator, will teach readers how to build a coherent representation of the informational text they are reading and how to integrate the new content with their existing knowledge. The intervention will be designed for use in remedial classes to help students who have adequate decoding skills but poor comprehension skills. Instructional materials will be developed along with accompanying professional development for teachers.

University of Notre Dame
Principal Investigator: Nicole McNeil
Amount: $565,456
Award Number: R305A110198
Period of Performance: 9/1/11-8/31/14
Description: *Improving Children's Understanding of Mathematical Equivalence* — Mathematical equivalence is widely regarded as one of the most important concepts for developing children's algebraic thinking. Although decades of research have shown that children struggle to understand this fundamental concept, researchers have yet to develop an intervention that produces mastery-level understanding. The researchers in this project will build on the success of their previous IES development grant to develop and pilot test a comprehensive intervention that helps elementary school children achieve a mastery-level understanding of mathematical equivalence.

Vanderbilt University
Principal Investigator: David Dickinson
Amount: $1,691,934
Award Number: R305A110128
Period of Performance: 8/1/11-7/31/14
Description: *Increasing Vocabulary in Preschoolers: Using Cognitive Science to Guide Pedagogy* — The purpose of this project is to create and test a novel approach to building preschool teachers' abilities to foster vocabulary and therefore broader language skills among preschool children from low-income homes. Researchers will identify instructional methods that can be used to teach vocabulary and foster language learning through book reading followed by guided play (i.e., play in which an adult subtly offers input to children's play activities). After identification of methods is complete, the team will then refine development of intervention components and study the impact of the conditions on word learning. At the conclusion of this project, the team intends to have a set of optimal vocabulary learning activities that teachers can use after observing and being coached by a language specialist, and that will ultimately support improved vocabulary of preschool children.

University of South Florida
Principal Investigator: Douglas Rohrer
Amount: $901,694
Award Number: R305A110517
Period of Performance: 9/1/11-8/31/14
Description: *Interleaved Mathematics Practice* — In most U.S. mathematics textbooks, the majority of practice problems following a lesson are devoted to that same lesson. This "heavy

repetition" approach gives students many problems on the same topic in immediate succession. An alternative approach is to rearrange the practice problems so that a portion of each assignment includes "interleaved" problems from previous topics. Evidence suggests that interleaving different kinds of practice problems drawn from other lessons in the textbook, without adding or changing problems, can improve test scores. The purpose of this project is to develop, refine, and test a simple, inexpensive practice strategy that teachers could use to interleave practice problems.

University of Richmond
Principal Investigator: David Landy
Amount: $1,117,614
Award Number: R305A110060
Period of Performance: 6/1/11-5/31/14
Description: *Learning the Visual Structure of Algebra Through Dynamic Interactions with Notation* — Algebra is a foundational domain for understanding advanced mathematics. However, many middle and high school students fail to understand basic algebraic concepts. Much of the difficulty stems from failures to achieve algebraic literacy—a robust, intuitive understanding of how to create, transform, and interpret statements expressed in standard algebraic notation. The goal of this project is to develop and explore the feasibility of an intervention that uses a set of verbal, physical, and computer-based visualizations to enhance middle, high school, and remedial college students' understanding of algebraic notations.

University of Oregon
Principal Investigator: Helen Neville
Amount: $1,087,931
Award Number: R305A110397
Period of Performance: 7/1/11-6/30/14
Description: *Longitudinal Follow-up of Successful Parent/Child Intervention in Pre-school Children At Risk for School Failure* — Children in poverty are at risk for school failure, which leads to negative long-term consequences both for them and for society. There is a strong need for evidence-based educational programs to ameliorate socioeconomic status disparities in academic achievement. With prior IES funding, researchers developed an intervention, Parents and Children Making Connections-Attention (PCMC-A), based on research on the development and neuroplasticity of attention as well as parenting and family dynamics. Research has shown that PCMC-A improves family dynamics, child cognition, and brain function and that these gains last at least 18 months. In this project, researchers propose a longitudinal follow-up of effects of participating in the intervention during preschool over the following 3 years to determine whether gains persist from preschool to early elementary school.

Regents of the University of California
Principal Investigator: Jonathan Schooler
Amount: $1,702,662
Award Number: R305A110277
Period of Performance: 3/1/11-2/28/15
Description: *Mind Wandering During Reading* — Good reading comprehension requires that the readers attend to the material in front of them. However, despite readers' best intentions, there are times when their minds wander, and they find that although they have "read" a span of text,

they did not actually process the content. This "mind wandering" is common and can affect all levels of language processing, including understanding words and parsing sentences. The current project will explore mind wandering in the context of reading to determine the best methods for studying this phenomenon and for creating interventions to help overcome or avoid the effects of it. Specifically, the project will examine the role of meta-cognitive monitoring of mind wandering, and will identify behavioral (e.g., eye movements) and psychophysiological (e.g., pupil dilation and heart rate) indicators of mind wandering.

Regents of the University of Minnesota
Principal Investigator: Ann Masten
Amount: $1,484,771
Award Number: R305A110528
Period of Performance: 7/1/11-6/30/14
Description: *Promoting Executive Function to Enhance Learning in Homeless/Highly Mobile Children* — The goal of this project is to improve student learning by applying recent advances in developmental cognitive neuroscience to create an innovative intervention that targets executive function (EF) skills in impoverished preschoolers, particularly for those who are homeless and highly mobile (HHM). These children are at serious risk for poor EF skills, often show low levels of school achievement, are a substantial portion of many urban school district enrollments, and have limited access to intervention programs and research. Evidence in developmental cognitive neuroscience indicates that EF skills are fundamental for learning, predict early school success in HHM, depend on brain development, are compromised by adversity, and respond to targeted intervention. Researchers plan to develop and examine the promise of an innovative intervention to promote EF skills as a means to enhance school readiness, learning, and early school success in HHM children and similar preschoolers at high risk for school failure.

Purdue University
Principal Investigator: Jeffrey Karpicke
Amount: $1,600,000
Award Number: R305A110903
Period of Performance: 7/1/11-6/30/15
Description: *Retrieval-Oriented Learning Strategies* — Many students study using passive techniques, such as rereading their notes and textbooks, and choose not to use study techniques that require active retrieval of information, such as answering questions at the end of chapter. However, retrieval practice is a powerful learning strategy and has been found to increase test performance with undergraduate learners. The objective of this research project is to identify the best practices for implementing retrieval-oriented learning strategies with elementary school students in science courses. First, the team will identify the best ways to use concept mapping as a retrieval practice activity. Second, the team will identify the best ways to have students generate and then use their own retrieval cues to aid them while they practice retrieval.

University of Oregon
Principal Investigator: Helen Neville
Amount: $3,363,271
Award Number: R305A110398
Period of Performance: 7/1/11-6/30/15

Description: *Training Attention in At-risk Preschoolers: Expansion of Our Successful Program to a Wider Population within Head Start* — Children from low socioeconomic backgrounds often begin formal schooling at greater risk for negative social and academic outcomes. In recent years, researchers have identified children's early development of attention skills as an important indicator of later school success. This research team developed an evidence-based intervention, Parents and Children Making-Connections-Attention (PCMC-A), under a previous IES grant award. The intervention led to improvements in children's early literacy skills, receptive language abilities, and nonverbal intelligence. However, the original study population did not include Latino families. The purpose of the current study is to: (1) adapt and implement the intervention with a sample of Latino families, and (2) replicate the efficacy of the intervention with this sample. Adapting the intervention for Latino families and testing its efficacy in this large and growing segment of the population who are at high risk for school failure is a next step before scaling up the intervention to reach additional Head Start programs and, ultimately, all at-risk preschoolers.

Carnegie Mellon University
Principal Investigator: John Anderson
Amount: $1,542,658
Award Number: R305A100109
Period of Performance: 3/1/10-2/28/14
Description: *A Theory-Driven Search for the Optimal Conditions of Instructional Guidance in Algebra Tutor* — The purpose of this research is to use efficient and thorough methods to better understand the cognitive processes occurring as students work algebra problems in the context of the Carnegie Learning Algebra Tutor software. The researchers will use computer-generated, simulated students to find the optimal conditions of instructional guidance, such as how much direct instruction or guided discovery learning and feedback is needed for optimal learning to occur. The simulated students will interact with computer-based tutoring systems to predict the learning outcomes of various instructional conditions. The outcome of this exploration study will position the researchers to develop and test an intervention in the future on the basis of the predictions of the synthetic student model.

University of Colorado, Denver
Principal Investigator: Maria Ruiz-Primo
Award Number: R305A100571
Amount: $1,453,958
Period of Performance: 7/1/10-6/30/14
Description: *Developing and Evaluating Measures of Formative Assessment Practices* — There is a substantial and growing body of evidence of a significant impact on student learning when teachers and students use assessment results formatively to shape instruction. Most of the research on formative assessment focuses on its effects on student learning rather than on how good formative assessments are constructed and utilized. This project focuses on the development and technical evaluation of instruments to measure the quality of formative assessment practices currently used in middle school science classrooms.

University of Georgia Research Foundation, Inc.
Principal Investigator: Scott Ardoin
Amount: $1,513,246
Award Number: R305A100496
Period of Performance: 8/1/10-7/31/14
Description: *Exploring Reading Fluency and Its Underlying Behavior* — Extensive evidence exists demonstrating the benefit of repeated reading for increasing the oral reading rates of elementary students. As a result of the research base and an increased interest in promoting students' reading rate with accuracy, schools are increasingly using repeated reading instructional procedures as a means of increasing students' reading fluency. The purpose of this study is to explore the relationship between malleable instructional practices aimed at improving fluency, changes in fluency, and changes in underlying reading behavior (e.g., reading for meaning) as measured through eye-tracking.

University of Pittsburgh
Principal Investigator: Sandra Katz
Amount: $1,318,110
Award Number: R305A100163
Period of Performance: 6/1/10-5/31/13
Description: *Improving a Natural-Language Tutoring System that Engages Students in Deep Reasoning Dialogues about Physics* — Recent studies show that U.S. students lag behind students in other developed countries in math and science. Because one-on-one tutoring has been shown to be a highly effective form of instruction, many educators and education policy makers have looked to intelligent tutoring systems as a means of providing cost-effective, individualized instruction to students that can improve their conceptual understanding and problem-solving skills in math and science. The goal of this project is to build an enhanced version of a natural-language dialogue system that engages students in deep-reasoning and reflective dialogues after they solve quantitative problems in Andes, an intelligent web-based tutoring system for physics.

Temple University of the Commonwealth System of Higher Education
Principal Investigator: Julie Booth
Amount: $1,044,326
Award Number: R305A100074
Period of Performance: 7/1/10-6/30/13
Description: *Improving Students' Skill at Solving Equations Through Better Encoding of Algebraic Concepts* — Students and teachers have considerable trouble overcoming misconceptions in algebra. These misconceptions, if not addressed, will have long-term negative consequences for students' mathematics achievement. There is a growing body of research showing that students benefit from instruction that includes incorrect examples. The proposed study will develop a computer program designed to overcome misconceptions through the use of incorrect examples, which will be compared to the use of correct examples.

University of California, San Diego
Principal Investigator: Garrison Cottrell
Amount: $2,372,289
Award Number: R305A100389
Period of Performance: 3/1/10-2/28/14

Description: *Interactions Between Visual and Auditory Interventions for Reading* — Many students struggle in reading and deficiencies in auditory and visual timing impair reading ability, particularly those students identified with dyslexia. In this project, the researchers will use a randomized control trial to evaluate two interventions for dyslexia: *FastForWord,* which targets the temporal dynamics of the auditory pathway to improve speech perception, and hence phonological representations; and the *Path To Reading,* which targets the temporal dynamics of the visual pathway to improve visual perception. The researchers' main interest is whether the two programs, which attempt to improve temporal processing in completely separate modalities, can be combined into one two-pronged intervention that results in even greater benefit. Secondary purposes include further validating *FastForWord* and *Path To Reading* using a Response to Intervention approach, and trying to determine what subsets of students would benefit most from training with *FastForWord* alone, *Path To Reading* alone, or a combination of the two.

Carnegie Mellon University
Principal Investigator: David Klahr
Amount: $1,502,231
Award Number: R305A100404
Period of Performance: 8/1/10-7/31/13
Description: *Promoting Transfer of the Control of Variables Strategy in Elementary and Middle School Children via Contextual Framing and Abstraction* — Students from third to seventh grade have a surprisingly poor understanding of the basic procedural and conceptual aspects of experimental design (i.e., Control of Variables Strategy or CVS). Although students' understanding of CVS does improve as a result of direct instruction, students' performance on tests of experimental design is typically low, even when a repeated tutoring cycle of instruction is used. The purpose of this project is to determine which elements are critical to support the teaching and learning of CVS. Throughout the proposed studies, the researchers will use direct instruction coupled with student-constructed responses, but will vary the framing and context in which instruction and assessment occur. All instruction will be delivered by variants of a computer tutor (Training in Experimental Design [TED1]) developed and evaluated under a prior IES-funded award to this research team.

New York University
Principal Investigator: Clancy Blair
Amount: $3,521,227
Award Number: R305A100058
Period of Performance: 5/1/10-4/30/14
Description: *Tools of the Mind: Promoting Self-Regulation and Academic Ability in Kindergarten* — Many children enter school without the self-regulation needed to support learning and academic achievement in the early grades of schooling. The purpose of this project is to experimentally evaluate the efficacy of an early childhood curriculum, *Tools of the Mind*, in improving the self-regulation abilities, academic achievement, and social-emotional development of young children. The team seeks to determine if improvements in academic achievement can be accounted for (or mediated) by changes in students' executive functioning, self-regulation, and social-emotional skills. Unlike other self-regulation development programs, *Tools of the Mind* integrates activities intended to promote self-regulation with instructional activities intended to develop skills in literacy, mathematics, and social competence.

Tufts Medical Center
Principal Investigator: Naomi Steiner
Amount: $2,088,256
Award Number: R305A090100
Period of Performance: 3/1/09-2/28/13
Description: *An Efficacy Study of Two Computer-Based Attention Training Systems in Schools* —Clinically significant attention problems in children can present a considerable obstacle to learning in school. Because of concerns over medication, many parents and school systems are increasingly turning to alternative forms of treatment for Attention Deficit/Hyperactivity Disorder (ADHD), including computer-based attention training systems. The aim of this project is to evaluate the efficacy of two computer-based attention training systems in schools. One program uses electroencephalography biofeedback to train children with ADHD to focus on a task, and the other uses a standard computer format for cognitive retraining.

Early Learning Programs and Policies

Oregon Social Learning Center
Principal Investigator: Katherine Pears
Amount: $3,198,210
Award Number: R305A120391
Period of Performance: 9/1/12-8/31/16
Description: *A Randomized Efficacy Trial of the Kids in Transition to School (KITS) Program to Improve the School Readiness of Children in Disadvantaged Communities* — The purpose of this project is to conduct a randomized control trial of the *Kids in Transition to School* (KITS) program, an intervention designed to improve the early literacy, prosocial, emotional, and behavior regulation skills of at-risk children. Designed to support at-risk children and their families during the transition period between prekindergarten and kindergarten, the KITS program provides a high-intensity, short-term intervention that can be delivered to children before and during the transition to kindergarten. Two prior randomized control trials, one of which was funded by IES, have demonstrated that the KITS program is effective at enhancing the school readiness skills of children in foster care and children with developmental disabilities and behavior problems. The proposed study will extend the existing evidence base for the KITS program and evaluate the impact of the intervention with a sample of children and families from socioeconomically disadvantaged backgrounds.

Education Development Center, Inc.
Principal Investigator: Nancy Clark-Chiarelli
Amount: $1,484,675
Award Number: R305A120193
Period of Performance: 03/01/12-2/28/15
Description: *Cultivating Young Scientists: Expanding Foundations of Science Literacy* — Teaching children how to think scientifically in the preschool years has the potential to address an existing achievement gap in early science and provide all children with the skills necessary to continue learning and thinking critically throughout the school years. Unfortunately, early childhood teachers typically lack content and pedagogical knowledge in science, and are not prepared to provide developmentally appropriate experiences that support children's early

science learning and readiness. In order to address these challenges, the researchers will develop and test the *Cultivating Young Scientists* intervention, which includes a professional development program for early childhood educators, science curricular content, and a set of formative assessment tools. The intervention is intended to lead to an increase in teachers' use of science instructional content and practices in preschool settings and improvements in young children's science content knowledge and scientific thinking skills.

University of Virginia
Principal Investigator: Mable Kinzie
Amount: $3,499,427
Award Number: R305A120631
Period of Performance: 7/1/12–6/30/16
Description: *Efficacy Trial of MyTeachingPartner-Mathematics and Science Curricula and Implementation Support System* — The *MyTeachingPartner-Mathematics and Science (MTP-Mathematics and Science)* curricula and accompanying professional development system was previously developed, refined, and pilot tested with prior IES funding. The intervention supports early childhood educators in delivering mathematics and science instruction in prekindergarten settings and is intended to improve young children's knowledge and understanding of mathematics and science concepts. In this project, the researchers will conduct a randomized study to evaluate the impact of the *MTP-Mathematics and Science* curricula and professional development supports on early childhood teachers' instructional practices and children's early mathematics and science knowledge and skills.

Trustees of Columbia in the City of New York
Principal Investigator: Helena Duch
Amount: $1,478,693
Award Number: R305A120783
Period of Performance: 7/1/12-6/30/15
Description: *Getting Ready for School: An Integrated Curriculum to Help Teachers and Parents Support Preschool Children's Early Literacy, Math, and Self-Regulation Skills* — Preschool children need language and literacy, mathematics, and self-regulation skills in order to be ready for school. While many curricula focus on one or two of these skills, none takes a fully integrated approach to supporting parents and early childhood teachers in fostering these skills in young children. The purpose of this project is to further develop and expand an existing school readiness curriculum, *Getting Ready for School* (GRS). The current version of the curriculum targets parents and focuses on promoting disadvantaged preschoolers' literacy and math skills. The GRS will be revised and expanded to include self-regulation content and supports for teachers. It is expected that this integrated curriculum will lead to improvements in prekindergarten children's social and academic skills.

Yale University
Principal Investigator: Susan Rivers
Amount: $1,499,812
Award Number: R305A120172
Period of Performance: 3/1/12 - 2/28/15
Description: *Improving School Readiness with Emotional Literacy: Developing the RULER Preschool Program* — The goal of this project is to create a developmentally appropriate

intervention to promote emotional literacy for preschool-aged children. By teaching young children to recognize, understand, label, express, and regulate emotion (i.e., emotional literacy), the intervention is expected to support the development of strong self-regulatory and social skills in preschool and in turn help children to benefit from academic instruction. The proposed intervention, the RULER-PS (Recognize, Understand, Label, Express, and Regulate emotions) program, will be developed as a preschool version of an existing social emotional skills intervention program, the RULER-K-*8th grade* program. It is expected that the RULER-PS intervention will improve children's emotional literacy skills and have a direct effect on children's development of self-regulation, social competence, and academic skills.

Regents of the University of Minnesota
Principal Investigator: Scott McConnell
Amount: $1,599,980
Award Number: R305A120449
Period of Performance: 7/1/12–6/30/16
Description: *Research and Development of Spanish Individual Growth and Development Indicators (S-IGDIs): Early Literacy Identification Measures for Spanish-English Bilingual Children* — The need to understand and prevent low academic achievement in the growing student population of English language learners is one the greatest challenges facing educators today. Existing research provides limited information regarding how trajectories of early literacy and language development in Spanish-English bilingual children predict later literacy achievement. In addition, early childhood programs that seek to promote children's later literacy performance have few tools available to help them identify and address the language and literacy skills of Spanish-English bilingual children. The purpose of this project is to develop and validate an early literacy assessment, *Spanish Individual Growth and Development Indicators* (S-IGDIs) that will meet rigorous psychometric standards for scientific and clinical use. Measures, such as this one, will be used to guide instructional decisions, including determining candidacy for tiered early intervention.

University of Virginia
Principal Investigator: Jason Downer
Amount: $1,273,577
Award Number: R305A120323
Period of Performance: 8/1/12-7/31/15
Description: *Using Validated Measures of Children's Engagement with Teachers, Peers, and Tasks to Guide Teachers' Response Toward Children with Emotional and Behavioral Challenges* — The purpose of this project is to develop a set of professional development resources designed to help prekindergarten teachers more easily identify and understand children's engagement in the classroom context and more efficiently choose appropriate evidence-based strategies that will increase children's self-regulation skills. The project team will develop a teacher consultation model, *Learning to Objectively Observe Kids* (LOOK), which is intended to improve early childhood teachers' observational skills; increase their understanding of the interdependence between children's behavioral strengths/challenges and the resources available to teachers in the classroom; and help them use the information to meet the needs of young children who display challenging behaviors. By changing teacher practice, it is expected that children's social-emotional competence and academic skills will improve.

Michigan State University
Principal Investigator: Ryan Bowles
Amount: $1,800,843
Award Number: R305A110293
Period of Performance: 7/1/11-6/30/15
Description: *Development and Validation of the Narrative Assessment Protocol (NAP)* — Professionals who work with young children have access to very few standardized and validated tools for assessing young children's narrative abilities. This is true despite the fact that narrative abilities are an important aspect of early language development that can be reliably measured and improved through intervention. The purpose of this project is to develop and validate a usable, standardized, and psychometrically sound measurement tool, the *Narrative Assessment Protocol* (NAP), for direct assessment of the narrative skills of 3- to 6-year-old children. The project has three goals: (1) to develop the *Narrative Assessment Protocol* (NAP); (2) to determine the psychometric characteristics of the NAP; and (3) to ensure the usability of the NAP for a range of end users and to promote its scalability through web-based dissemination.

University of Texas Health Science Center at Houston
Principal Investigator: Jason Anthony
Amount: $1,701,261
Award Number: R305A110549
Period of Performance: 7/1/11-6/30/15
Description: *Development of the School Readiness Curriculum Based Measurement System* — A substantial number of children arrive at elementary school without the skills essential for academic success. Early identification and regular monitoring of children's learning in critical school readiness domains are important features of programs that help close the achievement gap. Unfortunately, many existing language literacy measures designed for use with preschoolers have limited reliability and validity, as well as floor and ceiling effects. Most of the existing measures do not cover a range of language and literacy skills, and do not allow for comparison of competencies in English and Spanish. This project will address this weakness and develop a curriculum-based school readiness measure addressing language and literacy skills that can be used with English- and Spanish-speaking 3- to 5-year old children.

George Mason University
Principal Investigator: Susanne Denham
Amount: $1,567,774
Award Number: R305A110730
Period of Performance: 9/1/11-8/31/15
Description: *Early Childhood Teachers as Socializers of Young Children's Emotional Competence* — Researchers have explored the contribution of parental socialization of emotion to their children's emotional competence—how they model emotional expressiveness, react to their children's emotions, and intentionally teach their children about emotions. However, limited research is available about how early childhood educators promote such emotional competence. The proposed project constitutes a first major effort to move from understanding of parental socialization of emotion to teachers' contributions in the area. The purpose of this study is to examine teachers' emotion socialization methods and children's emotional competence by exploring teachers' views of emotional competence; examining socialization of emotion and

short-term indicators of children's school success; and examining socialization of emotion and long-term school success.

President and Fellows of Harvard College, Graduate School of Education
Principal Investigator: Hirokazu Yoshikawa
Amount: $699,881
Award Number: R305A110035
Period of Performance: 3/1/11-2/28/13
Description: *Effective Early Childhood Education Programs: Meta-Analytic Lessons from High Quality Program Evaluations* — The goal of this project is to identify malleable early childhood education program characteristics associated with child achievement, cognition, antisocial behavior, and positive behavior. Researchers propose to use meta-analytic and regression-based methods to answer three key questions: (1) What structural characteristics of early education programs are associated with larger program impacts on achievement, cognition, antisocial behavior and positive behavior? (2) Is the addition of parent-focused services to early childhood education programs associated with larger program impacts on children? If so, what types of parent-focused services are associated with the largest added benefits? and (3) How are starting age, duration and length of follow-up in early childhood program evaluations associated with size of effects on children's achievement, cognition, antisocial behavior and positive behavior?

Vanderbilt University
Principal Investigator: Sandra Wilson
Amount: $586,411
Award Number: R305A110074
Period of Performance: 4/1/11-3/31/13
Description: *Exploring the Predictors of School Readiness: Meta-analysis of Longitudinal Research* — Children's achievement trajectories appear to be established very early in schooling, with early successes promoting later achievement and early difficulties becoming entrenched. Given this, it is especially important to identify and understand the developmental precursors of school outcomes that are present in the early childhood period. Knowledge of these factors can be used to identify the children most in need of remedial services and to guide the design of prevention programs aimed at offsetting the more significant, malleable risk factors likely to influence school outcomes. The researchers for this study have created a large meta-analytic database of longitudinal studies of school outcomes, but analyses have not yet focused specifically on school readiness. The purpose of this research study is to complete a systematic meta-analysis of the findings of the full range of longitudinal studies that will provide information about the predictive relationships of facets of school readiness to later school performance. A meta-analysis of the predictive relationships between risk and protective factors and school readiness will also be conducted.

High/Scope Educational Research Foundation
Principal Investigator: Larry Schweinhart
Amount: $2,102,024
Award Number: R305A100483
Period of Performance: 7/1/11-6/30/15
Description: *Numbers Plus Efficacy Study* — Improving the math proficiency of young children depends upon two factors: appropriate curriculum that sequences early learning in key content

areas and instructional competence of teachers. Unfortunately, the ability of teachers to deliver appropriate math instruction is hampered by their anxiety about teaching math, attitudes about math's importance in the curriculum, lack of knowledge regarding early math development, and inability to identify and apply appropriate teaching strategies. This project will gather information about the efficacy of the research-based *Numbers Plus* curriculum that is possible when teachers are given appropriate professional development support.

University of Delaware
Principal Investigator: Roberta Golinkoff
Amount: $2,897,846
Award Number: R305A110284
Period of Performance: 6/1/11-5/31/15
Description: *Using Developmental Science to Create a Computerized Preschool Language Assessment* — The purpose of this project is to develop a reliable, valid, norm-ready, research-driven, and culturally sensitive computer-based language assessment for children 3 to 5 years old that can be administered in 20 minutes. The preschool language assessment tool is intended to be an easily administered, automatically scored, 48-item tool that is appropriate for use by teachers, paraprofessionals, and professionals. The tool will have the capacity to quickly and automatically derive individual and group language profiles in two areas of competency: (1) vocabulary and word learning strategies, and (2) grammar and the use of syntax in comprehension. These competencies comprise a broad profile of verbal abilities that reflect both the products of learning, or milestones, and learning processes or strategies.

Texas A&M Research Foundation
Principal Investigator: Jorge Gonzalez
Amount: $2,608,581
Award Number: R305A110638
Period of Performance: 7/1/11-6/30/15
Description: *WORLD Efficacy Study* — The *Words of Oral Reading and Language Development* (WORLD) is a shared book reading intervention previously developed, piloted, and refined with prior IES funding. This intervention is designed to develop and accelerate science and social studies content-related vocabulary and background knowledge in preschool-aged children for later reading with comprehension. The research team will conduct a randomized study to evaluate the impact of the WORLD intervention on school readiness outcomes for children enrolled in public prekindergarten and Head Start preschool programs.

University of Virginia
Principal Investigator: Bridget Hamre
Amount: $1,475,574
Award Number: R305A100154
Period of Performance: 6/1/10-5/31/13
Description: *Development of an Online Course to Improve Teachers' Use of Effective Teacher-Child Interactions During Delivery of Early Literacy and Language Instruction* — Research has shown that the quality of preschool teachers' interactions with their students contributes to children's school readiness. Teacher professional development interventions that support teachers' use of effective instructional practices may be one way to promote children's development of pre-academic skills that are related to later school success. Few studies have

systematically tested the effects of coursework on teacher-child interactions or child outcomes. The purpose of this project is to develop and document the feasibility of an online course designed to build teachers' content knowledge about and use of effective teacher-child interactions, particularly those interactions known to support early literacy and language development.

Miami Museum of Science
Principal Investigator: Judy Brown
Amount: $2,999,904
Award Number: R305A100275
Period of Performance: 3/1/10-2/28/14
Description: *ECHOS: Early Childhood Hands on Science* — In recent years, early childhood education has emphasized children's school readiness in the domains of language, literacy, and mathematics. To date, there has been limited systematic focus on science education in preschool. The purpose of this project is to conduct an efficacy study of a comprehensive early childhood science curriculum and professional development program, ECHOS, developed with prior IES funding.

University of Miami
Principal Investigator: Rebecca Shearer
Amount: $1,424,795
Award Number: R305A100233
Period of Performance: 7/1/10-6/30/14
Description: *Extending the Cultural and Linguistic Validity of the Adjustment Scales for Preschool Intervention (ASPI) for Low-Income, Latino Children* — Latino children, many of whom are Spanish-speaking English language learners, are a growing segment of the preschool population. It is important for preschool educators and researchers to have access to valid and reliable measures of the school readiness skills of Latino preschool children. This includes measures of academic skills and assessments of emotional and behavioral adjustment. Although there are measures of children's early academic skills, few reliable and valid Spanish-language assessments of emotional and behavioral adjustment are available for use with low-income Latino preschoolers. The purpose of this study is to adapt the English version and develop a Spanish version of the *Adjustment Scales for Preschool Intervention* (ASPI) for use with diverse bilingual Spanish-speaking populations. The ASPI is a teacher report measure of children's emotional and behavioral (e.g., aggression, inattention/hyperactivity, withdrawn/low energy) adjustment in the preschool classroom.

Stanford University
Principal Investigator: Susanna Loeb
Amount: $607,864
Award Number: R305A100574
Period of Performance: 7/1/10-6/30/12
Description: *The Availability of Early Childhood Education and Care in the United States: Exploring Links Between Policy, Availability and Effects, 1990-2005* — The purpose of this study is to examine the availability of early childhood education and care, explore the extent to which policies and regulations impact supply, and examine the link between supply and child outcomes. This study will explore childcare regulations across all types of early childhood

education and care settings including family daycare homes, private child care, Head Start, and state-funded preschool programs. The research team will address the policy and practice implications of the study findings.

Oregon State University
Principal Investigator: Megan McClelland
Amount: $1,600,004
Award Number: R305A100566
Period of Performance: 7/1/10-6/30/14
Description: *Touch Your Toes! Developing a New Measure of Behavioral Regulation* — Children's social skills at the beginning of kindergarten are related to their academic achievement and the quality of their peer relationships. he goal of this project is to develop a reliable and valid screening measure of children's behavioral regulation skills that can be easily administered in school-based settings and is predictive of children's school outcomes.

Education Development Center, Inc.
Principal Investigator: Nancy Clark-Chiarelli
Amount: $2,999,841
Award Number: R305A090114
Period of Performance: 3/1/09-2/28/13
Description: *Assessing the Efficacy of a Comprehensive Intervention in Physical Science on Head Start Teachers and Children* — The purpose of this project is to test the efficacy of the *Foundations of Science Literacy* (FSL) intervention, a professional development program that was developed for use with Head Start teachers. By focusing on the Head Start community, FSL directly addresses the achievement gap in early science education by providing a framework for teachers to learn and implement preschool science instructional practices in classrooms serving children from low-income backgrounds. This study will examine the impact of the FSL professional development program on teachers' attitudes toward and knowledge of physical science content, teachers' classroom instructional practices, and children's understanding of physical science content.

Florida State University
Principal Investigator: Christopher Lonigan
Amount: $1,773,387
Award Number: R305A090169
Period of Performance: 4/1/09-3/31/13
Description: *Development of a Comprehensive Assessment System for Spanish-Speaking English Language Learner's Early Literacy Skills* — In the United States, Spanish-speaking children both constitute the largest English language learner (ELL) subgroup and are the fastest growing school-age population. Findings from the National Assessment of Educational Progress (NAEP 2007) suggest that English language learners are at risk for academic failure throughout their school experience. One impediment to improving instruction for ELL students is the lack of validated measures for use with Spanish-speaking ELL preschoolers. The purpose of this study is to develop and validate both a comprehensive assessment instrument and a screening measure for Spanish-speaking ELL preschool children's early literacy skills for use by early childhood educators and other professionals.

Vanderbilt University
Principal Investigator: Dale Farran
Amount: $3,413,233
Award Number: R305A090533
Period of Performance: 7/1/09-6/30/13
Description: *Experimental Validation of the Tools of the Mind Prekindergarten Curriculum* — The purpose of this efficacy study is to conduct an experimental evaluation of the *Tools of the Mind* prekindergarten curriculum. This curriculum focuses on developing learning skills that enable children to engage in and benefit from all kinds of learning tasks and activities that occur in the classroom. The *Tools of the Mind* curriculum is intended to promote the basic academic and social skills that will prepare children for school success in kindergarten and beyond.

University of Texas Health Science Center at Houston
Principal Investigator: Susan H. Landry
Amount: $2,653,503
Award Number: R305A090212
Period of Performance: 3/1/09-2/28/13
Description: *Improving School Readiness of High Risk Preschoolers: Combining High Quality Instructional Strategies with Responsive Training for Teachers and Parent* — The purpose of this study is to determine if the combination of two proven interventions—one delivered in the classroom (*The Early Education Model-TEEM*) and one delivered in the home (*Play & Learning Strategies-PALS*)—results in a synergistic versus additive effect on children's school readiness skills (i.e., social, language, early literacy) and early kindergarten reading and social competence. This study bridges the gap between the school and home environments for pre-kindergarten children from low socioeconomic homes, an area that has received little attention. It is expected that the combined interventions will result in greater child self-regulation that will mediate, along with gains in teacher and parent behaviors, the impact of both interventions on children's school readiness skills.

Vanderbilt University
Principal Investigator: Mark W. Lipsey
Amount: $1,503,059
Award Number: R305A090079
Period of Performance: 4/1/09-3/31/13
Description: *Learning-Related Cognitive Self-Regulation School Readiness Measures for Preschool Children: Optimizing Predictive Validity for Achievement* — The purpose of this study is to construct and cross-validate a teacher rating measure and a parallel direct child assessment measure of learning-related cognitive self-regulation (LRCSR) for preschool children. LRCSR skills are conceptualized as cognitive skills that fall into five major categories: (1) attention focus and concentration (e.g., being able to pay attention to a teacher's instruction and focus on an in-class assignment); (2) inhibitory control (e.g., being able to suppress inappropriate off-task responses to distractions in the classroom setting); (3) patience (e.g., being able to wait when you are asked to do so and not respond impulsively or prematurely); (4) attention shifting (, being able to shift your focus within a given classroom assignment and from one task to another as needed); and (5) organizing skills (e.g., being able to follow directions, engage in planning activities, and organize sequences of behavior to move from one activity to another). Such skills have emerged as an important facet of school readiness for preschool children.

University of Miami
Principal Investigator: Daryl Greenfield
Amount: $1,570,265
Award Number: R305A090502
Period of Performance: 7/1/09-6/30/13
Description: *Lens on Science: Development and Validation of a Computer-Administered, Adaptive, IRT-Based Science Assessment for Preschool Children* — Recent emphasis has been placed on science as a school readiness domain. However, an obstacle to conducting research and evaluation on early childhood science programs is the lack of appropriate, reliable, and valid direct assessments of children's science knowledge and process skills. This measurement project will develop a computer adaptive test of science, *Lens on Science*, primarily for use with low-income preschool children.

Education Leadership

Board of Trustees of the Leland Stanford Junior University
Principal Investigator: Susanna Loeb
Amount: $1,050,000
Award Number: R305A100286
Period of Performance: 7/1/10-6/30/13
Description: *Assessing School Leaders' Development of Management Skills and Leadership: A Longitudinal Mixed-Methods Study* — This project will identify the specific attributes, skills, orientations and behaviors of school leaders that are associated with positive school outcomes. The study describes differences in these principal management and leadership characteristics across schools and over time, focusing on malleable factors that can be taught, coached, and selected for in the identification of school leaders. In addition, the study seeks to describe career pathways that lead to the principalship, as well as the factors that influence educators' choices to pursue and remain in a school leadership position.

Northwestern University
Principal Investigator: James Spillane
Amount: $3,345,497
Award Number: R305A100289
Period of Performance: 3/1/10- 5/09/12
Description: *Learning Leadership: Kernel Routines for Instructional Improvement.* The purpose of the proposed research is to assess the efficacy of *The Learning Walk* routine as a strategy for developing school leaders. *The Learning Walk* routine, developed by the Institute for Learning at the University of Pittsburgh, is a form of "walkthrough" practice in which school leaders conduct brief classroom visits on a regular basis for the purpose of observing classroom instruction and providing feedback to teachers.

University of Wisconsin
Principal Investigator: Richard Halverson
Amount: $1,600,000
Award Number: R305A090265
Period of Performance: 9/1/09-8/31/13

Description: *Developing and Validating the Next Generation of Leadership Evaluation Tools: Formative Assessment for High Stakes Accountability* — This project will develop and validate the *Comprehensive Assessment of Leadership for Learning* (CALL), a rubric-based online formative assessment system that can be used by middle and high schools to self-evaluate and to guide the development of critical leadership practices. CALL provides an online rubric that will allow teams of school leaders and teachers to assess themselves in terms of core leadership tasks and to receive feedback that will scaffold efforts to improve local practices. The resulting reports can then be used as planning documents to help schools determine which tasks will be necessary to improve leadership for learning and to assign who will be responsible for conducting these tasks.

University of Wisconsin
Principal Investigator: Eric Camburn
Amount: $1,600,000
Award Number: R305A090316
Period of Performance: 8/1/09-7/31/13
Description: *School Leadership for Student Achievement: A Survey and Quasi-Experimental Analysis of Leadership in Florida* — This project will estimate the effects of school leadership on student achievement in a large sample of schools in the state of Florida. This project will identify avenues through which school leadership influences student achievement, and will also provide data on mediating factors that influence the efficacy of leadership.

Education Policy, Finance, and Systems

Board of Regents of the University of Wisconsin System
Principal Investigator: Geoffrey Borman
Amount: $1,398,450
Award Number: R305A110136
Period of Performance: 6/1/11-5/31/14
Description: *An Efficacy Trial of Two Interventions Designed to Reduce Stereotype Threat Vulnerability and Close Academic Performance Gaps* — This project will test the efficacy of reducing gaps in academic performance between minority and White students and between students of lower and higher socioeconomic status through two types of interventions aimed at reducing *stereotype threat*. Stereotype threat refers to the apprehension individuals experience when confronted with a personally relevant stereotype that threatens their social identity or self-esteem. This project team proposes to determine the impacts of two similar but theoretically distinct stereotype threat-reduction interventions.

American Institutes for Research
Principal Investigator: Jessica Heppen
Amount: $3,084,374
Award Number: R305A110149
Period of Performance: 3/1/11 to 2/28/15
Description: *Assessing the Efficacy of Online Credit Recovery in Algebra I for At-Risk Ninth Graders* — The project will carry out several studies to estimate the impact of an online summer credit recovery course for first time ninth-graders who fail the second semester of Algebra I. The

first study will compare the impacts of the online course to a traditional in-class summer course through an experiment in which such ninth-graders will be randomly assigned to one of the two summer courses within 20 high schools with high rates of Algebra 1 failure. A second study will examine whether schools offering the online Algebra 1 course show improved student academic outcomes versus schools that do not. A third study will compare how students who succeed in their summer credit recovery course (both online and in-class versions) do in subsequent mathematics courses and on standardized mathematics tests versus ninth-grade students who passed Algebra I.

President and Fellows of Harvard College
Principal Investigator: Daniel Koretz
Amount: $1,564,713
Award Number: R305A110420
Period of Performance: 7/1/11-6/30/15
Description: *Developing More Effective Test-Based Accountability by Improving Validity Under High-Stakes Conditions* — Research on test-based accountability has documented a variety of distortions of educational practice that can lead to test score inflation. This means that gains in scores on the tests used for accountability can be far larger than the actual gains in student learning they are intended to signal. The goal of this project is to: (1) evaluate the limitations of current assessment systems, including the features of tests that are most vulnerable to score inflation and the types of schools and students most affected by such inflation; (2) develop and evaluate new approaches for validating inferences based on scores on tests used for accountability; and (3) design new research-based approaches to assessment to lessen the unwanted side effects of test-based accountability.

The Urban Institute
Principal Investigator: Umet Özek
Amount: $350,097
Award Number: R305A110242
Period of Performance: 3/1/11-2/28/13
Description: *Strategic Responses to School Accountability* — This project investigates two ways in which schools and teachers might behave strategically when facing pressure from school accountability systems based on student test scores. First, schools might provide more attention to students who have full academic year eligibility. Under the No Child Left Behind Act of 2011, a school is only accountable for a student's performance if that student has attended that school for a certain number of days and states are required to define that time, which is known as a full academic year. Second, teachers might teach to the test (i.e., focus on subjects for which test scores are used in the school accountability system). The project will analyze student-level administrative data from Florida to examine these two possible behaviors.

University of Virginia
Principal Investigator: Sara Dexter
Amount: $1,731,359
Award Number: R305A110913
Period of Performance: 7/1/11-6/30/14
Description: *Strengthening School Leaders' Instructional Leadership Practice Through Developing Teachers' Abilities to Integrate Technology in Support of Student Learning* — The research team proposes to develop and test an intervention, CANLEAD (Cognitive Assistance

Network, Learning Environment, and Database), that enables team members (principals, teacher-leaders, and technology specialists) to: (1) recognize what strong instruction in math and science looks like when it makes use of technology, and (2) foster integration of technology into math and science instruction that leads to improvements in student learning outcomes in math and science.

Georgia State University
Principal Investigator: Tim Sass
Amount: $495,575
Award Number: R305A110697
Period of Performance: 7/1/11-12/31/14
Description: *The Impact of Incentives to Recruit and Retain Teachers in "Hard-to-Staff" Subjects: An Analysis of the Florida Critical Teacher Shortage Program* — This project will evaluate the efficacy of programs created under the statewide Florida Critical Teacher Shortage Program and a related set of teacher bonuses, the Teacher Recruitment and Retention Fund. Components of the programs were in place from 1984 through 2010 and provided a variety of incentives for teachers to become fully certified to teach in hard-to-staff disciplines like math, science, and special education.

Michigan State University
Principal Investigator: Gary Troia
Amount: $1,632,437
Award Number: R305A100040
Period of Performance: 8/15/10-8/15/14
Description: *Alignment Across K–12 Writing Standards, Assessments, Achievement, and Postsecondary Expectations: A State-by-State Analysis* — This project will analyze all 50 states' writing content standards and large-scale assessments and aims to improve understanding of (1) the specificity and cognitive demands of their K-12 standards; (2) the extent to which those standards are aligned with state assessments; (3) the extent to which the content standards and assessments reflect evidence-based practices; and (4) the relationship between the alignment of states' standards and assessments, and NAEP writing scores.

Northwestern University
Principal Investigator: Jonathan Guryan
Amount: $3,177,638
Award Number: R305A120809
Period of Performance: 7/1/10-6/30/14
Description: *Preventing Truancy in Urban Schools Through Provision of School Services by Truancy Officers* — This project will evaluate interventions for truant ninth-graders involving services from truancy officers. Sixty Chicago Public Schools high schools with high truancy rates will be randomly assigned to receive (1) the status quo truancy interventions that include parental notification and potentially a referral to outside social service agencies for assistance; (2) truancy officers who provide assessments, service referrals and monitoring to address the underlying factors that contribute to truancy; or (3) truancy officers providing the same services along with the threat of CPS disciplinary hearings for non-compliance.

American Institutes for Research
Principal Investigator: Jay Chambers
Amount: $1,660,938
Award Number: R305A1100630
Period of Performance: 7/1/10-6/30/13
Description: *Strategic School Funding for Results, Phase I* — The project will develop and refine a student needs-based budget process accompanied by an increased level of school autonomy in the use of those funds and an increased accountability for results. This work will be done in partnership with three urban school districts with the intention that they then implement the process with adjustments as needed.

Turnaround for Children, Inc.
Principal Investigator: Joan Stamler
Amount: $1,398,923
Award Number: R305A100358
Period of Performance: 7/1/10-8/14/13
Description: *Turnaround Intervention for Transformation of High-Need Schools* — The project will refine and test a two-tiered school-level turnaround model for use in low-performing middle schools in high poverty areas. The strategy is based on the premise that disruptive destabilizing behavioral issues need to be addressed (in tier 1) before programs focused on training and classroom instruction can be introduced (in tier 2). The model is structured around the development of multi-disciplinary, problem-solving teams, enhanced access to student support resources, and targeted knowledge and skill-building for staff with the goal of removing barriers to teaching and learning, which will result in higher achievement.

Duke University
Principal Investigator: Jacob Vigdor
Amount: $850,948
Award Number: R305A090019
Period of Performance: 3/1/09-2/28/13
Description: *The Impact of School Accountability Sanctions on Student Outcomes: Evidence from North Carolina* — The project will estimate the effects of the sanctions included in No Child Left Behind (NCLB) and in the North Carolina State accountability program on student achievement. Using longitudinal, student-level data on the population of North Carolina students, the researchers will use regression discontinuity designs to identify the causal effect of the positive and negative sanctions embedded in these policies on student achievement.

Education Technology

SRI International
Principal Investigator: Jeremy Roschelle
Amount: $3,498,460
Award Number: R305A120125
Period of Performance: 4/1/12-3/31/16
Description: *An Efficacy Study of Online Mathematics Homework Support: An Evaluation of the ASSISTments Formative Assessment and Tutoring Platform* — The purpose of this study is to

evaluate the efficacy of the fully developed intervention, *ASSISTments*. *ASSISTments* is an online formative assessment and tutoring platform in mathematics that provides coached, practice problem-solving support for students and cognitive diagnostic reports to teachers; supports students' mathematics homework completion; and facilitates differentiated instruction. The team will carry out a randomized control trial with two cohorts of seventh-grade mathematics teachers and their students.

Wireless Generation
Principal Investigator: Brian Rowan
Amount: $3,243,460
Award Number: R305A120639
Period of Performance: 9/1/12-10/30/16
Description: *Burst: Reading Efficacy Study* — The purpose of this study is to examine the efficacy of *Burst: Reading*, a fully developed software-based reading intervention designed to improve the literacy skills of students in grades K-3. In this intervention, students' reading ability will be repeatedly assessed and scored dynamically using handheld devices, thereby allowing teachers to make data-driven, in-the-moment instructional decisions at both the individual and classroom levels.

WestEd
Principal Investigator: Jodi Davenport
Amount: $1,499,815
Award Number: R305A120047
Period of Performance: 3/1/12-2/28/15
Description: *Cyber-enabled Tangible Molecular Models for High School* — The purpose of this project is to develop and test cyber-enabled tangible molecular models and companion activities to enhance the instruction of core concepts of molecular biology taught in high school.

University of Pittsburgh
Principal Investigator: Diane Litman
Amount: $1,498,939
Award Number: R305A120370
Period of Performance: 9/1/12-8/30/15
Description*: Intelligent Scaffolding for Peer Reviews of Writing* — The purpose of this project is to improve upon an existing software technology, *Scaffolded Writing and Rewriting in the Disciplines* (SWoRD), that facilitates the writing and revision of essays and compositions; and handles the logistics of peer review (e.g., distribution of essays to reviewers, collection and distribution of anonymous reviewer comments to original authors). In this project, the research team will incorporate new features into the current software, such as automated detection of thesis statements and assessment of reviewer comments (e.g., do feedback comments contain helpful suggestions?).

CAST, Inc.
Principal Investigator: Tracey Hall
Amount: $1,498,649
Award Number: R305A110333
Period of Performance: 7/1/11-6/30/15

Description*: Creating Compositions Using a Technology-Based Writing Tool: Supporting Students With Universal Design for Learning* — The goal of this project is to develop and formatively evaluate *Composition Builder* (CB), a web-based, guided-process writing tool designed to support students in grades 6–8 as they write persuasive and expository compositions. The proposed tool will incorporate the process-writing approach and the principles of Universal Design for Learning by including (a) research-based writing strategies, (b) supports and scaffolds available throughout the writing process, (c) opportunities to engage in social collaboration around writing, and (d) built-in progress monitoring using curriculum-based measurement.

Vanderbilt University
Principal Investigator: Douglas Clark
Amount: $1,305,409
Award Number: R305A110782
Period of Performance: 8/1/11-7/31/14
Description: *Explanation and Prediction Increasing Gains and Metacognition (EPIGAME)* — The proposed project, *Explanation and Prediction Increasing Gains and Metacognition (*EPIGAME*)*, will integrate metacognitive research on prediction and explanation into the design of a physics-based digital game environment to scaffold students' understanding of formal physics concepts. The design of the EPIGAME environment will support pilot and future research on games for learning through (a) randomized assignment of players to multiple configurations of parameters within the game and (b) embedded computer adaptive assessment and data log analysis functionality to support sophisticated analytics and data collection. The goal is for teachers to use EPIGAME software to scaffold middle school students (and potentially older students) in bridging intuitive understandings with explicit articulated core concepts of Newtonian mechanics.

WestED
Principal Investigator: Daniel Brenner
Amount: $1,496,301
Award Number: R305A110021
Period of Performance: 3/1/11-2/28/14
Description: *Voyage to Galapogos: Development of a Differentiated Assistance Model in an Inquiry Learning Environment* — Prior research on scaffolded inquiry learning suggests that teaching skills associated with scientific inquiry can be improved if supported by the right kind of guidance. The project will bring together *SimScientists*, a web-based learning management system, with *Voyage to Galapagos (VTG)*, an inquiry-driven instructional module that provides students with the opportunity to do simulated science field work in Galapagos. The goal of the *VTG* project is to develop three assistance modalities that will be integrated into the *VTG* materials and delivered by the *SimScientists* web-based platform. The project will explore how students learn when receiving tutoring at different points in the simulation process (i.e., only after completion of a level or while the student is engaged in problem solving) and when the tutoring that they receive is contingent upon their assessed ability level. Striking a balance of how much assistance to give, when to give it, and in what format to optimize learning for all students is the primary focus of this project.

Educational Testing Service
Principal Investigator: Jill Burstein
Amount: $1,434,760
Award Number: R305A100105
Period of Performance: 3/1/10-2/28/13
Description: *A Technology-Rich Teacher Professional Development Intervention that Supports Content-Based Curriculum Development for English Language Learners* — English language learners (ELLs) are taught both by specialists and by regular classroom teachers. Many states acknowledge that all teachers need to know how to support the unique needs of ELLs. The purpose of this project is to develop a teacher professional development curriculum and software package that will improve teachers' ability to instruct their ELL students and prepare materials designed to support students learning English.

University of Memphis
Principal Investigator: Vasile Rus
Amount: $1,650,272
Award Number: R305A100875
Period of Performance: 9/1/10-8/31/13
Description: *DeepTutor: An Intelligent Tutoring System Based on Deep Language and Discourse Processing and Advanced Tutoring Strategies* — The proposed project will develop and test an innovative intelligent tutoring system (ITS) designed to improve the effectiveness of state-of-the-art tutoring systems with natural language dialog. Researchers focusing on the tutor-tutee relationship have identified a number of illusions (such as the illusion that all feedback is accurate) that occur during the tutoring process and that result in the tutoring process being less efficient. Researchers will develop and evaluate an ITS which will address these illusions, and which will integrate recent advances in instructional and curriculum design. Called *DeepTutor*, the system is intended to improve student outcomes in science relative to a current state-of-the art tutoring system, called *AutoTutor*, and standard classroom instruction.

Vanderbilt University
Principal Investigator: Ted Hasselbring
Amount: $1,499,860
Award Number: R305A100110
Period of Performance: 6/1/10-5/31/13
Description: *Developing and Evaluating a Technology-Based Fractions Intervention Program for Low-Achieving and At-Risk Students* — The purpose of this project is to develop an intelligent tutoring system intended to promote students' understanding of fractions, an area that many students find difficult to master. The *HALF* (Helping At-risk and Low-achieving students in Fractions) system will present learning problems in conjunction with virtual manipulatives and videos designed to anchor to-be-learned concepts within already-familiar topics. After students attempt to solve these new problems, the system will diagnose gaps in student understanding and provide feedback to teachers intended to support individualized instruction and practice in basic concepts of fractions.

Florida State University
Principal Investigator: Paul Marty
Amount: $1,156,500
Award Number: R305A100782
Period of Performance: 9/1/10-8/31/13
Description: *Habitat Tracker: Learning About Scientific Inquiry Through Digital Journaling at Wildlife Centers* — National reform efforts in science education emphasize the need for students to participate in scientific inquiries, yet inquiry-based instruction remains a rarely seen practice in most elementary classrooms. Field trips to museums and wildlife centers are a common activity in schools and it is widely believed that they have educational and motivational impacts. Yet research shows field trips frequently have limited educational benefits and lack integration with science curricula. To address these problems, this project will develop an intervention designed to foster fourth- and fifth-grade student understanding of scientific inquiry and the nature of science during school field trips. This will be accomplished through student-led data collection and analysis, before, during, and after visits to a local wildlife center.

Columbia University, Teachers College
Principal Investigator: Herbert Ginsburg
Amount: $1,436,344
Award Number: R305A100267
Period of Performance: 9/1/10-8/31/13
Description: *MathemAntics Preschool --> 3: Development and Evaluation of Mathematics Software for Children from Preschool to Grade 3* — The purpose of this project is to develop and evaluate the promise of a software system, *MathemAntics*, designed to deliver a supplementary mathematics curriculum for children ranging from preschool to grade 3. This software system will focus on a number of topics ranging from basic ideas about cardinal numbers to negative integers. A single system that covers such a broad range of topics has the advantage of a consistent look, feel, and use so that students need not become acquainted with a new system each time they advance to a new topic. Graphical tools will allow students to operate virtual objects in ways not possible with physical manipulatives and an avatar will provide instruction, feedback, and support. Additionally, the system will provide assessment data to teachers.

Effective Teachers and Effective Teaching

University of Denver
Principal Investigator: Kent Seidel
Amount: $987,152
Award Number: R305A120233
Period of Performance: 3/1/12-2/28/15
Description: *An Exploration of Novice Teachers' Core Competencies: Impacts on Student Achievement and Effectiveness of Preparation* — Licensure policies and accreditation requirements at the national and state levels described expectations for the knowledge, skills, and dispositions that are presumed important to teachers' eventual success in the classroom. These expectations represent “Core Competencies” (CCs). Previous research on CCs is limited in that expectations have been determined by studying high-quality teachers only, often selected based

on principal recommendations. The purpose of this study is to provide additional information describing the relationship between novice teachers' CCs and student outcomes.

Ohio State University
Principal Investigator: Ian Wilkinson
Amount: $1,447,711
Award Number: R305A120634
Period of Performance: 7/1/12-6/30/15
Description: *Dialogic Teaching: Professional Development in Classroom Discussion to Improve Students' Argument Literacy* — Student active engagement in classroom discussion, particularly through reasoned argument, has been linked to improved reading and writing achievement and reasoning in other subject areas. This research team intends to develop, refine, and test a professional development program designed to promote dialogic teaching—an approach which relies on open discussion and supports student comprehension and formulation of arguments through speaking, listening, reading, and writing. The professional development program aims to improve both teacher awareness of dialogic versus monologic techniques and their use of dialogic techniques. In turn, dialogic classroom practices are expected to increase students' argument literacy and reading comprehension.

Boise State University
Principal Investigator: Keith Thiede
Amount: $1,199,999
Award Number: R305A120265
Period of Performance: 7/1/12-6/30/15
Description: *Improving Teachers' Monitoring of Learning* — In order for learning to be effective, teachers must accurately monitor students' learning. The purpose of this study is to develop and test a professional development program called *Monitoring Professional Development* (*Monitoring PD*), a program intended to improve the accuracy of elementary teachers' monitoring of student learning, specifically in mathematics. In addition, researchers will gather evidence about the relation between teachers' monitoring accuracy and student achievement.

Florida State University
Principal Investigator: Robert Schoen
Amount: $3,427,187
Award Number: R305A120781
Period of Performance: 9/1/12-8/31/16
Description: *Replicating the CGI Experiment in Diverse Environments — Cognitively Guided Instruction* (CGI*)* is a widely used professional development program for mathematics instruction in elementary school. A previous efficacy study of CGI found beneficial impacts on student achievement; however, implementation of this intervention has changed substantially since that study. Researchers propose to conduct a randomized controlled trial to examine the impact of this intervention on mathematics achievement in a diverse sample of students. The study also seeks to identify the principal, teacher, and student characteristics that moderate intervention impact and to explore the mechanisms through which the intervention affects student mathematics achievement.

University of Louisville
Principal Investigator: William S. Bush
Amount: $1,291,941
Award Number: R305A120553
Period of Performance: 8/1/12-7/31/15
Description: *Updating Middle School Mathematics Diagnostic Teacher Assessments in Mathematics & Science (*DTAMS*)* — The *Diagnostic Teacher Assessments in Mathematics and Science* (DTAMS) is a widely used set of assessments that measure teacher mathematical content knowledge (i.e., number/computation, algebraic ideas, geometry/measurement, and probability/statistics), mathematical problem-solving and reasoning, and mathematics knowledge for teaching. The purpose of this project is to update the Middle School Mathematics portion of the DTAMS, so that it will be aligned with the Common Core State Standards in Mathematics and its Standards for Mathematical Practice. The intended uses of this revised version of the Middle School Mathematics DTAMS include assessing the impact of teacher professional development and providing feedback to teachers about their knowledge of teaching mathematics.

English Learners

Duke University
Principal Investigator: Leslie Babinski
Amount: $1,494,642
Award Number: R305A120290
Period of Performance: 4/1/12-3/31/15
Description: *Developing Consultation and Collaboration Skills: ESL and Classroom Teachers Working Together with Students and Families* — This project team will develop a professional development program designed to improve English language learners' (ELLs) language and literacy skills by building stronger home-school connections, leveraging the expertise of English as a Second Language (ESL) teachers, and increasing elementary school teachers' skills in meeting the instructional needs of ELLs. The *Developing Consultation and Collaboration Skills* program will include training for ESL specialists in how to help teachers assess classroom strengths to inform plans to improve instruction; training for classroom teachers in how to collaborate with parents to take advantage of their families' cultural capital; and development of teachers' knowledge and skills in instructional approaches to increase ELLs acquisition of reading and language skills in English.

Pennsylvania State University
Principal Investigator: Kausalai Wijekumar
Amount: $1,497,191
Award Number: R305A120593
Period of Performance: 7/1/12-6/30/15
Description: *Improving Reading Comprehension of Middle Grades English Language Learners by Combining Structure Strategy with Web-Based Adaptive Tutoring for EL Learners (SWELL)* — English language learners (ELLs) are at particularly high risk for poor education outcomes due to poor reading performance. This risk becomes more apparent as ELLs progress through school and knowledge of academic language becomes increasingly important for learning. This project will extend a web-based intelligent tutoring system, the *Intelligent Tutoring using*

Structure Strategy (ITSS), designed to teach students explicit strategies for using knowledge of the structure of informational text to improve understanding. Prior research has found that students who use ITSS improve their reading comprehension. The new intervention, *Structure Strategy with Web-Based Adaptive Tutoring for EL Learners* (SWELL), will be designed to help Spanish-speaking ELLs.

University of Maryland, College Park
Principal Investigator: Rebecca Silverman
Amount: $1,500,000
Award Number: R305A110142
Period of Performance: 6/1/11-5/31/14
Description: *Developing a Cross-Age Peer Tutoring Program to Promote the Vocabulary and Comprehension of English Learners* — English language learners (ELLs) are especially at risk for reading difficulties due to limited vocabulary and comprehension skills. Two critical periods for supporting ELLs are upon school entry (i.e., kindergarten) and upon transition from learning to read to reading to learn (i.e., fourth grade). Cross-age peer tutoring has been shown to be an effective instructional context to support students learning to read. Given the social nature of language learning, cross-age tutoring, in which older and younger children work together, is a uniquely promising instructional format for supporting vocabulary and comprehension. Also, the use of multimedia has been shown to support the language learning of ELLs. Combining cross-age peer tutoring with multimedia support is a potentially powerful way to target ELL vocabulary and comprehension. The purpose of this project is to develop materials designed to support this type of cross-age peer tutoring with ELLs and to gather preliminary evidence as to the effects of this intervention on student outcomes.

Washington Research Institute
Principal Investigator: Patricia Vadasy
Amount: $1,729,436
Award Number: R305A110343
Period of Performance: 7/1/11-6/30/14
Description: *Efficacy of Supplemental Early Vocabulary Connections Instruction for English Language Learners* — The goal of this project is to study the efficacy of a supplemental reading intervention for English language learners (ELLs) in kindergarten called *Early Vocabulary Connections* (*Connections*). This intervention is designed to coordinate the development of beginning decoding skills, spelling, and vocabulary knowledge in English. In addition to immediate effects on word reading and vocabulary, participation in *Connections* is hypothesized to improve learning of new vocabulary and general comprehension outcomes. An initial IES efficacy study of this intervention found positive effects on both word reading and vocabulary. This study is designed to replicate these findings. *Connections* will be implemented with a more diverse sample of ELLs, will follow students for an additional year, and will examine the effect of participation in this instruction on a broader range of assessments.

Technical Education Research Centers, Inc.
Principal Investigator: Tracy Noble
Amount: $1,610,874
Award Number: R305A110122
Period of Performance: 4/1/11-3/31/15

Description: *English Learners and Science Tests* — The use of students' scores on science achievement tests to make consequential decisions, such as grade promotion, rests on the assumption that a student's score is an accurate reflection of his or her knowledge of science. However, if a student is learning English and the test includes complex uses of English, it is difficult to distinguish whether the ELL (English language learner) student's score is low because she does not know the language or the science being tested. This project will identify linguistic aspects of multiple-choice assessment items in science that create undue difficulty for ELLs and suggest ways to modify the items to reduce factors that unfairly impede the performance of ELLs.

WestEd
Principal Investigator: Eric Haas
Amount: $2,691,599
Award Number: R305A110176
Period of Performance: 5/1/11-4/30/15
Description: *Impact of the WRITE Program on English Learner Achievement and Teacher Instructional Practice* — English language learners (ELL) consistently score below grade-level on state standardized tests in all content areas, and much below non-ELL students. The persistent performance gap between ELLs and non-ELLs increases as the level of language demand of learning tasks increases. Even ELL students who have progressed beyond basic levels of English proficiency continue to struggle with academic demands. The *Writing Reform Institute for Teaching Excellence* (WRITE) Tier 2 program is designed to transition ELL students to fluency in academic English writing, including instructional foci on specific content knowledge, critical thinking, and meta-cognitive skills, so they can successfully learn in English-only classrooms. This project will test the efficacy of the WRITE Tier 2 program in meeting this goal with middle-school students.

Education Development Center, Inc.
Principal Investigator: Mark Driscoll
Amount: $1,450,579
Award Number: R305A110076
Period of Performance: 3/1/11-2/28/14
Description: *Mathematics Coaching Supporting English Language Learners* — Many English learners in middle and high schools are taught mathematics by teachers who are not prepared and often reluctant to integrate language supports into teaching and learning mathematics. In this project, the team will develop and study the utility of integrating mathematics coaching and professional development for middle-grade teachers whose classrooms include English language learners (ELLs). Prior research suggests that ELLs benefit from learning multiple problem-solving strategies, using diagrams to represent and solve problems, and increasing opportunities to develop self-monitoring skills. Building on these findings, the coaching and PD materials will emphasize the importance of providing challenging mathematical tasks, multimodal representations, and emphasize acquisition of academic language in math.

Regents of the University of California, Santa Cruz
Principal Investigator: Peggy Estrada
Amount: $1,598,169
Award Number: R305A110512

Period of Performance: 7/1/11-6/30/15
Description: *Reclassifying and Not Reclassifying English Learners as Fluent English Proficient: Access and Achievement* — Schools provide additional instructional services to support learning by English language learners (ELLs) at entry to school, and set criteria for mastery of English to indicate that they no longer require special services. Reclassification out of ELL status can be a gateway to full participation in core curricula and provide a greater opportunity to learn, which in turn, can promote greater academic achievement. Either premature or delayed entry into the mainstream classroom is potentially harmful in supporting mastery of core content for ELLs. This proposal is grounded in the observation that there is an apparent discrepancy between the substantial percentage of ELLs who meet state-specified minimum English proficiency levels and achievement criteria while a much smaller percentage are reclassified as Fluent English Proficient (FEP). The purpose of this project is to document this discrepancy and begin to examine the potential impact on achievement outcomes of ELLs who are reclassified as FEP instead of remaining as ELLs.

Education Northwest
Principal Investigator: Theresa Deussen
Amount: $2,878,385
Award Number: R305A100583
Period of Performance: 7/1/10-6/30/14
Description: *An Efficacy Study of Project GLAD* — In U.S. schools, English language learners (ELLs) receive most of their instruction in mainstream classrooms. Their teachers need to be able to help them access grade-level content and meet state standards while also developing their English language proficiency. This study will test the efficacy of *Project GLAD* (Guided Language Acquisition Design), an instructional model specifically designed to help mainstream classroom teachers integrate the development of academic English with content area instruction for non-native English speakers.

Educational Testing Service
Principal Investigator: Mikyung Wolf
Amount: $1,349,291
Award Number: R305A100724
Period of Performance: 7/1/10-6/30/14
Description: *Developing a Formative Assessment of Academic Reading Comprehension for English Language Learners: A Tool to Improve Teaching and Learning* — English language learner (ELL) students deal with the dual challenges of acquiring English proficiency to handle academic materials and learning curriculum content. While states annually implement English language proficiency assessments to measure the progress of ELLs English language development, there is a paucity of appropriate classroom-based assessments available to inform teaching and learning of ELL students on an ongoing basis. This project will develop and validate classroom-based, formative assessments of academic reading for ELL students in middle school.

University of Georgia Research Foundation, Inc.
Principal Investigator: Pedro Portes
Amount: $2,935,846
Award Number: R305A100670

Period of Performance: 9/1/10-8/30/14
Description: *Improving the Teaching and Learning of English Language Learners: The Instructional Conversational Model* — This study will examine the effects of the *Instructional Conversatio*n (IC) model for improving the academic development and achievement of upper elementary English language learners (ELLs) from high poverty schools. In the IC model, the teacher structures small-group instruction to stimulate and guide a conversation with students on a current topic from the curriculum. The main purpose of this project is to study the efficacy of this model to improve reading comprehension and other areas of academic development for ELLs. Researchers also will explore hypotheses surrounding the mechanisms through which affective, cognitive, and English language development influence the impact of the IC model on student achievement.

University of Houston
Principal Investigator: Lee Branum-Martin
Amount: $215,143
Award Number: R305A100272
Period of Performance: 3/1/10-2/29/12
Description: *Language and Literacy Abilities in Spanish-Language Speaking Children* — While much has been learned about the educational needs of Spanish-speaking students in the United States, much more remains to be learned about the specific nature and development of their language and literacy abilities. The purpose of this project is to apply contemporary measurement models to examine home, student, and instructional factors and implications for the development of more effective interventions for Spanish-speaking students.

University of Miami
Principal Investigator: Walter Secada
Amount: $1,510,390
Award Number: R305A100862
Period of Performance: 7/1/10-6/30/13
Description: *Language in Math* — Many schools lack widespread expertise in how to address the instructional and language learning needs of English language learners (ELLs). In particular, little attention has been devoted to understanding how ELLs learn the conventions and expectations for language use in mathematics in order to master the linguistic complexity of mathematical discourse. To address this need, the researchers will develop an intervention called *Language in Math* (LiM) that is intended to increase upper elementary and middle school ELLs' knowledge of academic language used in math. An additional goal of this intervention is to enhance elementary teachers' ability to teach mathematics to ELLs.

University of Michigan
Principal Investigator: Mary Schleppegrell
Amount: $1,396,598
Award Number: R305A100482
Period of Performance: 7/1/10-6/30/13
Description: *The Iterative Development of Modules to Support Teachers' Engagement in Exploring Language and Meaning in Text with English Language Learners* — This study will develop, test, and refine a set of five professional development modules called *Exploring Language and Meaning in Text*, intended to support reading comprehension and writing

development for English language learners (ELLs). The modules will be informed by systemic functional linguistics, a theory of language that links form and meaning, and will be designed to prepare teachers to develop activities that help their students focus on an author's language choices and what they mean. The modules will also incorporate classroom interactional practices shown to support English language learning and will link reading with writing to encourage students' active use of the language they are learning.

University of Wisconsin, Madison
Principal Investigator: Craig Albers
Amount: $1,600,000
Award Number: R305A100585
Period of Performance: 7/1/10-6/30/14
Description: *Validating Universal Screening and Progress Monitoring Instruments for Use with ELLs in Response-to-Intervention Models* — Current demands for early identification and intervention, coupled with accountability demands, have increased the need for good measures to identify English language learners (ELLs) at risk for academic difficulties. This project will examine universal screening and progress monitoring literacy procedures necessary for the appropriate use of Response-to-Intervention (RTI) models with ELL students. Researchers will establish the reliability, validity, and predictive accuracy of existing universal screening literacy instruments and progress monitoring procedures. The connection between English language acquisition and literacy skills will be established to define appropriate and scientifically based guidelines for universal screening and progress monitoring for ELLs.

Improving Education Systems: Policies, Organization, Management, and Leadership

Board of Regents, University of Nebraska
Principal Investigator: Susan Sheridan
Amount: $699,997
Award Number: R305A120144
Period of Performance: 6/1/12-5/31/14
Description: *A Meta-Analysis of Parent Involvement Interventions and Family-School Partnerships' Effects on Student Outcomes* — Interactions and experiences within home and school systems form the foundation for developmental trajectories throughout students' educational careers. Previous research on parental involvement suggests that when parents are involved in their children's schooling, students experience increased academic performance, fewer discipline problems, better study habits, and higher educational aspirations. Despite these positive research findings, some large-scale reviews of the literature have documented little to no effect of parent involvement on student achievement. However, previous meta-analyses have tended to exclude non-academic outcomes, and have not differentiated between general activity-based measures of parent involvement and measures of family-school partnerships. The purpose of this study is to investigate the relationship between these two different forms of involvement and academic, behavioral, and social-emotional outcomes for students from preschool to grade 12.

University of Chicago
Principal Investigator: Takako Nomi
Amount: $490,831
Award Number: R305A120640
Period of Performance: 7/1/12-6/30/14
Description: *Curricular Reform and Classroom Peer Ability: School-Specific and Citywide Effects* — Focusing on two mathematics education reform initiatives in Chicago Public Schools (Algebra for All starting in 1997 and Double-Dose Algebra starting in 2003), the researchers seek to gauge and start to account for the variability in the effects of the reform across different schools. Specifically, researchers will gauge the effects of course taking, classroom peer composition, and their interaction on student mathematics performance, and to investigate the extent to which prior student ability influences these effects.

President and Fellows of Harvard College
Principal Investigator: Joshua Goodman
Amount: $291,164
Award Number: R305A120466
Period of Performance: 7/1/12-6/30/13
Description: *Doubling Up? The Impact of Remedial Algebra on Students' Long-Run Outcomes* — School districts, especially those with high concentration of ninth-grade students who lack foundational math skills, are concerned that early failure in algebra may lead to a series of negative consequences for struggling students' future academic achievement and ability to graduate from high school. Focusing on Chicago Public Schools' implementation of a remediation strategy called Double-Dose Algebra, the researchers will assess whether requiring students to participate in an additional algebra class during ninth grade improves students math grades, their overall course attainment, their likelihood of graduating high school, and their chances of attaining a college degree.

Duke University
Principal Investigator: Philip Cook
Amount: $1,085,309
Award Number: R305A120526
Period of Performance: 7/1/12-6/30/15
Description: *Early Truancy Prevention Project* — Across the United States, high school dropout has emerged as a critical education policy problem. On average, one in four students who begin public high school in the United States will not graduate. Most dropout prevention programs currently in place in American schools begin in adolescence, either toward the end of middle school or in the high school years. However, research suggests that the process of "becoming" a high school dropout can begin as early as elementary school. In this study, researchers will develop, implement, and test the feasibility of a teacher-based truancy prevention program in elementary schools. Specifically, the truancy prevention program will aim to support a collaborative relationship between parents and teachers and promote a positive teacher-child relationship; provide teachers with timely data about a student's attendance patterns; and train and supervise teachers in individualized interventions that are based on a particular family's reasons for truancy.

Johns Hopkins University
Principal Investigator: Robert Balfanz
Amount: $1,085,309
Award Number: R305A120677
Period of Performance: 7/1/12-6/30/15
Description: *Getting Students to the Finish Line: An Efficacy Study of a Ninth Grade Early Warning Indicator Intervention* — Each year in the United States, more than a million students fail to graduate with their high school class. The process of disengagement with schooling, which culminates in students dropping out, can be observed in high absenteeism (A), behavior problems (B), and course failure (C), including both the failure to complete assignments and failure to pass courses. These three factors—the "ABCs" of dropout—are the strongest predictors of dropping out, are often interrelated, and can serve as early warning indicators of students who (absent effective intervention) are likely to drop out. In this project, researchers will evaluate the effectiveness of the *Early Warning Intervention* (EWI) Team model developed by the Center for Social Organization of Schools at Johns Hopkins University. In this model, facilitators are trained to work with school teams to intervene with students displaying early warning indicators of not being "on track" to graduation. The project will assess impacts on absenteeism and other outcomes related to high school graduation.

American Institutes for Research
Principal Investigator: Umet Özek
Amount: $420,000
Award Number: R305A120310
Period of Performance: 7/1/12–6/30/14
Description: *Misattribution of Teacher Value-Added* — With the added emphasis on incorporating evidence of student learning into teacher evaluations, many states are using value-added modeling as part of their approach to evaluating teachers. The evidence typically comes in the form of year-to-year changes in student scores on annual standardized tests administered in spring, with the spring teacher assumed to be the only teacher in the intervening year. This study seeks to quantify the magnitude of the misattribution, to examine policy effects of it, and to develop a modeling approach that will properly account for it.

University of Chicago
Principal Investigator: Elaine Allensworth
Amount: $693,432
Award Number: R305A120136
Period of Performance: 7/1/12–6/30/14
Description: *The Educational Benefits of Attending High-Performing High Schools* — In school districts nationwide, policymakers are implementing reforms that rest on a simple assumption: students do better when they attend schools with high achievement levels. The goal of this study is to examine whether, how, and under what circumstances students benefit from attending high schools with high reported performance levels. Researchers will look closely at which students benefit the most from attending a high-performing high school, to assess whether transfer provides a path to greater achievement for students who often attend low-performing high schools.

University of Chicago
Principal Investigator: Elaine Allensworth
Amount: $940,874
Award Number: R305A120706
Period of Performance: 9/1/12-8/31/15
Description: *The Influence of School Leadership on Instruction and Student Learning: A Longitudinal Examination of Leadership in Chicago Public Schools* — School leadership is often conceived of as a key lever for school reform and improving student achievement. However, despite four decades of research, principals have little information to guide them on how best to focus their efforts to maximize the impact of their actions and decisions on student performance. In this project, researchers propose to analyze a comprehensive set of school district data to understand how school leaders influence teaching and learning. Specifically, researchers will examine the relationships between principal and teacher leadership practices, school processes, classroom instruction, and student outcomes such as standardized test scores, grades, absenteeism, and graduation.

National Bureau of Economic Research
Principal Investigator: Joshua Angrist
Amount: $1,654,320
Award Number: R305A120269
Period of Performance: 3/1/12-2/28/15
Description: *Why are Some Charter Schools More Effective than Others? Econometric Methods and Empirical Evidence from Massachusetts, Michigan, and Texas* — Enrollment in charter schools has tripled over the last decade, and more states are making it easier to open charter schools. The goal of the proposed research is to determine what makes some charter schools reliably succeed at increasing learning while others do not. A key feature of this study is that charter enrollment will be determined by a lottery system.

Board of Trustees of the Leland Stanford Junior University
Principal Investigator: Sean Reardon
Amount: $699,424
Award Number: R305A110670
Period of Performance: 7/1/11-6/30/13
Description: *Malleable Factors that Influence Outcomes of English Language Learners* — The purpose of this project is to explore the relationship between instructional programs and academic achievement from kindergarten through entry to postsecondary education in four different types of English language learner (ELL) programs that vary in the language of instruction and support for home language. The relationship between educational programs and student learning will be considered in view of contextual factors, such as linguistic and ethnic diversity in the school, variability in initial English proficiency, and teacher and school characteristics. The relationship between the timing of reclassification out of ELL status and later academic achievement will also be examined.

Interventions for Struggling Adolescent and Adult Readers and Writers

Boston University
Principal Investigator: Gloria Waters
Amount: $1,597,065
Award Number: R305A100261
Period of Performance: 4/1/10-3/31/14
Description: *Assessment of Comprehension in Older Struggling Readers* — Too many students fail to develop essential comprehension skills necessary to be successful in school and in their future endeavors. Improving literacy skills relies on the availability of good assessments that can be used to target instruction. The goal of this project is to further develop a comprehensive computerized test battery that assesses the ability of middle and high school students in processing all levels of written and spoken language. Development of the battery for high school students began in a 2005 IES grant.

Florida State University
Principal Investigator: Barbara Foorman
Amount: $1,499,743
Award Number: R305A100301
Period of Performance: 3/1/10-2/28/13
Description: *Measuring Reading Progress in Struggling Adolescents* — The purpose of this project is to modify and validate the Florida Assessment for Instruction in Reading (FAIR) system, which consists of a computer adaptive assessment for students in grades 3-12. The current system includes (1) a reading comprehension screen, (2) diagnostic tasks of maze and word analysis, and (3) ongoing progress monitoring tasks of reading comprehension and maze. In this project, the team will revise the current passages used in the FAIR, modify the current maze tasks, and improve the adaptive features of the system. In addition, the team will improve the features of the system for use as a progress monitoring tool with these older readers.

University of Connecticut
Principal Investigator: Donald Leu
Amount: $2,813,127
Award Number: R305A090608
Period of Performance: 7/1/09-6/30/13
Description: *Assessing Online Reading Comprehension: The ORCA Project* — The Internet has rapidly become the defining medium for information, reading comprehension, and learning in the 21st century, and requires additional reading comprehension skills, beyond those required to comprehend printed text. A key obstacle to effective teaching of online reading skills is a lack of valid, reliable, and practical assessments of online reading comprehension intended to inform instruction and help students become better online readers. The *Online Reading Comprehension Assessment* (ORCA) Project seeks to fill that gap by developing a valid, reliable, and practical assessment of online reading comprehension.

University of Maryland, College Park
Principal Investigator: Susan De La Paz
Amount: $1,498,632
Award Number: R305A090153

Period of Performance: 7/1/09-6/30/12
Description: *Disciplinary Writing Instruction for the Social Studies Classroom: A Path to Adolescent Literacy* — As young adolescents prepare for the demands of high school and college classrooms, they must learn to read and write increasingly complex and specialized forms of text. The primary goal for this project is to develop and pilot a multi-component discipline based intervention designed to improve the writing of adolescents who are struggling readers. Controversial historical issues will be used to form the basis of the document-based instructional tasks in both reading and writing modules. Literacy skills will be taught as students read and write about authentic historical documents.

Johns Hopkins University
Principal Investigator: James McPartland
Amount: $1,499,322
Award Number: R305A090187
Period of Performance: 3/1/09-2/28/12
Description: *Strengthening Content Literacy for Struggling High School Readers: Coordinated Lessons and Support Systems for Subject Matter Teachers* — Many students enter high school as struggling readers without the skills and strategies needed to be successful with a high school level curriculum. Students' success in learning the core content of high school subjects (e.g., mathematics, science, history and literature) depends upon their ability to read the textbooks and other written materials used in these academic courses. This project will develop interventions specifically designed to strengthen struggling high school readers' skills and strategies for reading textbooks in core academic subjects.

University of Oregon
Principal Investigator: Lynn Anderson-Inman
Amount: $1,499,832
Award Number: R305A090227
Period of Performance: 4/1/09-3/31/12
Description: *The ESTRELLAS Project: Electronic Supported Text Research for English Language Learner Academic Success* — Struggling adolescent readers must overcome substantial barriers imposed by the printed materials they are asked to read if they are to gain meaningful access to text. Technology can assist students to overcome these challenges. The purpose of this project is to develop and test a set of "supported e-Text" interventions for Spanish-speaking adolescents who qualify for services as English language learners.

President and Fellows of Harvard College, Graduate School of Education
Principal Investigator: Catherine Snow
Amount: $2,853,512
Award Number: R305A090555
Period of Performance: 7/1/09-6/30/13
Description: *Word Generation: An Efficacy Trial — Word Generation* is a curricular intervention designed to promote adolescents' knowledge and use of academic vocabulary, by providing opportunities for students to read and comprehend brief academic texts on compelling and controversial topics, to discuss those texts, to hear the academic words highlighted in those texts in a variety of settings, and to write brief persuasive essays about the controversial topics focused on. Preliminary findings suggest positive effects on word learning outcomes. The

purpose of this project is to test the efficacy of this intervention at a larger scale with middle school students using a randomized clinical trial.

Success for All Foundation
Principal Investigator: Nancy Madden
Amount: $2,150,460
Award Number: R305B070324
Period of Performance: 7/1/07-6/30/11
Description: *The Reading Edge: Development and Evaluation of a High School Cooperative Learning Reading Intervention Program* — Although the poor reading skills of students in high-poverty high schools have long been recognized as a problem, there are very few replicable interventions available to improve the reading achievement of students in these grades, and fewer still that have even rudimentary evidence of effectiveness from experimental-control comparisons. This research project is designed to adapt a middle school reading intervention titled *The Reading Edge* for use in high school, and to conduct a preliminary evaluation of the program's impact on students' reading. *The Reading Edge* emphasizes cooperative learning, metacognitive strategies, and generative study skills.

Mathematics and Science Education

WestEd
Principal Investigator: Prentice Starkey
Amount: $3,500,000
Award Number: R305A120262
Period of Performance: 3/1/12–2/29/16
Description: *A Randomized Study of the Efficacy of a Two-Year Mathematics Intervention for At-Risk Pre-Kindergarten and Kindergarten Students* — Most public preschool and kindergarten programs spend little time on mathematics, although evidence is accumulating that young children benefit from early mathematics instruction. The *Pre-Kindergarten Mathematics and Early Learning in Mathematics (ELM)* curricula have been shown to improve students' mathematics achievement at pre-kindergarten and kindergarten, respectively, in prior, separate evaluations. The current study will combine the two, 1-year interventions into a 2-year pre-kindergarten and kindergarten intervention that has the potential to produce strong effects at the end of the kindergarten year and enable low-income students to perform comparably to their middle-class peers on high stakes mathematics assessments. This study will provide empirical evidence about whether the 2-year intervention improves low-income students' mathematical knowledge and the degree to which the intervention closes the socioeconomic status-related achievement gap in students' mathematical knowledge.

Mid-continent Research for Education and Learning (McREL)
Principal Investigator: Andrea Beesley
Amount: $1,878,435
Award Number: R305A120045
Period of Performance: 3/1/12-2/29/16
Description: *Efficacy Study of a Pre-Algebra Supplemental Program in Rural Mississippi Schools* — In some states, rural students continue to lag significantly behind their non-rural peers

in mathematics achievement. A strong correlate of the mathematics achievement gap between rural and non-rural students is the availability for opportunities to learn. Providing supplemental learning activities can help improve the mathematics achievement of rural students by providing students with additional opportunities to learn the content. This study will evaluate the efficacy of a supplemental mathematics curriculum, *Every Day Counts Algebra Readiness (EDC Algebra Readiness)*, in Mississippi, a state with a sizable number of rural schools and the largest gap in achievement on the eighth-grade algebra scale of the National Assessment of Educational Progress.

University of California, Berkeley
Principal Investigator: Mark Wilson
Amount: $1,426,540
Award Number: R305A120217
Period of Performance: 3/1/12-2/29/16
Description: *Innovative Computer-Based Formative Assessment via a Development, Delivery, Scoring, and Report-Generative System* — Formative assessments, when used correctly and consistently, can improve student learning. Furthermore, computerized formative assessments can provide teachers with rich diagnostic information about students' learning in a timely manner, which allows for instructional planning. Many online assessment products currently exist but these products do not typically take into consideration students' learning progressions, incorporate complex item formats that evaluate constructed responses, or include sophisticated item response modeling techniques. To address this need, the current study will develop and validate a computerized formative assessment system around the topics of statistics and modeling to improve the quality and usefulness of the assessment data provided to teachers.

The Hospital for Sick Children
Principal Investigator: Rosemary Tannock
Amount: $2,749,546
Award Number: R305A120184
Period of Performance: 3/1/12-2/29/16
Description: *Investigation of the Efficacy of the JUMP Program of Mathematics Instruction* — Research on the efficacy of comprehensive mathematics curricula and instruction continue to be in short supply. Existing programs have not had a sizable impact on mathematics achievement, so there is a need for innovative, evidence-based approaches for teaching mathematics. The current study will evaluate the efficacy of a newly developed mathematics curriculum, *Junior Undiscovered Math Prodigies (JUMP Math)*, that has promising evidence of its potential impact to improve learning in mathematics.

WestEd
Principal Investigator: Edys Quellmalz
Amount: $1,599,764
Award Number: R305A120390
Period of Performance: 7/1/12-6/30/16
Description: *SimScientists Assessment System* — To date, technology has been used mainly to support the logistics of assessment administration and scoring. However, new technology has also shown promise as a tool for the development of measures of complex learning that can be useful for instruction. There is a need, then, to develop and validate simulation-based science

assessments designed for classroom-, district-, and state-level use. To that end, the researchers will develop and validate a vertically aligned set of simulation-based assessments for the Life Science strand encompassing three units taught in middle school: Cells, Human Body Systems, and Ecosystems. Both curriculum-embedded formative assessments intended to monitor progress and summative end-of-unit benchmark assessments will be developed.

American Association for the Advancement of Science
Principal Investigator: Cari Herrmann Abell
Amount: $1,598,086
Award Number: R305A120138
Period of Performance: 8/1/12-7/31/16
Description: *The Development and Validation of an Assessment Instrument to Study the Progression of Understanding of Ideas about Energy from Elementary School through High School* — Energy is a key topic in science with many applications to earth, physical, and life science, as well as to engineering and technology. Therefore, it is important to have high-quality assessments focusing on energy to determine what students do and do not know about the topic and how those ideas develop across grade levels. The purpose of this project is to develop and validate a set of three assessment instruments to monitor how students progress in their understanding of important ideas about energy from late elementary school through high school.

Worchester Polytechnic Institute
Principal Investigator: Janice Gobert
Amount: $1,499,587
Award Number: R305A120778
Period of Performance: 7/1/12–6/30/15
Description: *The Development of an Intelligent Pedagogical Agent for Physical Science Inquiry Driven by Educational Data Mining* — The National Research Council's new framework for K-12 science education emphasizes the integration of scientific inquiry with disciplinary content knowledge. This integration is intended to help students learn to apply and transfer their science knowledge in more flexible ways. Recent studies suggest that tutoring students in scientific inquiry through the use of pedagogical agents is a promising, innovative approach for improving student learning in science. To that end, the current project will develop a pedagogical agent designed to assist students in learning inquiry in new science topics while also seamlessly integrating assessments with the instruction.

Vanderbilt University
Principal Investigator: Richard Lehrer
Amount: $3,706,097
Award Number: R305A110685
Period of Performance: 7/1/11-6/30/15
Description: *Data Modeling Supports the Development of Statistical Reasoning* — Statistics and data are featured prominently in the emerging national core standards in mathematics at the middle grades, but instruction in the middle grades typically isolates data from chance and fails to focus on foundations of statistical reasoning. These neglected foundations include structuring variability in data as distributions, relating data distribution to chance, and generating models of chance to guide statistical inference. Under the *Data Modeling* curriculum, these skills and understandings are integrated into a coordinated, cohesive curriculum. The goal of this project is

to examine the efficacy of the *Data Modeling* curriculum on student learning and attitudes toward the mathematics of data and statistics at grade 6. The intervention includes a sequence of seven lessons to guide teachers in teaching key ideas, a set of coordinated formative and summative assessment items used to measure student learning and to inform instruction, and a professional development model and tools for teachers.

Mills College
Principal Investigator: Catherine Lewis
Amount: $1,494,236
Award Number: R305A110500
Period of Performance: 9/1/11-8/31/14
Description: *Focused and Coherent Elementary Mathematics: Japanese Curriculum Resources for U.S. Teachers* — The *Mathematics for Elementary School* curriculum is the most widely used elementary textbook in Japan. The curriculum is organized around well-established cognitive science principles of learning including eliciting students' prior knowledge, helping students to organize their knowledge around important concepts, promoting students' reflection on their learning, and using contrasting or conflicting ideas to stimulate conceptual development. It remains to be seen, however, whether translated versions of these Japanese textbooks can be used effectively on a wide scale in U.S. mathematics classrooms. As a first step to answering this question, the proposed project will translate, revise, and adapt the Japanese mathematics curriculum, *Mathematics for Elementary School*, for widespread use by U.S. K–2 educators. The team will also carry out a small pilot test of the promise of the curriculum in improving mathematics achievement of U.S. first-grade students.

Regents of the University of Minnesota
Principal Investigator: Asha Jitendra
Amount: $4,953,808
Award Number: R305A110358
Period of Performance: 9/1/11-8/30/15
Description: *Learning of Ratio and Proportion Problem-Solving Using Schema-Based Instruction: Efficacy and Sustainability* — The mathematics performance of U.S. students by grade 8 is below the international average on more advanced mathematics topics including geometry, measurement, and proportionality. One explanation for the lower levels of performance may be students' difficulties with proportional reasoning, which is considered to be a capstone of elementary mathematics and a necessity for the more advanced mathematics that students encounter in high school and college. Building upon work from a prior IES grant, the goal of this project is to evaluate the efficacy of an intervention (schema-based instruction or "SBI") aimed at improving seventh-grade students' learning of ratio and proportional reasoning.

University of Denver
Principal Investigator: Douglas Clements
Amount: $1,895,857
Award Number: R305A110188
Period of Performance: 5/1/11-4/30/14
Description: *Longitudinal Study of a Successful Scaling-Up Project: Extending TRIAD* — Some research has indicated that early childhood interventions have lasting effects, while other research suggests that the effects of early childhood interventions diminish over time. This mixed

evidence base warrants further research on the sustainability of early childhood interventions and the need to identify elements of continued support necessary for preserving initial gains from early childhood interventions. To that end, the researchers will assess the long-term effectiveness of the TRIAD (Technology-enhanced, Research-based, Instruction, Assessment and professional Development) program on students' mathematics achievement by extending an IES-funded scale-up evaluation. The original sample of students from pre-kindergarten to grade 1 in the scale-up evaluation will be followed for 4 additional years during grades 2 through 5.

University of Chicago
Principal Investigator: Dae Kim
Amount: $960,404
Award Number: R305A110621
Period of Performance: 7/1/11-6/30/14
Description: *Scientific Validation of a Set of Instruments Measuring Fidelity of Implementation (FOI) of Reform-Based Science and Mathematics Instructional Materials* — Careful description and measurement of fidelity of implementation is essential in order to know which components of reform-based mathematics and science programs bolster or hinder student performance, or to determine the differential effects of incomplete or incorrect implementation of instructional materials. The determination of whether instructional materials have been adequately and faithfully implemented necessitates reliable and valid indicators of the extent, quality, and type of the implementation of the materials. However, there are few available tools to measure these factors. The goal of this project is to expand and validate a set of existing instruments for measuring the fidelity of implementation of reform-based science and mathematics instructional materials.

Strategic Education Research Partnership Institute
Principal Investigator: Mary Suzanne Donovan
Amount: $1,491,949
Award Number: R305A100150
Period of Performance: 6/1/10–5/31/13
Description: *Transforming Algebra Assignments* — Research within the domains of cognitive science and mathematics education suggests that students develop a better understanding of mathematics concepts and learn more quickly when half of their practice problems are replaced with worked-out example solutions. Learning is further enhanced when students are prompted to provide explanations for key steps in the worked examples. Despite an accumulation of evidence, typical Algebra I textbooks contain few worked-out example solutions and few prompts for student explanations. To address this gap, the research team will develop a set of Algebra I assignments that interleave worked examples and prompts for self-explanation with problems that students must solve on their own. In addition, the team will develop teacher professional development materials (PD) and assessments to accompany the assignments.

Georgia Institute of Technology
Principal Investigator: Susan Embretson
Amount: $1,854,393
Award Number: R305A100234
Period of Performance: 6/1/10–5/31/14

Description: *An Adaptive Testing System for Diagnosing Sources of Mathematics Difficulties* — Current standards-based state accountability tests typically find that many students do not meet proficiency standards. However, state accountability tests cannot pinpoint specific sources of students' difficulties so that differentiated instruction may be provided to remedy the difficulties. The purpose of this project is to build an online and on-demand adaptive assessment system to diagnose sources of students' mathematics difficulties and deficits that are linked to state standards-based assessments. The researchers will develop an online diagnostic assessment system to diagnose sources of students' mathematics deficits and provide information to teachers to guide instruction.

WestEd
Principal Investigator: Jodi Davenport
Amount: $1,498,113
Award Number: R305A100069
Period of Performance: 3/1/10–2/28/13
Description: *Embedded Assessments Using the ChemCollective Virtual Lab* — Test scores on the most recent National Assessment of Educational Progress (NAEP) indicate that nearly half of 12th-grade students fail to reach basic proficiency in science. One contributing factor may be that current high school chemistry curricula do not support the development of deep conceptual understanding of chemical principals or scientific inquiry skills. To address this need, the researchers will develop *Virtual Lab*-based activities with embedded assessments that allow students to engage in authentic chemistry investigations while getting personalized coaching. These activities are expected to lead to improvements in students' science achievement through a deeper understanding of chemical principles and their ability to plan and conduct laboratory investigations.

Southwest Education Development Corporation
Principal Investigator: Michael Vaden-Kiernan
Amount: $6,145,582
Award Number: R305A100116
Period of Performance: 7/1/10–6/30/14
Description: *National Randomized Control Trial of Everyday Mathematics* — Given the importance of early mathematics instruction and curricula for preventing mathematics difficulties in later grades, it is necessary to identify effective mathematics curricula and instruction to ensure that children become proficient in early mathematics content and procedures. One widely used elementary mathematics curriculum, *Everyday Mathematics* is reported to have "potentially positive effects" on students' mathematics achievement. However, most of the studies that have evaluated *Everyday Mathematics* have used quasi-experimental designs or are small-scale randomized control trials. This research team will conduct a scale-up evaluation of this widely used curriculum. The results of this study will contribute to determining whether *Everyday Mathematics* is effective in promoting mathematic proficiency in the elementary grades.

University of California, Los Angeles
Principal Investigator: Noreen Webb
Amount: $690,000
Award Number: R305A100181
Period of Performance: 3/1/10–2/29/12

Description: *Improving Mathematics Achievement through Active Student Participation in Mathematics Classrooms* — A growing body of research in mathematics education suggests that engaging students as active participants in mathematics classrooms is central to the development of their mathematical skills and understanding. This project will explore the kinds of student participation that are productive for learning, and the teacher practices that promote high-quality student participation and high levels of student achievement in mathematics. The researchers will conduct secondary data analysis of video- and audio-taped classroom observation data of mathematics lessons focusing on number relations and operations taught in kindergarten to grade 6 classrooms.

Educational Testing Service
Principal Investigator: Malcolm Bauer
Amount: $1,572,975
Award Number: R305A100518
Period of Performance: 7/1/10–6/30/14
Description: *Creating Cross-Grade Assessments of the Development of Core Algebraic Constructs* —There is a large body of research linking the consistent and systematic use of formative assessments to improved student learning. However, many of these programs fall short because either they do not provide specific questions for teachers to ask students, or they do not provide training or support materials to help teachers understand what to do next. The current study seeks to address this gap between the research on formative assessments and what it takes to implement these types of assessments in the classroom by developing and validating a set of formative assessments that middle school mathematics teachers can readily incorporate into their existing curricula in order to guide instructional decisions related to three key concepts in algebra—equality, notion of a variable, and multiplicative reasoning.

SRI International
Principal Investigator: Angela DeBarger
Amount: $1,819,505
Award Number: R305A100475
Period of Performance: 7/1/10–6/30/14
Description: *Establishing the Validity and Diagnostic Capacity of Facet-Based Science Assessments* — Formative use of diagnostic classroom assessments can be one of the most powerful ways to improve student achievement. These assessments have the potential to provide critical information to students and teachers about whether students understand the targeted concepts, and if not, what problematic or partial understandings are present instead. Facet-based assessments are one innovative approach to help teachers diagnose students' science understanding. A facet is the use of one or more pieces of knowledge and reasoning by the learner in order to solve a problem or explain an event. This study will focus on the development and validation of facet-based assessments focusing on 17 facet clusters related to three key concept strands in Force and Motion at the middle and high school levels—Description of Motion, Nature of Forces, and Forces to Explain Motion.

University of North Carolina, Charlotte
Principal Investigator: Stephanie Moller
Award Number: R305A100822
Amount: $480,158

Period of Performance: 7/1/10–6/30/12
Description: *Do Professional Communities Improve K-16 Curricula Mastery and Augment Mathematics Achievement?* — To date, there has not been a comprehensive national analysis of students' mathematics achievement between kindergarten and 12th grade. To address this need, the researchers will examine how mathematics curricula, instruction, and school organizational structure (i.e., professional communities) augment or change students' mathematics achievement from elementary to high school, and on into college using data from the Early Childhood Longitudinal Study, the National Education Longitudinal Study, and the Education Longitudinal Study.

American Association for the Advancement of Science
Principal Investigator: Jo Ellen Roseman
Amount: $2,441,360
Award Number: R305A100714
Period of Performance: 9/1/10–8/31/13
Description: *Toward High School Biology: Helping Middle School Students Make Sense of Chemical Reactions* — Research on learning indicates that students have difficulties understanding phenomena involving either living or non-living systems at the molecular level. Despite the well-documented difficulties that students have in understanding many science ideas, particularly ideas related to chemical and biochemical change, currently available textbooks do little to help students overcome these difficulties. To address this need, the researchers will develop two instructional units focusing on chemistry and biochemistry, including content focused on chemical and biochemical change that are designed as replacements for, or supplements to, currently used middle school science curricula.

Florida State University
Principal Investigator: Victor Sampson
Amount: $1,062,214
Award Number: R305A100909
Period of Performance: 7/1/10–6/30/13
Description: *Argument-Driven Inquiry in the Middle and High School Laboratory: The Refinement and Further Development of a New Instructional Model* — Most laboratory experiences in U.S. science classrooms are isolated from the flow of classroom science instruction and are typically prescriptive in nature. Traditional laboratory experiences also rarely incorporate ongoing reflection and discussion between teachers and students, even though there is evidence that indicates that opportunities to reflect on one's own thinking is essential for students to make meaning out of their laboratory activities. To address this problem, the researchers will develop an instructional model called *Argument-Driven Inquiry* that can be used by teachers to change the nature of laboratory experiences inside middle or high school science classrooms to better support and promote the development of students' scientific proficiency.

University of Illinois, Chicago
Principal Investigator: Mike Stieff
Amount: $1,121,094
Award Number: R305A100992
Period of Performance: 7/1/10–6/30/13

Description: *The Connected Chemistry Curriculum* — At all levels, chemistry deals with concepts and phenomena that are not directly observable to students. Therefore, instructors often encourage students to engage in visualization of mental images for learning and problem solving in chemistry. Visualization is difficult and complex, and educational software designers have promoted the use of technology to address students' difficulty with visualizations in chemistry. To that end, the researchers will develop a high school chemistry curriculum, *Connected Chemistry*, which makes central use of computer-based visualization tools.

University of California, Berkeley
Principal Investigator: Mark Wilson
Amount: $1,599,931
Award Number: R305A100692
Period of Performance: 7/1/10–6/30/14
Description: *Learning Progressions in Middle School Science Instruction and Assessment* — State-adopted science standards are designed to describe the level of science proficiency expected of students from kindergarten to grade 12. However, the standards are often organized in discrete grade levels without attention to the developmental continuity across grades. Learning progressions are a new approach to thinking about how to structure science education. Learning progressions outline potential cognitive paths that students might experience as they develop a more sophisticated understanding of a core scientific concept. The purpose of this project is to develop assessments for learning progressions in physical science together with assessments of students' scientific reasoning. The researchers will develop and validate assessments for learning progressions in physical science focusing on the Structure of Matter, along with assessments of students' scientific reasoning at grade 8.

University of Memphis
Principal Investigator: Xiangen Hu
Amount: $2,364,610
Award Number: R305A090528
Period of Performance: 7/1/09-6/30/13
Description: *Applications of Intelligent Tutoring Systems (ITS) to Improve the Skill Levels of Students with Deficiencies in Mathematics* — This efficacy study will examine a web-based, artificial intelligent assessment and learning system called the *Assessment and Learning in Knowledge Spaces* (ALEKS) system, which uses adaptive questions to quickly and accurately determine what a student knows and does not know. The system is being used as a strategic intervention in after-school settings and is intended to improve math skills of struggling sixth grade students. With the goal of ensuring long-term learning, ALEKS periodically reassesses the student and uses the results to adjust the lessons students encounter in the system.

University of Iowa
Principal Investigator: Brian Hand
Amount: $4,836,057
Award Number: R305A090094
Period of Performance: 6/1/09–5/31/13
Description: *Efficacy of the Science Writing Heuristic Approach* — Basic scientific literacy, knowledge, and skills are needed in order to participate effectively in a society increasingly shaped by science and technology. Unfortunately, mastery of rudimentary science knowledge

and skills continue to be a challenge for many students. To address this need, the current study will test the efficacy of an inquiry approach that helps build elementary school students' science content knowledge, argumentation skills, and interest. Specifically, the researchers will carry out a randomized field trial in order to evaluate the effects of participating in the *Science Writing Heuristic* approach on the science achievement of students in grades 4-6, as measured by student performance on the Iowa Test of Basic Skills Science test.

University of Illinois, Chicago
Principal Investigator: James Pellegrino
Amount: $1,943,388
Award Number: R305A090111
Period of Performance: 3/1/09–2/28/13
Description: *The Cognitive, Psychometric, and Instructional Validity of Curriculum-Embedded Assessments: In-Depth Analyses of the Resources Available to Teachers Within "Everyday Mathematics"* — Progress toward improving the quality of mathematics teaching and learning has been slow despite the introduction of standards-based curricula, such as *Everyday Mathematics*, and efforts to support teachers' implementation of reform-based classroom practices. Embedded assessments are considered to be a key element of reform-based curricula with the goal of supporting more effective instructional practices such as making students' thinking visible and providing opportunities for feedback. In the current study, the researchers will test the validity of embedded assessments within the *Everyday Mathematics* curriculum. The focus will be on three content strands within the curriculum at grades 3 and 5: Number and Numeration; Operations and Computation; and Patterns, Functions, and Algebra.

WestEd
Principal Investigator: Steve Schneider
Amount: $2,698,814
Award Number: R305A090197
Period of Performance: 3/1/09–2/28/13
Description: *Efficacy Study of AnimalWatch: An Intelligent Tutoring System for Pre-Algebra* — Algebra is considered a critical "gatekeeper" mathematics course for high school graduation and college enrollment, but many students continue to struggle with algebra and failure rates are high. Often, the problem is that students have not yet mastered the prerequisite computation, fractions, and algebra readiness skills necessary to successfully solve algebraic problems. One potential way to improve student mathematics achievement and prepare students for algebra may be through the use of intelligent tutoring systems. In this study, the researchers are evaluating the efficacy of the *AnimalWatch System*, a computer-based intelligent tutor designed to provide individualized tutoring for students in pre-algebra. The *AnimalWatch System* was developed with support from a previous IES Goal 2 Development grant.

University of California, Irvine
Principal Investigator: George Farkas
Amount: $3,000,000
Award Number: R305A090527
Period of Performance: 7/1/09-6/30/13
Description: *Spatial Temporal Mathematics at Scale: An Innovative and Fully Developed Paradigm to Boost Math Achievement Among All Learners* — Researchers will evaluate the

efficacy of *Spatial Temporal (ST) Math*, a software program intended to supplement existing mathematics curricula in second to fifth grade. It includes a coordinated series of computer games that build on a key cognitive ability, variously called visualization, spatial ability, or spatial temporal reasoning. Second- to fifth-grade students from diverse demographic backgrounds, including economically disadvantaged students and English language learners, will participate in this randomized field trial.

Trustees of Indiana University
Principal Investigator: Jonathan Plucker
Amount: $2,019,816
Award Number: R305A090195
Period of Performance: 3/1/09–2/28/13
Description: *Testing the Effectiveness of CALM for High School Chemistry Students* — To address the poor science achievement of high school students and to help reduce the achievement gap, high school science teachers need interventions that improve student learning in science. Unfortunately, there are few science interventions currently available to high school science teachers that have rigorous, scientifically based evidence of their impact on students' science achievement. Therefore, this study seeks to assess the efficacy of the *Computer Assisted Learning Method* (CALM), a fully developed chemistry program widely used in the state of Indiana.

University of Miami
Principal Investigator: Okhee Lee
Amount: $2,999,918
Award Number: R305A090281
Period of Performance: 7/1/09–6/30/13
Description: *Promoting Science among English Language Learners (P-SELL): Efficacy and Sustainability* — For English language learning (ELL) students, content area instruction, such as science, should provide a meaningful learning environment for English language and literacy development. However, ELL students frequently confront the demands of academic learning through a yet-unmastered language without the instructional support they need. As a result, ELL students often fall behind their English-speaking peers in content areas. Thus, an intervention with evidence of efficacy in promoting academic learning with ELL students is needed, especially in content areas such as science. To address this need, the researchers intend to evaluate the efficacy of the *Promoting Science among English Language Learners* (P-SELL) curriculum.

University of Virginia
Principal Investigator: Mable Kinzie
Amount: $1,949,854
Award Number: R305A070068
Period of Performance: 3/1/07-2/28/11
Description: *Pre-Kindergarten Mathematics and Science for At-Risk Children: Outcomes-Focused Curricula and Support for Teaching Quality* — There are significant differences in students' mathematical and science knowledge and performance from prekindergarten through high school across socioeconomic groups, such that students who live in poverty exhibit lower levels of achievement and are at risk for later school failure. Currently, there is a lack of

integrated prekindergarten mathematics and science curricula that also incorporate materials for teacher professional development and implementation. To address this limitation, the researchers are developing, implementing, and conducting an initial evaluation of an integrated preschool math and science curriculum that is anchored to state benchmarks. The curriculum includes detailed lesson plans that are linked to demonstration videos of high-quality implementation, along with a range of teaching resources.

Middle and High School Reform

Institute for Research and Reform in Education
Principal Investigator: James Connell
Amount: $1,499,517
Award Number: R305A100423
Period of Performance: 7/1/10-6/30/13
Description: *Bringing Rigor and Relevance to High School Reform through Thematic Curricula* — The research and development team will develop and pilot two high school-level thematic curricula, in the areas of Health and the Arts, with emphasis on rigorous content/instruction and student engagement. Classroom observation, teacher reports, and student surveys will be used to measure implementation of the curriculum, teachers' pedagogical strategies, student engagement in the curricula, and impacts of the curricula on broader measures of school engagement.

Postsecondary Education

Ohio State University
Principal Investigator: Gail McKoon
Amount: $1,592,493
Award Number: R305A120189
Period of Performance: 6/1/12-5/31/16
Description: *A Cognitive Science Investigation of Struggling Adult Readers' Skills* — Although researchers have made progress in determining the underlying component processes that children and adolescents use while reading, little is known about the processes used by struggling adult readers. In this project, researchers plan to explore whether young readers and older readers employ the same processes. This will help determine whether or which reading interventions used with younger readers may help older ones as well. This project will explore the component processes adult readers use as they occur in real time, comparing the patterns exhibited by struggling adult readers with non-struggling, college-aged and older readers.

SRI International
Principal Investigator: Lynn Newman
Amount: $689,151
Award Number: R305A120300
Period of Performance: 7/1/12-6/30/14
Description*: Factors Associated with Postsecondary Success for Students with Disabilities* — Students with disabilities face significant obstacles in making successful transitions to college. Not only do students with disabilities continue to face challenges to learning as they move into college, only 28 percent of postsecondary students with disabilities disclose their disabilities to

their colleges, and thus may not receive the types of supports they received in the K–12 system. Unknown is the specific relationship between these types of college interventions and postsecondary outcomes for students with disabilities. The purpose of this study is to examine this relationship. The researchers will answer questions such as: What is the relationship between receipt of postsecondary interventions—both those available because of a disability and those available to the general student body—and postsecondary persistence and completion for students with disabilities?

National Bureau of Economic Research
Principal Investigator: Eric Bettinger
Amount: $4,899,247
Award Number: R305A120280
Period of Performance: 3/1/12-2/28/17
Description: *Improving Information and Access to Financial Aid: Expanding the FAFSA Experiment* — The purpose of this research project is to test the effects of simplifying the financial aid application process and providing assistance in the financial aid application process at scale. Findings from previous efficacy studies found that providing these two supports to high school seniors led to a 20 percent increase in college attendance in our target areas in Ohio and North Carolina. The researchers will evaluate the effects of the simplification of the financial aid application process and assistance on college outcomes.

University of Wisconsin at Milwaukee
Principal Investigator: Diane Reddy
Amount: $2,475,839
Award Number: R305A110112
Period of Performance: 6/1/11-5/31/15
Description: *Evaluating the Success of Undergraduates in the U-Pace Intervention to Improve Academic Achievement for All Postsecondary Education Students* — The University of Wisconsin at Milwaukee has developed an instructional approach, known as U-PACE, for its introductory psychology course that combines self-paced online learning with mastery learning and amplified assistance (in which the instructor initiates support to student on both course material and to increase student motivation). The goal of this instructional approach is to improve student achievement in these courses and increase student retention. The researchers will evaluate U-PACE through experiments carried out in introductory courses within psychology, sociology, and political science.

University of North Carolina, Greensboro
Principal Investigator: Julie Edmunds
Amount: $1,851,954
Award Number: R305A110085
Period of Performance: 7/1/11-6/30/14
Description: *Follow-Up to the Study of the Efficacy of North Carolina's Early College High School Model* — This project will carry out a follow-up of students already taking part in an evaluation of North Carolina's Early College High School program. Early College High Schools are intended to increase the number of students graduating from high school who are prepared for and who enroll in postsecondary education. In this follow-up study of an earlier IES grant that found significant initial impacts on 9th- and 10th-graders, impacts will be estimated for longer

term outcomes including success in college preparatory courses, high school graduation, college credit attainment during high school, and enrollment and persistence in postsecondary education.

MDRC
Principal Investigator: Lashawn Richburg-Hayes
Amount: $1,558,732
Award Number: R305A110204
Period of Performance: 4/1/11-3/31/14
Description: *Performance-Based Scholarship Demonstration: An Alternative Financial Aid Program to Incentivize Academic Success* — This project will extend an ongoing randomized control trial, known as the *Performance-Based Scholarship* (PBS) Demonstration, that is evaluating the impacts of incentive scholarships on postsecondary outcomes for low-income college students. The PBS Demonstration began in 2008 and has recruited over 10,000 students across 4 states. Funded by other sources, the PBS Demonstration tracks college students' academic outcomes for up to 2 years after random assignment. This project will further examine 2 years of outcome data for students who took part in the demonstration in 3 of the states.

EdBoost Education Corporation
Principal Investigator: Tiffani Chin
Amount: $2,977,301
Award Number: R305A110809
Period of Performance: 8/1/11-7/31/15
Description: *Promoting College Enrollment among Disadvantaged Students: A Randomized Controlled Trial of Two Low-Cost Interventions* — The research team will test the efficacy of *V-SOURCE* (Virtual Student Outreach for College Enrollment), a 15-month program designed to increase college access among academically eligible, disadvantaged high school students by providing support for the college application process. The project will also test the efficacy of a less intensive variant of the program, *Milestones*, which focuses on getting students to complete key college application milestones using automated reminders and incentives. Both programs are based on an earlier program known as *SOURCE* that used one-on-one mentoring to support students as they applied for college and was tested in a prior randomized control trial.

Florida State University
Principal Investigator: Shouping Hu
Amount: $774,910
Award Number: R305A110609
Period of Performance: 7/1/11-6/30/14
Description: *State Merit Aid Program and Student College Choice and Success: Evaluating the Efficacy of Florida's Bright Futures Program* — In this study, researchers will evaluate the effects of Florida's *Bright Futures Scholarship* program, a merit aid program, on: (1) college enrollment and degree production in the state and its different postsecondary institution types; and (2) students' college choice, persistence, and degree completion. The researchers will answer questions such as: Does the *Bright Futures* program affect aggregated college enrollment and degree production in Florida? How does the effect vary by type of institutions (i.e., selectivity), gender, and race/ethnicity? Does the *Bright Futures* program affect college choice for individual students? How does this vary by gender, race/ethnicity, and socioeconomic status (as reflected by student eligibility to free and reduced lunch program)?

University of Southern California
Principal Investigator: William Tierney
Amount: $1,464,509
Award Number: R305A110288
Period of Performance: 4/1/11-3/31/14
Description: *Strategizing for College: A Game-based Approach to Increasing College Access* — Through the development of online games, the goal of this project is to develop a means for students to learn, both on their own and through social interaction with peers, about various postsecondary options and how to attain them. The intended audience is students with low-income backgrounds who are not aware of their postsecondary options and who attend schools lacking strong college guidance counseling. The researchers will answer questions such as: In what ways do game-based strategies motivate low-income students to pursue a college education?

University of Michigan
Principal Investigator: Isaac McFarlin Jr.
Amount: $2,573,484
Award Number: R305A100369
Period of Performance: 7/1/10-6/30/14
Description: *Causes and Consequences of Public Subsidies in Higher Education: Evidence from Community College Districts* — This project will examine the causes and consequences of tax policies and tuition rates of community colleges on student outcomes including postsecondary access, choice, and success (credits, degrees, earnings). The design is provided by a 'natural experiment' in which differences in policies among community colleges allows for comparison of the effects of tax subsidies on community college attendance and completion.

University of Southern California
Principal Investigator: Tatiana Melguizo
Amount: $546,452
Award Number: R305A100381
Period of Performance: 5/1/10-4/30/12
Description: *Evaluating the Effects of Basic Skills Mathematics Placement on Academic Outcomes of Community College Students* — This project evaluates the effectiveness of basic math skills education on the course-taking patterns of community college students and the subsequent effect on math success, transfer, and graduation using transcript data from nine community colleges.

MDRC
Principal Investigator: Mike Weiss
Amount: $1,584,722
Award Number: R305A100066
Period of Performance: 4/1/10-3/31/13
Description: *Evaluating the Long-Term Effects and the Costs of Two Community College Interventions* — This project will evaluate the long-term educational effects of two promising community college programs operated as part of the Opening Doors Demonstration, an efficacy study of programs aimed to help community college students succeed. It will also estimate the costs of operating the programs in comparison to the usual college services.

Board of Trustees of the Leland Stanford Junior University
Principal Investigator: Caroline Hoxby
Amount: $2,879,635
Award Number: R305A100120
Period of Performance: 3/1/10-2/28/14
Description: *Evaluation of a Random Assignment Intervention to Improve College Choice Among High Achieving, Low Income Students* — This study will evaluate the effects of four interventions designed to increase applications to selective colleges by qualified low-income students through providing informational and financial supports. Students will be randomly assigned to a control group or to receive application information, financial aid information, coupons for application fee waivers, information for parents, and/or contact by a peer who has already applied to college. The success of the interventions will be measured in regard to college applications and college offers including offers of financial aid, and persistence.

University of California, Davis
Principal Investigator: Michal Kurlaender
Amount: $1,831,608
Award Number: R305A100971
Period of Performance: 7/1/10-6/30/14
Description: *Ready or Not? California's Early Assessment Program and the Transition to College* — The project will evaluate the impact of California's Early Assessment Program (EAP) in reducing the need for remediation at California State University. EAP is a program in which students voluntarily agree to participate in additional assessment in the junior year of high school in order to receive feedback on their college readiness. The study will investigate the effect of EAP participation on student course-taking in the senior year of high school and on student applications to the California State University system.

University of Massachusetts, Dartmouth
Principal Investigator: Amy Shapiro
Amount: $504,246
Award Number: R305A100625
Period of Performance: 7/1/10-6/30/13
Description: *The Efficacy of Personal Response Systems (Clickers) as Learning Tools: A Multidisciplinary, Large-Scale, Empirical Evaluation* — The project will evaluate the efficacy of personal response systems (also known as Clickers) in facilitating learning in introductory college courses in biology, physics, and psychology. The study will gather evidence on whether providing responses and receiving immediate feedback through Clickers promotes cognitive activity that results in deeper learning, or increases learning by drawing students' attention and study efforts to important material.

National Bureau of Economic Research
Principal Investigator: Bridget Terry Long
Amount: $1,510,238
Award Number: R305A090204
Period of Performance: 3/1/09-2/28/13
Description: *Simplification and Incentives: A Randomized Experiment for Increasing College Savings* — The project will evaluate the effects of providing different levels of information about

529 College Savings Plans and support in opening college savings plans to individuals. The intent is to determine how best to encourage saving for college, and to ascertain how saving behavior relates to college outcomes.

Reading and Writing

University of Minnesota
Principal Investigator: Theodore Christ
Amount: $1,599,950
Award Number: R305A120086
Period of Performance: 6/1/12-5/31/16
Description: *Computer Based Assessment System for Reading (CBAS-R): Skills Analysis and Progress Monitoring* — Despite the recent increase in the number of reading assessments created for use in classrooms, very few assessments are designed to provide ongoing instructionally-relevant information to teachers. In this study, researchers intend to further develop and validate the *Computer-Based Assessment System for Reading* (CBAS-R), which is designed to be a highly efficient tool to monitor student progress, evaluate students' strengths and weaknesses in reading, and gauge the effects of instruction. The assessment is aimed at guiding instruction in kindergarten through grade 5 classrooms. The new version of the CBAS-R will assess both broad and component reading skills including: concepts of print; phonological skills; automaticity/fluency; phonics; vocabulary; and comprehension. Because the CBAS-R will be a computer adaptive test, the goal is that it will benefit teachers and students by decreasing the amount of time required to administer the assessment, thus leaving more time for instruction.

Florida State University
Principal Investigator: Young Suk Kim
Amount: $1,600,000
Award Number: R305A120147
Period of Performance: 7/1/12-6/30/16
Description: *Development of Oral and Silent Reading Fluency and Their Relation with Reading Comprehension in First Through Third Grade Students* — Despite the recognized importance of reading fluency for reading comprehension development, research has tended to focus on oral reading fluency with little attention given to how silent reading fluency develops over time and how to best support children during the transition from oral to silent reading. The goals of this study are to: (1) explore the development of oral and silent reading fluency (including reading prosody) and their relation with reading comprehension for first through third grade students; (2) examine whether the relation varies as a function of students' word reading proficiency; (3) document and describe current classroom instruction in oral and silent reading fluency; and (4) identify promising instructional practices for oral and silent reading fluency development.

Arizona State University
Principal Investigator: Danielle McNamara
Amount: $1,600,000
Award Number: R305A120707
Period of Performance: 7/1/12-6/30/16

Description: *Exploration of Automated Writing Strategy Instruction for Adolescent Writings Using The Writing Pal — The Writing Pal* (W-Pal) provides writing strategy instruction, game-based writing practice, essay writing practice, and formative feedback to adolescent writers. The purpose of this project is to explore how components of the fully developed W-Pal are related to student writing strategy acquisition and writing proficiency. Researchers will examine the extent to which students' strategy acquisition and interactions with the W-Pal are influenced by individual differences such as prior writing skill and strategy use, writing self-efficacy, and attitudes about writing. Additionally, researchers will explore the effects of different formats for strategy instruction, different modes and formats of practice, and different essay feedback formats on students' writing strategy acquisition.

Regents of the University of Michigan
Principal Investigator: Holly Craig
Amount: $1,172,679.98
Award Number: R305A120320
Period of Performance: 8/1/12-7/31/15
Description: *Exploring the Contribution of Social, Cognitive, and Linguistic Factors on the Development of Style Shifting by Young African-American English-speaking Students Learning to Read* —On average, African-American students significantly underperform academically in comparison to their non-African-American peers, especially in the foundational area of reading achievement. Part of the reason African American youth often underperform academically compared to their peers may be because many are speakers of African-American English (AAE), a rule-governed variety of English that contributes to the culture of African-American communities. New research has shown that students who produce more frequent AAE features tend to have lower reading scores. On the other hand, African-American students who are able to switch between AAE and Standard American English (SAE) when appropriate—called style shifting—show increased reading performance. This project's activities were motivated by results from a previous IES-funded Development and Innovation project which is developing an intervention intended to teach style shifting to young African-American students. The team observed that a substantial proportion of the students in that study were never able to learn to style shift, which potentially places them at an academic disadvantage. Because little is known about the predictors of learning to style shift, the current study will explore the developmental trajectory of AAE feature production, and examine if student features such as metalinguistic awareness, executive function, and demographic characteristics predict the ability to style shift.

University of Pittsburgh
Principal Investigator: Cynthia Puranik
Amount: $1,177,128
Award Number: R305A120368
Period of Performance: 7/1/12-6/30/15
Description: *Peer Assisted Writing Strategies (PAWS)* — While both reading and writing are necessary for success in school and the workplace, the vast majority of research and intervention development has focused on reading skills. Most of this research suggests that early intervention is important to improving reading achievement. However, less is known about writing, and fewer interventions have been developed to help students learn to write. The current project aims to develop a writing intervention for kindergarten children. Building on the *Peer-Assisted Learning Strategies* (PALS) framework, this new writing intervention, *Peer Assisted Writing Strategies*

(PAWS) will allow for increased learning time as pairs of students are asked to work together to complete highly structured activities aimed at increasing writing skills.

Georgia State University Research Foundation, Inc.
Principal Investigator: Lee Branum-Martin
Amount: $422,549
Award Number: R305A120785
Period of Performance: 9/1/12-8/31/14
Description: *The Roles of Instruction and Component Skills in Reading Achievement —* Understanding why some schools are more successful at teaching reading than others requires examination of three key components: student characteristics, school practices such as instruction, and school context effects. Using the Texas Reading First dataset, the research team will complete a secondary data analysis of student reading performance in over 200,000 students in 809 schools in 222 districts over 6 years. The researchers will examine the nature and growth of student literacy skills over time; the stability of instructional strategies, quality, and how instruction relates to literacy over time; and the extent to which variability between classrooms and campuses predicts differences in how instruction impacts reading achievement.

University of Kansas Center for Research, Inc.
Principal Investigator: Michael Hock
Amount: $1,738,808
Award Number: R305A110148
Period of Performance: 3/1/11-2/28/15
Description: *Development and Validation of Online Adaptive Reading Motivation Measures —* Currently, measures of reading motivation are targeted to young children or lack good psychometric properties. The researcher team proposes to develop and validate a new measure of reading motivation called the *Adaptive Reading Motivation Measures* (ARMM) for use with adolescents in grades 5–12. The ARMM will consist of multiple measures that will build from an established theoretical framework of reading motivation. The ARMM will measure the multiple constructs that are hypothesized to make up reading motivation such as self-efficacy, intrinsic motivation, extrinsic motivation, social goals, reading avoidance, and reading interests.

University of Delaware
Principal Investigator: David Coker
Amount: $1,496,813
Award Number: R305A110484
Period of Performance: 7/1/11-6/30/15
Description***:*** *Investigating the Impact of Classroom Instruction and Literacy Skills on Writing Achievement in First Grade —* Elementary schools generally, and first grade in particular, provide students with critical instruction in early literacy skills. This project is designed to explore how various types and amounts of reading and writing instruction are related to student writing outcomes in first grade and to examine whether the effects of instruction are moderated by students' incoming reading and writing skills and demographic characteristics (socioeconomic status).

University of Houston
Principal Investigator: David Francis
Amount: $5,201,997
Award Number: R305A110297
Period of Performance: 8/1/11-7/31/16
Description: *Scale-up Evaluation of Reading Intervention for First Grade English Learners* — The purpose of this project is to determine the effectiveness of a fully developed first-grade literacy and oracy intervention in Spanish and English when implemented directly by school personnel across various settings and populations. In addition, researchers will assess the factors at the student and school levels that moderate intervention effectiveness. The research team also intends to complete a 1-year follow-up of participants to determine maintenance of effects.

Regents of the University of Michigan
Principal Investigator: Holly Craig
Amount: $1,546,892
Award Number: R305A100284
Period of Performance: 4/1/10-3/31/13
Description: *Developing Contrastive Analysis Techniques for Teaching Academic Classroom English to Young African American English-Speaking Students* — Inspired by recent evidence that speakers of African American English (AAE) who learn to "code-switch" and use Academic Classroom English (ACE) for school tasks have improved reading and writing scores, the researchers will develop an intervention to foster dialect awareness and code-switching skills in kindergarten and first-grade students who speak AAE. A grade-appropriate assessment battery will be developed and validated as a second goal of this project to measure dialect change.

University of Delaware
Principal Investigator: Charles MacArthur
Amount: $877,803
Award Number: R305A100614
Period of Performance: 7/1/10-6/30/13
Description: *Development of a Curriculum to Teach Writing in Postsecondary Developmental English Composition Classes* — Community colleges admit large numbers of students who are often encouraged or required to take developmental or remedial courses, with the most common being remedial writing courses. Yet, despite the prevalence of remedial writing courses at the community college level, few studies have explored the effects of instructional techniques in basic writing courses. This research project will address this need and generate a writing curriculum that can be used in remedial college-level composition courses. This curriculum will be developed and tested iteratively over the course of 3 years at two different community college campuses in Delaware with the assistance of college administrators and instructors.

University of Tennessee
Principal Investigator: Dennis Ciancio
Amount: $1,369,422
Award Number: R305A100093
Period of Performance: 7/1/10-6/30/13
Description: *Development of Integrated Text Level Curricula for Kindergarten Through Second Grade Students* — In this project, the research team will develop a language arts curriculum for

students in kindergarten, first and second grade that integrates explicit comprehension instruction and writing activities into existing vocabulary lessons. The intervention builds on prior IES-funded work in which a vocabulary curriculum was developed for kindergarten and first-grade students. Assessments will be developed to evaluate the effectiveness of the developed curricula along with a set of curriculum-based measurement assessments for teachers to track students' acquisition of the material.

Washington Research Institute
Principal Investigator: Patricia Vadasy
Amount: $1,338,371
Award Number: R305A100568
Period of Performance: 7/1/10-6/30/13
Description: *Efficacy of Rich Vocabulary (RVOC) Instruction for Classrooms* — The ability to understand written text is highly dependent on knowing the meaning of individual words. The well-established positive relation between vocabulary and comprehension suggests that high-quality vocabulary instruction should benefit comprehension. In this efficacy study, the research team will test the efficacy of rich vocabulary (RVOC) instruction compared to typical (i.e., business-as-usual) vocabulary instruction for students in fourth and fifth grade. RVOC instruction is intensive, provides frequent and varied encounters with targeted vocabulary words, and has been found to improve reading comprehension in prior quasi-experimental research conducted with small samples. The current study will attempt to replicate this prior research using more methodological rigor, including the use of random assignment and a larger and more diverse sample.

George Mason University
Principal Investigator: Ana Taboada
Amount: $1,566,603
Award Number: R305A100297
Period of Performance: 5/25/10-5/24/13
Description: *Fostering Reading Engagement in English-Monolingual Students and English Language Learners Through a History Curriculum* — According to the 2009 National Assessment of Educational Progress, 70 percent of eighth-graders are at or below the basic level in reading, leaving them unable to make inferences or connections within and across texts, explain causal relations, or analyze text features. Further, only 22 percent of eighth-graders agree that reading is their favorite activity and only 13 percent agree that they learn a lot from reading books. In this project, the research team intends to address both the cognitive and motivational aspects of adolescents' reading comprehension through the development of a history-based reading curriculum, *United States History for Engaged Reading* (USHER). This curriculum will also include specific adaptations for English language learners.

Vanderbilt University
Principal Investigator: Donald Compton
Amount: $1,346,663
Award Number: R305A100034
Period of Performance: 9/1/10-8/31/14
Description: *Predictors and Subtypes of Reading Disabilities: Implications for Instruction of 'Late Emergers'* — Comprehension of text requires the coordination of a complex set of skills.

At a minimum, children need to be able to decode printed words on a page and comprehend spoken language in order to read with understanding. One goal of this exploratory research is to determine whether these two skill sets, word-level skills and linguistic comprehension, are independent of each other. A second goal is to understand how development in these two skill domains may be related to reading problems. The research team will collect additional primary data on a sample of children who have been followed longitudinally in a prior IES-funded study from first through fourth grade. In this project, the research team will identify characteristics of children that may be amenable to intervention in order to guide instruction for all children and particularly for students whose reading difficulties emerge in the upper grades in elementary school.

University of Pittsburgh
Principal Investigator: Margaret McKeown
Amount: $1,685,979
Award Number: R305A100440
Period of Performance: 7/1/10-6/30/13
Description: *Robust Instruction of Academic Vocabulary for Middle School Students* — The vocabulary demands of texts that students are assigned to read in middle school are cited as a major contributor to reading problems, yet there is very little explicit vocabulary instruction in middle school. In this project, the research team will develop a vocabulary program to teach academic words to middle school students. The words for the intervention will be selected from Coxhead's Academic Word List, which includes 570 word families that span 28 content domains. These words are intended to support comprehension of expository, academic texts. The intervention will cover two grade levels of instruction, sixth and seventh grades, incorporating strategies for robust vocabulary instruction shown to be effective for elementary school students.

Ohio State University
Principal Investigator: George Newell
Amount: $979,493
Award Number: R305A100786
Period of Performance: 7/1/10-6/30/13
Description: *Teaching and Learning Argumentative Writing in High School English Language Arts Classrooms* — The ability of secondary students to compose written arguments is limited. Only 15 percent of 12th-grade students performing at the proficient level were able to write well-organized essays in which they took clear positions and consistently supported those positions. One way to improve outcomes may be to enhance teachers' pedagogical knowledge and practices regarding argumentative writing at the secondary level. However, the instructional processes that are predictive of high-quality argumentative writing are not clear. This research team will address this issue and identify the predictive factors that may, in turn, be used to develop an instructional model for teaching argumentative writing at the secondary school level.

Florida Atlantic University
Principal Investigator: Nancy Romance
Amount: $1,414,605
Award Number: R305A090523
Period of Performance: 7/1/09-6/30/12

Description: *A Multi-Part Intervention for Accelerating Vocabulary Acquisition through Inductive Transfer* — Research consistently shows that vocabulary knowledge is an important component of reading comprehension. How to enhance vocabulary knowledge for at-risk children is a challenge because the rate at which children typically learn new words is far too rapid to be explained by either direct vocabulary instruction or by the indirect effects of reading alone. Thus, an ongoing challenge in elementary school reading instruction is to develop strategies for rapidly increasing children's acquisition of new vocabulary. In this study, the research team will further develop and refine an instructional strategy that elementary school teachers can use with basal readers to help students make inferences about the meanings of words as they read texts.

University of Virginia
Principal Investigator: Marcia Invernizzi
Amount: $1,599,169
Award Number: R305A090015
Period of Performance: 6/1/09-5/31/13
Description: *Designing Assessment to Enhance English Literacy Development Among Spanish-Speaking Children in Grades K–3* — Reading assessments administered in English can be effective for identifying English language learners at risk for problems with reading in English. However, assessment in the native language is also important for children who speak little or no English to identify literacy skills in the native language that can be leveraged to support the development of literacy skills in English. In this study, the researchers will develop a Spanish version of the widely used *Phonological Awareness Literacy Screening* (PALS) assessment to support the development of English literacy in Spanish-speaking English language learners. *PALS español* will be an assessment tool designed to identify strengths and weaknesses in Spanish-speaking children's native language development that can be leveraged to facilitate their development of English literacy skills.

Curators of the University of Missouri
Principal Investigator: James Baumann
Amount: $1,982,244
Award Number: R305A100094
Period of Performance: 9/1/09-8/31/12
Description: *Development of a Multifaceted, Comprehensive Vocabulary Instructional Program for the Upper Elementary Grades* — The process of implementing effective vocabulary instruction in authentic classroom settings is not well understood. In particular, teachers need a comprehensive, explicit, and practical approach for instructing all of their students, including English language learners, on vocabulary knowledge. In this project, the researchers will develop, refine, and test the feasibility of a comprehensive, multifaceted vocabulary instructional program for students in the fourth and fifth grade.

University of Maryland, College Park
Principal Investigator: Rebecca Silverman
Amount: $1,400,000
Award Number: R305A090152
Period of Performance: 6/1/09-5/31/12

Description: *Investigating Vocabulary Breadth and Depth and Comprehension in English Monolingual and Spanish-English Bilingual Elementary School Students* — Vocabulary knowledge is critical to effective reading comprehension. Most research to date has focused on the importance of vocabulary breadth (the *quantity* of known words) and its relationship to reading comprehension. Vocabulary depth (the *quality* of vocabulary knowledge), including morphological, semantic, and syntactical awareness, may be equally important to reading comprehension but there is limited research in this area. In this study, the researchers will investigate the development of vocabulary breadth and depth, their relationship to the development of reading comprehension, and instructional factors related to the development of both vocabulary and comprehension, in a sample of monolingual English and bilingual Spanish-English students in second through fifth grade.

University of California, Santa Cruz
Principal Investigator: Judith Scott
Amount: $2,034,838
Award Number: R305A090550
Period of Performance: 7/1/09-6/30/13
Description: *Measuring Vocabulary with Testlets: A New Tool for Assessment* — Vocabulary knowledge is recognized by reading and education experts as an influential component of reading comprehension. Traditional assessments of vocabulary yield scores indicating choice of correct versus incorrect answers, but do not provide more nuanced information about the student's level of understanding. The VINE (*Vocabulary Innovations in Education*) assessments were developed with support from an IES grant in 2006 to assess growth of fourth-graders' vocabulary knowledge. The current project extends this work to develop valid and reliable vocabulary assessments for both fourth- and fifth-grade students in English language arts, science, math, and social studies.

Southwest Educational Development Corporation
Principal Investigator: Michael Vaden-Kiernan
Amount: $5,302,021
Award Number: R305A090150
Period of Performance: 7/1/09-6/30/13
Description: *National Randomized Controlled Trial Study of SRA/McGraw-Hill Open-Court Reading Program* — The *Open Court Reading* (OCR) program, published by SRA/McGraw-Hill and widely used for almost 40 years, is a phonics-based core-reading program for students in kindergarten to sixth grade that incorporates many of the instructional practices related to phonemic awareness, phonics, fluency, vocabulary, and text comprehension recommended by the National Reading Panel of 2000. In this study, an independent research team will evaluate the effectiveness of the OCR program at scale in a large national sample of elementary schools, across diverse school populations and conditions, and with no more support than schools would have access to if they had selected OCR as their early reading curriculum apart from participation in a research project.

Education Development Center, Inc.
Principal Investigator: Andrea Kotula
Amount: $2,235,330
Award Number: R305A090479

Period of Performance: 7/1/09-6/30/13
Description: *Responding to the National Crisis in Writing: An Efficacy Study of an Elementary Grades Writing Program* — The ability to write effectively is critical for success in school, college and the workplace. Yet, results of the most recent National Assessment of Educational Progress to assess writing (NAEP 2007) indicate that only about one-quarter of 4th- and 12th-grade students are proficient writers. This efficacy project will address the gap in our understanding of effective writing instruction through a randomized controlled trial of *The Writers' Express* (WEX), a writing program for students in grades 3-12, as implemented in 4th- and 5th-grade classrooms.

Social and Behavioral Context for Academic Learning

Duke University
Principal Investigator: Leslie Babinski
Amount: $1,488,228
Award Number: R305A120659
Period of Performance: 7/1/12-06/30/15
Description: *A Neuroscience-Based Health Curriculum to Promote Academic Success* — Although many states mandate health education courses in schools, existing health curricula often lack a strong theoretical grounding in successful health behavioral change models, limiting their potential for improving students' health behaviors and overall academic functioning. In this project, research on adolescent brain development and functioning will be integrated into an existing ninth-grade health curriculum, the North Carolina Healthful Living course, and tested to see if this integrated curriculum increases students' self-regulation skills and sense of self-efficacy, thereby contributing in the long term to academic achievement.

Vanderbilt University
Principal Investigator: Emily Tanner-Smith
Amount: $351,228
Award Number: R305A120181
Period of Performance: 5/1/12-4/30/14
Description: *Academic and Behavioral Consequences of Visible Security Measures in Schools* — In an attempt to create safe environments for students, many schools have turned to visible security measures such as security cameras, metal detectors, and law enforcement officers. This project will explore the ways that these security measures are used in schools; how they are related to middle- and high-school students' perceived school safety, academic, and behavioral outcomes; and in what contexts those associations are strongest. Results will help identify those school security approaches worth further refinement and empirical investigation.

University of Washington
Principal Investigator: Elizabeth McCauley
Amount: $1,143,174
Award Number: R305A120128
Period of Performance: 7/1/12-6/30/15
Description: *Brief Intervention for School Clinicians* — Research indicates that youth who experience mental health problems, especially those who do not receive appropriate, timely

intervention, are at risk for academic failure. School-based services can improve access to help for students in need and improve their emotional and behavioral functioning, and potentially enhance academic achievement. In this project, researchers will develop and pilot test a school-based mental health intervention designed for use in high schools by school staff, the *Brief Intervention for School Clinicians*.

Pennsylvania State University
Principal Investigator: Patricia Jennings
Amount: $3,478,904
Award Number: R305A120180
Period of Performance: 3/1/12-2/29/16
Description: *Improving Classroom Learning Environments by Cultivating Awareness and Resilience in Education (CARE): A Cluster Randomized Controlled Efficacy Trial* — This study will evaluate the effects of a professional development program, *Cultivating Awareness and Resilience in Education* (CARE). CARE was developed with funding from a previous IES Development award (R305A090179) and is intended to enhance teachers' capacity to provide a supportive and engaging context for social-emotional and academic learning. In this study, elementary school teachers are randomly assigned to CARE or typical professional development to determine if CARE enhances teachers' social and emotional competence, teaching efficacy, and mindfulness, resulting in better organized classrooms that provide both instructional and emotional support to students.

Florida State University
Principal Investigator: Linda Webb
Amount: $2,738,187
Award Number: R305A110470
Period of Performance: 8/1/11-7/31/15
Description: *A Randomized Controlled Trial of Student Success Skills: A Program to Improve Academic Achievement for All Students* — The *Student Success Skills (SSS)* program is designed to teach students fundamental learning, social, and self-management skills that have been demonstrated to support improved academic achievement. *Student Success Skills* is based on a strong body of theoretical and empirical research and uses developmentally appropriate student lessons, activities, and teaching strategies. This project will evaluate *Student Success Skills* in fifth-grade classrooms to determine effects on social, behavioral, and academic outcomes for participating students.

Rush University Medical Center
Principal Investigator: Clark McKown
Amount: $2,325,731
Award Number: R305A110143
Period of Performance: 7/1/11-6/30/15
Description: *A Toolkit for Identifying and Assessing Socially Rejected Children* — Children who are rejected by their peers are at elevated risk for academic, behavioral, and emotional problems. Despite these stark facts, few tools are available for school professionals to identify socially rejected children and to pinpoint social-emotional learning deficits that contribute to their rejection. The purpose of this project is to develop a suite of scientifically sound, usable tools for

screening social rejection and assessing social-emotional learning in children in grades K–3 to inform individualized intervention planning.

American Institutes for Research
Principal Investigator: Jessica Heppen
Amount: $3,209,567
Award Number: R305A110252
Period of Performance: 3/1/11-2/28/15
Description: *Assessing the Efficacy of Check & Connect for Improving Outcomes for At-Risk High School Students* — Because the dropout problem has persisted in the United States over the previous decades, much work has focused on the development and implementation of dropout prevention programs in and outside of school, only some of which have positive effects on school persistence and completion. *Check & Connect* is a dropout prevention program with demonstrated effectiveness for students with disabilities. In this study, *Check & Connect* is being evaluated with general education students who show signs that they are at-risk for dropping out of high school.

University of Virginia
Principal Investigator: David Grissmer
Amount: $2,812,162
Award Number: R305A110703
Period of Performance: 7/1/11-6/30/15
Description: *Efficacy of the WINGS After-School Social and Emotional Learning (SEL) Program* — The goal of this project is to evaluate the efficacy of the *WINGS for Kids (WINGS)* after-school social and emotional learning (SEL) program. *WINGS* is a fully developed and highly structured after-school SEL program that has been serving children who experience extraordinarily high levels of social and economic risks for the past 10 years. Non-experimental and case studies have found evidence of the program's promise in improving children's social skills and academic outcomes, but experimental evidence of efficacy has not yet been gathered. In this study, kindergarten children are randomly assigned to WINGS or a control group within each participating school to determine the impact of the program after 1, 2, and 3 years of participation.

Center for Research in Emotional and Social Health, Inc.
Principal Investigator: Melissa DeRosier
Amount: $1,499,948
Award Number: R305A110583
Period of Performance: 7/1/11-6/30/14
Description: *Interactive Social Tutoring System for Social Skills Training with Elementary Students* — Relatively little is known about how interactive software technology can be used to enhance students' social skills and/or peer relations. This project will extend prior work to fully develop an innovative computer-based *interactive social tutoring system (ISTS)* for elementary students experiencing social-behavioral problems at school. The *ISTS* software will provide a safe, private, social learning environment through which students will engage in tailored, interactive exercises to learn and practice social skills that parallel those taught through an existing evidence-based small group social skills training intervention.

Virginia Commonwealth University
Principal Investigator: Thomas Farmer
Amount: $3,952,267
Award Number: R305A110079
Period of Performance: 7/1/11-6/30/15
Description*: Supporting Early Adolescent Learning and Social Success: Project SEALS* — Many adolescents experience difficulties during the transition to middle school due to a poor fit between their developmental needs and the demands of the school environment. The *Supporting Early Adolescent Learning and Social Success* (SEALS) model addresses this issue by helping sixth-grade teachers provide a social and instructional context that supports all students, including those who are at increased risk for school adjustment problems. Prior studies in rural schools suggest that SEALS effectively supports early adolescents during this period of vulnerability. In this replication study, the SEALS program will be evaluated in urban schools to determine whether similar positive results are found for students transitioning to middle school in urban environments.

University of North Carolina, Chapel Hill
Principal Investigator: Patricia Garrett-Peters
Amount: $1,157,966
Award Number: R305A110104
Period of Performance: 3/1/11-2/28/14
Description: *The Role of Behavioral and Instructional Match in the Prediction of Early Classroom Engagement and Academic Achievement* — Recent research indicates that the match between child skills and teacher instruction in the early elementary grades is critical to children's reading achievement. In this project, researchers will examine teacher instructional strategies as a moderator of child grade entry skills in predicting literacy achievement at second and third grade by building on an extant study, the Family Life Project, that includes a representative sample of every baby born to mothers who resided in three poor rural counties in North Carolina over a 1-year period with oversampling of poor African-American families.

University of Houston
Principal Investigator: Teresa McIntyre
Amount: $1,600,000
Award Number: R305A110080
Period of Performance: 3/1/11-2/28/15
Description: *Using Longitudinal and Momentary Analysis to Study the Impact of Middle School Teachers' Stress on Teacher Effectiveness, Student Behavior and Achievement* — Teacher stress may influence how effective teachers are in the classroom, with potential consequences for their students' behavior and learning. Using a prospective multi-method, multi-time scale investigation of the proposed mediational chain (i.e., stressors lead to teacher stress response which lead to teacher work and health stress outcomes which lead to teacher effectiveness which lead to student behavioral and academic outcomes), project findings will be used to guide future intervention development to mitigate teacher stress and consequently improve teacher effectiveness and student behavior and learning.

University of Illinois, Urbana-Champaign
Principal Investigator: Philip Rodkin
Amount: $2,164,277
Award Number: R305A100344
Period of Performance: 5/16/10-5/15/14
Description: *A Longitudinal Study of Teaching Practices, Classroom Peer Ecologies, and Youth Outcomes* — The social atmosphere of the classroom and a teacher's ability to manage it is as critical to student achievement as the specific curricula and content of instruction. In this project, the research team will describe the relationship between teacher practices, classroom peer ecologies (children's social status and social network dynamics), academic achievement, aggression, and school relatedness in elementary school classrooms. The researchers will identify which features of classroom peer ecologies are associated with positive student outcomes, what teacher practices are associated with positive classroom peer ecologies and student outcomes, and whether classroom ecologies are influenced by students' ethnicity and classroom diversity.

New York University School of Medicine
Principal Investigator: Laurie Brotman
Amount: $2,127,642
Award Number: R305A100596
Period of Performance: 7/1/10-6/30/14
Description: *Academic Achievement Outcomes from a Pre-K Family and School Intervention* — Behavior problems in early childhood, especially physical aggression, strongly predict poor academic achievement later. This suggests that prevention of aggression in early childhood will lead to improved academic outcomes. In this study, the research team will follow 1,052 second-grade students who participated in an IES-funded randomized controlled trial (RCT) to evaluate the *ParentCorps/TeacherCorps* program when they were in preschool. Most of the participating students are African American and AfroCaribbean and come from low-income families. The RCT found positive impacts on parent and teacher behavior management practices, parent-teacher communication, and child aggression from preschool through kindergarten. This follow-up study will evaluate the long-term intervention effects of this program on academic achievement and parent involvement in education for these students in second and third grade.

University of Missouri
Principal Investigator: Wendy Reinke
Amount: $2,915,757
Award Number: R305A100342
Period of Performance: 8/1/10-7/31/14
Description: *Evaluation of a Video-Based Modeling Program to Promote Effective Teacher Classroom Management Practices* — Although much is known about effective classroom management strategies, many teachers are not adequately trained to deal with behavior problems in the classroom. The *Incredible Years* teacher training (IY TT) program is an innovative video-based modeling program that incorporates active learning of classroom management skills. In this efficacy study, the research team will examine the effects of IY TT on the academic performance of students in kindergarten through third grade and determine the extent to which classroom behavior mediates the relationship between teacher classroom management skills and students' academic performance in the classroom.

University of Virginia
Principal Investigator: Joseph Allen
Amount: $2,688,440
Award Number: R305A100367
Period of Performance: 3/1/10-2/28/14
Description: *Increasing Adolescent Engagement, Motivation, and Achievement: Efficacy of a Web-Based, Teacher Professional Development Model* — By the time adolescents enter high school, more than half report that they do not take school or their studies seriously. Many adolescents also report that their interactions with teachers are not satisfying or motivating. *My Teaching Partner* (MTP) is designed to change the quality of teacher-student interactions in ways that enhance student engagement, reduce problematic behaviors, and increase student achievement. In this efficacy study, the research team will examine the effects of MTP on the academic performance of students in high school and determine the extent to which improved teacher-student interaction increases student behavioral and achievement outcomes via their impact on student engagement and motivation.

University of South Florida
Principal Investigator: Shannon Suldo
Amount: $1,018,359
Award Number: R305A100911
Period of Performance: 7/1/10-6/30/13
Description: *Intrapersonal Factors Associated with Academic Success among High School Students in Advanced Placement and International Baccalaureate (AP-IB) Programs* — The number and diversity of high school students enrolled in rigorous college preparatory programs such as Advanced Placement and International Baccalaureate (AP-IB) classes and programs is on the rise. These students are increasingly diverse in terms of ethnic and linguistic background, academic preparation, socioeconomic status, and experience with managing challenging academic coursework. In this study, the researchers will explore how, and for whom, malleable factors such as coping strategies, engagement in learning, and perceptions of school connectedness may act as protective factors for students dealing with the inherent stress of AP-IB programs. This information can inform school-based prevention and intervention efforts to mitigate the impact of stress and increase the likelihood that all students can excel in rigorous academic coursework during high school.

University of Minnesota
Principal Investigator: Michael Resnick
Amount: $1,451,480
Award Number: R305A100064
Period of Performance: 3/1/10-2/28/13
Description: *Minnesota Partnership for School Connectedness* — The middle school years are associated with declines in academic achievement, performance motivation, and self-perceptions, making this a critical time to engage in strategies that build connectedness and engage students in learning. In this project, the research team proposes to develop and field-test a professional development program for middle school teachers. The program will be designed to help teachers engage their students in learning during the middle school years.

Cleveland State University
Principal Investigator: Justin Perry
Amount: $1,006,155
Award Number: R305A100094
Period of Performance: 6/1/10-5/31/13
Description: *The Career Passport Program: Development and Refinement* — School dropout affects urban youth of color at disproportionately high rates. In this project, the research team proposes to enhance and expand the existing curriculum and instructional practices of the *Career Passport Program*, a career education program designed to promote school engagement and high school completion.

University of Virginia
Principal Investigator: Jason Downer
Amount: $1,469,979
Award Number: R305A100590
Period of Performance: 9/1/10-8/31/13
Description: *Using an Empirically-supported Teacher Consultation Model to Facilitate the Implementation of an Integrated Social-emotional Learning and Literacy Curriculum in Urban Elementary Schools* — Students' success in school relies on both academic and social skills. In this project, the research team proposes to develop enhanced implementation supports for teachers' effective delivery of the *4Rs – Reading, Writing, Respect, and Resolution* program, an integrated social-emotional learning and literacy curriculum. The developers of the *4Rs* program will partner with the developers of *My Teaching Partner*, a professional development intervention that provides individualized coaching and feedback to support teachers' implementation of curricula, to develop an integrated *4Rs-MTP* program intended to improve implementation fidelity of the *4Rs* curriculum, enhance program effects on student social-emotional and academic outcomes, and produce a set of efficient, sustainable, and web-based resources for supporting future scaled-up implementation of the *4Rs* curriculum.

Duke University
Principal Investigator: Desiree Murray
Amount: $1,456,850
Award Number: R305A090361
Period of Performance: 7/1/09-6/30/13
Description: *Effects of Classroom Management Training on Early Learning Skills* — Considerable evidence suggests that teacher classroom management practices play a large role in determining the amount of time students engage in academic tasks, but there has been little experimental research on the direct benefits of classroom management training for academic achievement. The *Incredible Years* teacher training program (IYT) has been shown to be effective in improving classroom management practices in early elementary school and in enhancing children's social competence, emotion regulation skills, and behavior. However, academic outcomes of this program have not been examined. In this efficacy study, the research team will examine the effects of IYT on the academic performance of students in kindergarten through second grade and determine the extent to which classroom behavior mediates the relationship between teacher classroom management skills and students' academic performance in the classroom.

American Institutes for Research
Principal Investigator: Jeanne Poduska
Amount: $3,391,254
Award Number: R305A090446
Period of Performance: 7/1/09-6/30/13
Description: *Professional Development to Support and Sustain a Classroom Behavior Management Strategy* — The *Good Behavior Game* (*GBG*), a fully developed classroom behavior management strategy, is one of the few preventive interventions targeting aggressive/disruptive behavior that has shown both short-term and long-term improvements for classroom behavior in randomized field trials. In this study, the research team addresses a fundamental challenge in moving research to practice, the need to understand the level of professional development required for teachers to implement and sustain new program practices so that benefits are seen both for their current students and for students they teach in subsequent years. The research team will test the relative efficacy and sustainability of the GBG under two models of professional development: (1) GBG Basic, which provides group-based pre-implementation training to teachers supplemented by a group-based booster session; and (2) GBG w Coach, which features group-based activities that are enhanced by a coach who works directly in the classroom with the teacher.

Pennsylvania State University
Principal Investigator: James DiPerna
Amount: $2,412,860
Award Number: R305A090438
Period of Performance: 7/1/09-6/30/13
Description: *The Social Skills Improvement System Classwide Intervention Program: Social, Behavioral, and Academic Outcomes in the Intermediate Grades* — Helping children to get along with others, care about themselves, and actively participate in learning are critical to success in school. The *Social Skills Improvement System (SSIS)* is a comprehensive program to improve social skills and reduce problem behaviors from preschool to early adolescence. The *Classwide Intervention Program* (SSIS-CIP) is the universal component of this program, designed to help students learn the 10 social skills that teachers have identified as most critical to academic success. In this study, the research team will evaluate the effects of the SSIS-CIP program on students' social skills, behaviors, and academic achievement in the elementary grades.

Teacher Quality-Mathematics and Science Education

Mills College
Principal Investigator: Catherine Lewis
Amount: $1,497,512
Award Number: R305A110491
Period of Performance: 9/1/11-8/31/14
Description: *Japanese Structured Problem-Solving as a Resource for U.S. Elementary Mathematics Teachers: Program Development and Testing* — Problem-solving is a central component of mathematics but not one that U.S. students master well. This research team intends to develop and refine English language resources for "structured problem solving" (SPS), an

approach to teaching through problem-solving that is successfully used by a broad spectrum of elementary teachers in Japan. These resources will include lesson plans, student assessments, tools to track student progress, videos of model instruction using SPS, and examples of student responses to written assignments. The study will also produce measures of teachers' problem solving-orientation and problem-solving practices during instruction and of student beliefs about mathematics.

Education Development Center, Inc.
Principal Investigator: Albert Cuoco
Amount: $1,463,269
Award Number: R305A110451
Period of Performance: 8/1/11-7/31/14
Description: *Learning and Teaching Algebra (LTA)* — Many teachers require additional professional development and support to provide high-quality instruction in algebra. To meet this need, researchers will develop a comprehensive and integrated program of coaching, professional development, and assessment intended to help teachers build the mathematical understanding and practices needed to model and scaffold mathematical thinking. A set of materials intended to support mathematics coaches will also be developed. Researchers will focus on teachers in urban, grade 8, Algebra I settings.

Mid-continent Research for Education and Learning (McREL)
Principal Investigator: Andrea Beesley
Amount: $1,497,648
Award Number: R305A110392
Period of Performance: 9/1/11-8/31/14
Description: *Learning to Use Formative Assessment in Mathematics with the Assessment Work Sample Method (AWSM)* — The purpose of this study is to develop, revise, and field test an innovative professional development program for implementing formative assessments in middle school mathematics. This 3-year development project will use the *Assessment Work Sample Method* to provide teachers with authentic samples of mathematics formative assessment work and an interactive, hands-on experience to increase their understanding of formative assessment and improve their practice of formative assessment. The ultimate goal is to increase students' mathematics achievement.

WestED
Principal Investigator: Steve Schneider
Amount: $2,980,934
Award Number: R305A110515
Period of Performance: 7/1/11-6/30/15
Description: *Making Sense of SCIENCE: Efficacy Study of a Professional Development Series for Middle School Science Teachers* — WestEd developed the *Making Sense of SCIENCE* professional development program intended to deepen teacher content knowledge and improve pedagogical content knowledge and to ultimately promote student learning in line with the physical science standards. The purpose of this study is to test the efficacy of this program and its series of physical science courses for middle school teachers. This study examines cumulative effects of the full series of courses.

WestED
Principal Investigator: Steve Schneider
Amount: $1,494,103
Award Number: R305A110285
Period of Performance: 7/1/-6/30/14
Description: *Understanding Life Science: Improving Student Achievement by Deepening Teacher Content and Pedagogical Content Knowledge in Ways That Transform Instructional Practice* — Despite small gains in science achievement over the last decade, American students' academic performance in science remains poor. In order to increase performance, students need teachers who are knowledgeable about the subject matter and who are prepared to teach science in clear, engaging ways. In this study, researchers propose to address this need by designing a teacher professional development program focused on the life sciences. By building the content and pedagogical content knowledge of teachers in life science, this program aims to improve the science achievement of grade 3–8 students, especially English language learners and students with delayed literacy skills.

CNA Corp.
Principal Investigator: Linda Cavalluzzo
Amount: $3,386,940
Award Number: R305A100445
Period of Performance: 7/1/10-6/30/14
Description: *Using Data to Inform Decisions: How Teachers Use Data to Inform Practice and Improve Student Performance in Mathematics — Using Data* (*UD*) is a widely used professional development program intended to improve teacher data literacy skills, teacher instructional practice and, ultimately, student achievement. In a randomized controlled trial, researchers propose to test whether implementation of *UD* will help teachers make more effective use of assessment and other data in guiding instruction and will in turn improve student achievement in mathematics. The study will also produce two teacher self-report questionnaires, assessing teacher knowledge and skills around data use and teacher attitudes, beliefs, and data use.

Teacher Education Research Centers, Inc.
Principal Investigator: Ann Rosebery
Amount: $1,500,134
Award Number: R305A100176
Period of Performance: 3/1/10-2/28/13
Description: *A Practice-Based Approach to Professional Development in Science in Urban Elementary and Middle Schools* — In this study, researchers will iteratively develop and test a professional development program for new science teachers. The intervention will utilize structured cases as the bases for on-going, embedded learning that focuses on understanding how students of different cultural backgrounds make sense of their world as a way of generating scientific learning and knowledge.

University of Hawaii
Principal Investigator: Kanesa Duncan
Amount: $1,498,644
Award Number: R305A100091
Period of Performance: 3/1/10-2/28/13

Description: *Accessible Professional Development for Teaching Aquatic Science Inquiry* — Researchers in partnership with teachers will develop four content modules adapted from an existing curriculum, and a combined online and face-to-face professional development program designed to teach aquatic science. The program emphasizes different modes of inquiry learning and teaching and focuses on aquatic science content, consistent with national ocean literacy principles.

University of Michigan
Principal Investigator: Kevin Miller
Amount: $1,440,585
Award Number: R305A100178
Period of Performance: 6/1/10-5/31/13
Description: *Making Room for Student Thinking: Using Automated Feedback, Video-Based Professional Development, and Evidence-Based Practice Recommendations to Improve Mathematical Discussion* — Researchers will develop methods to help teachers monitor and improve classroom discussion in mathematics by (1) adapting and validating technology called the Language Environment Analysis (LENA) that automatically records and analyzes classroom discussions, (2) using video-based online professional development to provide teachers strategies for improving mathematics discussions, and (3) developing tests to understand how and why the source of explanations (teacher or students) affects student learning.

University of Michigan
Principal Investigator: Pamela Moss
Amount: $1,638,954
Award Number: R305A100623
Period of Performance: 7/1/10-6/30/13
Description: *Developing Mathematics Teaching through Focused Collaborative Assessment of Practice* — Researchers will develop and test a 2-year professional development program for mathematics teachers in grades 1-5 that uses focused collaborative assessment to improve high-leverage practices (e.g., planning instructional sequences, explaining mathematical ideas, leading discussions, and assessing students' understanding within and between lessons) and the content knowledge needed to enact them. The target outcomes of this intervention include teacher knowledge of mathematics for teaching, teacher instructional practices, and student math achievement.

WestEd
Principal Investigator: Shandy Hauk
Amount: $1,499,234
Award Number: R305A100454
Period of Performance: 9/1/10-8/31/13
Description: *Making Middle School Mathematics Accessible for All Students* — Researchers will use an iterative design process to produce a professional development course for middle school mathematics educators, with a special emphasis on supporting culturally responsive teaching and the application of research-based practices. The intervention will address educator awareness of personal skills that both teachers and students contribute to learning, instruction of both language proficiency and mathematical content, and development of mental models for understanding complex interactions between language, culture, and school.

WestEd
Principal Investigator: Steve Schneider
Amount: $2,959,275
Award Number: R305A100047
Period of Performance: 3/1/10-2/28/14
Description: *Linear Functions for Teaching: An Efficacy Study of Learning and Teaching Linear Functions* — In a randomized controlled trial, researchers will evaluate the effects on teacher knowledge and instructional practices and student achievement of a widely used video case-based professional development program in algebra, learning and teaching linear functions. Researchers will also examine differences in intervention impacts for English language learner, African-American, Latino(a)-American, and low SES students.

Teacher Quality-Reading and Writing

Board of Trustees of the Leland Stanford Junior University
Principal Investigator: Pamela Grossman
Amount: $1,454,478
Award Number: R305A110864
Period of Performance: 7/1/11-6/30/14
Description: *Improving the Quality of English Language Arts Teaching through the Use of an Observation Protocol* — In ongoing efforts to improve student learning and the quality of instruction, practitioners and education stakeholders rely on measures of classroom practice. Researchers have been developing classroom observation tools to evaluate teacher performance, such as the *Protocol for Language Arts Teaching Observation* (PLATO), which highlights 12 elements of high-quality teaching in English language arts (ELA). The researchers will develop and test the use of PLATO as a tool for professional development to improve the classroom practices of teachers of ELA.

American Institutes for Research
Principal Investigator: Terry Salinger
Amount: $1,599,799
Award Number: R305A100641
Period of Performance: 7/1/10-6/30/14
Description: *Validation of an Assessment of Teacher Knowledge of Beginning Reading Instruction* — Researchers will review, revise, and validate against student learning, a pool of assessment items previously developed for the National Center for Education Statistics/Education Statistics Services Institute to measure K-3 early reading teachers' knowledge of content, pedagogy, and students. The goal is to produce a pool of approximately 200 validated items in a wide range of formats (e.g., multiple choice, short-answer, and open-ended) that can be recombined into smaller tests of the various components of teacher reading knowledge. The resulting measure is to be used for research purposes.

University of North Carolina, Chapel Hill
Principal Investigator: Lynn Vernon-Feagans
Amount: $3,432,868
Award Number: R305A100654

Period of Performance: 7/1/10-6/30/14
Description: *The Targeted Reading Intervention: A Web-Based Professional Development Program Targeting K-1 Classroom Teachers and their Struggling Readers* — Researchers will examine the efficacy of the *Targeted Reading Intervention* (TRI), a professional development program designed to help rural kindergarten and first-grade classroom teachers in low-wealth schools implement individualized reading instruction for struggling readers in their classrooms. The professional development model includes remote-coaching from a TRI consultant, collaborative professional learning teams, and an on-site literacy facilitator.

RG Research Group DBA Instructional Research Group
Principal Investigator: Russell Gersten
Amount: $2,713,610
Award Number: R305A090294
Period of Performance: 7/1/09-12/31/12
Description: *Impact of Teacher Study Groups as Observed Teaching Practice and Student Vocabulary Knowledge: A Multi-Site Randomized Control Trial in First Grade* — The research team proposes to examine the impact of the *Teacher Study Group* on effective vocabulary instruction, teacher knowledge, observed teaching practice, and student vocabulary achievement when implemented with first-grade teachers. This study builds on an earlier IES Development grant and proposes to replicate the *Teacher Study Group* professional development program in eight districts, across three states (California, Ohio, and Texas) and the District of Columbia metropolitan area (Virginia/Maryland), in 60 randomly assigned Title 1 schools.

Postdoctoral Research Training Program in the Education Sciences

Ohio State University
Principal Investigator: Laura Justice
Amount: $607,824
Award Number: R305B120008
Period of Performance: 9/1/12-8/31/16
Description: *Children's Learning Research Collaborative Fellowships for Postdoctoral Research Training in the Education Sciences* — Postdoctoral fellows in this program will receive training focused on designing and testing interventions intended to strengthen the language and literacy skills of children. Four fellows will be recruited to join the Children's Learning Research Collaborative. Each fellow will receive 2 years of training.

New York University
Principal Investigator: Jennifer Hill
Amount: $686,999
Award Number: R305B120017
Period of Performance: 9/1/12-8/31/17
Description: *NYU/Columbia Postdoctoral Training Program* — The focus of this training program is to develop researchers who are prepared to both (a) develop the new statistical methods that will be required to meet future education research challenges and (b) teach other researchers how to use more advanced quantitative methods. In this program, fellows will participate in ongoing research that aligns to IES' Statistical and Research Methodology in

Education grant program. Fellows will have the opportunity to focus on methods to address missing data, tools to address computational limitations for multilevel models, and strategies to address failures in random assignment. In addition, fellows will receive mentoring in career development topics such as preparing high-quality education research grant proposals, teaching, ethics, writing, and applying for jobs.

University of California, Irvine
Principal Investigator: Greg Duncan
Amount: $663,361
Award Number: R305B120013
Period of Performance: 8/15/12-814/17
Description: *Postdoctoral Training Program on Human Capital Interventions in Development* — Postdoctoral fellows in this program will receive training in a variety of methodological techniques while participating in studies that explore the effects of education interventions across childhood and adolescence. Over the course of a 2-year fellowship, each fellow will gain substantive knowledge of policy-relevant education outcomes such as school readiness, behaviors that support learning in academic contexts, and higher order thinking in core academic content while acquiring methodological and statistical skills using the latest experimental and quasi-experimental methods.

Board of Trustees of the University of Illinois
Principal Investigator: William Cope
Amount: $659,375
Award Number: R305B110008
Period of Performance: 3/1/11-2/18/14
Description: *Assessing Complex Performance: A Postdoctoral Training Program Researching Students Writing and Assessment in Digital Workspaces* — The goal of the postdoctoral fellows program is to provide a breadth and depth of research-related experiences that will prepare the fellows to become well-rounded researchers who are fully engaged in academic professional life. The research opportunities offered to fellows include (1) innovations in formative and summative assessment; (2) the development of methods for assessment of complex performance (such as writing); (3) the disciplinary practices of discipline areas captured in written reports and essays; and (4) the evaluation of a large-scale assessment tool currently used by the state of Illinois. Researchers will train four postdoctoral fellows for 2 years each, during which time the fellows will select a research project for concentrated involvement.

Regents of the University of California
Principal Investigator: Mark Wilson
Amount: $659,375
Award Number: R305B110017
Period of Performance: 9/1/11-8/31/15
Description: *Berkeley Research Experience and Methodology (BREM) Program* — This postdoctoral training program will train four postdoctoral fellows for two years each.
The fellows will be engaged in a selection of projects based in the Berkeley Evaluation and Assessment Research (BEAR) Center. This includes projects to develop and evaluate educational programs, especially those with an emphasis on developing and evaluating assessment systems in education.

University of Michigan
Principal Investigator: Susan Dynarski
Amount: $648,974
Award Number: R305B110001
Period of Performance: 3/1/11-2/29/16
Description: *Postdoctoral Training Program in Experimental and Quasi-Experimental Methods for Education Research* — The postdoctoral training program is based at the University of Michigan's Gerald R. Ford School of Public Policy and is led by faculty with appointments at the School of Public Policy, School of Education, and Department of Economics. Researchers will train four postdoctoral fellows who will receive close mentorship from program faculty, attend courses and specialized training institutes on quantitative methods, participate in seminars and workshops devoted to causal inference in education research, and assist in research projects that will develop skills in experimental and quasi-experimental methods for causal inference. Training will emphasize the use of state longitudinal data systems using techniques that allow for robust causal inference.

Carnegie Mellon University
Principal Investigator: David Klahr
Amount: $648,974
Award Number: R305B110003
Period of Performance: 6/01/11-5/31/14
Description: *PosTPIER: Post-doctoral Training Program in Interdisciplinary Education Research* — This program will train four postdoctoral fellows to do rigorous research on learning conditions related to curriculum, instruction, and assessment for diverse K–12 student populations. Training will focus on cognitive science foundations for developing and implementing evidence-based instructional methods that can improve teaching and learning in authentic educational settings.

University of Oregon
Principal Investigator: Scott Baker
Amount: $670,211
Award Number: R305B110012
Period of Performance: 3/1/11-8/31/15
Description: *Preparing Education Scientists: A Postdoctoral Training Program Emphasizing Rigorous Research on Systems-Level Prevention and Remediation of Academic and Behavioral Problems* — This postdoctoral training program will support and train four postdoctoral fellows with expertise in research design and implementation, applied content expertise, and methodology and data analysis. Each fellow will participate in a 2-year, advanced training and research experience in one of the five IES research goals: Exploration, Development and Innovation, Efficacy and Replication, Effectiveness, and Measurement.

Carnegie Mellon
Principal Investigator: Brian Junker
Amount: $654,619
Award Number: R305B100012
Period of Performance: 7/1/10–6/30/15

Description: *Carnegie Mellon and RAND Traineeships (CMART) in Methodology and Interdisciplinary Research* — The Postdoctoral Training in Children's Mathematics Learning at Carnegie Mellon University provides opportunities for fellows to focus on contemporary theories and methods of cognitive development and to participate in experimental studies that test interventions designed to improve learning. The program is carried out in collaboration with RAND Corporation, whose team adds quantitative and methodological training for scientifically rigorous education research.

University of Virginia
Principal Investigator: Sara Rimm-Kaufmann
Amount: $654,619
Award Number: R305B100009
Period of Performance: 7/1/10–6/30/13
Description: *Interdisciplinary Postdoctoral Research Training Program in Education Sciences* — The University of Virginia Postdoctoral Interdisciplinary Training Program in the Education Sciences provides training for fellows in multiple projects including ones focused on teacher quality, early childhood, and social and behavioral contexts for academic learning. Through this program, fellows work with faculty on research projects including randomized evaluation trials, quasi-experimental studies of large-scale databases of state and national significance, planned comparison evaluations, and observational studies.

University of Pennsylvania
Principal Investigator: Laura Desimone
Amount: $591,351
Award Number: R305B100013
Period of Performance: 3/1/10–2/28/15
Description: *Penn GSE in Postdoctoral Training Program in the Education Sciences* — The University of Pennsylvania Graduate School of Education in Postdoctoral Training Program in the Education Sciences is designed to foster fellows as independent scholars. The emphasis of the program is on developing and/or refining fellows' methodology, design, fieldwork and substantive area expertise, providing opportunities for scholarly publication and the development of the fellow's independent research agenda. The program, broadly focused on the effects of leadership and teaching on student achievement, targets three main areas: (1) theory, (2) research design and methods, and (3) fieldwork. Current projects offer opportunities for developing expertise in qualitative analysis and fieldwork, including the development and analysis of surveys, interviews, and classroom observations; the measurement of instruction; multi-level longitudinal modeling; Item Response Theory; psychometrics; design and analysis of randomized experiments; designing customized student assessments; and studying education policy implementation.

Northwestern University
Principal Investigator: Larry Hedges
Amount: $654,480
Award Number: R305B100027
Period of Performance: 9/1/10–8/31/15
Description: *Postdoctoral Research Training in Education Sciences* — The Postdoctoral Research Training Program in Education Sciences focuses on providing interdisciplinary training

in methods for education research, including statistical methods, measurement methods, evaluation methods, and research design in the research area focus of individual fellows. The program aims to train postdoctoral fellows in applied education research and to produce a new generation of education researchers dedicated to solving the pressing challenges facing the American educational system through methodologically rigorous and relevant research.

Vanderbilt University
Principal Investigator: Dale Farran
Amount: $654,721
Award Number: R305B100016
Period of Performance: 3/1/10–2/28/15
Description: *Postdoctoral Field Based Research Methodology Training* — The Postdoctoral Field Based Research Methodology Training Program at Vanderbilt University provides training for fellows interested in increasing their statistics, measurement, and experimental design skills in the context of field-based randomized control trials. Participants in this program work with faculty on research projects focused on developing a portable, valid measure of self-regulation in young children; developing a measure of science emphasis in classrooms; identifying promising interventions using meta-analyses of randomized control trials examining the effectiveness of interventions for children and families; and evaluating mathematics instructional practices and pre-K programs being delivered at scale.

University of North Carolina, Chapel Hill
Principal Investigator: Margaret Burchinal
Amount: $561,584
Award Number: R305B100028
Period of Performance: 8/1/10–7/31/14
Description: *Postdoctoral Research Training Fellowship in Early Childhood Education Sciences* — The University of North Carolina at Chapel Hill Postdoctoral Research Training Program in the Early Childhood Education Sciences provides training for fellows interested in gaining experience in the design and evaluation of interventions for young children and research that addresses methods used in clinical trial studies and quasi-experimental evaluations. Through this program, fellows have the opportunity to work with faculty on one or more early childhood studies currently being conducted.

Carnegie Mellon University
Principal Investigator: Robert Siegler
Amount: $366,520
Award Number: R305B100001
Period of Performance: 5/1/10–4/30/15
Description: *Postdoctoral Training in Children's Mathematics Learning* — The Postdoctoral Training in Children's Mathematics Learning at Carnegie Mellon University provides fellows with the opportunity to develop their understanding of contemporary theories and methods of cognitive development and the opportunity to actively participate in research that focuses on experimental methods for testing interventions to improve learning.

University of Wisconsin, Madison
Principal Investigator: Mitchell Nathan
Amount: $655,000
Award Number: R305B100007
Period of Performance: 8/1/10–7/31/13
Description: *Postdoctoral Training Program in Mathematical Thinking, Learning, and Instruction* — The Postdoctoral Training Program in Mathematical Thinking, Learning, and Instruction focuses on math education and provides opportunities for fellows to learn how to apply a range of scientifically rigorous methods to support inferences about education outcomes by using various data analysis techniques that support causal inference within experimental, quasi-experimental, and observational designs. In this program, fellows work with faculty on current research projects.

University of Iowa
Principal Investigator: William Therrien
Amount: $625,400
Award Number: R305B100005
Period of Performance: 3/1/10–2/28/13
Description**:** *The Science Writing Heuristic Postdoctoral Fellowship* — The Science Writing Heuristic Postdoctoral Fellowship focuses on topics in the areas of science and special education and on research focusing on applying skills to experimental design and large scale research projects. In this program, fellows work with faculty on an efficacy study of the science writing heuristic approach, which embeds science argument in typical inquiry lessons to improve students' understandings of science.

University of Illinois
Principal Investigator: Sarah Lubienski
Amount: $655,000
Award Number: R305B100017
Period of Performance: 3/1/10–2/28/15
Description: *University of Illinois at Urbana-Champaign Postdoctoral Research Training Program in Mathematics Education* — The University of Illinois at Urbana-Champaign Postdoctoral Research Training Program in Mathematics Education provides training for fellows interested in mathematics learning, mathematical measurement, and in developing expertise in quasi-experimental and experimental design and analysis of large-scale evaluations. Through this program, fellows have the opportunity to work with faculty on funded research studies as their core training experience.

Predoctoral Research Training Program in the Education Sciences

Carnegie Mellon University
Principal Investigator: David Klahr
Amount: $4,433,486
Award Number: R305B090023
Period of Performance: 9/1/09-8/31/14

Description: *Carnegie Mellon University Program in Interdisciplinary Education Research (PIER)* — The Program in Interdisciplinary Education Research (PIER) at Carnegie Mellon, initially funded by IES in 2004, is designed to train scientists whose rigorous research on learning conditions related to curriculum, instruction, and assessment will improve academic outcomes for diverse pre-K through postsecondary students. PIER fellows earn an Education Sciences Certificate by fulfilling a set of course and project requirements and conducting a dissertation involving applied research in education, while simultaneously earning a Ph.D. in one of Carnegie Mellon's participating departments (Human Computer Interaction, Economics, Machine Learning, Philosophy, Psychology, Robotics, and Statistics). The Program in Interdisciplinary Education Research training focuses on skills relevant to IES's development and efficacy goals in the areas of Cognition and Student Learning, Math and Science Education, and Educational Technology. Training emphasizes the use of cognitive modeling, process-tracing tools, and advanced statistical techniques for analyzing complex datasets with an emphasis on causal modeling.

University of Chicago
Principal Investigator: Stephen Raudenbush
Amount: $4,902,276
Award Number: R305B090025
Period of Performance: 9/1/09-8/31/14
Description: *Improving the Contribution of Schooling to Skills Required for Labor Market Success* — The Predoctoral Interdisciplinary Research Training Program in the Education Sciences at the University of Chicago, initially funded by IES in 2005, includes students and faculty from Economics, Comparative Human Development, Mathematics, Psychology, Public Policy, Social Services Administration, and Sociology. The training program takes an approach to educational inquiry that focuses on developmental transitions and their implications for success in the labor market. Faculty and fellows will synthesize the best research on how school organization and instruction influence these transitions while designing new research to advance this knowledge. The ongoing intensive Education Workshop will supplement a shared set of courses and apprenticeships with a focus on application of the best scientific methods to address these questions.

Michigan State University
Principal Investigator: Robert Floden
Amount: $4,942,670
Award Number: R305B090011
Period of Performance: 8/16/09-8/15/14
Description: *Interdisciplinary Pre-Doctoral Research Training Program* — The Michigan State University Predoctoral Interdisciplinary Research Training Program in the Education Sciences provides a Doctoral Specialization in the Economics of Education. The training program will train scholars in the use of quantitative methods from the field of economics to answer education questions. The Michigan State training program is a joint effort of the university's College of Education, Department of Economics, and School of Industrial and Labor Relations. Fellows in the program will study such topics as the effects of teacher quality and other resources on student achievement, the effects of school finance reform, the effects of school choice policies, the impact of early childhood education, and the development of advanced methodological techniques for identification of promising policies and practices and the evaluation of their

effectiveness. All students will complete courses in quantitative methods and economics of education, work with core faculty on research projects using advanced quantitative methods, have a supervised summer research apprenticeship at another organization, participate in an ongoing research seminar to discuss work of core faculty and students, attend colloquia presented by core faculty and leading scholars from outside MSU, and complete a dissertation that includes a study of an educational problem.

University of Wisconsin, Madison
Principal Investigator: Adam Gamoran
Amount: $5,000,180
Award Number: R305B090009
Period of Performance: 8/1/09-7/31/14
Description: *Interdisciplinary Training Program (ITP) for Predoctoral Research in the Education Sciences at the University of Wisconsin–Madison* — The Interdisciplinary Training Program (ITP) for Predoctoral Research in the Education Sciences at the University of Wisconsin–Madison began with an IES grant in 2005. The Interdisciplinary Training Program will continue its focus on training scholars in education policy and systems. The methodological focus is on randomized controlled trials and on rigorous statistical methods, particularly econometric techniques that provide evidence on potential impacts when randomized trials are not feasible. The Interdisciplinary Training Program is housed at the Wisconsin Center for Education Research and draws fellows from sociology, economics, psychology, political science, and/or social welfare. Fellows complete course work in students' disciplines, in education, and in advanced statistics, including courses in experimental design and measurement; a weekly interdisciplinary seminar; certification in a minor in education sciences; a research practicum on randomized trials in education; an intensive internship in randomized field trials; and ongoing experiences in faculty-led research projects.

University of Washington
Principal Investigator: Robert Abbott
Amount: $4,773,751
Award Number: R305B090012
Period of Performance**:** 7/1/09-6/30/14
Description: *Preparing Scholars for Rigorous Mixed-Method Studies of K-20 Education Policies and Programs: The Collaborative Researchers for Education Sciences Training (CREST) Program* — The Collaborative Researchers for Education Sciences Training (CREST) Program at the University of Washington brings together faculty from six schools and departments: Educational Psychology, Educational Leadership and Policy Studies, Evans School of Public Affairs, Sociology, Economics, and Social Work. The CREST program is overseen by the Center for the Study of Teaching and Learning (CT) within the University of Wisconsin College of Education. The team of faculty and students participating in the CREST program will concentrate on studying and evaluating policies that relate to educational reform across the K–20 continuum, with special emphasis on those that affect struggling learners within and across levels of the system, especially in high school and postsecondary institutions. Through coursework, mentoring, and research apprenticeships, CREST fellows will learn to use sophisticated mixed-methods designs that add to the understanding of policy design, implementation, and effects in the K–20 realm.

Florida State University
Principal Investigator: Christopher Lonigan
Amount: $4,998,353
Award Number: R305B090021
Period of Performance: 9/1/09-8/31/14
Description: *Program to Increase Research Capacity in Educational Science (PIRT)* — The Florida Center for Reading Research (FCRR) Predoctoral Interdisciplinary Research Training (PIRT) program at Florida State University was originally funded by IES in 2004. The program focuses on evaluation and measurement in education research, particularly reading research. Faculty are drawn from Education and Psychology, and have expertise and experience conducting high-quality evaluation research (e.g., large-scale randomized and cluster randomized studies), developing and validating measures (e.g., diagnostic, screening, and progress monitoring assessments for reading), and using advanced statistical methods (e.g., multi-level and hierarchical linear modeling, item response theory analyses, structural equation modeling), as well as significant knowledge and content expertise related to abnormal and normal developmental processes in reading, teacher training and professional development, and special needs populations. The PIRT program will collaborate with a newly founded institute at Florida State University, which has a mandate to develop and evaluate instructional activities to increase the math and science capabilities of Florida's K–12 students.

University of California, Berkeley
Principal Investigator: Geoffrey Saxe
Amount: $4,987,170
Award Number: R305B090026
Performance Period: 7/1/09-6/30/14
Description: *Research in Cognition and Mathematics Education* — The Research in Cognition and Mathematics Education (RCME) pre-doctoral training program at the University of California, Berkeley will provide training in the cognitive sciences, mathematics education, and methodologies essential to research in the social sciences. The focus of the RCME program will be the integration of the cognitive sciences and the use of mixed methods for strategic decision making in investigations of core questions regarding K–12 mathematical learning and teaching. Fellows will complete coursework in cognitive sciences, mathematics education, research design, quantitative analysis, and qualitative techniques, as well as research apprenticeships, specialized workshops, and colloquia. RCME's three partners at U.C. Berkeley are the Graduate School of Education, U.C.'s Graduate Group in Science and Mathematics Education (SESAME), and the Department of Psychology, with affiliate faculty from the Department of Mathematics.

Stanford University
Principal Investigator: Sean Reardon
Amount: $4,999,828
Award Number: R305B090016
Performance Period: 8/1/09-7/31/14
Description: *Stanford University Predoctoral Training Program in Quantitative Educational Policy Analysis* — The Stanford University Predoctoral Training Program in Quantitative Educational Policy Analysis is designed to provide doctoral students in social science disciplines (especially Economics, Sociology, Political Science, and Psychology) and in the School of Education with advanced training in state-of-the-art quantitative methods of discipline-based

educational policy analysis. Fellows will participate in an interdisciplinary core curriculum consisting of coursework in education policy, discipline-based theory, and applied quantitative research methods, including a 1-year course in applied statistical analysis, a course in measurement, several elective courses in statistics, and an ongoing interdisciplinary quantitative methods seminar. Fellows will receive additional training through research apprenticeships, a series of annual summer advanced training workshops, an ongoing educational policy analysis speaker series, and a series of annual conferences on educational policy analysis.

Pennsylvania State University
Principal Investigator: Karen Bierman
Amount: $4,928,128
Award Number: R305B090007
Performance Period: 8/1/09-7/31/14
Description: *Training Interdisciplinary Educational Scientists (TIES) Program* — The Pennsylvania State University Training Interdisciplinary Educational Scientists (TIES) Program is designed to train educational scientists with expertise in literacy and social/emotional competence and with proficient skills in statistics and research methods necessary to conduct cluster randomized trials. TIES will bridge resources and capacities of three Colleges (Education, Health and Human Development, Liberal Arts) and six interdisciplinary research centers at Penn State (Children, Youth, and Families Consortium; Center for Human Development and Family Research in Diverse Contexts; Child Study Center; Methodology Center; Prevention Research Center; and Center for Applied Educational and Developmental Sciences). TIES fellows will be involved in coursework, seminars, summer institutes, and research apprenticeships that will expose them to cutting-edge work in literacy and social and emotional learning and that will underscore the developmental interplay between these two critical domains of school adjustment. The program's core research training will emphasize cluster randomized trials, management of the research process, grant writing, and applied research experiences.

University of Pennsylvania
Principal Investigator: Laura Perna
Amount: $4,782,163
Award Number: R305B090015
Performance Period: 7/1/09-6/30/14
Description: *University of Pennsylvania Predoctoral Interdisciplinary Training Program in Education Sciences* — The University of Pennsylvania Predoctoral Training Program in Interdisciplinary Methods for Field-based Research in Education, which began with a 2005 IES grant, is a collaborative initiative among the Graduate School of Education, School of Arts and Sciences, and the Wharton School, as well as two affiliated policy and research centers—the Consortium for Policy Research and Evaluation and the Penn Center for Education Leadership. The program prepares fellows to design and carry out rigorous field-based research to advance and inform education policy on questions of the impacts and cost effectiveness of various educational policy and leadership practices. Graduates of the program will have a strong foundation in an academic discipline (e.g., economics, sociology, psychology) as well as in education. The program offers a coordinated set of instruction and field-based research experiences to prepare students from multiple disciplinary backgrounds in the science and practice of rigorous research in education. Although a focus of the program is randomized

controlled trials, fellows also master the skills to apply observational and qualitative research to advance theory, inform study designs, and enrich the utility of impact evaluations.

University of Virginia
Principal Investigator: Robert Pianta
Amount: $4,916,923
Award Number: R305B090002
Performance Period: 9/1/09-8/31/14
Description: *University of Virginia Predoctoral Training Program in Education Sciences (PTPES)* — The University of Virginia Predoctoral Training Program in Education Sciences (PTPES) was established through an IES grant in 2004. Under this new award, the Virginia Education Science Training (VEST) program will provide funding for 15 Four-Year Fellows in the Curry School of Education's doctoral programs in Applied Developmental Science and Education Policy and 15 Two-Year Fellows in the latter years of their doctoral program in their home Department in Arts and Sciences (Psychology, Economics, Sociology). Training in the Predoctoral Training Program in Education Sciences integrates the use of theoretical models of causal inference from various sciences (e.g., psychology, economics, biostatistics) with research designs, analytic techniques and methods that support causal inferences in studies of classroom and program effects. Training applies rigorous methods to three substantive research topics identified by IES: teacher quality, early childhood, and social and behavioral contexts for academic learning.

National Research and Development Centers

Georgia State University
Principal Investigator: Daphne Greenberg
Amount: $9,999,985
Award Number: R305C120001
Period of Performance: 9/1/12-8/31/17
Description: *Center for the Study of Adult Literacy (CSAL): Developing Instructional Approaches Suited to the Cognitive and Motivational Needs for Struggling Adults* — The Center for the Study of Adult Literacy (CSAL) seeks to improve our understanding of ways to advance the reading skills of struggling adult learners reading at the third- to eighth-grade levels. The Center will both conduct exploratory work on underlying cognitive and motivational processes that contribute to or impede reading development and develop and evaluate a multi-component reading intervention for this population. In addition, CSAL will examine the adequacy of measurement instruments and assessments for this population. CSAL is a collaborative effort across four research sites: Atlanta, Georgia; Memphis, Tennessee; and Toronto and St. Catharines, Canada. Struggling adult readers in both the United States and Canada will participate.

American Institutes for Research
Principal Investigator: Jane Hannaway
Amount: $10,000,000
Award Number: R305C120008
Period of Performance: 7/1/12-6/30/17
Description: *National Center for Analysis of Longitudinal Data in Education Research (CALDER)* — CALDER will conduct a focused program of research on state and district

education personnel policy issues and their relationship to student outcomes. In addition, CALDER will examine state and district policies for turning around low-performing schools and improving college/career-ready outcomes for secondary school students. CALDER's work will draw on longitudinal administration data from six states (Florida, Missouri, New York, North Carolina, Texas, and Washington) and the District of Columbia.

Columbia University, Teachers College
Principal Investigator: Thomas Bailey
Amount: $9,951,362
Award Number: R305C110011
Period of Performance: 7/1/11-6/30/16
Description: *The Center for Analysis of Postsecondary Education and Employment* — The Center for Analysis of Postsecondary Education and Employment conducts research and provides national leadership (in cooperation with IES) in order to advance knowledge regarding the link between postsecondary education and the labor market. Specifically, the Center aims to clarify this link with attention to four key topics: (1) relatively short-term occupational degrees (occupational associate degrees and certificates or diplomas) that are designed to improve labor market outcomes; (2) non-credit workforce programs that now enroll millions of students and play an important (but under-investigated) workforce development role; (3) the burgeoning for-profit sector; and (4) the trajectory of earnings growth after college (or even occurring simultaneously with college).

WestEd
Principal Investigator: Steve Schneider
Amount: $9,998,406
Award Number: R305C100024
Period of Performance: 7/1/10-6/30/15
Description: *National Research & Development Center on Cognition and Mathematics Instruction* — The National Center on Cognition and Mathematics Instruction has a core goal of redesigning components of a widely used middle school mathematics curriculum, *Connected Mathematics Project* (CMP), and evaluating the efficacy of the redesigned curriculum materials. Bringing together leading experts in cognition, instruction, assessment, research design and measurement, mathematics education, and teacher professional development, the Center team will apply research-based design principles to revise mathematics curricular materials for grades 6-8, when fundamental concepts required for algebra and advanced mathematics are addressed.

Vanderbilt University
Principal Investigator: Thomas Smith
Amount: $13,573,066
Award Number: R305C100023
Period of Performance: 8/1/10-7/31/15
Description: *National Research and Development Center on Scaling Up Effective Schools* — The purpose of the National Center for Scaling Up is to identify the combination of programs, practices, and policies that make some high schools in large urban districts effective with historically low-performing groups (e.g., low-income students, minorities, and English language learners); to develop an intervention using these practices that can be implemented by less effective high schools; to evaluate the implementation and impact of the intervention at less

effective high schools; and to evaluate the ability of districts to scale up the intervention to other less effective high schools.

Harvard University
Principal Investigator: Thomas Kane
Amount: $9,997,888
Award Number: R305C090023
Period of Performance: 7/1/09-6/30/14
Description: *National Center for Teacher Effectiveness: Validating Measures of Effective Math Teaching* — The National Center for Teacher Effectiveness: Validating Measures of Effective Math Teaching will identify practices and characteristics that distinguish between more and less effective teachers and will use this information to develop a suite of empirically validated and practical instruments that can be used by school districts to select, deploy, and retain more effective teachers. While focusing on math instruction in grades 4 and 5, the Center will have four primary goals: (1) to unify the disparate strands of research for teacher effectiveness, combining "value-added" measures based on student achievement gains with a close study of the features of effective teachers and teaching; (2) to develop a suite of empirically validated instruments for measuring teacher effectiveness; (3) to operationalize the measures and ensure that they are usable in the field; and (4) to externally validate the measure of teacher effectiveness against student achievement.

University of Nebraska, Lincoln
Principal Investigator: Susan Sheridan
Amount: $9,997,852
Award Number: R305C090022
Period of Performance: 7/1/09-6/30/14
Description: *National Center for Research on Rural Education* — The National Center for Research on Rural Education will identify, develop, and validate professional development practices that lead to the delivery of improved instruction in rural schools and improve rural students' acquisition of knowledge and skills in reading, science, and mathematics. The Center will focus on three primary goals: (1) investigation of variations in existing rural professional development practices, differences in professional development practices between rural and non-rural settings, the potential influence of various characteristics of professional development on rural teachers' knowledge, perceptions, and instructional practices, and moderating effects of context and teacher variables; (2) evaluation of the impact of two types of coaching (on-site versus distance-provided) on teachers' use of RTI-based differentiated reading instruction and their students' acquisition of reading skills through an experiment; and (3) evaluation of the impact of teacher professional development focused on teaching science using explicit instruction with guided inquiry and scaffolding.

University of Virginia
Principal Investigator: Robert Pianta
Amount: $12,814,994
Award Number: R305A060021
Period of Performance: 7/1/06-6/30/11
Description: *National Research Center on Early Childhood Education* — The National Research Center on Early Childhood Education will conduct research that contributes to the solution of

significant problems in early childhood education and will engage in leadership and dissemination activities with the early childhood policy, practitioner, and research communities. The Center's research will include work on in-service and pre-service training of early childhood teachers, early childhood curricula in literacy and language development, and assessment of child outcomes in language and literacy.

The Urban Institute
Principal Investigator: Jane Hannaway
Amount: $11,996,301
Award Number: R305A060067
Period of Performance: 7/1/06-6/30/11
Description: *National Research and Development Center for Analysis of Longitudinal Data in Education Research (CALDER)* — CALDER will address a variety of education policy issues including teacher policies (e.g., hiring, compensation, and certification), governance policies (e.g., accountability, choice) and the ramifications of changing social and economic community conditions (e.g., changing student demographics, resources) on education. The Center will utilize comprehensive education databases in Florida, Missouri, New York, North Carolina, Texas, and Washington to disentangle the effects of different policies by location. The Center also expects to make significant technical contributions to the field as it engages new, rich databases to help guide policymaking.

Statistical and Research Methodology in Education

Educational Testing Service
Principal Investigator: Sandip Sinharay
Amount: $390,191
Award Number: R305D120006
Period of Performance: 7/1/12-6/30/14
Description: *Assessing the Fit of the Statistical Model Used in the National Assessment of Educational Progress* — Researchers will investigate three new approaches to evaluating item response theory (IRT) model fit, using four National Assessment of Educational Progress (NAEP) datasets, covering Reading, Math, and Science. If the results indicate improved model fit when using these new approaches, then adopting the new approaches could lead to improved NAEP tests and decreased personnel time for assessing model fit of future NAEP data. Because several other large-scale assessments use essentially the same statistical model as in NAEP, the findings of this project will benefit analyses pertinent to those assessments as well.

Carnegie Mellon University
Principal Investigator: Brian Junker
Amount: $481,456
Award Number: R305D120004
Period of Performance: 7/1/12-6/30/15
Description: *Hierarchical Network Models for Education Research* — In this project, researchers will carry out a methodological investigation of social network analysis and examine its potential applicability in education through the development of hierarchical network models (HNMs). In addition to conducting simulation studies of issues pertinent to statistical power and

model estimation, the researchers will use hierarchical network models to analyze available social network data, including data from the National Longitudinal Study of Adolescent Health.

University of Wisconsin, Madison
Principal Investigator: Peter Steiner
Amount: $588,681
Award Number: R305D120005
Period of Performance: 7/1/12-6/30/15
Description: *Matching Strategies for Observational Studies with Multilevel Data in Educational Research* — This project has two goals: (1) to determine the conditions under which within- and across-cluster matching strategies produce consistent estimates of average treatment effects; and (2) to determine the matching strategies and analytic approaches that work best in education research practice. The research team will derive guidelines for education researchers who are currently using multilevel matching techniques in their analyses. It is anticipated that these guidelines will contribute to the implementation of more and better warranted matching designs in the future.

National Opinion Research Center
Principal Investigator: Guanglei Hong
Amount: $851,169
Award Number: R305D120020
Period of Performance: 7/1/12-6/30/15
Description: *Weighting Methods for Mediation Analysis in Experimental and Quasi-Experimental Multilevel Data* — The primary goal of this project is to develop a series of propensity-score-based weighting procedures for revealing the mediation mechanisms in multi-level educational settings. The researchers will use a combination of theory, simulation studies, and secondary data analyses to develop and to test the weighting methods and to compare their methods with path analysis and the instrument variable method. The researchers also plan to produce software that can be readily used by education researchers to implement the weighting procedures.

Stanford University
Principal Investigator: Sean Reardon
Amount: $697,878
Award Number: R305D110018
Period of Performance: 4/1/11-3/31/13
Description: *Addressing Practical Problems in Achievement Gap Estimation: Nonparametric Methods for Censored Data* — Without access to basic distributional statistics for test scores, research linking changes in state, district, or school policies and practices to levels and changes in achievement gaps may be compromised. The project will develop and test a set of methods for estimating achievement gap measures from widely available categorical proficiency data using a new nonparametric approach. Real and simulated data will be used to determine whether the developed methods produce unbiased estimates of achievement gaps and accurate standard errors. The overall result will be a set of practical guidelines for measuring achievement gaps based on categorical proficiency data and the development of free software to enable researchers and stakeholders to estimate these gaps.

University of Maryland, College Park
Principal Investigator: Laura Stapleton
Amount: $159,620
Award Number: R305D110046
Period of Performance: 7/1/11-6/30/14
Description: *Approaches for Weighting and Estimation of Public-release Education Data using Two-level Covariance Structure Models* — Appropriate methods to model data from multi-stage stratified sampling designs have been proposed but have not been tested under conditions similar to those of national education-related datasets. These methods require sampling weights at both student and school levels, but these weights often are not found on public-release datasets. Bias of estimates will be examined across a range of typical sampling designs and population characteristics, and models will be developed to identify best methods for estimating parameters and their sampling variances when using multilevel analyses with data collected via complex sampling designs typically used in education research.

University of Wisconsin, Madison
Principal Investigator: David Kaplan
Amount: $566,397
Award Number: R305D110001
Period of Performance: 3/1/11-2/28/14
Description: *Bayesian Inference for Experimental and Observational Studies in Education* — The purpose of this project is to develop, apply, and disseminate Bayesian statistical tools for designs and analytic strategies used in empirical education research and provide guidance into best practices in Bayesian statistical modeling for the education sciences. Existing data from a randomized field trial of a large-scale reform in Los Angeles and from an evaluation of the Success-for-All intervention will be used to supplement the simulation studies. Analyses will also be conducted on two large-scale datasets to address responses to intervention for English language learners. Finally, this project will use or develop open-source software to carry out this work and this software will be made readily available for future researchers.

Washington State University
Principal Investigator: Brian French
Amount: $453,933
Award Number: R305D110014
Period of Performance: 6/1/11-12/31/13
Description: *Increased Accuracy in the Detection of Differential Item Functioning through Multilevel Analysis* — This project seeks to develop multilevel differential item functioning (DIF) methods and software to increase the accuracy of the detection of DIF. DIF detection is a common component of instrument development in testing programs with high standards for the psychometric properties of tests. Two popular methods for DIF detection are SIBTEST and the Mantel-Haenszel (MH) statistic. Neither method has been adapted for use with multilevel data and thus may exhibit poor performance with education data, which are almost always multilevel in structure. In addition to developing the statistics to accommodate multilevel data, the project will also develop code in R and SAS that can be used to conduct the DIF analyses.

American Institutes for Research
Principal Investigator: Laura Salganik
Amount: $476,061
Award Number: R305D110008
Period of Performance: 3/1/11-2/28/13
Description: *Methods for Parameter Inference, Model Comparison and Incomplete Data in Complex Psychometric Models for NAEP Survey Data* — This project will use data from the 2005 National Assessment of Educational Progress (NAEP) math survey to determine the best fitting model and the best way to address missing data in the teacher questionnaire. To address limitations in previously used psychometric models, the researchers use Bayesian methods based on Markov chain Monte Carlo (MCMC) to obtain the full joint posterior distribution for all the model parameters. These methods are expected to provide more accurate variability estimates and compare the models through either integrated or posterior likelihoods. The researchers will also develop methods for efficient use of incomplete data in multilevel models for analyses of the NAEP survey data.

Katholieke Universiteit Leuven
Principal Investigator: Wim Van den Noortgate
Amount: $889,559
Award Number: R305D110024
Period of Performance: 7/1/11-6/30/14
Description: *Multilevel Synthesis of Single-Case Experimental Data: Further Developments and Empirical Validation* — The project will further develop the multilevel modeling approach for combining the results of studies that use single-subject experimental designs (SSED). The study will use real data and simulation studies. Multilevel modeling can be used to provide estimates of individual treatment effects, the average treatment effect, how these effects change over time, the variability in treatment effects, and the effects of moderators on the treatment effect. Dissemination products from this work will include research presentations and publications, workshops, and a freely available *SSED modeling* manual providing programs in SAS, R, and MLwiN to estimate the multilevel model and its extensions; and information on the principal investigators' web sites.

Educational Testing Service
Principal Investigator: Frank Rijmen
Amount: $1,197,301
Award Number: R305D110027
Period of Performance: 3/1/11-2/28/14
Description: *Psychometric Models for 21st Century Educational Survey Assessments* — The project will develop models for the statistical analysis of data from large-scale survey assessments, including the National Assessment of Educational Progress (NAEP) and the Programme for International Student Achievement (PISA). These psychometric models will account for the multilevel nature of the data and be characterized by a structured high dimensionality to closely mirror how recent assessment frameworks specify the relationship between tasks and underlying content domains and the cognitive processes required for solving these tasks. The results will be disseminated, and the research software used to estimate the models will be made available on a website dedicated to this project.

New York University
Principal Investigator: Jennifer Hill
Amount: $928,537
Award Number: R305D110037
Period of Performance: 7/1/11-6/30/14
Description: *Sensitivity Analysis - If We're Wrong, How Far Are We from Being Right?* — The project intends to extend and develop methods to explore the sensitivity of inferences to deviations from the required assumptions in the context of observational studies and randomized experiments. With these methods, researchers will be able to gauge how far their estimates might be from the truth. In addition, the project will develop practical guidelines for using sensitivity analyses in applied settings. User-friendly software to implement these strategies will be developed to make them accessible to education researchers, and the software will include procedures for representing results graphically to facilitate interpretation.

National Opinion Research Center
Principal Investigator: Larry Hedges
Amount: $1,128,562
Award Number: R305D110032
Period of Performance: 3/1/11-2/28/14
Description: *State-specific Design Parameters for Designing Better Evaluation Studies* — Using mixed linear models, this project will decompose the total variation of state achievement test scores (in reading and math) into district, school, classroom, and student level variance components. A secondary objective of the project will be to use the longitudinal state data to estimate single year increases in achievement in effect-size units for particular grades and subjects. This will include estimating effect sizes for participating states controlling for each of the covariate sets and for the different school contexts, with a focus on low-performing schools, schools serving low-income populations, or schools with large minority populations.

Abt Associates, Inc.
Principal Investigator: Robert Olsen
Amount: $489,178
Award Number: R305D100041
Period of Performance: 4/1/10-3/31/12
Description: *Testing Different Methods of Improving the External Validity of Impact Evaluations in Education* — This project will examine the external validity of evaluations that rely on purposive samples in order to answer two questions: (1) How, and under what conditions, can evaluations of federal education programs that select sites purposively produce externally valid impact estimates for the program as a whole? and (2) How, and under what conditions, can evaluations of educational interventions produce externally valid estimates of an intervention's impacts for schools and districts that did not participate in the evaluation?

Arizona State University
Principal Investigator: Roy Levy
Amount: $251,476
Award Number: R305D100021
Period of Performance: 9/1/10-8/31/12

Description: *Generalized Dimensionality Assessment for Multidimensional Psychometric Models* — This project will create dimensionality analysis tools and procedures necessary to support the application of multidimensional item response theory models. These models should facilitate inferences about students in terms of multiple aspects of proficiency.

Columbia University
Principal Investigator: Andrew Gelman
Amount: $1,125,301
Award Number: R305D100017
Period of Performance: 8/1/10-7/31/13
Description: *Practical Tools for Multilevel Hierarchical Modeling in Education Research* — The project will address the problems that occur when using multilevel models for a study involving only a small number of classrooms or when specifying random slopes for variables that do not always vary substantially within all groups through the development of Bayes modal estimation of multilevel models with weakly informative priors for routine use in standard software.

MDRC
Principal Investigator: Howard Bloom
Amount: $884,579
Award Number: R305D100027
Period of Performance: 4/1/10-12/31/12
Description: *Regression Discontinuity Designs with Assignment Based on Multiple Rating Scores: Statistical Properties and Issues in the Context of Education Evaluation* — The project proposes to provide practical guidance to education researchers on how to estimate program impacts using a regression discontinuity (RD) design with more than one rating variable. The project will compare the four multi-rating RD design approaches used in the literature in terms of their precision, potential threats to their internal validity (e.g., functional form misspecification), and the severity of the trade-off between bias and precision.

Michigan State University
Principal Investigator: Cassandra Guarino
Amount: $1,194,064
Award Number: R305D100028
Period of Performance: 5/16/10-5/15/13
Description: *Constructing Value-Added Indicators of Teacher and School Effectiveness that We Can Trust* — The project will address the use of value-added models by (1) developing statistical methods that can be used to test for violations of assumptions that threaten the validity of VAM-based inferences, (2) developing methods to improve the statistical characteristics of estimates obtained from valued added models, and (3) investigating how conditions threatening the validity of inference using value-added models vary across different subpopulations of students.

Northwestern University
Principal Investigator: Thomas Cook
Amount: $1,162,032
Award Number: R305D100033
Period of Performance: 3/1/10-2/28/13

Description: *Better Warranted Quasi-Experimental Practice for Evidence Based Practical Research* — This project will improve four quasi-experimental methods that have potential for providing unbiased or minimally biased causal inference when random assignment is not possible: regression discontinuity, interrupted time-series, certain case matching methods, and falsificationist pattern matching.

University of California, Los Angeles
Principal Investigator: Li Cai
Amount: $994,000
Award Number: R305D100039
Period of Performance: 3/1/10-2/28/13
Description: *Non-Linear Multilevel Latent Variable Modeling with a Metropolis-Hastings Robbins-Monro Algorithm* — The goal of this project is to bring together the benefits of multilevel modeling and latent variable modeling. To do so, the project proposes a flexible nonlinear multilevel latent variable modeling framework under which (1) random effects and latent variables are treated synonymously because both represent unobserved heterogeneity; (2) a nonlinear random effect regression model permits the specification and testing of important structural relations (e.g., mediation or moderation effects) in latent variables; and (3) both the outcome variable and the predictors (at any level) can be latent variables measured with fallible indicators.

University of California, Merced
Principal Investigator: William Shadish
Amount: $974,524
Award Number: R305D100046
Period of Performance: 5/1/10-4/30/13
Description: *A d-Estimator for Single Case Designs* — Although a number of methods exist for analyzing data from single-case designs, none yields an effect size estimator that is comparable to the commonly used effect size statistics in between-groups designs like the standardized mean difference statistic. This project will develop such a d-statistic (represented as *d*) for single-case designs that are comparable to and in the same metric as the d-statistic from a between-groups experiment. This statistic will allow researchers to assess effects from both single-case and between-groups designs on comparable metrics in systematic reviews of effective educational interventions.

University of Wisconsin, Madison
Principal Investigator: Robert Meyer
Amount: $1,200,000
Award Number: R305D100018
Period of Performance: 3/1/10-7/2/13
Description: *Value-Added Models and Accountability: Next Steps* — This project will further develop value-added models with a focus on a new value-added model that combines the best features of models with random and fixed individual effects to provide high precision and low selection bias.

Columbia University
Principal Investigator: Andrew Gelman
Amount: $904,972
Award Number: R305D090006
Period of Performance: 3/1/09-5/31/13
Description: *Practical Solutions for Missing Data and Imputation* — The project will develop and extend methods of multiple imputation to address missing data. This work will include: investigating the properties of imputation models, developing diagnostics to identify problems in imputations, developing software for multiple imputation that is reliable and useful for both non-statisticians and sophisticated modelers, testing the methods and software in applied research including comparisons with simpler missing data strategies, and providing workshops and educational materials demonstrating how to apply the newly developed methods.

MDRC
Principal Investigator: Howard Bloom
Amount: $446,205
Award Number: R305D090008
Period of Performance: 4/1/09-6/30/11
Description: *Statistical Properties of Regression Discontinuity Analysis and Comparative Interrupted Time Series Analysis for Estimating Impacts* — The project will examine statistical properties of two important quasi-experimental designs: regression discontinuity designs (RDD) and comparative interrupted time series (CITS). Specifically for RDD, it proposes to examine the trade-off between validity and generalizability of RDD, by gradually including larger samples around the cutoff of the assignment variable. For CITS, it aims to examine whether CITS can produce unbiased effect of treatment by comparing the estimates from schools around the cutoff point to RDD results.

National Opinion Research Corporation
Principal Investigator: Stephen Raudenbush
Amount: $1,184,993
Award Number: R305D090022
Period of Performance: 3/1/09-2/28/12
Description: *Development of Accessible Methodologies and Software in Hierarchical Models with Missing Data* — The project will develop methodologies and software to impute missing data at any level in two-level and three-level hierarchical models and cross-classified hierarchical models.

RAND Corporation
Principal Investigator: John Lockwood
Amount: $939,937
Award Number: R305D090011
Period of Performance: 3/1/09-2/28/12
Description: *Reducing Bias and Improving Efficiency of Estimated Teacher Effects from Value-Added Models* — The project will improve value-added models using longitudinal student test scores to estimate the effects of individual teachers on student learning. This work includes addressing potential sources of bias in econometric and statistical value-added estimates, exploring the use of propensity scores to compensate for pre-existing differences among students

that create bias in value-added estimates, and adapting methods of small-area and shrinkage estimation to develop methods that use observable teacher characteristics to improve the precision of value-added teacher effects.

RAND Corporation
Principal Investigator: John Engberg
Amount: $963,626
Award Number: R305D090016
Period of Performance: 4/1/09-3/31/12
Description: *Estimation and Inference in Education Research when Actions by Participants Impact Validity and Availability of Data* — The project will examine the threats to internal validity of two quasi-experimental designs. First, they will examine threats caused by differential attrition in studies using a lottery-design. A key objective of this study is to explore estimation and inference where there are differential attrition rates among the treatment and control groups. Second, they are to examine the impact from the manipulation of the assignment variable in regression discontinuity designs. A key objective of this work is to develop new estimators that can be used to recover the relevant treatment effects in the presence of some types of manipulation of the assignment variable.

Southern Methodist University
Principal Investigator: Lynne Stokes
Amount: $431,823
Award Number: R305D090020
Period of Performance: 6/1/09-5/31/11
Description: *Using Imperfect Fidelity Measures to Improve Statistical Inferences about Educational Interventions* — The project will investigate problems that arise when the fidelity of implementation measure is subject to errors of measurement. The researchers plan to develop regression calibration estimators of regression coefficients for "noisy" measures of fidelity in multilevel linear and logistic models for four measurement models.

State University of New York, Buffalo
Principal Investigator: Jaekyung Lee
Amount: $$307,940
Award Number: R305D090021
Period of Performance: 6/1/09-5/31/11
Description: *Developing Time-Indexed Effect Size Metrics in K–12 Reading and Math* —
The project will develop a context for interpreting effect sizes in reading and math. To do so, the project will develop academic growth references for K-12 reading and math achievement based on national representative longitudinal datasets and from these develop time-referenced effect size metrics that can estimate how long, in months of schooling, it would take for an "untreated" control group to reach the outcome of the treatment group.

University of California, Riverside
Principal Investigator: Jun Li
Amount: $171,742
Award Number: R305D090019
Period of Performance: 7/1/09-2/28/11

Description: *Hierarchical Linear Modeling Under Multilevel Non-Ignorable Non-Responses with Applications to NAEP Data* — The project will develop a modeling procedure for incorporating non-responses from students and schools that may be related to the outcome variable (as a result these non-responses provide information and are not ignorable). This work would include developing hierarchical linear models to incorporate multilevel non-ignorable non-response mechanisms using NAEP data that could provide estimators for the population mean and other parameters of interest.

University of Houston
Principal Investigator: Paras Mehta
Amount: $702,393
Award Number: R305D090024
Period of Performance: 3/1/09-2/28/12
Description: *Cross-Classified Structural Equations Model: Development of an OpenMX Module and its Application to Multiyear Assessment and Intervention Data in Literacy Research* — The project will develop a software library for fitting cross-classified structural equation models (CC-SEM) integrated into the R statistical modeling language. These models can be used in multi-level modeling when the data are not completely hierarchical, for example, when longitudinal data are collected on students who have more than one teacher during a school year or when students have different teachers over multiple years. They will demonstrate the use of CC-SEM in educational research through the secondary analysis of several datasets.

Western Michigan University
Principal Investigator: Jessaca Spybrook
Amount: $300,841
Award Number: R305D090013
Period of Performance: 3/1/09-2/28/11
Description: *Examining the Changes in Methodology that Occur Between the Design and Implementation of Field Trials in Education* — The project will describe the changes in methodology that occur between the design and implementation of randomized trials (RCT) in education. The researchers will investigate changes that occur in research design, sample sizes, outcome measures, the intervention itself, and expected rates of attrition. The research team will examine a group of RCTs funded between 2002 and 2006 by the National Center for Education Research and the National Center for Education Evaluation and Regional Assistance.

Evaluation of State and Local Education Programs and Policies

CNA Corporation
Principal Investigator: Christine Mokher
Amount: $4,687,046
Award Number: R305E120010
Period of Performance: 7/1/12-6/30/17
Description: *Assessment of the Florida College and Career Readiness Initiative* — To increase students' college readiness in high school and reduce their need for remediation at community colleges, Florida has implemented the Florida College and Career Readiness Initiative (FCCRI). The FCCRI uses test scores to identify 11th-grade students likely to graduate high school but also

likely to need remediation in college and then provides remediation in 12th grade. The researchers will evaluate the impact of the FCCRI on students' college persistence and completion.

RAND Corporation
Principal Investigator: Louis Mariano
Amount: $1,690,567
Award Number: R305E120006
Period of Performance: 8/1/12-7/31/17
Description: *Evaluation of the Long-Term Effects of Retention under New York City's Student Promotion Policy* — A growing number of states and school districts have established policies that link grade promotion decisions to standardized test performance under the assumption that an additional year of instruction in the same grade will help struggling students acquire the skills needed to succeed in future grades. In this project, the researchers will examine the impact of the New York City Department of Education's comprehensive student promotion policy in grades 3-8 on high school persistence, behavioral outcomes, and academic measures.

RAND Corporation
Principal Investigator: Jennifer Steele
Amount: $1,694,560
Award Number: R305E120003
Period of Performance: 7/1/12-6/30/15
Description: *The Effect of Dual-Language Immersion on Student Achievement in the Portland Public Schools* — Under dual-language immersion programs, teachers deliver core academic courses in the partner language (such as Spanish or Russian) and students begin receiving instruction in the partner language as early as kindergarten and through high school. These programs are to both help the growing number of language minority students learn English and achieve academically, while giving other students the opportunity to develop proficiency in another language. The researchers will examine the effect of the Portland Public Schools' dual-language immersion programs on student achievement in English, mathematics, and science, and on student engagement as measured through student attendance and behavior.

National Bureau of Economic Research
Principal Investigator: David Card
Amount: $791,666
Award Number: R305E110019
Period of Performance: 7/1/11-6/30/14
Description: *Gifted Education Program Participation and Program Impacts* — The purpose of this project is to evaluate the impact of gifted education on student achievement of the Broward County Public Schools (BCPS) in Florida. The BCPS gifted program combines separate gifted classrooms, specialized teacher training, and accelerated and differentiated instruction. Applying quasi-experimental methods to secondary data, researchers will answer three main questions: (1) What is the effect of gifted education in early elementary grades on subsequent academic achievement? (2) What is the impact of universal screening to identify potentially gifted children on the size and composition of the gifted population? and (3) To the extent that universal screening increases the size of the gifted population, how do the program impacts for newly identified students compare to impacts for students identified though traditional channels?

Ohio State University Research Foundation
Principal Investigator: Shayne Piasta
Amount: $5,998,358
Award Number: R305E100030
Period of Performance: 7/1/10-6/30/15
Description: *Evaluation of the Effectiveness of the Ohio Department of Education's Literacy Core Curriculum for Early Childhood Educators* — This project will evaluate the impact of the Ohio Department of Education's professional development course for preschool teachers. The course, known as the Preschool Literacy Core, is focused on improving teachers' literacy instruction. The project will compare teachers randomly assigned to take the literacy course versus those assigned to take a course offered in another subject. The comparison will be made on both teacher outcomes (e.g., literacy-related knowledge, beliefs, and instructional skills) and student literacy skills at the end of preschool and kindergarten.

President and Fellows of Harvard College, Graduate School of Education
Principal Investigator: Richard Murnane
Amount: $450,000
Award Number: R305E100013
Period of Performance: 3/1/10-2/28/13
Description: *Intended and Unintended Consequences of State High-Stakes Testing: Evidence from Standards-Based Reform in Massachusetts* — This project will evaluate the impact of Massachusetts' exit examinations in math and English language arts that students must pass in order to graduate from high school. The project will examine whether the exams: (1) lead students to substitute a GED for a high school diploma, and (2) affect students' educational aspirations. In addition, the project will also examine whether the proficiency labels (Basic, Needs Improvement, Proficient, or Advanced) given to students based on their eighth-grade tests (these do not have high stakes for students) affect their future achievement, grade retention, absenteeism, and educational attainment.

University of Michigan
Principal Investigator: Brian Jacob
Amount: $5,999,850
Award Number: R305E100008
Period of Performance: 3/1/10-2/28/16
Description: *The Impact of the Michigan Merit Curriculum and Michigan Promise Scholarship on Student Outcomes* — The project will evaluate the impact of two Michigan high school programs that seek to increase the rigor of high school academics through requiring more advanced coursework for high school graduation (the Michigan Merit Curriculum) and provide financial assistance for postsecondary education (the Michigan Promise Scholarship). The project will examine: (1) the impact of the curriculum policy on student course-taking, achievement on an 11th-grade state examination, high school graduation, and college enrollment; and (2) the impact of the scholarship program on college entry, college choice, and college completion.

University of Oregon
Principal Investigator: Scott Baker
Amount: $7,164,350

Award Number: R305E100043
Period of Performance: 7/1/10-6/30/15
Description: *Middle School Intervention Project (MSIP)* — This project will evaluate a middle school intervention (grades 6 to 8) for students with significant reading difficulties being used in five districts in Oregon. The intervention provides an additional reading class, activities to increase both psychological and behavioral engagement with school, and the use of data to monitor each student and adjust the intervention. Using a regression discontinuity design, the project will examine the impacts of the intervention on students' reading achievement, science and math achievement, and a set of engagement outcomes (including attendance, involvement in school activities, homework completion, office referrals, and student ratings).

Learning Point Associates
Principal Investigator: Shazia Miller
Amount: $3,332,675
Award Number: R305E090005
Period of Performance: 7/1/09-6/30/13
Description: *A Proposal to Measure the Impact of Indiana's System of Diagnostic Assessments on Student Achievement Outcomes* — This project will evaluate the impact of Indiana's interim diagnostic assessment system through which K-8 students take three formative assessments a year on student achievement (in reading and math for students in grades K-2; and reading, math, science, and social studies for students in grades 3-8). In addition, the study will examine the impact of the system on teacher instructional practices.

MDRC
Principal Investigator: Fred Doolittle
Amount: $4,827,957
Award Number: R305E090019
Period of Performance: 7/1/09-6/30/14
Description: *Evaluation of Ninth Grade Academies in Broward County Public Schools* — The project will evaluate the Ninth Grade Academies specifically used in the Broward County School District of Florida and a sample of similar academies throughout the state to determine their impact on student engagement and academic performance (grades, test scores, credits earned, promotion rates, and graduation rates) throughout high school.

University of Virginia
Principal Investigator: David Grissmer
Amount: $4,891,945
Award Number: R305E090003
Period of Performance: 7/1/09-6/30/14
Description: *Evaluation of Core Knowledge Charter Schools in Colorado* — This project will evaluate the impact of Core Knowledge (CK) charter elementary schools in Colorado on student achievement primarily in kindergarten through third grade. It will also examine whether there are differential impacts by student and school characteristics, whether the level of implementation of the Core Knowledge program is associated with the impacts on student achievement, as well as the cost-effectiveness of the CK charter schools.

Vanderbilt University
Principal Investigator: Mark Lipsey
Amount: $5,982,571
Award Number: R305E090009
Period of Performance: 7/1/09-6/30/14
Description: *Evaluating the Effectiveness of Tennessee's Voluntary Pre-K Program* — This project will evaluate the effectiveness of the Tennessee Voluntary Pre-k Program (TN-VPK) in attaining its primary objectives of enhancing the school readiness of economically disadvantaged children and improving their academic performance. It will also examine the relationship between student outcomes and selected policy-relevant characteristics of teachers, classrooms, and schools to determine which are associated with the largest effects and thus provide guidance for program improvement.

Reading for Understanding Research Initiative

Educational Testing Service
Principal Investigator: John Sabatini
Amount: $14,824,226
Award Number: R305F100005
Period of Performance: 7/1/10-6/30/15
Description: *Assessing Reading for Understanding: A Theory-based, Developmental Approach* — The research team will develop a new system of assessments that are aligned with current theoretical constructs and empirical findings pertaining to both reading comprehension and potential 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. Partners include researchers at Educational Testing Service, Florida State University/Florida Center for Reading Research, Arizona State University, Northern Illinois University, and Haskins Laboratories.

Strategic Education Research Partnership Institute
Principal Investigator: Mary Suzanne Donovan
Amount: $19,352,384
Award Number: R305F100026
Period of Performance: 7/1/10-6/30/15
Description: *Catalyzing Comprehension Through Discussion and Debate* — The overall purpose of this project is to better understand the roles of perspective taking, complex reasoning, and academic language skills in reading comprehension for upper elementary and middle school students, and to refine, develop, and test the efficacy of two reading interventions, *Word Generation* and the *Strategic Adolescent Reading Intervention* (SARI). This team will develop and test three instructional programs, as well as accompanying professional development, that are intended to catalyze the growth of reading comprehension skills by engaging students in discussion and debate. Partners include researchers at the Strategic Education Research

Partnership Institute, Harvard University, Stanford University, Developmental Testing Service, and Wheelock College.

Florida State University
Principal Investigator: Christopher Lonigan
Amount: $20,000,000
Award Number: R305F100027
Period of Performance: 7/1/10-6/30/15
Description: *Examining Effective Intervention Targets, Longitudinal Intensity, and Scaling Factors for Pre-K to 5th Grade Student Comprehension* — The goals of this project are to investigate the underlying cognitive and linguistic components that contribute to or that prevent the acquisition of well-developed comprehension skills, and to create and evaluate coherent, integrated multi-component instructional interventions intended to build and integrate key component skills that support students' proficient oral and text comprehension and reading for understanding. Researchers will identify, develop, and evaluate interventions that are likely to result in substantial increases in students' reading comprehension across early childhood and elementary school with a focus on students at risk for significant reading comprehension difficulties, particularly among children attending higher poverty schools. A focus of this project is the investigation of the cumulative impact of the use of effective instructional interventions on students' reading comprehension skills. In addition, this team intends to develop and evaluate a professional development support and training system that will allow these multi-component instruction interventions to be taken to scale with sufficient fidelity to have meaningful impacts on the reading comprehension skills of students from prekindergarten to fourth grade.

Board of Trustees of the University of Illinois
Principal Investigator: Susan Goldman
Amount: $19,256,585
Award Number: R305F100007
Period of Performance: 7/1/10-6/30/15
Description: *Reading for Understanding Across Grades 6 through 12: Evidence-Based Argumentation for Disciplinary Learning* — Project READI (Reading, Evidence, and Argumentation in Disciplinary Instruction) defines reading for understanding in adolescence as the ability to engage in evidence-based argumentation across multiple texts and supports its learning in three disciplines: history, science, and English literature. This work will contribute to expanding extant reading comprehension models and produce a set of fully tested Evidence-Based Argument Instruction Models (E-B AIMS) that exemplify core design principles. Partners include researchers at University of Illinois at Chicago, Northern Illinois University, DePaul University, WestEd, Northwestern University, University of Chicago, American Institutes for Research, Boston College, and Inquirium LLC.

Ohio State University
Principal Investigator: Laura Justice
Amount: $19,999,999
Award Number: R305F100002
Period of Performance: 7/1/10-6/30/15
Description: *The Language Bases of Reading Comprehension* — The primary purpose of this project is to increase fundamental understanding of the role of lower and higher level language

skills in listening and reading comprehension, and develop effective classroom-based approaches to increase language, general knowledge, and comprehension skills in prekindergarten through grade 3. This project explicitly focuses on the role of language skills in reading comprehension, not only how these skills contribute to reading comprehension but also how these skills can be rigorously developed in students to impact reading comprehension. Partners include researchers at Ohio State University, University of Nebraska-Lincoln, University of Kansas, Arizona State University, and Lancaster University in the UK.

University of Texas at Austin
Principal Investigator: Sharon Vaughn
Amount: $20,000,000
Award Number: R305F100013
Period of Performance: 7/1/10-6/30/15
Description: *Understanding Malleable Cognitive Processes and Integrated Comprehension Interventions for Grades 7–12* — The goals of this project are to improve our knowledge of cognitive processes that underlie reading for understanding to identify malleable processes that may be targets of intervention, provide knowledge about the role of engagement and motivation in enhancing reading comprehension outcomes, and integrate and apply the findings from these studies to develop and test the efficacy of interventions for students with reading comprehension difficulties in grades 7-12. The research team will examine how the representation of text is constructed in comprehenders of different skill levels, exploring the relations between cognitive and linguistic processes and variance in such relations across text types, grade levels, and sources of students' reading difficulties, and examine questions related to motivation and engagement in students with and without reading comprehension difficulties.

Unsolicited and Other Awards

Michigan State University
Principal Investigator: Spyros Konstantopoulos
Amount: $544,556
Award Number: R305U110001
Period of Performance: 10/1/11-9/30/13
Description: *Proposal for an RCT Training Institute* — Well-executed randomized experiments provide the strongest evidence about causal effects of educational interventions, products, and services. Consequently, they have a crucial role to play in establishing a base of knowledge for the improvement and reform of American education. Yet the number of individuals with the knowledge and experience necessary to design, implement, analyze, and interpret randomized field experiments in education is small. A training institute aimed at faculty and others employed in carrying out educational research can play a crucial role in complementing the efforts of IES to build capacity within the education science community to carry out randomized field experiments. To that end, the major goal of the project is to hold a summer research training institute on cluster-randomized designs during each year of the grant. The training institute will be modeled after the 2008-2011 IES Training Institute on Cluster-Randomized Trials.

Northwestern University
Principal Investigator: Thomas Cook
Amount: $833,228
Award Number: R305U100001
Period of Performance: 4/1/10-3/31/13
Description: *A Three Year Proposal to Conduct Two Annual Workshops on Better Quasi-Experimental Design and Analysis in Education* — Quasi-experimental designs are often used in education research for causal purposes. However, the quality of quasi-experimental designs and their application varies widely. In addition, knowledge of the better quasi-experimental designs that provide stronger evidence for making causal connections is not currently widespread among educational researchers due in part to the ongoing advances being made in quasi-experimental methods. The purpose of this project is to build the capacity of the education research community to carry out advanced quasi-experiments. Two 1-week summer research training workshops on quasi-experimental design and analysis will be held each year of the grant at Northwestern University for a total of six workshops. Each workshop is to include 60 participants for a total of approximately 360 researchers, who are to be drawn from faculty, postdoctoral students and senior graduate students, as well as employees in the federal, state, and local government and contract research firms.

Northwestern University
Principal Investigator: Larry Hedges
Amount: $2,169,830
Award Number: R305U100002
Period of Performance: 9/1/10-8/31/14
Description: *Continued Support of SREE* — The Society for Research on Educational Effectiveness (SREE) was established to support rigorous research in education by increasing the field's capacity to design and conduct rigorous investigations, creating a community of rigorous education researchers, and promoting the understanding and use of evidence to improve education decisions and outcomes. IES has supported SREE via two unsolicited grants in the past (in 2005 and in 2008). SREE has almost 400 members, a peer-reviewed journal (the *Journal of Research on Educational Effectiveness*), and a history of holding well-attended conferences. This grant will support core operations for SREE, much of which involve conference planning and logistics, while it moves toward self-sufficiency.

Contracts

Small Business Innovation Research

Filament Games
Principal Investigator: Beth Quinn
Amount: $149, 382
Contract Number: ED-IES-12-C-0033
Period of Performance: 6/21/12-11/20/12
Description: *GoCivics Mock Trial* — Studies show that many American students do not possess basic knowledge of the America judicial branch of government. Researchers are developing a prototype of the *GoCivics Mock Trial*, a multiplayer, augmented reality, role-playing game for

use on tablet devices. Through the game, middle school students will take on a role in a virtual mock trial. The game will be played within the classroom to supplement social studies and civic outcomes related to the judicial system. Pilot research in Phase I will seek to demonstrate that the software prototype functions as planned, the product can be used during class, and students are engaged by the prototype.

Filament Games
Principal Investigator: Dan White
Amount: $149,926
Contract Number: ED-IES-12-C-0024
Period of Performance: 6/21/12-11/20/12
Description: *iCivics+: Games and Games-Based Assessments to Prepare Students for Better Citizenship* — Researchers will develop a prototype of a formative assessment component to be added to the *GoCivics* games, a tablet-based intervention through which middle school students engage in learning activities and simulations to learn standards-based civics content. The formative assessment component will adjust the game play to students' levels of knowledge in real-time and provide feedback to teachers. The games will be integrated within classroom practice and also used out of school. Pilot research in Phase I will seek to demonstrate that the software prototype functions as planned, teachers are able to integrate the games within classroom practice, and students are engaged by the prototype.

Imagine Education
Principal Investigator: Scott Laidlaw
Amount: $150,000
Award Number: ED-IES-12-C-0041
Period of Performance: 6/21/12-11/20/12
Description: *Ko's Journey: Empires — Empires* will be a multi-player math game designed to teach pre-algebra middle school students, based on the critical areas of the Common Core State Standards for sixth and seventh grades. In Phase I, researchers will develop a prototype of a web-based pre-algebra math game for use on tablet and personal computer platforms, including strategic game-based narratives. The games will be integrated within classroom practice. Pilot research in Phase I will seek to demonstrate that the gaming prototype functions as planned, teachers are able to integrate the game within the classroom instruction, and students are engaged by the prototype.

Improve, LLC
Principal Investigator: Nona Ullman
Amount: $150,000
Contract Number: ED-IES-12-C-0035
Period of Performance: 6/21/12-11/20/12
Description: *myEdna: Web 2.0 Teacher Personal Assistant* — Research demonstrates that lesson planning can be a highly inefficient process for teachers. The goal of this project is to develop a prototype of *MyEdna*, a web-based personal assistant that provides elementary school teachers easy and fast ways to search, save, and share high-quality online educational resources. Pilot research at the end of Phase I will seek to demonstrate that the software prototype functions as planned and teachers can efficiently and effectively use the website to integrate materials within classroom practice.

1st Playable Productions
Principal Investigator: Tobi Saulnier
Amount: $150,000
Contract Number: ED-IES-12-C-0040
Period of Performance: 6/21/12-11/20/12
Description: *Possible Worlds: Explorer Series* — This project team is developing a prototype of a delivery platform to host four web-based interactive games to help students overcome scientific misconceptions in middle-grade science. This project team will convert and enhance the games and materials for use on tablet-based devices with touch-screen capability to enable more in-depth and interactive gameplay. The games will supplement classroom lessons for topics such as genetics, photosynthesis, electricity, and energy. Pilot research in Phase I will seek to demonstrate that the software prototype functions as planned, teachers are able to integrate it within the classroom environment, and students are engaged with the prototype.

3-C Institute for Social Development
Principal Investigator: Melissa DeRosier
Amount: $150,000
Contract Number: ED-IES-12-C-0036
Period of Performance: 6/21/12-11/20/12
Description: *Social Tutor for Supporting the Transition from Elementary to Middle School* — A growing body of research underscores the need to prepare students socially, as well as academically, to ensure successful transition to middle school and foster subsequent academic success. Researchers will develop a prototype of a series of web-based interactive games to help students practice and learn needed social skills to successfully transition from grade school to middle school. The games will include a formative assessment software engine to adapt to students' levels of social skills. The games will supplement fifth-grade classroom learning. Pilot research in Phase I will seek to demonstrate that the software prototype functions as planned and teachers and students are engaged by the prototype.

Flip Learning
Principal Investigator: Christian Speilvogel
Amount: $149,780
Contract Number: ED-IES-12-C-0034
Period of Performance: 6/21/12-11/20/12
Description: *The American War Featuring Valley Sim* — Researchers are developing a prototype of *The American War: Featuring Valley Sim*, an e-textbook for college students that will integrate thematic content and role-playing, games, and simulations. The product will allow students to recreate and critique arguments and events during the civil war from the perspective of those who were alive during that period. The games will supplement classroom learning and support student outcomes in history. Pilot research in Phase I will seek to demonstrate that the software prototype functions as planned, the product can be used within the classroom, and students are engaged by the prototype.

3-C Institute for Social Development
Principal Investigator: Melissa DeRosier
Amount: $849,989
Contract Number: ED-IES-11-C-0039

Period of Performance: 6/30/11-6/29/12
Description: *An Interactive Social Tutoring System to Improve and Measure Social Goals for Students Related to Academic and Other School-Related Outcomes* — Elementary school is a time of growth and development in students' social skills and peer relations. Prior research shows that students who are able to establish and maintain positive peer relations are more successful in school (including higher levels of achievement) and better able to cope with stressful life events. In contrast, students who have difficulty navigating the socio-developmental shifts of elementary school are substantially more likely to experience academic failure, behavioral problems, and emotional difficulties. The goal of this project is to develop a cost-effective, time-efficient, and engaging product to measure students' progress toward improved social literacy.

Children's Progress, Inc.
Principal Investigator: Eugene Galanter
Amount: $850,000
Contract Number: ED-IES-11-C-0044
Period of Performance: 6/30/11-6/29/12
Description: *Computer Adaptive Triarchic Assessment and Instructional Activities for Early Childhood* — Prior research has shown that students who are considered to be gifted generally have high levels of academic performance, motivation, creativity, critical thinking skills, and positive self-concepts. Perhaps because the general perception is that gifted students will flourish under any conditions, support for gifted children may be limited within some schools. The purpose of this project is to develop an early intervention software program to assess and provide support to gifted children in social and intellectual domains. The assessment will be designed for administration in a school setting with desktop computer hardware or touch screen tablets serving as a delivery platform. A Spanish language version of the assessment will be developed for English language learners.

Quantum Simulations Inc.
Principal Investigator: Benny Johnson
Amount: $850,000
Contract Number: ED-IES-11-C-0041
Period of Performance: 6/30/11-6/29/12
Description: *Math Education for Adult Learners and College Remediation Using Artificial Intelligence* — Recent international comparative studies report declining levels of numeracy skills among the adult population (16- to 65-year-olds) in the United States. The purpose of this project is to extend artificial intelligence methodologies to an on-demand tutor focused on developmental mathematics for adult learners and underprepared college students requiring remediation. Embedded content will focus on gatekeeper topics that are viewed as critical to a strong foundation in mathematics, including probability, data interpretation, estimation, exponents, basic geometry, fractions, multiplication, division, and addition. To use the product, students will enter their own problems. An automated assessment feature will check responses and will offer immediate tutoring on any mistakes to support the student working through a solution.

Triad Digital Media
Principal Investigator: Scott Brewster
Amount: $1,050,000
Contract Number: ED-IES-11-C-0045
Period of Performance: 6/30/11-12/29/13
Description: *PlatinuMath: An Online Formative Assessment Math Game for Preservice Elementary Teachers* — To be qualified to teach their future students in math, preservice students need to gain specialized mathematics content and pedagogical knowledge. The purpose of this project is to develop a web-based game to strengthen preservice teachers' knowledge of mathematics and provide college instructors with accurate assessments of their students' mathematical understanding. *PlatinuMath* will include a series of narrative based mini-games to improve mathematical understanding among preservice teachers. The games will cover 24 standards-relevant topics and will supplement any preservice curriculum or training course. Additional components of the games will include content that will adjust to the level of a user, an interface dashboard and reporting feature that will present results to preservice teachers and their instructors, and a backend database to house all records.

Mtelegence Corporation
Principal Investigator: Harriet Isicke
Amount: $849,950
Contract Number: ED-IES-11-C-0042
Period of Performance: 6/30/11-6/29/12
Description: *Readorium Software for Improved Reading Comprehension of Non-fiction Science Text* — Prior research indicates that reading difficulties in childhood become more problematic as students move to middle and high school where increasingly challenging material must be learned. Although some older students still struggle with decoding, many more have difficulty constructing meaning from text. Despite research that has identified strategies for teaching students to comprehend what they read, many teachers do not have the training or resources to utilize such techniques. The purpose of this project is to develop a web-based product to support struggling readers in understanding nonfiction text in the area of science. *Readorium* will be a web-based product for middle school students to improve reading comprehension of science content.

Biostatistical Programming Associates, Inc.
Principal Investigator: Michael Borenstein
Amount: $1,048,874
Contract Number: ED-IES-11-C-0037
Period of Performance: 6/30/11-12/29/13
Description: *Software to Compute Effect Sizes for Cluster-Randomized Trials* — In education research, the standardized mean difference (symbolized by *d*) is the predominant effect size index. It is calculated as the difference between the treatment-group and control-group means, divided by the pooled standard deviation. Using *d* allows the impacts of education interventions to be compared even when they have been evaluated using different measures or study designs. Calculating *d* is relatively straightforward for simple-randomized trials. However, calculating *d* becomes difficult when using cluster-randomized trials (CRTs). Previous work to develop formulas to compute effect size *d* and its standard error for CRTs resulted in identifying the complexity of the procedure and the additional difficulties raised by the use of real data. The

purpose of this project is to develop a computer program that can be used by mainstream education researchers to compute *d* and its standard error for both researchers conducting CRTs and researchers working with published data from CRTs conducted by others.

Diversified Construction, Inc.
Principal Investigator: David Marley
Amount: $1,045,450
Contract Number: ED-IES-11-C-0022
Period of Performance: 6/30/11-12/29/13
Description: *STEM Solar Explorations* — The need for all students to be well prepared in science has been well documented. The purpose of this project is to develop a solar learning lab platform to apply learning in the area of energy science. The *STEM Solar Explorations* platform will be a multidisciplinary solar energy field laboratory to supplement middle school standards. The hardware component will include physical solar equipment to capture real-time data to be wirelessly transmitted to classrooms. The web-based component will host the STEM curriculum focusing on energy concepts, a dashboard to present data, and materials to facilitate teacher training and implementation. The platform will allow students to apply knowledge to daily changes in the position of the sun and to solar energy production, and to conduct hands-on investigations to address curricular content.

Teaching Research Institute, LLC
Principal Investigator: Lynn Singletary
Amount: $849,999
Contract Number: ED-IES-11-C-0043
Period of Performance: 6/30/11-6/29/12
Description: *The Social Shape Up System* — In prior research, prosocial behaviors in grade school have been correlated with later academic achievement while anti-social behaviors have been associated with later poor academic achievement and deviance. To help teachers monitor students' social behavior, this project will develop a classroom conduct system that includes a mechanism for teachers to monitor social behavior. Through the *Social Shape Up System*, teachers will use a handheld device to monitor classroom behaviors in pre-kindergarten through eighth-grade classrooms. The product will include research-based strategies for teachers to shape student behavior; a web-based database to store, manage, and report student behavior; and a handheld device to facilitate data collection

Polyhedron Learning Media, Inc.
Principal Investigator: Jeanne Finstein
Amount: $850,000
Contract Number: ED-IES-11-C-0029
Period of Performance: 6/30/11-6/29/12
Description: *Virtual Labs for High School Physics* — With national attention on the shortage of STEM (science, technology, engineering, and mathematics) professionals, enrollment in science is expected to be on the rise in the years to come. Laboratory work is seen as an essential part of many STEM courses, because labs enable students to interact with natural phenomena and analyze collected data. Funding adequate labs, however, has become a challenge and many schools indicate they are not well equipped for laboratory science. It is estimated that a single classroom physics lab can cost $40,000 to $55,000, with an additional annual replacement and

repair budget of $2,000 to $3,000. The purpose of this project is to develop a set of cost-effective and maintenance free web-based virtual labs that can fully replace or supplement hands-on labs in a typical high school physics course.

Other Contracts

AFYA, Inc.
Amount: $4,030,555
Award Number: ED-IES-10-O-0091
Period of Performance: 9/20/10-9/19/13
Description: This contract provides administrative and logistical support for IES.

American Institutes for Research in the Behavioral Sciences
Amount: $1,500,000
Contract Number: ED-04-CO-0025/0020
Period of Performance: 6/24/09-6/30/12
Description: *Identifying Potentially Successful Approaches to Turning Around Chronically Low Performing Schools* — This study will identify strategies used by chronically low-performing schools to successfully turn around and exit from low-performing status.

Interagency Agreements

U.S. Army Medical Research Acquisition Activity
Amount: $9,732,200
Contract Numbers: ED-IES-09-J-0019; ED-IES-10-J-0008; ED-IES-11-J-0015
Period of Performance: 8/10/09-9/30/11
Description: This interagency agreement is for services to contract for scientific peer review management and administrative support for all IES grant competitions, including NCER, NCSER, and Statewide Longitudinal Data Systems.