REQUEST FOR APPLICATIONS

Special Education Research Grants
CFDA Number: 84.324A

COMPETITION ROUND	JUNE	OCTOBER
Letter of Intent Due Date (https://ies.constellagroup.com/)	04/27/2009	08/03/2009
Application Package Available (http://www.grants.gov/)	04/27/2009	08/03/2009
Application Due Date (http://www.grants.gov/)	06/25/2009	10/01/2009

IES 2009   **U.S. Department of Education**

<div align="center">**PART I GENERAL OVERVIEW**</div>

1. REQUEST FOR APPLICATIONS

In this announcement, the Institute of Education Sciences (Institute) requests applications for research projects that will contribute to its special education research programs in Early Intervention and Early Childhood Special Education; Reading, Writing, and Language Development; Mathematics and Science Education; Social and Behavioral Outcomes to Support Learning; Transition Outcomes for Special Education Secondary Students; Cognition and Student Learning in Special Education; Teacher Quality; Related Services; Special Education Policy, Finance, and Systems; and Autism Spectrum Disorders. For the FY 2010 competition, the Institute will consider only applications that meet the requirements outlined below under Part II Research Grant Topics and Part III Requirements of the Proposed Research.

Separate funding announcements are available on the Institute's website that pertain to the other research and research training grant programs funded through the Institute's National Center for Special Education Research (http://ncser.ed.gov) and to the discretionary grant competitions and research training program funded through the Institute's National Center for Education Research (http://ncer.ed.gov).

For the purpose of this Request for Applications (RFA), a student with a disability is defined in Public Law 108-446, the Individuals with Disabilities Education Improvement Act of 2004 (IDEA), as a child "(i) with mental retardation, hearing impairments (including deafness), speech or language impairments, visual impairments (including blindness), serious emotional disturbance (referred to in this title as 'emotional disturbance'), orthopedic impairments, autism, traumatic brain injury, other health impairments, or specific learning disabilities; and (ii) who, by reason thereof, needs special education and related services" (Part A, Sec. 602). An infant or toddler with a disability is defined in IDEA as, "an individual under 3 years of age who needs early intervention services because the individual (i) is experiencing developmental delays, as measured by appropriate diagnostic instruments and procedures in 1 or more of the areas of cognitive development, physical development, communication development, social or emotional development, and adaptive development; or (ii) has a diagnosed physical or mental condition that has a high probability of resulting in developmental delay" (Part C, Sec. 632).

2. OVERVIEW

Through its Special Education Research grant program, the Institute supports research over a diverse set of topics and for a range of purposes. The topics include school readiness, achievement in core academic content (reading, writing, mathematics, science), and behaviors that support learning in academic contexts for students with disabilities or at risk for disabilities from prekindergarten through high school. Additional outcomes of interest include developmental outcomes for infants and toddlers with disabilities and functional outcomes that improve educational results and transitions to employment, independent living, and post secondary education.

The purposes or goals of the research projects are described below. They are designed to span the range from basic translational research to evaluation of the impact of interventions when the interventions are implemented at scale.

Project Goal

Goal One: Exploration	The Institute solicits projects to explore the relations between education outcomes and malleable factors (i.e., factors that can be changed, such as child behaviors or education programs, practices, and policies), as well as mediators or moderators of those relations. Exploring the relations between malleable factors and education outcomes is translational research; it is intended to inform the development of interventions – programs, practices, or policies – that can improve education outcomes. Exploratory research can be used to identify existing practices, programs, or policies that are associated with better education outcomes and that should be

evaluated to determine if the identified practices are the actual cause of the better outcomes, as opposed to some other factor that has yet to be uncovered.

Since the Institute established the goal structure, approximately 5 percent of the projects funded through the Special Education Research grant program are exploratory projects (National Board for Education Sciences, 2008).[1]

Goal Two: Development and Innovation

The Institute supports projects to develop innovative education interventions – programs, practices, products, policies – or to improve existing education interventions. To develop or improve education interventions requires an iterative process of designing, testing, revising, and testing to produce a product or system that functions in the way that the developer intends for it to function and that can be implemented in actual education delivery settings (e.g., schools). This iterative process, sometimes called a systems-engineering approach, is important for producing interventions that have the potential to be *potent* and *robust* interventions.

Since the Institute established the goal structure for its Special Education Research grant program, about 59 percent of the funded projects have been development projects.[1]

Goal Three: Efficacy and Replication

The vast majority of the education programs, practices, and policies that are implemented in U.S. schools have never been rigorously evaluated to determine if they are able to improve student learning (or other desired education outcomes) relative to any other education intervention. The Institute funds experimental and quasi-experimental research projects to evaluate the efficacy of newly developed and existing education programs, practices, and policies under limited conditions. Efficacy projects determine whether an intervention can have a positive impact on the outcomes of interest.

Efficacy projects also provide estimate of how *potent* the intervention is for producing the desired outcome. By potent, the Institute refers to the strength of the impact of the intervention. For example, suppose a district has students who are two-years below grade-level expectations on reading assessments at the beginning of first grade and wants to have all students reading at grade-level by the end of fourth grade. The district might look for reading interventions that are potent enough to produce 1.5 years of growth per year in first-, second-, third-, and fourth-grades. An extra half-year of growth in each year could bring the students who are two-years behind in first grade up to grade-level expectations by the end of fourth grade.

Since the Institute established the goal structure for its Special Education Research grant program, about 22 percent of the funded projects have been efficacy and replication projects.[1]

Goal Four: Scale-up Evaluations

If interventions are able to produce positive effects in small efficacy evaluations, they may be ready to be evaluated in a scale-up evaluation. Scale-up evaluations determine whether or not an intervention is effective when it is implemented under conditions that would be typical if the district were to implement

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[1]This percentage is based on all grants funded through the special education research competitions and does not include grants awarded under competitions for which the Institute's research goal structure did not apply (e.g., all grants awarded prior to 2004, all Research & Development Center awards)

it on its own (i.e., without special support from the developer or research team) across a variety of conditions (e.g., different student populations, different types of schools). Scale-up evaluations provide an estimate of how *robust* the intervention is. Will it work under a variety of conditions (e.g., with novice teachers, with large or small classes, in well-organized and in poorly organized schools)?

Since the Institute established the goal structure for its Special Education Research grant program, about 1 percent of the funded projects have been scale-up evaluations.[1]

Goal Five: Measurement   Finally, the Institute supports research to develop and validate measurement instruments that are intended for use by practitioners for purposes such as screening, progress monitoring, and outcome assessments. Since the Institute established the goal structure for its Special Education Research grant program, about 13 percent of the funded projects have been measurement projects.[1]

The Institute's research programs are intended to cover the range of research, development, and evaluation activities necessary for building a scientific enterprise that can provide solutions to the education problems in our nation. Focusing on only one type of research activity will not produce the results that the nation seeks. We need *innovation and development* because we have not yet solved old problems (e.g. the achievement gap), and we continue to face new problems and opportunities (e.g., integrating new technologies, building on new findings on how students learn, addressing large groups of students new to the United States and moving to communities that have not worked with such students before). Innovation and development can lead to the design of potent and robust interventions that may be effective for improving education outcomes. However, development and innovation cannot stand-alone. On the front end, the work of creating more potent and more robust interventions benefits from exploratory research to uncover underlying processes and identify promising approaches to test. This research, although at times quite basic, is translational research that is intended to inform the development of new and more powerful interventions. On the back end, we need evaluations that test the effect of the interventions on their intended outcomes. Education has always produced new ideas, new innovations, and new approaches, but as in any field, new is not always better. Evaluations can tell us which programs and policies actually produce positive effects on education outcomes, which need more work to become more potent or more robust, and which should be discarded. Only appropriate empirical evaluation can sift the wheat from the chaff and identify those programs that do in fact improve student outcomes. Hence, before we support widespread adoption of an intervention that has demonstrated positive effects in small efficacy and replication trials, we must make sure they work as expected when they are scaled up.

Finally, the Institute intends for its research programs to contribute to the generation of new knowledge and theories relevant to learning, instruction, and education systems. The goal structure of the Institute's research programs divides the research process into stages. Under Goal One, researchers generate hypotheses about the components and processes involved in learning and instruction and in the operation of education systems. They develop models about how they think systems function to bring about education outcomes. Under Goal Two, investigators build on prior theoretical and empirical work to propose a theory of change for a specific intervention. The intervention, in essence, is an instantiation of the theory. Under Goals Three and Four, the efficacy and scale-up evaluations assess the impact of specific interventions and constitute tests of the theory (of change). Results from these studies should inform further theory development and refinement. Through Goal Five, the development and validation of assessments also contribute to theory development and theory testing. Taken together, work across the various goals should not only yield the practical benefits about the effects of specific interventions on education outcomes but also contribute to the bigger picture of scientific knowledge and theory on learning, instruction, and education systems.

PART II RESEARCH GRANT TOPICS

For FY 2010, the Institute's National Center for Special Education Research is accepting applications for research grants on June 25, 2009, and October 1, 2009. In this section, the Institute describes the 10 research grant topics.

A. Purpose
Through its research program on Early Intervention and Early Childhood Special Education (Early Intervention), the Institute intends to support research that contributes to the improvement of developmental outcomes and school readiness of infants, toddlers, and young children (from birth through preschool) with disabilities or at risk for disabilities by: (1) exploring malleable factors[2] (e.g., children's skills, instructional practices, curricula) that are associated with better developmental and school readiness outcomes for children with disabilities or children at risk for disabilities, as well as mediators or moderators of the relations between these factors and child outcomes, for the purpose of identifying potential targets of intervention; (2) developing innovative curricula, instructional approaches, programs, or professional development training to improve developmental outcomes and school readiness for children with disabilities or children at risk for disabilities; (3) evaluating the efficacy of fully developed interventions, programs, curricula, and professional development programs to improve developmental outcomes and school readiness for children with disabilities or children at risk for disabilities; (4) evaluating the effectiveness of interventions, programs, curricula, or professional development programs that are implemented at scale and designed to improve developmental outcomes and school readiness; and (5) developing and validating assessment tools that can be used by practitioners to assess infants, toddlers, and young children with disabilities or at risk for disabilities, assess the performance of early intervention and early childhood special education practitioners, or assess systemic practices or policies. Developmental outcomes that may be addressed through this program are cognitive, linguistic, social, emotional, adaptive, and physical outcomes.

The long-term outcome of this program will be an array of tools and strategies (e.g., assessment tools, curricula, programs, services, interventions) that have been documented to be effective for improving developmental outcomes or school readiness of infants, toddlers, and young children with disabilities or at risk for disabilities.

B. Background
Almost one million infants, toddlers, and young children (birth through five years old) receive early intervention or early childhood special education services under IDEA (U.S. Department of Education, 2006). Relatively little rigorous research, however, has been conducted to evaluate the impact of early interventions or early childhood special education services for improving child outcomes (National Research Council and Institute of Medicine, 2000).

The Institute intends for its Early Intervention research program to support research on the development and evaluation of interventions, programs, and curricula that are intended to improve developmental outcomes (cognitive, linguistic, social, emotional, adaptive, and physical outcomes) and school readiness for infants, toddlers, and young children with disabilities or at risk for disabilities. Through this program, the Institute supports research to develop and validate assessments of school readiness and developmental outcomes for the purposes of screening, diagnosis, progress monitoring, or evaluating outcomes for infants, toddlers, and young children with disabilities or at risk for disabilities. Finally, the Institute supports research that examines the relations between malleable factors and school readiness

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[2] By malleable factors, we mean factors that can be changed and are potential targets for intervention.

or developmental outcomes for infants, toddlers, and young children with disabilities or at risk for disabilities for the purpose of identifying potential targets of intervention. The types of projects that are appropriate for this program are illustrated by, but not limited to, the examples provided below.

The Institute encourages researchers to develop innovative interventions, modify existing interventions, or rigorously evaluate fully developed interventions. Interventions appropriate for research under this program are interventions for infants, toddlers, or young children with high- or low-incidence disabilities, or at risk for disabilities, that are delivered to the child by early intervention specialists, teachers, or related service providers. For example, an applicant might propose to develop a home-based intervention designed to be delivered by speech language pathologists and intended to improve the articulation, expressive vocabulary, and word retrieval skills of toddlers with Down Syndrome or Prader-Willi Syndrome. As another example, applicants might propose to develop interventions designed to be delivered by physical or occupational therapists and intended to improve the gross motor skills (e.g., rolling, sitting, and crawling) and fine motor skills (e.g., reaching and grasping) of infants with disabilities. Interventions may also include training provided to parents to enable them to deliver interventions to their child.

Also appropriate under this topic are applications to develop or evaluate professional development programs intended to improve services to infants, toddlers, or young children with high- or low-incidence disabilities, or at risk for disabilities, and thereby improve developmental outcomes or school readiness. Professional development programs may be for early intervention specialists, teachers, or related service providers. For example, an applicant might propose to evaluate a professional development training program for occupational therapists to improve self-care behaviors of toddlers with visual impairments.

Under the Early Intervention topic, researchers may propose to develop or evaluate systemic interventions intended to directly or indirectly improve developmental outcomes or school readiness of infants, toddlers, or young children with high- or low-incidence disabilities or at risk for disabilities. Examples of systemic interventions include (a) programs to improve the development and implementation of Individualized Family Service Plans or preschoolers' Individualized Education Programs; (b) programs or procedures intended to better coordinate service delivery systems; (c) Response to Intervention approaches; and (d) interventions intended to improve collaboration among families, service providers, and educators and promote smooth transitions as children move from Early Intervention services to preschool settings.

The Institute encourages researchers to explore malleable factors (e.g., instructional practices, young children's behaviors or skills) that are associated with better developmental and school readiness outcomes for infants, toddlers, and young children with disabilities or at risk for disabilities, as well as mediators and moderators of the relations between these factors and child outcomes *for the purpose of identifying potential targets of intervention*. This is translational research intended to inform development of innovative programs, practices, or products to improve outcomes for infants and young children with disabilities. For example, one approach to the identification of malleable factors is for researchers to conduct detailed, quantifiable observational measures of instruction intended to improve school readiness outcomes (e.g., types of instruction, frequency, duration, under what circumstances), and then use the instructional data in conjunction with child characteristics to predict subsequent school readiness outcomes. The goal here is to identify what type or combination of instructional activities is associated with better outcomes and for which children. Researchers who can successfully identify strong correlates of school readiness outcomes could use this information as the basis for developing an intervention. Another approach is to conduct multivariate analyses of existing databases in order to identify practices that are associated with the most positive developmental or school readiness outcomes and to examine factors and conditions that may mediate or moderate the relations between the school readiness outcomes and such practices.

Finally, the Institute is interested in proposals to develop and validate new instruments, or to validate existing instruments, that can be used by practitioners to identify or monitor infants, toddlers, and young children with disabilities or at risk for a disability. For example, researchers may propose to develop and validate outcome measures that can be used not only for measuring infants', toddlers', and young children's development and school readiness, but also for determining program areas that need improvement and for providing data for Federal accountability purposes. Also appropriate for the Early Intervention research program are applications to develop measures to assess practitioner performance or systemic practices and then validate such measures against child outcomes.

C. Specific Requirements

a. Submission to a specific goal
For the Early Intervention research program, applicants must submit under *either* Goal One *or* Goal Two *or* Goal Three *or* Goal Four *or* Goal Five. More details on the requirements for each Goal are listed in Part III Requirements of the Proposed Research. Here, specific requirements that apply to the Early Intervention topic are described.

Applicants should read carefully the requirements for each Goal and the examples of appropriate projects under each Goal. The Institute strongly encourages potential applicants to contact the relevant program officer in section 29 if they have any questions regarding the appropriateness of a particular project for submission under a specific Goal.

b. Focus on children with disabilities
This research program is restricted to early intervention and special education research for children with disabilities or at risk for disabilities. For the purpose of Institute's special education research programs, a child with a disability is defined in Public Law 108-446, the Individuals with Disabilities Education Improvement Act of 2004 (IDEA), as a child "(i) with mental retardation, hearing impairments (including deafness), speech or language impairments, visual impairments (including blindness), serious emotional disturbance (referred to in this title as 'emotional disturbance'), orthopedic impairments, autism, traumatic brain injury, other health impairments, or specific learning disabilities; and (ii) who, by reason thereof, needs special education and related services" (Part A, Sec. 602). An infant or toddler with a disability is defined in IDEA as, "an individual under 3 years of age who needs early intervention services because the individual (i) is experiencing developmental delays, as measured by appropriate diagnostic instruments and procedures in 1 or more of the areas of cognitive development, physical development, communication development, social or emotional development, and adaptive development; or (ii) has a diagnosed physical or mental condition that has a high probability of resulting in developmental delay" (Part C, Sec. 632).

Applicants proposing to study children at risk for developing disabilities must present research-based evidence of an association between risk factors in their proposed sample and the potential identification of disabilities. The determination of at-risk status must be made on an individual child basis and may include, for example, factors used for selecting students for Early Intervening Services, for moving children to higher tiers in a Response to Intervention model, or for placing children in secondary or tertiary services in a Positive Behavioral Interventions and Supports system. Evidence consisting only of general population characteristics (e.g., labeling all children in a school or district as "at risk for disabilities" because of community socioeconomic characteristics) is *not* sufficient for this purpose.

c. Content and sample requirements
Under the Early Intervention program, applications must address:
- malleable factors that are associated with developmental or school readiness outcomes for infants, toddlers, or young children (preschool) with disabilities or at risk for disabilities for the purpose of identifying potential targets for intervention; or

- mediators or moderators of the relations between malleable factors and child outcomes for the purpose of identifying potential targets for intervention; or

- interventions designed to improve developmental or school readiness outcomes of infants, toddlers, and young children (preschool) with disabilities or at risk for disabilities; or

- assessments that can be used by practitioners to screen, diagnose, monitor progress, or evaluate outcomes for infants, toddlers, and young children (preschool) with disabilities or at risk for disabilities; or

- assessments to evaluate the quality of early intervention/early childhood special education systems or the performance of early intervention/early childhood special education practitioners (e.g., early intervention specialists, teachers, or related service providers).

Under the Early Intervention program:
- Developmental outcomes appropriate for this research program are cognitive, linguistic, social, emotional, adaptive, and physical outcomes for infants, toddlers, or young children with disabilities or at risk for disabilities.

- Interventions may be school-based interventions or may occur in natural settings (e.g., home-based, child care settings, family-focused interventions) or may be systemic interventions.

- Interventions designed to provide direct services to infants, toddlers, or young children may be delivered by early intervention specialists, teachers, related service providers (e.g., speech-language pathologists, physical therapists), or parents. Professional development interventions may target professionals or paraprofessionals who provide services to infants, toddlers, or young children with disabilities or at risk for disabilities.

- All applicants must include measures of child outcomes.

- Under Goal Five, assessments of the knowledge or performance of early intervention and early childhood special education practitioners, as well as assessments of the quality of early intervention/early childhood special education programs and systems must be validated against child outcomes.

4. Reading, Writing, and Language Development
Program Officer: Dr. Kristen Lauer (202-219-0377; Kristen.Lauer@ed.gov)

A. Purpose
Through its Reading, Writing, and Language Development (Reading/Language) special education research program, the Institute intends to contribute to the improvement of reading, writing, and language skills for students with identified disabilities and to prevent the development of disabilities among students at risk for disabilities by (1) exploring malleable factors[3] (e.g., children's skills, instructional practices, curricula) that are associated with better reading, writing, or language outcomes for students with disabilities or students at risk for disabilities, as well as mediators or moderators of the relations between these factors and student outcomes, for the purpose of identifying potential targets of intervention; (2) developing innovative curricula, instructional approaches, or strategies for teaching reading, writing, or language skills to students with identified disabilities or students at risk for disabilities; (3) evaluating the efficacy of fully developed curricula, instructional approaches, or strategies for teaching reading, writing, or language skills to students with identified disabilities or students at risk

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[3] By malleable factors, we mean factors that can be changed and are potential targets for intervention.

for disabilities; (4) evaluating the effectiveness of curricula, instructional approaches, or strategies for teaching reading, writing, or language skills for students with disabilities or at risk for disabilities when implemented at scale; and (5) developing and validating reading, writing, or language assessments for students with disabilities or at risk for disabilities that are intended for use by practitioners in instructional settings.

The long-term outcome of this program will be an array of tools and strategies (e.g., assessments, instructional approaches) that have been documented to be effective for improving reading, writing, or language outcomes for students with identified disabilities and students at risk for disabilities from kindergarten through Grade 12.

B. Background

Students with disabilities do not attain the same performance thresholds as their peers on a range of language, reading, and writing outcome measures. For example, the 2007 National Assessment of Educational Progress (NAEP) indicates that 64 percent of fourth graders with disabilities and 65 percent of eighth graders with disabilities who participated in the assessment scored below the basic level in reading achievement in contrast to 30 percent of fourth graders and 22 percent of eighth graders without disabilities. Reading below the basic level means that when reading grade-appropriate text, these students cannot extract the general meaning of text, make obvious connections between the text and their own experiences, or make simple inferences from the text. In other words, approximately two-thirds of fourth graders and eighth graders with disabilities who take the NAEP do not understand what they have read. In writing, a similar picture emerges. The 2007 NAEP writing assessment indicated that, in eighth grade, 45 percent of students with disabilities who participated in the assessment scored below the basic level in contrast to 8 percent of students without disabilities. The NAEP results make clear the substantial gap in reading and writing skills between students with and without disabilities.

The Institute intends for its Reading/Language special education research program to support research on the development and evaluation of curricula and instructional approaches that are intended to improve reading, writing, and language outcomes for students with disabilities, or at risk for disabilities, from kindergarten through Grade 12. Through this program, the Institute supports research to develop and validate assessments of reading, writing, or language for use by practitioners for purposes such as, screening, progress monitoring, or evaluating outcomes for students with disabilities or at risk for disabilities. Finally, the Institute supports research that examines the relations between malleable factors (e.g., child skills or instructional practices) and reading, writing, or language outcomes for students with disabilities or at risk for disabilities for the purpose of identifying potential targets of intervention. The types of projects that are appropriate for this program are illustrated by, but not limited to, the examples provided below.

Interventions appropriate for research under this program are interventions for students with high- or low- incidence disabilities that are delivered to the student by teachers, related service providers, or other school personnel. For example, an applicant might propose to adapt an existing comprehensive reading curriculum for students with hearing impairments or to develop instructional strategies for improving language/communication skills of students with significant intellectual disabilities. As another example, applicants could consider developing instructional approaches or strategies for improving reading comprehension that could be incorporated into instruction in content courses (e.g., history, science) for middle- or high-school students with learning disabilities.

Under the Reading/Language research program, the Institute also accepts applications to develop or evaluate interventions that could be used as a tier in a Response to Intervention model. For example, an applicant might propose to evaluate a secondary-tier intervention intended to improve vocabulary, which in turn could enhance writing skills of students with or at risk for learning disabilities.

The Institute encourages the development and validation of assessments of reading, writing, or language that are intended to be used by practitioners for purposes such as identifying, progress monitoring, or evaluating outcomes in reading, writing, or language. For example, applicants could compare the relative predictive validity of short-term dynamic assessments versus progress monitoring instruments.

The Institute encourages researchers to explore malleable factors (e.g., instructional practices, curricula, children's behaviors or skills) that are associated with better reading, writing, or language outcomes for students with disabilities or at risk for disabilities, as well as mediators or moderators of the relations between these factors and student outcomes, *for the purpose of identifying potential targets of intervention*. This is translational research intended to inform development of innovative interventions to improve reading, writing, or language outcomes for children with disabilities or at risk for disabilities. One approach to the identification of malleable factors is for researchers to conduct detailed, quantifiable observational measures of reading, writing, or language instruction (e.g., types of instruction, frequency, duration, under what circumstances), and then use the instructional data in conjunction with child characteristics to predict subsequent reading, writing, or language performance. The goal here is to identify what type or combination of instructional activities is associated with better student outcomes and for which students. Researchers following this strategy who can successfully predict student performance could use this information as the basis for developing an intervention. Another approach is to conduct multivariate analyses of district or state databases in order to identify existing programs and practices that may be associated with better reading, writing, or language outcomes and to examine factors and conditions that may mediate or moderate the relations between the student outcomes and these programs and practices.

C. Specific Requirements

a. Submission to a specific goal
For the Reading/Language special education research program, applicants must submit under *either* Goal One *or* Goal Two *or* Goal Three *or* Goal Four *or* Goal Five. More details on the requirements for each Goal are listed in Part III Requirements of the Proposed Research. Here, specific requirements that apply to the Reading/Language topic are described.

Applicants should read carefully the requirements for each Goal and the examples of appropriate projects under each Goal. The Institute strongly encourages potential applicants to contact the relevant program officer listed in section 29 if they have any questions regarding the appropriateness of a particular project for submission under a specific goal.

b. Focus on children with disabilities
This research program is restricted to special education research for students with disabilities or at risk for developing disabilities. For the purpose of Institute's special education research programs, a student with a disability is defined in Public Law 108-446, the Individuals with Disabilities Education Improvement Act of 2004 (IDEA), as a child "(i) with mental retardation, hearing impairments (including deafness), speech or language impairments, visual impairments (including blindness), serious emotional disturbance (referred to in this title as 'emotional disturbance'), orthopedic impairments, autism, traumatic brain injury, other health impairments, or specific learning disabilities; and (ii) who, by reason thereof, needs special education and related services" (Part A, Sec. 602).

Applicants proposing to study students at risk for developing disabilities must present research-based evidence of an association between risk factors in their proposed sample and the potential identification of disabilities. The determination of at-risk status must be made on an individual student basis and may include, for example, factors used for moving students to higher tiers in a Response to Intervention model. Evidence consisting only of general population characteristics (e.g. labeling all students in a school or district as "at risk for disabilities" because of community socioeconomic characteristics) is *not* sufficient for this purpose.

c. Content and sample requirements

Under the Reading/Language special education research program, applications must address:

- malleable factors that are associated with reading, writing, or language outcomes from kindergarten through Grade 12 for students with disabilities or at risk for disabilities for the purpose of identifying potential targets for intervention; or

- mediators or moderators of the relations between malleable factors and child outcomes from kindergarten through Grade 12 for students with disabilities or at risk for disabilities for the purpose of identifying potential targets for intervention; or

- curricula designed to improve reading/pre-reading, writing/pre-writing, or language outcomes of students with disabilities or at risk for disabilities from kindergarten through Grade 12; or

- instructional approaches intended to improve reading/pre-reading, writing/pre-writing, or language outcomes of students with disabilities or at risk for disabilities from kindergarten through Grade 12; or

- reading/pre-reading, writing/pre-writing, or language assessments to support instruction from kindergarten through Grade 12 for students with disabilities or at risk for disabilities.

Under the Reading/Language special education research program:

- Interventions must be for use in schools, alternative school settings, or supplemental education services as defined in Section 1116(e) of the Elementary and Secondary Education Act of 1965, as amended by the No Child Left Behind Act of 2001.

- Interventions may be delivered by teachers, related service providers, or other instructional staff.

5. Mathematics and Science Education
Program Officer: Dr. Rob Ochsendorf (202-219-2234; Robert.Ochsendorf@ed.gov)

A. Purpose

Through its Mathematics and Science Education (Math/Science) program, the Institute intends to contribute to the improvement of mathematics and science education for students with identified disabilities and to prevent the development of disabilities among students at risk for disabilities by: (1) exploring malleable factors[4] (e.g., children's skills, instructional practices, curricula) that are associated with better mathematics or science outcomes for students with disabilities or students at risk for disabilities, as well as mediators or moderators of the relations between these factors and student outcomes, for the purpose of identifying potential targets of intervention; (2) developing new curricula and innovative instructional approaches to mathematics and science education that will eventually result in improving mathematics and science achievement for students with disabilities or at risk for disabilities; (3) evaluating the efficacy of fully developed curricula and instructional approaches to mathematics and science education for students with disabilities or students at risk for disabilities; (4) evaluating the effectiveness of mathematics and science curricula and instructional approaches for students with disabilities or at risk for disabilities that are implemented at scale; and (5) developing and validating assessments of mathematics and science learning for students with disabilities or at risk for disabilities and intended for use by practitioners in instructional settings.

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[4] By malleable factors, we mean factors that can be changed and are potential targets for intervention.

The long-term outcome of this program will be an array of tools and strategies (e.g., assessments, instructional approaches) that have been demonstrated to be effective for improving mathematics and science learning and achievement for students with disabilities or students at risk for disabilities from kindergarten through Grade 12.

B. Background
Students with disabilities lag behind their peers without disabilities in both mathematics and science achievement. For example, in the 2007 National Assessment of Educational Progress (NAEP) mathematics assessment, 40 percent of Grade 4 students with disabilities who participated in the assessment scored below the basic level compared to 15 percent of Grade 4 students without disabilities. Among Grade 8 students, 66 percent of students with disabilities who participated in the assessment scored below the basic level compared to 25 percent of students without disabilities. Among Grade 12 students on the 2005 NAEP mathematics assessment, 83 percent of students with disabilities who participated in the assessment scored below the basic level compared to 36 percent of students without disabilities. In the 2005 NAEP science assessment, 55 percent of the Grade 4 students with disabilities who participated in the assessment scored below the basic level compared to 30 percent of the Grade 4 students without disabilities. At Grade 8, 73 percent of the students with disabilities who participated in the assessment scored below the basic level in the science assessment compared to 38 percent of the students without disabilities. Among Grade 12 students, 83 percent of students with disabilities who participated in the assessment scored below the basic level in science achievement compared to 43 percent of students without disabilities.

The Institute intends for its Math/Science special education research program to support research on the development and evaluation of curricula and instructional approaches that are intended to improve mathematics and science outcomes for students with disabilities, or at risk for disabilities, from kindergarten through Grade 12. Through this program, the Institute supports research to develop and validate assessments of mathematics or science for use by practitioners for purposes such as screening, progress monitoring, or evaluating outcomes for students with disabilities or at risk for disabilities. Finally, the Institute supports research that examines the relations between malleable factors and mathematics or science outcomes for students with disabilities or at risk for disabilities for the purpose of identifying potential targets of intervention. The types of projects that are appropriate for this program are illustrated by, but not limited to, the examples provided below.

Interventions appropriate for research under this program are interventions for students with high- or low-incidence disabilities that are delivered to the student by teachers or other instructional staff. For example, a number of interventions (e.g., Nemeth code tutorials for students or teachers, embossed graphics for presenting visual information, captioned media) have been developed to make mathematics or science content more accessible for students with blindness, visual impairments, deafness or hearing impairments. Similarly, technology-based interventions, such as simulations, multimedia, and virtual reality, have been developed to allow students with physical disabilities to experiment with science concepts or to support students with disabilities in learning science and mathematics (e.g., supported electronic text). Relatively little systematic research has been conducted on the impact of interventions such as these, and the Institute encourages researchers to propose projects to conduct rigorous research on the effect of such interventions on learning outcomes for students with disabilities.

The Institute is primarily interested in interventions that address core mathematics and science content (e.g., Mathematics: addition/subtraction, fractions, algebra, geometry, trigonometry, calculus; Science: physical science, earth science, life science). Instruction in mathematics and science is shaped by theories that vary in their implications regarding, for example, the importance of active student construction of knowledge through discovery- or inquiry-based learning, and the need for direct and explicit instruction for concept and skill development. The Institute does **not** limit research to any particular framework, and is interested in proposals to develop or test different theoretically-based approaches for teaching mathematics or science to students with disabilities.

Under the Math/Science special education research program, the Institute accepts applications to develop innovative or evaluate promising interventions that could be used as a tier in a Response to Intervention model. For example, an applicant might propose to evaluate a secondary-tier intervention intended to improve mathematics achievement of students with or at risk for learning disabilities.

The Institute encourages researchers to explore malleable factors (e.g., instructional practices, curricula, children's behaviors or skills) that are associated with better mathematics or science outcomes for students with disabilities or at risk for disabilities, as well as mediators or moderators of the relations between these factors and student outcomes, *for the purpose of identifying potential targets of intervention*. This is translational research intended to inform development of innovative interventions to improve mathematics or science outcomes for children with disabilities or at risk for disabilities. One approach to the identification of malleable factors is for researchers to conduct detailed, quantifiable observational measures of mathematics or science instruction (e.g., types of instruction, frequency, duration, under what circumstances), and then use the instructional data in conjunction with child characteristics to predict subsequent mathematics or science performance. The goal here is to identify what type or combination of instructional activities is associated with better student outcomes and for which students. Researchers following this strategy who can successfully predict student performance could use this information as the basis for developing an intervention. Another approach is to conduct multivariate analyses of district or state databases in order to identify existing programs and practices that may be associated with better mathematics or science outcomes and to examine factors and conditions that may mediate or moderate the relations between the student outcomes and these programs and practices.

In addition, the Institute invites proposals to develop and/or validate mathematics and science measurement tools for classroom assessments to be used for instructional purposes (e.g., progress monitoring). To improve mathematics and science skills, instruction may need to be tailored to the sources of difficulty that individual students experience. An ideal learning environment might involve regular and frequent assessment of skills and the possibility of individualized instruction for students based on the particular source of their difficulties.

C. Specific Requirements

a. Submission to a specific goal
For the Math/Science special education research program, applicants must submit under *either* Goal One *or* Goal Two *or* Goal Three *or* Goal Four *or* Goal Five. More details on the requirements for each Goal are listed in Part III Requirements of the Proposed Research. Here, specific requirements that apply to the Math/Science topic are described.

Applicants should read carefully the requirements for each Goal and the examples of appropriate projects under each Goal. The Institute strongly advises potential applicants to contact the relevant program officer listed in section 29 if they have any questions regarding the appropriateness of a particular project for submission under a specific goal.

b. Focus on children with disabilities
This research program is restricted to special education research for students with disabilities or at risk for disabilities. For the purpose of Institute's special education research programs, a student with a disability is defined in Public Law 108-446, the Individuals with Disabilities Education Improvement Act of 2004 (IDEA), as a child "(i) with mental retardation, hearing impairments (including deafness), speech or language impairments, visual impairments (including blindness), serious emotional disturbance (referred to in this title as 'emotional disturbance'), orthopedic impairments, autism, traumatic brain injury, other health impairments, or specific learning disabilities; and (ii) who, by reason thereof, needs special education and related services" (Part A, Sec. 602).

Applicants proposing to study students at risk for developing disabilities must present research-based evidence of an association between risk factors in their proposed sample and the potential identification of disabilities. The determination of at-risk status must be made on an individual student basis and may include, for example, factors used for selecting students for moving students to higher tiers in a Response to Intervention model. Evidence consisting only of general population characteristics (e.g., labeling all students in a school or district as "at risk for disabilities" because of community socioeconomic characteristics) is *not* sufficient for this purpose.

c. Content and sample requirements
Under the Math/Science special education research program, applications must address:
- malleable factors that are associated with mathematics or science learning or achievement from kindergarten through Grade 12 for students with disabilities or at risk for disabilities for the purpose of identifying potential targets for intervention; or

- mediators or moderators of the relations between malleable factors and child outcomes from kindergarten through Grade 12 for students with disabilities or at risk for disabilities for the purpose of identifying potential targets for intervention; or

- mathematics or science curricula designed to improve mathematics or science proficiency from kindergarten through Grade 12 for students with disabilities or at risk for disabilities; or

- instructional approaches intended to improve mathematics or science outcomes from kindergarten through Grade 12 for students with disabilities or at risk for disabilities; or

- mathematics or science assessments to support instruction from kindergarten through Grade 12 for students with disabilities or at risk for disabilities.

Under the Special Education Math/Science research program:
- Interventions must be for use in schools, alternative school settings, or supplemental education services as defined in Section 1116(e) of the Elementary and Secondary Education Act of 1965, as amended by the No Child Left Behind Act of 2001.

- Interventions may be delivered by teachers or other instructional staff.

6. Social and Behavioral Outcomes to Support Learning
Program Officer: Dr. Jacquelyn Buckley (202-219-2130; Jacquelyn.Buckley@ed.gov)

A. Purpose
The purpose of the Social and Behavioral Outcomes to Support Learning (Social/Behavioral) research grant program is to contribute to the prevention or amelioration of behavior problems in students with or at-risk for disabilities and concomitantly, improve their academic outcomes by: (1) exploring malleable factors[5] (e.g., children's skills, classroom management practices) that are associated with better behavioral, social, or emotional competencies that support learning for students with or at risk for disabilities, as well as mediators or moderators of the relations between these factors and student outcomes, for the purpose of identifying potential targets of intervention; (2) developing innovative programs that are intended to improve behavioral, social, or emotional outcomes of students with or at risk for disabilities; (3) evaluating the efficacy of fully developed interventions that are intended to improve behavioral, social, or emotional outcomes of students with or at risk for disabilities; (4) evaluating the effectiveness of interventions intended to improve behavioral, social, or emotional

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[5] By malleable factors, we mean factors that can be changed and are potential targets for intervention.

outcomes of students with or at risk for disabilities that are implemented at scale; and (5) developing and validating social and behavioral assessment tools and procedures for students with or at risk for disabilities and intended for use by practitioners.

The long-term outcome of this program will be an array of tools and strategies (e.g., assessments, interventions) that have been documented to be effective for preventing behavior problems and improving the behavioral, emotional, social skills, and likewise, the academic performance of students with or at risk for disabilities from kindergarten through Grade 12.

B. Background

Research on the efficacy of behavioral interventions and supports designed to manage, control, and prevent a range of behavior and antisocial problems (e.g., violence toward peers or adults, self-injury, noncompliance, bullying, withdrawal, truancy) in a range of settings (e.g., school, general and special education classrooms, home, work, community) is historically robust (e.g., Baer, Wolf, & Risley, 1968; Becker, Madson, Arnold, & Thomas, 1967; Safran & Oswald, 2003; Sugai et al., 2000). However, much remains to be done to understand and advance the application, scalability, and sustainability of these behavioral interventions and supports.

Through the Social/Behavioral program, the Institute supports research to develop or evaluate interventions to improve social or behavioral outcomes for students with or at risk for high- or low-incidence disabilities. Interventions may be delivered as school-wide or classroom-wide programs or to individual or small groups of students and may be delivered by teachers, related service providers, school psychologists, or other school staff. For example, researchers may develop a classroom-based program to decrease problem behaviors (e.g., aggression, disruption) and increase appropriate behaviors (e.g., positive social interactions) for students with autism in inclusive classrooms. The program might include specific classroom management strategies for the teacher along with specific behavior skills for a student with autism taught by a para-professional.

The Institute encourages research to develop innovative programs and interventions that combine the disciplines of special education and mental health with the goal of preventing behavior problems and improving the academic outcomes for students with disabilities. Considerable work focusing on interventions that are aimed at preventing or ameliorating behavior disorders in children and youth has been conducted in the areas of developmental psychopathology, prevention research, and children's mental health services. Much of this work focuses on improving social and behavioral functioning in schools and other community settings, yet there has been relatively little systematic effort to bridge these efforts with prevention and intervention research in special education. The Institute also encourages researchers to consider, for example, tailoring programs developed in children's mental health aimed at preventing behavior and mental health disorders (e.g., conduct disorder) and evaluating the impact of those programs on *school-based behavior and academic outcomes*, including referral and classification for special education.

The Institute recognizes that applicants to the Social/Behavioral research program typically propose models that involve multiple steps. For example, an applicant might choose to evaluate a program intended to improve teacher's behavior management skills. For the purpose of illustration, a simple model of change for this program might be:

Intervention	Mediator	Mediator	Mediator	Student Academic Outcome
Teacher training on classroom management strategies	Improve teachers' classroom practices	Decrease student disruptive behaviors	Increase instruction time Improve students' engagement Reduce suspensions	Improve grades and test scores Improve graduation rates
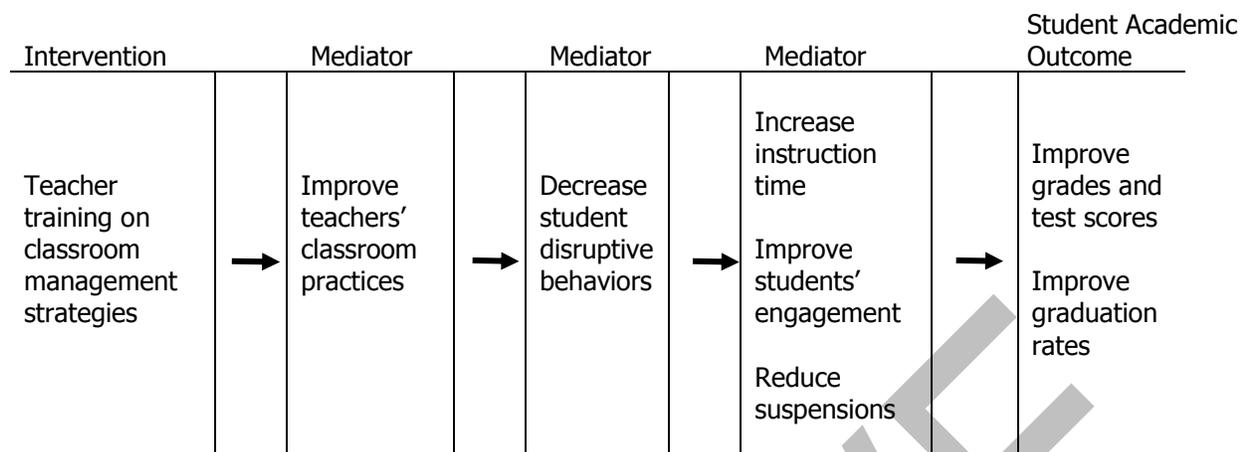
In this model, improved student academic outcomes is the most distal outcome that the intervention seeks to improve. The Institute requires applicants to obtain measures of student education outcomes (e.g., grades, test scores, high school completion). In strong applications, researchers would also propose to measure the mediators between the intervention (i.e., training teachers on classroom management strategies) and the education outcomes (i.e., grades, test scores, graduation rates).

The Institute invites research to explore the relations between malleable factors (e.g., classroom management practices, students' social skills) and behavioral, social, or emotional competencies that support learning for students with or at risk for disabilities *for the purpose of identifying potential targets of intervention*. This is translational research intended to inform development of innovative programs, practices, or products to improve outcomes for children with disabilities. Under the Social/Behavioral research program, malleable factors may be underlying competencies (e.g., self-regulation) that are correlated with social, emotional, or behavioral outcomes in the classroom. In addition, malleable factors appropriate for the Social/Behavioral research program include behavior management strategies, as well as interventions for improving the social, emotional, and behavioral outcomes that are associated with academic learning for children with disabilities or at risk for disabilities. For example, researchers could propose to conduct detailed, quantifiable observational measures of behavior management (e.g., types of strategies, frequency, duration, under what circumstances), and then use these data to identify strong correlates of subsequent student social, emotional, and behavioral outcomes. Researchers who can identify strong correlates of student outcomes could use this information as the basis for developing an intervention.

Under the Social/Behavioral program, the Institute also supports research to develop and validate assessments intended for use by practitioners for purposes such as screening or progress-monitoring. For example, behavior problems can be evident in early childhood, yet some children do not evince behavior problems until later such as middle school. Accurately identifying students with later onset behavior problems is the necessary first step in providing needed intervention services to older students. To contribute to solving this problem, researchers could analyze an existing large group longitudinal dataset to determine which variables are most strongly correlated with late onset behavior problems. Researchers could then use this information to develop a screening instrument that can be practically used by school personnel to accurately identify students at risk for late onset behavior problems. The instrument would also be beneficial for researchers developing interventions targeting this population.

C. Specific Requirements

a. Submission to a specific goal
For the Social/Behavioral special education research program, applicants must submit under *either* Goal One *or* Goal Two *or* Goal Three *or* Goal Four *or* Goal Five. More details on the requirements for each Goal are listed in Part III Requirements of the Proposed Research. Here, specific requirements that apply to the Social/Behavioral topic are described.

Applicants should read carefully the requirements for each Goal and the examples of appropriate projects under each Goal. The Institute strongly encourages potential applicants to contact the relevant program officer in section 29 if they have any questions regarding the appropriateness of a particular project for submission under a specific goal.

b. Focus on children with disabilities
This research program is restricted to special education research for students with disabilities or at risk for disabilities. For the purpose of Institute's special education research programs, a student with a disability is defined in Public Law 108-446, the Individuals with Disabilities Education Improvement Act of 2004 (IDEA), as a child "(i) with mental retardation, hearing impairments (including deafness), speech or language impairments, visual impairments (including blindness), serious emotional disturbance (referred to in this title as 'emotional disturbance'), orthopedic impairments, autism, traumatic brain injury, other health impairments, or specific learning disabilities; and (ii) who, by reason thereof, needs special education and related services" (Part A, Sec. 602).

Applicants proposing to study students at risk for developing disabilities must present research-based evidence of an association between risk factors in their proposed sample and the potential identification of disabilities. The determination of at-risk status must be made on an individual student basis and may include, for example, factors used for selecting students for moving students to higher tiers in a Response to Intervention model or for placing students in secondary or tertiary services in a Positive Behavioral Interventions and Supports system. Evidence consisting only of general population characteristics (e.g. labeling all students in a school or district as "at risk for disabilities" because of community socioeconomic characteristics) is *not* sufficient for this purpose.

c. Content and sample requirements
Under the Social/Behavioral special education research program, applicants must address:

- malleable factors that are associated with social, emotional, or behavioral competencies that support learning from kindergarten through Grade 12 for students with disabilities or at risk for disabilities for the purpose of identifying potential targets for intervention; or

- mediators or moderators of the relations between malleable factors and child outcomes for the purpose of identifying potential targets for intervention; or

- interventions designed to improve social, emotional, or behavioral outcomes that support learning for students with disabilities or at risk for disabilities from kindergarten through Grade 12; or

- assessments of social, emotional, or behavioral outcomes that are strongly associated with learning outcomes for students with disabilities or at risk for disabilities from kindergarten through Grade 12 for students.

Under the Social/Behavioral program:

- Intervention programs must be school-based alone or school-based with a home or community component. "School-based" includes programs for students who receive education through alternative school or home settings (e.g., residential treatment programs).

- Interventions may be delivered by teachers, school psychologists, related service providers, other school-based or school-affiliated staff (e.g., clinical psychologists contracted with a school district), or parents.

- All applicants must include measures of students' education outcomes. By education outcomes, the Institute means those measures of learning and achievement that are important to parents, teachers, and school administrators (e.g., grades, achievement test scores, graduation rates, percentage of time spent in the general education environment).

7. Transition Outcomes for Special Education Secondary Students
Program Officer: Dr. Rob Ochsendorf (202-219-2234; Robert.Ochsendorf@ed.gov)

A. Purpose
The purpose of the research program on Transition Outcomes for Special Education Secondary Students (Transition) is to contribute to the improvement of transition outcomes for secondary students with disabilities. Transition outcomes include the behavioral, social, communicative, functional, occupational, and academic skills that enable young adults with disabilities to obtain and hold meaningful employment, live independently, and obtain further training and education (e.g., postsecondary education, vocational education programs). Through the Transition program, the Institute intends to support research to: (1) explore malleable factors[6] (e.g., transition services, students' competencies) that are associated with better transition outcomes for secondary students with disabilities, as well as mediators or moderators of the effects of these practices, for the purpose of identifying potential targets of intervention; (2) develop innovative interventions to improve the transition outcomes of secondary students with disabilities; (3) establish the efficacy of fully developed interventions for improving the transition outcomes of secondary students with disabilities; (4) provide evidence on the effectiveness of interventions for improving the transition outcomes of secondary students with disabilities when implemented at scale; and (5) develop and validate measures that assess skills predictive of successful transition outcomes for secondary students with disabilities.

The long-term outcome of this program will be an array of tools and strategies (e.g., assessments, intervention programs) that have been documented to be effective in improving transition outcomes for secondary students with disabilities.

B. Background
Education practitioners and policymakers face considerable challenges in improving transition outcomes for secondary students with disabilities. According to recent reports from the National Longitudinal Transition Study-2 (Wagner et al., 2003; Wagner et al., 2005), a study of a nationally representative sample of adolescents across the disability categories, students' grade-level equivalent performance on standardized achievement tests was on average about 3.6 years behind grade level in reading and mathematics. Among those individuals who were no longer in school, about 28 percent had dropped out prior to receiving a diploma. In addition, a substantial minority experienced social and behavioral problems (e.g., about 17 percent were reported to have difficulty controlling their behavior in class;

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[6] By malleable factors, we mean factors that can be changed and are potential targets for intervention.

about 13 percent had been arrested). In the first two years after high school, individuals with disabilities were much less likely to attend postsecondary education than were individuals without disabilities. In the first two years after high school, about 21 percent of youth with disabilities were not engaged in their community either through postsecondary education, job training, or employment.

The Institute's Transition program is intended to address the challenges for improving the transition outcomes of secondary students with high- or low-incidence disabilities.

Under this topic, the Institute will consider proposals to develop innovative or evaluate existing interventions intended to improve students' transition from high school to work settings, independent living, or further education and training. For example, an applicant might propose to develop a work-related intervention including school and workplace components that is intended to improve transition into employment for students with significant intellectual disabilities.

Under the Transition program, the Institute also supports research to develop and validate instruments intended for use by practitioners and designed to assess behaviors and skills for students with disabilities that are related to successful transitions from school to work, independent-living, or further education. For example, an applicant could propose to develop and validate an instrument to assess specific behaviors and functional skills (e.g., social interaction and communication skills, motor skills, personal living skills) that are predictive of successful transition to employment for students with mild to moderate intellectual disabilities.

C. Specific Requirements

a. Submission to specific goal
For the Transition special education research program, applicants must submit under *either* Goal One *or* Goal Two *or* Goal Three *or* Goal Four *or* Goal Five. More details on the requirements for each Goal are listed in Part III Requirements of the Proposed Research. Here, specific requirements that apply to the Transition topic are described.

Applicants should read carefully the requirements for each Goal and the examples of appropriate projects under each Goal. The Institute strongly encourages potential applicants to contact the relevant program officer listed in section 29 if they have any questions regarding the appropriateness of a particular project for submission under a specific goal.

b. Focus on children with disabilities
This research program is restricted to special education research for students with disabilities. For the purpose of Institute's special education research programs, a student with a disability is defined in Public Law 108-446, the Individuals with Disabilities Education Improvement Act of 2004 (IDEA), as a child "(i) with mental retardation, hearing impairments (including deafness), speech or language impairments, visual impairments (including blindness), serious emotional disturbance (referred to in this title as 'emotional disturbance'), orthopedic impairments, autism, traumatic brain injury, other health impairments, or specific learning disabilities; and (ii) who, by reason thereof, needs special education and related services" (Part A, Sec. 602).

Applicants proposing to study students at risk for developing disabilities are *not* eligible to submit to the Transition research program.

c. Content and sample requirements
Under the Transition research program, applicants must address:
- malleable factors that are associated with transitions outcomes for secondary students with disabilities for the purpose of identifying potential targets for intervention; or

- mediators or moderators of the relations between malleable factors and transition outcomes for secondary students with disabilities for the purpose of identifying potential targets for intervention; or

- interventions designed to improve transition outcomes of secondary students with disabilities; or

- assessments intended for use by practitioners (e.g., teachers) to measure behaviors and skills for students with disabilities that are related to successful transitions from school to work, independent-living, or further education.

Under the Transition research program:
- By transition outcomes, the Institute means those behavioral, social, communicative, functional, occupational, and basic academic skills that enable young adults with disabilities to obtain and hold meaningful employment, live independently, and obtain further training and education (e.g., vocational education programs). By basic academic skills, the Institute refers to functional literacy and math skills (e.g., adding and subtracting whole numbers or fractions, as well as calculations involving money or time).

- By secondary students, the Institute means students in middle or high school.

- Eligible intervention programs are those that are school-based alone, school-based with a home component or community-based component, alternate school settings, or community-based programs that primarily serve individuals receiving IDEA services.

8. Cognition and Student Learning in Special Education
Program Officer: Dr. Celia Rosenquist (202-219-2024; Celia.Rosenquist@ed.gov)

A. Purpose
The purpose of the Cognition and Student Learning in Special Education (Cognition) research program is to improve developmental outcomes for infants and toddlers with disabilities and learning for students with disabilities by bringing recent advances in cognitive science to (1) explore malleable factors[7] (e.g., instructional practices, children's skills) that are associated with better child outcomes for children with disabilities or children at risk for disabilities, as well as mediators or moderators of the relations between these factors and child outcomes, for the purpose of identifying potential targets of intervention; (2) develop innovative interventions – instructional approaches, practices, and curricula – to improve developmental outcomes for infants and toddlers with disabilities and for improving student learning for children with disabilities or at risk for disabilities; (3) establish the efficacy of existing interventions and approaches for improving student learning with efficacy or replication trials for infants and toddlers with disabilities and children with disabilities or at risk for disabilities; and (4) develop measurement tools that can be used to improve developmental outcomes for infants and toddlers with disabilities and student learning and achievement for children with disabilities or at risk for disabilities and that are intended for use by practitioners.

The long-term outcome of this program will be an array of tools and strategies (e.g., instructional approaches, computer tutors) that are based on principles of learning and information processing gained from cognitive science and that have been documented to be efficacious for improving developmental outcomes for infants and toddlers with disabilities and learning for students with disabilities or at risk for disabilities in preschool through Grade 12.

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[7] By malleable factors, we mean factors that can be changed and are potential targets for intervention.

B. Background

The most important outcome of education is student learning. Recent advances in understanding learning have come from cognitive science, as well as cognitive and developmental psychology, but these advances have not been widely or systematically tapped in education in general, and in special education in particular. Through the Cognition research program, the Institute intends to establish a scientific foundation for learning and development in special education by building on the theoretical and empirical advances that have been gained through cognitive science and applying them to special education practice. The purpose of this research is to improve developmental outcomes for infants and toddlers with disabilities and learning and academic achievement for students with disabilities.

Cognitive science has shown explosive growth in the last 30 years. Basic laboratory research in cognitive science within disciplines such as psychology, linguistics, and neuroscience has generated new and important fundamental knowledge on how people learn. Cognitive scientists have identified a number of basic principles of learning that are supported by a solid research base (for examples, see Carver & Klahr, 2001). For the most part, however, these research principles have not been incorporated into education practice, either at the level of instruction or through the creation of materials that support teaching and learning. The types of projects that are appropriate for this program are illustrated by, but not limited to, the examples provided below.

Authentic education settings are often quite different from the laboratory. Contrasted with learning in laboratory settings, learning in everyday instructional settings typically involves content of greater complexity and scope, delivered over much longer periods of time, with much greater variability in delivery, and with far more distractions and competitors for student time and effort. Moreover, the parameters that have defined "learning" in laboratory experiments are often not the same as what defines learning in school. For example, in laboratory experiments, learning is typically defined as having occurred if individuals can recall an item a few minutes or hours after presentation; rarely are individuals asked to recall items days, weeks, or months after presentation. In school, however, students are expected to remember information presented in September the following May, and to be able to use that information in subsequent years. Students in school are expected to learn sets of related concepts and facts, and to build on that knowledge over time. Before some principles of learning generated from research in cognitive science can be applied to instruction in classroom settings, we need to understand if the principles generalize beyond well-controlled laboratory settings to the complex cognitive and social conditions of the classroom.

Under the Cognition program, the Institute will support research that utilizes cognitive science to develop, implement, and evaluate approaches that are intended to improve teaching and learning for children with high- or low-incidence disabilities. For example, a researcher might develop a set of guidelines for teachers on how to modify text characteristics (e.g., length of sentences, organization of text) intended to minimize working memory demands for science textbooks that will improve the ability of student's with reading disabilities to attend to and distinguish main ideas from extraneous details. As another illustration, a research team might adapt the display and presentation of visual materials in a math curriculum in ways that are intended to optimize visual attention and/or visuo-spatial processing in order to improve mathematics skills in elementary age students who are deaf and hard of hearing. As a final example, an applicant might propose to conduct an initial evaluation of whether an intervention intending to improve executive function skills enhances school readiness skills in preschoolers with intellectual disability.

The Institute also funds projects designed to explore the cognitive processes underlying the acquisition of developmental skills for infants and toddlers with disabilities, and communication, language, reading, writing, mathematics knowledge and skills, science knowledge and skills, or general study skills for children with disabilities or at risk for disabilities. This is translational research that is ultimately intended to inform the development of innovative intervention to improve outcomes for students with disabilities.

Such studies might include short-term longitudinal studies in which the objective is to identify the component skills that are (a) highly correlated with child outcomes and (b) can be improved, accelerated, or advanced through intervention. In order for applications to be competitive, the researcher should make explicit the hypothesized link between the underlying cognitive process and improving developmental outcomes or academic achievement. That is, it is not sufficient to propose research to simply examine cognitive processes. The objective here is to gain a better understanding of which processes and skills are predictive of subsequent proficiency in developmental communication, language, reading, writing, mathematics, science, or study skills that would allow researchers to develop interventions (e.g., curricula or instructional approaches) that target these processes and ultimately result in improving developmental outcomes or academic achievement. For example, a researcher might propose to measure early narrative discourse skills or speech and language perception skills of students who are deaf or hard-of-hearing and correlate differences in the emergence of these skills with measures of reading skills such as phonological awareness, decoding, and knowledge of print concepts. Strong applications would include a rationale that justifies the plausibility of developing interventions that might improve the targeted underlying skills. The Institute strongly encourages cognitive scientists to collaborate with special education researchers who understand the variation in learner characteristics and teaching and learning in the context of authentic education settings.

Exploratory projects could also examine the underlying processes that explain learning problems (difficulties) that occur in authentic education settings. In these cases, researchers might begin by identifying a constellation of observed behaviors indicating a developmental or academic learning problem, and then propose a research plan to systematically explore possible causal explanations for that problem. For example, students with learning disabilities in mathematics may struggle with mastering their basic mathematics facts (e.g., addition, multiplication), and repeated practice does not appear to improve the students' mastery of these facts. For a Cognition Goal One project, the researchers could propose to explore whether the difficulty arises from conceptual and/or procedural mathematics knowledge. If the initial experiments indicate that students' difficulties arise due to procedural mathematics knowledge, the research team could further examine if deficiencies in the retrieval of procedural knowledge are explained by attentional mechanisms or phonological working memory. As with all Goal One proposals, strong applications would include a rationale that justifies the plausibility of developing interventions that might improve the targeted underlying skills.

C. Specific Requirements

a. Submission to a specific goal
For the Cognition and Student Learning special education research program, applicants must submit under *either* Goal One *or* Goal Two *or* Goal Three *or* Goal Five. The Institute numbers goals consistently across research grant programs. The Institute does *not* accept applications under Goal Four for the Cognition program. More details on the requirements for each Goal are listed in Part III Requirements of the Proposed Research. Here, specific requirements that apply to the Cognition and Student Learning topic are described.

Applicants should read carefully the requirements for each Goal and the examples of appropriate projects under each Goal. The Institute strongly encourages potential applicants to contact the relevant program officer in section 29 if they have any questions regarding the appropriateness of a particular project for submission under a specific goal.

b. Focus on children with disabilities
This research program is restricted to special education research for students with or at-risk for disabilities. For the purpose of Institute's special education research programs, a student with a disability is defined in Public Law 108-446, the Individuals with Disabilities Education Improvement Act of 2004 (IDEA), as a child "(i) with mental retardation, hearing impairments (including deafness), speech or language impairments, visual impairments (including blindness), serious emotional disturbance (referred

to in this title as 'emotional disturbance'), orthopedic impairments, autism, traumatic brain injury, other health impairments, or specific learning disabilities; and (ii) who, by reason thereof, needs special education and related services" (Part A, Sec. 602). An infant or toddler with a disability is defined in IDEA as, "an individual under 3 years of age who needs early intervention services because the individual (i) is experiencing developmental delays, as measured by appropriate diagnostic instruments and procedures in 1 or more of the areas of cognitive development, physical development, communication development, social or emotional development, and adaptive development; or (ii) has a diagnosed physical or mental condition that has a high probability of resulting in developmental delay" (Part C, Sec. 632).

Applicants proposing to study students at risk for developing disabilities must present research-based evidence of an association between risk factors in their proposed sample and the potential identification of disabilities. The determination of at-risk status must be made on an individual student basis and may include, for example, factors used for selecting students for Early Intervening Services or for moving students to higher tiers in a Response to Intervention model. Evidence consisting only of general population characteristics (e.g., labeling all students in a school or district as "at risk for disabilities" because of community socioeconomic characteristics) is *not* sufficient for this purpose.

c. Content and sample requirements
Under the Cognition program, applications must address:

- malleable factors that are associated with developmental outcomes for infants and toddlers with disabilities or child outcomes in communication, language, reading, pre-reading, writing, pre-writing, mathematics, early mathematics, science, early science, or study skills for students with disabilities or at risk for disabilities from preschool through grade 12, for the purpose of identifying potential targets for intervention; or

- mediators moderators of the relations between malleable factors and student outcomes for the purpose of identifying potential targets for intervention; or

- curriculum, intervention strategies, or instructional practice intended to improve developmental outcomes for infants and toddlers with disabilities, or communication, language, reading, pre-reading, writing, pre-writing, mathematics, early mathematics, science, early science, or study skills for students with disabilities or at risk for disabilities from preschool through grade 12; or

- curriculum or instructional practice intended to improve transitional skills for secondary students with disabilities that lead to successful transitions to independent living, employment, or further education; or

- assessment of developmental outcomes for infants and toddlers with disabilities; communication, language, reading, pre-reading, writing, pre-writing, mathematics, early mathematics, science, early science, or study skills for students with disabilities or at risk for disabilities from preschool through grade 12; or transitional skills for secondary students with disabilities.

d. Research setting requirements
Under Goals One and Five, the research may be conducted in laboratory and/or authentic education settings.

Under Goal Two, the *majority* of the proposed work should be conducted in authentic education settings (e.g., service delivery setting, elementary school classrooms, distance learning or online education delivery modes); however, some work may be conducted in laboratory settings. Laboratory and classroom research with college students may be proposed as a means to identifying underlying principles or testing critical components of an intervention that is being developed. However, within the

award period, the interventions must be tested for use with the student population for which the intervention is intended. These student populations along with the content requirements are described above in section II.8.C.c., Content and sample requirements.

Goal Three is appropriate for applicants proposing to evaluate fully developed interventions. The Institute does **not** support laboratory research under Goal Three projects. Interventions that are ready to be evaluated through efficacy trials must be fully developed and ready to be implemented in authentic education settings.

9. Teacher Quality
Program Officer: Dr. Rob Ochsendorf (202-219-2234; Robert.Ochsendorf@ed.gov)

A. Purpose
The purpose of the Institute's Teacher Quality Research (Teacher Quality) program is to identify effective strategies for improving the performance of current teachers and other instructional personnel in ways that increase reading, writing, language, mathematics, science, or secondary transitional outcomes for students with disabilities from kindergarten through Grade 12. The Institute intends for the Teacher Quality research program to fulfill five goals: (1) exploring the relations between malleable factors[8] (e.g., practices of teachers and other instructional personnel; professional development experiences) and student outcomes, as well as mediators or moderators of the relations between these factors and student outcomes, for the purpose of identifying potential targets of intervention; (2) developing innovative programs and practices for professional development of teachers and/or other instructional personnel that are intended to improve instructional practices and through them student outcomes; (3) evaluating the efficacy of fully-developed programs and practices for professional development of teachers and/or other instructional personnel; (4) evaluating the effectiveness of programs and practices for professional development of teachers and/or other instructional personnel that are implemented at scale and intended for improving instructional practices and through them student outcomes; and (5) developing and validating new assessments of teacher quality for current classroom teachers or other instructional personnel, or validating existing assessments for teachers or other instructional personnel at any grade level from kindergarten through grade 12 against measures of student outcomes.

Long-term outcomes of the Teacher Quality program will be an array of tools and strategies (e.g., in-service programs, teacher supports, assessments) that have been demonstrated to be effective for improving and assessing performance of teachers and other instructional personnel in ways that are linked to improvements in student outcomes.

By "professional development," the Institute refers to in-service training and supports (e.g., information resources) for current personnel. By "teachers and other instructional personnel," the Institute refers to special education teachers, general education teachers, paraprofessionals, teacher consultants and specialists, and other personnel involved in the instruction of students with disabilities. Personnel involved in providing related services are not included under the Teacher Quality topic but can be included under the Related Services research topic.

B. Background
One approach to improving student outcomes is to identify effective curricula and instructional approaches; a second approach is to improve the knowledge and skills of teachers and other instructional personnel. This second approach is the approach taken by the Institute's Teacher Quality research program. Through this program, the Institute intends to improve the quality of teaching through development and evaluation of professional development programs for special education teachers as well as general education teachers and others who instruct students with disabilities. Those interested in

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[8] By malleable factors, we mean factors that can be changed and are potential targets for intervention.

improving teacher quality through systemic practices and polices (e.g., alternative certification, incentives for recruiting and retaining highly qualified special education teachers) should refer to the topic on Special Education Policy, Finance, and Systems.

Most students with disabilities (96%) are educated in school buildings attended by their peers without disabilities, and almost half of all students with disabilities (47%) are educated in the general education classroom for most of the school day (U.S. Department of Education, 2005). Thus, general and special educators share educational responsibilities for students with disabilities. In a survey conducted in 2000, only 32 percent of the public school teachers who taught students with disabilities indicated that they were very well prepared to address the needs of these students. Of the teachers surveyed, 49 percent had received professional development during the previous year on addressing the needs of students with disabilities, and 53 percent of the teachers who received this training said it improved their teaching moderately or a lot (Parsad, Lewis, & Farris, 2001).

In addition to general and special education teachers, a variety of other personnel may have responsibility for providing instruction to students with disabilities. These personnel include paraprofessionals, instructional aides, remedial teachers, one-on-one aides, student job coaches and behavior coaches, media and technology specialists, and other personnel. Through the Teacher Quality program, the Institute supports research to develop or evaluate professional development programs for teachers and other instructional personnel who instruct students with high- or low-incidence disabilities. For example, an applicant might propose to develop an in-service training program designed to improve the ability of special educators to assess and monitor skill levels of learners with visual impairments, using a progress monitoring system, and to provide special educators with guidance on using specific instructional strategies depending on the student's progress in acquiring knowledge and skills as tracked through the progress monitoring system.

Research on teacher professional development interventions should consider both the content of the programs (i.e., what is it that personnel are expected to learn) as well as the delivery of the content (e.g., coaches, online resources, workshops). Although many experts believe that most current professional development offerings are not effective for improving instructional practice and student outcomes, very little research exists that allows for clear causal interpretations of the effect of specific professional development programs or for knowing which elements of professional development programs (e.g., coaching) are critical or relatively more important than others. The Institute encourages researchers to test different delivery modes using a curriculum or instructional approach that has already been shown to be effective for improving student outcomes.

In addition to research on the development and evaluation of professional development programs, the Teacher Quality program supports research on the development of practical assessments of subject matter knowledge, pedagogical knowledge, and instructional skills – such as measures that might be used for teacher certification purposes or by school administrators to provide feedback to teachers and improve the quality of classroom instruction – and validation of these assessments (or existing assessments) against measures of student outcomes. Ideally, assessments of pedagogical knowledge, subject matter knowledge, and instructional skills would not only be highly correlated with student outcomes, but also be practical to administer and cost-effective. The Institute is interested in proposals to develop and validate new assessments, as well as proposals to validate existing assessments of pedagogical knowledge, subject matter knowledge, and instructional skills against measures of student learning and achievement.

The Institute also encourages researchers to explore the relations between malleable factors (e.g., teachers' skills or knowledge, professional development experiences) and student outcomes, as well as mediators or moderators of the relations between these factors and student outcomes, *for the purpose of identifying potential targets for intervention.* This is translational research intended to inform development of innovative programs, practices, or products to improve outcomes for children with

disabilities. By way of illustration, researchers might propose to collect detailed, quantifiable measures of teacher practices (e.g., types of instruction, frequency, duration, under what circumstances) and professional development experiences, and then use these data in conjunction with children's ability levels to predict subsequent child outcomes. The objective here is to identify the specific practices and strategies that teachers use that are associated with the most positive student outcomes and to describe the conditions under which they are acquired and used. Researchers who can successfully identify strong correlates of student performance can use this information as the basis for developing a professional development intervention.

C. Specific Requirements
a. Submission to a specific goal
For the Teacher Quality special education research program, applicants must submit under *either* Goal One *or* Goal Two *or* Goal Three *or* Goal Four *or* Goal Five. More details on the requirements for each Goal are listed in Part III Requirements of the Proposed Research. Here, specific requirements that apply to the Teacher Quality topic are described.

Applicants should read carefully the requirements for each Goal and the examples of appropriate projects under each Goal. The Institute strongly encourages potential applicants to contact the relevant program officer in section 29 if they have any questions regarding the appropriateness of a particular project for submission under a specific goal.

b. Focus on children with disabilities
This research program is restricted to special education research for students with disabilities or at risk for developing disabilities. For the purpose of Institute's special education research programs, a student with a disability is defined in Public Law 108-446, the Individuals with Disabilities Education Improvement Act of 2004 (IDEA), as a child "(i) with mental retardation, hearing impairments (including deafness), speech or language impairments, visual impairments (including blindness), serious emotional disturbance (referred to in this title as 'emotional disturbance'), orthopedic impairments, autism, traumatic brain injury, other health impairments, or specific learning disabilities; and (ii) who, by reason thereof, needs special education and related services" (Part A, Sec. 602).

Applicants proposing to study students at risk for developing disabilities must present research-based evidence of an association between risk factors in their proposed sample and the potential identification of disabilities. The determination of at risk status must be made on an individual student basis and may include, for example, factors used for selecting students for Early Intervening Services, for moving students to higher tiers in a Response to Intervention model, or for placing students in secondary or tertiary services in a Positive Behavioral Interventions and Supports system. Evidence consisting only of general population characteristics (e.g., labeling all students in a school or district as "at risk for disabilities" because of community socioeconomic characteristics) is *not* sufficient for this purpose.

c. Content and sample requirements
Under the Teacher Quality special education research program, applicants must address:

- malleable factors relevant to teacher professional development that are associated with child outcomes in reading, pre-reading, writing, pre-writing, mathematics, early mathematics, science, early science, or study skills, for students with disabilities or at risk for disabilities from kindergarten through Grade 12, or secondary transitional skills for students with disabilities, for the purpose of identifying potential targets for intervention; or

- mediators or moderators of the relations between malleable factors relevant to teacher professional development and child outcomes for the purpose of identifying potential targets for intervention for students with disabilities or at risk for disabilities from kindergarten through Grade 12; or

- professional development interventions for teachers or other instructional personnel that are designed to change practices in ways that improve child outcomes in reading, pre-reading,

writing, pre-writing, mathematics, early mathematics, science, early science, or study skills for students with disabilities or at risk for disabilities from kindergarten through Grade 12, or secondary transitional skills for students with disabilities; or

- assessments of subject matter knowledge, pedagogical knowledge, or instructional practices of teachers or other instructional personnel who instruct children with disabilities or at risk for disabilities from kindergarten through Grade 12.

Under the Teacher Quality special education research program:

- Eligible interventions are professional development training, tools or other supports (e.g., information resources) for teachers and other instructional personnel. Professional development refers to in-service training, tools and other supports, and must be for current personnel. Pre-service training of prospective teachers is not eligible for support under this research program.

- In mathematics and science, the Institute focuses on core mathematics and science content.

- All applicants must include measures of student outcomes as well as measures of instructional behaviors.

- Research on assessment must include validation of the assessment (new or existing) against student outcomes.

Applicants interested in teacher quality for prekindergarten teachers should apply to the Early Intervention and Early Childhood Special Education research program.

d. Distinction between the Teacher Quality and content topics

Applicants sometimes wonder whether the project they plan to propose is more appropriate for the Teacher Quality topic or for one of the content domain research programs (e.g., Mathematics and Science Education). Applications that are appropriate for the content topics are those that develop or evaluate specific curricula or instructional approaches for students, whereas applications that are appropriate for the Teacher Quality program are those that have teachers or other instructional personnel as the primary target of the intervention. The Institute recognizes that this distinction may be blurred. Oftentimes implementation of a specific curriculum includes training for personnel on how to best deliver the curriculum, but the focus of the intervention is the new curriculum for students. Similarly, implementation of a new instructional approach almost always includes training for teachers on the instructional approach, but the focus of the intervention is on a different approach for teaching students, not on different ways to train instructional personnel. If the investigator is focusing on the outcomes of variations in curriculum content or variations in instructional approaches, then the application should be submitted to the appropriate content topic. If the researcher is examining outcomes of variations in approaches to professional development, then the application should be submitted to the Teacher Quality topic. Below are some examples to help clarify the intent of the two programs. In all cases, the Institute strongly encourages applicants to contact the program officer listed at the end of this announcement (Section 29) to help them identify the more appropriate topic under which to submit their application.

Projects for Teacher Quality	Projects for a Content Topic
Example A The district uses Reading Curriculum A for its elementary school students. Applicant proposes to test professional development consisting of innovative in-service training on reading instruction for students with learning disabilities; half of the teachers receive the new professional development and half receive the district's regular training. All students receive Reading Curriculum A.	**Example B** The applicant proposes to evaluate a reading curriculum for Grade 4 students with learning disabilities. Half of the students with learning disabilities will receive the new curriculum; half of the students will receive the district's existing reading curriculum and practices for students with learning disabilities. The teachers whose students receive the new curriculum will receive training on how to implement the new curriculum. All teachers will participate in the district's professional development on reading.
Example C The applicant wants to test whether professional development to improve math instruction for students with visual impairments can be delivered effectively using an online coaching model available on a daily basis for paraprofessionals versus a coach who visits the classroom. Half of the paraprofessionals receive online coaching; half receive in-class coaching. The content of the professional development is the same for paraprofessionals in both groups. The basic curriculum that the students receive is the same in both groups.	**Example D** The applicant proposes to compare two different approaches for teaching reading comprehension strategies to middle school students with disabilities in the context of a social studies curriculum. All students receive the same social studies curriculum. Half of the students receive instruction using Instructional Approach A; the remaining students receive instruction using Instructional Approach B.

10. Related Services
Program Officer: Dr. Jacquelyn Buckley (202-219-2130; Jacquelyn.Buckley@ed.gov)

A. Purpose
The purpose of the Related Services (Related Services) research program is to contribute to the improvement of reading, writing, language, mathematics, science, social, or behavioral outcomes, as well as functional skills that improve educational and transitional results of students with disabilities by: (1) exploring malleable factors[9] (e.g., related services practices and delivery systems) that are associated with better child outcomes for children with disabilities, as well as mediators or moderators of the relations between these factors and child outcomes, for the purpose of identifying potential targets of intervention; (2) developing innovative related services interventions – practices, programs, and delivery systems – that are intended to improve outcomes for students with disabilities; (3) determining the efficacy of related services practices, programs, and delivery systems for students with disabilities; (4) providing evidence on the effectiveness of related services practices, programs, and delivery systems for students with disabilities when implemented at scale; and (5) developing assessments that can be used

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[9] By malleable factors, we mean factors that can be changed and are potential targets for intervention.

to evaluate the performance of related service providers and validating these or existing assessments against child outcomes.

The long-term outcome of this program will be an array of tools and strategies (e.g., assessments, services, curricula, programs, practices, interventions) that have been documented to be effective for improving the reading, writing, mathematics, science, social and behavioral outcomes, as well as functional skills that improve educational and transitional outcomes of students with disabilities who receive related services from kindergarten through Grade 12.

B. Background
The provision of related services is an integral part of a free and appropriate public education for students served under Part B of IDEA. In the most recent wave of data from the Special Education Elementary Longitudinal Study (U.S. Department of Education, n.d.), 31 percent of elementary special education students received speech or language therapy; 8 percent received occupational therapy; 4 percent received social work services; and 2 percent received audiology services.

Relatively little rigorous research has been conducted to determine the impact of related services for improving student outcomes. Under the Related Services topic, the Institute supports research on related services interventions for students with high- or low-incidence disabilities. For example, an applicant could propose to evaluate the efficacy of interpreter services for students with hearing impairments by comparing the effects of interpreter services on student learning to other methods of language input, such as closed captioning. Alternatively, a study could be designed to examine the separate and combined effects of elements of interpreter practice to determine which elements are most important for improving learning for students with hearing impairments.

Through the Related Services program, the Institute encourages research on strategies, practices, or programs delivered by related services providers as well as research on school-level procedures and processes that may directly affect the delivery of related services and indirectly affect student outcomes. For example, an applicant could propose to develop a comprehensive model of coordinated service delivery that is intended to streamline communication between teachers and related service providers. Intervention components might include professional development, co-teaching, problem-solving approaches, and management strategies.

The Institute is also interested in proposals to develop innovative or evaluate promising professional development programs for related services providers. As an illustration, an applicant might propose to evaluate a professional development program intended to improve instructional practices of occupational therapists targeting fine motor skills and writing outcomes. The occupational therapists could be randomly assigned to receive the intervention program or to a business-as-usual (e.g., whatever professional development training is typically provided by the district) control condition. In this design, the researcher would evaluate whether the practices of the occupational therapists changed as well as whether the intervention directly improved students' fine motor skills and indirectly, writing outcomes.

Finally, through this program, the Institute welcomes applications to develop assessments of the practices of related service providers (i.e., a measure of the quality of the services provided) and validate such assessments against student outcomes. For example, measures of "interpreter quality" might be developed and validated against the amount of academic content learned by students with hearing impairments.

The types of projects that are appropriate for this program are illustrated by, but not limited to, the examples provided above.

C. Specific Requirements

a. Submission to a specific goal
For the Related Services research program, applicants must submit under *either* Goal One *or* Goal Two *or* Goal Three *or* Goal Four *or* Goal Five. More details on the requirements for each Goal are listed in Part III Requirements of the Proposed Research. Here, specific requirements that apply to the Related Services topic are described.

Applicants should read carefully the requirements for each Goal and the examples of appropriate projects under each Goal. The Institute strongly advises potential applicants to contact the relevant program officer in section 29 if they have any questions regarding the appropriateness of a particular project for submission under a specific goal.

b. Focus on children with disabilities
This research program is restricted to special education research for students with disabilities. For the purpose of Institute's special education research programs, a student with a disability is defined in Public Law 108-446, the Individuals with Disabilities Education Improvement Act of 2004 (IDEA), as a child "(i) with mental retardation, hearing impairments (including deafness), speech or language impairments, visual impairments (including blindness), serious emotional disturbance (referred to in this title as 'emotional disturbance'), orthopedic impairments, autism, traumatic brain injury, other health impairments, or specific learning disabilities; and (ii) who, by reason thereof, needs special education and related services" (Part A, Sec. 602).

Applicants proposing to study students at risk for developing disabilities are *not* eligible to submit to the Related Services program.

c. Content and sample requirements
Under the Related Services research program, applications must address:
- malleable factors that are associated with reading, writing, language, mathematics, science, social, or behavioral outcomes, as well as functional skills that improve educational and transitional results of students with disabilities who receive related services from kindergarten through Grade 12, for the purpose of identifying potential targets for intervention; or

- mediators or moderators of the relations between malleable factors relevant to related services and child outcomes for the purpose of identifying potential targets for intervention for students with disabilities who receive related services from kindergarten through Grade 12; or

- curricula designed to improve reading, writing, language, mathematics, science, social, or behavioral outcomes, as well as functional skills that improve educational and transitional results of students with disabilities who receive related services from kindergarten through Grade 12; or

- instructional approaches intended to improve reading, writing, language, mathematics, science, social, or behavioral outcomes, as well as functional skills that improve educational and transitional results of students with disabilities who receive related services from kindergarten through Grade 12; or

- assessments of related service provider quality or effectiveness to support instruction from kindergarten through Grade 12 for students with disabilities. Researchers who are interested in developing and validating student-level assessments should refer to the appropriate content area of that proposed assessment (e.g., Reading, Writing, and Language Development; Mathematics and Science Education; Social and Behavioral Outcomes to Support Learning).

Under the Related Services topic:
- Related services that are eligible to be studied under this research program are the following, as defined in §300.34 of the Part B regulations to the 2004 reauthorization of IDEA: speech-language pathology and audiology services, interpreting services, psychological services, physical and occupational therapy, counseling services, including rehabilitation counseling, orientation and mobility services, social work services in schools, and parent training.

- Intervention programs must be school-based alone or school-based with a home- or community-based component.

- The student outcome that is the target of the related services must be one or more of the following: cognitive, communication, social/emotional, behavioral, adaptive, functional, transition, reading, writing, mathematics, or science outcomes of students with disabilities kindergarten through grade 12.

- Applicants must include measures of student outcomes as well as measures of related service practices (e.g., behaviors of the related services provider, quality of communication between classroom teachers and related services provider).

11. Special Education Policy, Finance, and Systems
Program Officer: Dr. Kristen Lauer (202-219-0377; Kristen.Lauer@ed.gov)

A. Purpose
Through the research program on Special Education Policy, Finance, and Systems (Policy/Systems), the Institute intends to contribute to the improvement of education for students with disabilities or at risk for disabilities by: (1) exploring malleable factors[10] (e.g., procedures for allocating resources, education finance practices, school organization and structure) that are correlated with outcomes for students with or at risk for disabilities, as well as mediators or moderators of the relations between these factors and student outcomes, for the purpose of identifying potential targets of intervention; (2) developing innovative systems or policies that are intended to improve student outcomes either directly or indirectly by improving the education environment for students with or at risk for disabilities; (3) evaluating the efficacy of systemic practices or policies that are intended to improve student outcomes either directly or indirectly by improving the education environment for students with or at risk for disabilities; (4) evaluating the impact of systemic practices and polices that are implemented at scale and are intended to improve student outcomes either directly or indirectly by improving the education environment; and (5) developing assessments that can be used to evaluate organization, management, or implementation of systems-level programs or policies and validating these or existing assessments against student outcomes, as well as developing and validating accommodations for large-scale assessments (i.e., assessments used for accountability purposes) that would permit measurement of the proficiency and growth of students with disabilities.

The long-term outcome of this program will be an array of systems-level practices and policies that have been documented to be effective for improving the education or intervention environment and thereby improving outcomes for students with or at risk for disabilities from kindergarten through Grade 12.

B. Background
Intervention and education for students with disabilities typically requires the coordination of a variety of programs and services. Little rigorous research has examined either a direct causal relation or indirect associations between student outcomes and various systemic or organizational strategies. Through the Policy/Systems program, the Institute supports research to improve outcomes for students with

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[10] By malleable factors, we mean factors that can be changed and are potential targets for intervention.
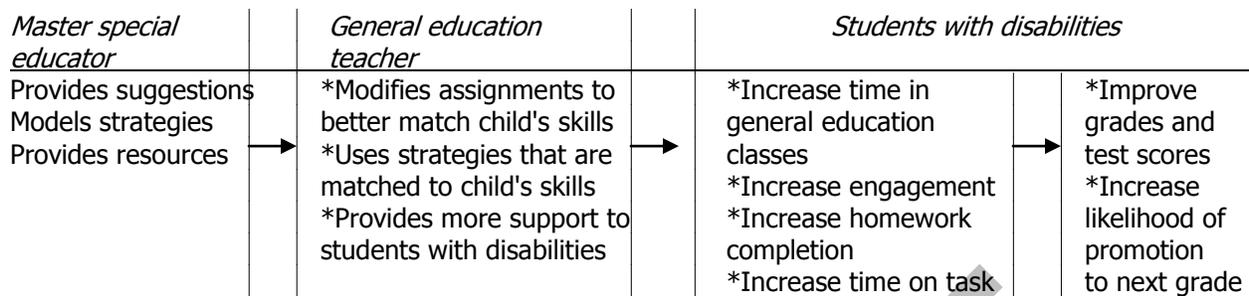
disabilities or at risk for disabilities by identifying changes in the ways in which systemic processes, procedures, and programs are organized, managed, and operated that may be directly or indirectly linked to student outcomes. That is, rather than focusing on improving student outcomes by changing curricula or student-level intervention approaches, researchers will conduct research on systems-level procedures and policies that are intended to improve the management, coordination, and implementation of systemic programs and services in ways that directly enhance the overall intervention or education environment, and indirectly improve student outcomes. The types of projects that are appropriate for this program are illustrated by, but not limited to, the examples provided below.

The Institute encourages researchers to develop innovative interventions, modify existing interventions, or rigorously evaluate fully developed interventions. Interventions appropriate for research under this program are policies or systemic interventions that are intended to improve student outcomes either directly or indirectly by improving the intervention or education environment for students with high- or low-incidence disabilities or students at risk for disabilities from kindergarten through Grade 12. For example, the Institute encourages applications to improve the development, monitoring, and implementation of Individualized Education Programs (IEP) for students with high- or low-incidence disabilities. By way of illustration, an applicant might propose to develop a web-based program that (a) guides providers through a series of prompts related to a student's developmental goals, services, service delivery options, and assessments for measuring student progress and (b) links to additional resources to provide feedback and support for decision-making during the IEP development and implementation process. The web-based program might be developed to cover a broad range of disabilities (e.g., hearing impairments, significant intellectual disabilities, visual impairments, learning disabilities) and serve, in many ways, as a virtual expert consultant for IEP teams. If an applicant had a web-based program of this nature already developed, the applicant could propose to evaluate the effect of having access to this program on the quality of IEPs that are developed and its perceived value and utility for the IEP development process, along with its impact on student outcomes.

Also, appropriate under this topic is research on the implementation of Response to Intervention (RtI) approaches. For example, an applicant might propose to compare the efficacy of a school-wide, simultaneous RtI system in which students are placed into a secondary or tertiary intervention based on beginning of the year universal screening performance to a school-wide, sequential RtI system in which students are placed into a secondary or tertiary intervention only after they have demonstrated a lack of progress in the previous tier. Under the Systems/Policy research program, applicants interested in RtI research must focus on the design and implementation of RtI approaches and not on the development of the secondary or tertiary interventions themselves. Applicants who are interested in developing only secondary or tertiary interventions for RtI systems should apply under the applicable content topic (e.g., Reading, Writing, and Language Development or Mathematics and Science Education).

The Institute also encourages research to evaluate the effects of policies that are intended to improve special education services. For example, an applicant might propose to evaluate the effect of offering annual financial bonuses on the recruitment and retention of special education teachers in hard-to-staff schools. As another example, a researcher might propose to evaluate the effect of policies intended to promote collaboration among IEP team members and increase time and resources available for instruction of students with disabilities.

The Institute recognizes that applicants to the Policy/Systems research program typically propose models that involve multiple steps. For example, an applicant might choose to evaluate a program intended to facilitate inclusion of students with disabilities in middle school classrooms by having a master special education teacher serve as a consultant to and rotate through the classrooms of general education teachers who have students with disabilities in their classes. For the purpose of illustration, a simple model of change for this program might be:

Master special educator		General education teacher		Students with disabilities	
Provides suggestions Models strategies Provides resources	→	*Modifies assignments to better match child's skills *Uses strategies that are matched to child's skills *Provides more support to students with disabilities	→	*Increase time in general education classes *Increase engagement *Increase homework completion *Increase time on task	→	*Improve grades and test scores *Increase likelihood of promotion to next grade

In this model, improved academic outcomes are the most distal outcome that the intervention seeks to improve. The Institute requires applicants to obtain measures of student academic outcomes (e.g. grades, promotion). In this example, strong applications would include measures of moderators (e.g., class size, number of students with disabilities per class, type of course), as well as the mediators between the intervention strategy (i.e., master special educator provides support to general education teachers) and the target academic outcomes.

The Institute also welcomes research on outcome assessments used for large-scale accountability purposes. For example, an applicant might propose to develop and validate new regular or alternate assessments or to modify and validate existing regular or alternate assessments for students with disabilities. This work might include research on the reliability and validity of different test accommodations for students with disabilities, approaches for designing accountability assessments to be more accessible to students with disabilities, use of individual student growth models for accountability purposes with students with disabilities, and methods for integrating large-scale assessments with IEP development, instruction, progress monitoring, and other systemic elements in order to help students with disabilities achieve academic standards. Also appropriate for the Policy/Systems research program are applications to assess implementation of systemic practices or policies and validate such measures against student outcomes.

The Institute encourages research that explores meaningful links among special education financing, allocation of resources, and improvements in student outcomes. For example, a researcher might investigate the relationships among census-based or resource-based formulas, the allocation of resources and services as documented on students' Individualized Education Programs, and improvements in academic outcomes. The researcher might also explore other factors influencing the relationship among financing, resource allocation, and student outcomes, such as school- or district- size, or students' disability categories or degree of students' individual skills or needs.

C. Specific Requirements

a. Submission to a specific goal
For the Policy/Systems research program, applicants must submit under *either* Goal One *or* Goal Two *or* Goal Three *or* Goal Four *or* Goal Five. More details on the requirements for each Goal are listed in Part III Requirements of the Proposed Research. Here, specific requirements that apply to the Policy/Systems topic are described.

Applicants should read carefully the requirements for each Goal and the examples of appropriate projects under each Goal. The Institute strongly encourages potential applicants to contact the relevant program officer in section 29 if they have any questions regarding the appropriateness of a particular project for submission under a specific Goal.

b. Focus on children with disabilities

This research program is restricted to special education research for students with disabilities or at risk for disabilities. For the purpose of Institute's special education research programs, a student with a disability is defined in Public Law 108-446, the Individuals with Disabilities Education Improvement Act of 2004 (IDEA), as a child "(i) with mental retardation, hearing impairments (including deafness), speech or language impairments, visual impairments (including blindness), serious emotional disturbance (referred to in this title as 'emotional disturbance'), orthopedic impairments, autism, traumatic brain injury, other health impairments, or specific learning disabilities; and (ii) who, by reason thereof, needs special education and related services" (Part A, Sec. 602).

Applicants proposing to study students at risk for developing disabilities must present research-based evidence of an association between risk factors in their proposed sample and the potential identification of disabilities. The determination of at risk status must be made on an individual student basis and may include, for example, factors used for selecting students for Early Intervening Services, for moving students to higher tiers in a Response to Intervention model, or for placing students in secondary or tertiary services in a Positive Behavioral Interventions and Supports system. Evidence consisting only of general population characteristics (e.g. labeling all students in a school or district as "at risk for disabilities" because of community socioeconomic characteristics) is *not* sufficient for this purpose.

c. Content and sample requirements

Under the Policy/Systems program, applications must address:
- malleable factors that are associated with better outcomes for students with or at risk for disabilities for the purpose of identifying potential targets for intervention; or

- mediators or moderators of the relations between malleable factors and child outcomes for the purpose of identifying potential targets for intervention; or

- systemic interventions or policies designed to improve student outcomes either directly or indirectly by improving the intervention or education environment for students with or at risk for disabilities; or

- assessments intended for use by practitioners and designed to assess the management, operation, or implementation of systemic practices or programs; or

- assessments and accommodations for large-scale assessments (i.e., assessments used for accountability purposes) that would permit measurement of the proficiency and growth of students with disabilities.

Under the Policy/Systems program:
- Applicants must address policies, systemic interventions, or assessments relevant to the education of students with or at risk for disabilities from kindergarten through Grade 12.

- The Institute recognizes that, in general, Policy/Finance interventions are designed to change directly the teaching and learning environment and indirectly affect student learning and achievement. Applicants under Goal Three and Goal Four, however, must provide measures of student outcomes (e.g., graduation, achievement tests, grades, secondary transition and behavioral outcomes).

- Under Goal Five, assessments that can be used to evaluate implementation of systemic practices or policies must be validated against student outcomes.

12. Autism Spectrum Disorders
Program Officer: Dr. Celia Rosenquist (202-219-2024; Celia.Rosenquist@ed.gov)

A. Purpose
The purpose of the Autism Spectrum Disorders Research (ASD) program is to contribute to the improvement of developmental, cognitive, communicative, academic, social, behavioral, and functional outcomes of students identified with autism spectrum disorder (ASD) from preschool through Grade 12 by (1) exploring malleable factors[11] relevant to *comprehensive* preschool and school-based interventions (e.g., intervention practices) that are associated with better developmental, cognitive, communicative, academic, social, behavioral, and functional outcomes for students identified with ASD, as well as mediators or moderators of the relations between these factors and student outcomes, for the purpose of identifying potential targets of intervention; (2) developing innovative *comprehensive* preschool and school-based interventions or modifying existing interventions to make them comprehensive to address the developmental, cognitive, communicative, academic, social, behavioral, and functional needs of students identified with ASD; (3) establishing the efficacy of fully developed *comprehensive* preschool and school-based interventions for students identified with ASD; (4) evaluating the effectiveness of *comprehensive* preschool and school-based interventions for student with ASD when implemented at scale; and (5) developing and validating measures of developmental, cognitive, communicative, academic, social, behavioral, and functional outcomes that can be used by practitioners to monitor progress and evaluate outcomes for students identified with ASD.

The long-term outcome of this program will be an array of comprehensive programs and assessments that have been documented to be effective for improving the developmental, cognitive, communicative, academic, social, behavioral, and functional outcomes of students identified with ASD from preschool through Grade 12.

B. Background
The prevalence rate of students identified with an ASD has increased dramatically over the last decade. In 1997, approximately 42,517 students between the ages of 6 and 21 were identified with autism. In 2006, approximately 224,594 students between the ages of 6 and 21 were identified with autism (U.S Department of Education, n.d.). The unprecedented increase in reported incidence rates within the past decade has created an extraordinary demand on schools to provide interventions that meet the educational needs of students identified with ASD. Furthermore, the highly variable cognitive and behavioral phenotype associated with ASD creates a significant challenge in developing and implementing effective interventions that address the range of developmental and academic needs of students with ASD. Compounding the problem is that few interventions to date have been manualized (Lord et al., 2005) or implemented and evaluated in a preschool or school based setting.

Through the ASD research program, the Institute supports the development and evaluation of *comprehensive school-based interventions* intended to improve developmental, cognitive, communicative, academic, social, behavioral, and functional outcomes of students identified with ASD. By comprehensive intervention, the Institute means an intervention that is designed to address multiple outcomes, that can include developmental, cognitive, communicative, academic, behavioral, and functional outcomes.

The Institute encourages researchers to develop innovative, modify existing, or rigorously evaluate fully-developed *comprehensive school-based interventions*. For example, applicants might consider developing an integrated literacy and social skill intervention designed to be

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[11] By malleable factors, we mean factors that can be changed and are potential targets for intervention.

delivered by teachers for students in kindergarten through third grade with ASD intended to improve academic, social, and communication outcomes. Or, applicants might consider evaluating which training approach is most effective in teaching parents the instructional strategies and approaches for the home-based component of a comprehensive preschool intervention for students with ASD. The Institute would also like to encourage applicants to develop or evaluate instructional approaches or strategies appropriate for students in middle and high school with ASD that will improve communication, behavior, and adaptive skills across academic and vocational instruction.

The Institute encourages researchers to explore malleable factors (e.g., intervention practices, child competencies) relevant to comprehensive preschool or school-based programs for children with ASD that are associated with better developmental, cognitive, communicative, academic, social, behavioral, and functional outcomes for students identified with ASD, as well as mediators or moderators of the relations between these factors and student outcomes, *for the purpose of identifying potential targets of intervention*. This is translational research intended to inform development of innovative programs, practices, or products to improve outcomes for children with ASD. By way of illustration, researchers could propose to conduct detailed, quantifiable observational measures of practices and strategies used by teachers or other school personnel to address the developmental and academic needs of students with ASD in kindergarten through third grade inclusive classrooms. The research team could examine the use of specific practices, how IEP goals are addressed, children's interaction with peers, and strategies teachers use to structure the classroom environment for children with ASD. The goal here is to identify what type or combination of strategies is associated with better student outcomes and for which students. Researchers who can identify strong correlates of student outcomes could use this information as the basis for developing an intervention.

In addition, the Institute encourages researchers to develop and validate new, or validate existing, developmental, cognitive, communicative, academic, social, behavioral, and functional measures or measurement systems designed to monitor progress and/or evaluate outcomes, particularly generalization and maintenance, for students identified with ASD.

C. Specific Requirements

a. Submission to a specific goal
For the Autism Spectrum Disorders research program, applicants must submit under *either* Goal One *or* Goal Two *or* Goal Three *or* Goal Four *or* Goal Five. More details on the requirements for each Goal are listed in Part III Requirements of the Proposed Research. Here, specific requirements that apply to the ASD topic are described.

Applicants should read carefully the requirements for each Goal and the examples of appropriate projects under each Goal. The Institute strongly encourages potential applicants to contact the relevant program officer in section 29 if they have any questions regarding the appropriateness of a particular project for submission under a specific goal.

b. Content and sample requirements
Under the Autism Spectrum Disorders research program, applications must address:
- malleable factors relevant to *comprehensive* preschool and school-based interventions (e.g., children's skills, intervention practices) that are associated with developmental, cognitive, communicative, academic, social, behavioral, and/or functional outcomes for students identified with ASD from preschool through Grade 12, for the purpose of identifying potential targets for intervention; or

- mediators or moderators of the relations between malleable factors and child outcomes of students identified with ASD from preschool through Grade 12 for the purpose of identifying potential targets for intervention; or

- *comprehensive* preschool or school-based interventions intended to improve the developmental, cognitive, communicative, academic, social, behavioral, and functional outcomes of students identified with ASD from preschool through Grade 12; or

- assessments that can be used by practitioners to identify and monitor developmental, cognitive, communicative, academic, social, behavioral, and functional outcomes of students identified with ASD from preschool through Grade 12.

Under the Autism Spectrum Disorders research program:
- Comprehensive interventions **must** address *multiple* outcomes that can include developmental, cognitive, communicative, academic, social, behavioral, and functional outcomes, for students identified with ASD in a coordinated fashion.

- Interventions must be preschool interventions, school-based interventions, preschool interventions that are integrated with home-based or clinic-based interventions, or school-based interventions that are integrated with home-based or clinic-based interventions.

- Interventions may be designed to be delivered by teachers alone or in combination with other professionals, (e.g., related service providers, clinic-based staff), paraprofessionals, or parents.

- Applicants wishing to develop an intervention that focuses on a single outcome such as language skills or social skills must apply to the appropriate topic area competition (e.g., Reading, Writing, and Language Development; Social and Behavioral Outcomes to Support Learning; Early Intervention and Early Childhood Special Education).

PART III REQUIREMENTS OF THE PROPOSED RESEARCH

13. GENERAL REQUIREMENTS OF THE PROPOSED RESEARCH

A. BASIC REQUIREMENTS

a. Resubmissions

Applicants who intend to revise and resubmit a proposal that was submitted to one of the Institute's previous competitions but that was not funded must indicate on the application form that their FY 2010 proposal is a revised proposal. Their prior reviews will be sent to this year's reviewers along with their proposal. Applicants should indicate the revisions that were made to the proposal on the basis of the prior reviews using no more than 3 pages of Appendix A.

Applicants who have submitted a somewhat similar proposal in the past but are submitting the current proposal as a new proposal must indicate on the application form that their FY 2010 proposal is a new proposal. Applicants should provide a rationale explaining why the current proposal should be considered to be a "new" proposal rather than a "revised" proposal at the beginning of Appendix A using no more than 3 pages. Without such an explanation, if the Institute determines that the current proposal is very similar to a previously unfunded proposal, the Institute may send the reviews of the prior unfunded proposal to this year's reviewers along with the current proposal.

b. Applying to a topic

Applicants must submit their proposal to one of the specific topics described in Part II Research Grant Topics. If applicants do not identify the specific topic under which their proposal should be considered, the Institute may reject the proposal as non-compliant with the requirements of this Request for Applications.

c. Applying to multiple topics

Applicants may submit proposals to more than one of the Institute's FY 2010 competitions or topics. In addition, within a particular competition or topic, applicants may submit multiple proposals. However, applicants may submit a given proposal only once (i.e., applicants may not submit the same proposal or very similar proposals to multiple topics or to multiple goals in the same topic or to multiple competitions). If the Institute determines prior to panel review that an applicant has submitted the same proposal or very similar proposals to multiple topics within or across competitions and the proposal is judged to be compliant and responsive to the submission rules and requirements described in the Request for Applications, the Institute will select one version of the application to be reviewed by the appropriate scientific review panel. If the Institute determines after panel review that an applicant has submitted the same proposal or very similar proposals to multiple topics within or across competitions and if the proposal is determined to be worthy of funding, the Institute will select the topic under which the proposal will be funded.

Applicants who submit a proposal for the June 25, 2009 deadline may not submit the same or a very similar proposal to the October 1, 2009 deadline.

d. Applying to a particular goal within a topic

For the FY 2010 Special Education Research Grants Programs, applicants must submit under *either* Goal One *or* Goal Two *or* Goal Three *or* Goal Four *or* Goal Five. The numbering of goals is consistent across the Institute's research programs. Each goal has specific requirements that are described in the following section. If applicants do not identify the specific goal under which their proposal should be considered, the Institute may reject the proposal as non-compliant with the requirements of this Request for Applications.

e. Determining which goal is most appropriate for the proposed project

Applicants should read carefully the requirements for each goal and the examples of appropriate projects under each goal. The Institute strongly encourages potential applicants to contact the relevant program officer listed in Section 29 if they have any questions regarding the appropriateness of a particular project for submission under a specific goal.

B. Requirements for Goal One (Exploration Projects)

Because the requirements for Goal One are essentially the same across the Institute's standing research grant programs, a generic description is used in the funding announcement. Consequently, the examples provided may not apply to a particular topic.

a. Purpose of Goal One (Exploration)

Through all of its research programs that include the Exploration goal (Goal One), the Institute is interested in the (a) exploration of the association between education outcomes and malleable factors and (b) examination of factors and conditions that may mediate or moderate the relations between malleable factors and education outcomes.

By malleable factors, the Institute means factors that can be changed such as children's behaviors, teachers' practices, education programs, or education policies. The Institute is interested in those malleable factors that are under the control of the education system. For example, young children's self-regulation is positively correlated with later academic achievement (Duncan, et al., 2007). Self-regulation is malleable and has the potential to be influenced by interventions that are under the control of the education system (e.g., teacher practices or classroom programs designed to enhance children's self-regulation). On the other hand, welfare policies may be associated with education outcomes and are potentially malleable, but they are not under the control of the education system. Malleable factors such as children's behaviors or teachers' practices are potential targets of interventions; malleable factors can also be education interventions (i.e., interventions can be changed). By intervention, the Institute refers broadly to policies, programs, practices, curricula, or instructional approaches intended to achieve desired education outcomes.

One purpose of Goal One projects is to explore the underlying processes that may be operating to enhance or inhibit learning outcomes. To the extent that such processes are malleable, information about the underlying processes gained from Goal One projects could be used to inform the development of interventions in a subsequent Goal Two (Development) project.

Exploration of the relations between education outcomes and education interventions can lead to the identification of types of interventions or components of interventions that are associated with better education outcomes. Goal One projects may be used to identify education interventions that are promising because they are statistically associated with better education outcomes. For example, if all schools in a state used one of five elementary mathematics curricula, a secondary data analysis could be conducted to identify which of the five curricula are associated with better mathematics achievement. This information could inform the selection of curricula to be rigorously tested in a subsequent efficacy evaluation under Goal Three.

Another purpose of Goal One projects is to examine mediators or moderators of education interventions for the purpose of informing modification of existing education interventions or development of new interventions in a subsequent Development project. For example, child gender may moderate the relation between an education program and education outcomes. Examining moderators of education interventions may help identify the conditions under which interventions are associated with better outcomes or the subgroups for which a particular intervention is associated with better outcomes.

A variety of methodological approaches are appropriate under Goal One including, but not limited to, original data collection with appropriate statistical analyses and secondary data analyses of existing datasets. Also appropriate are meta-analyses that go beyond a simple identification of the mean effect of interventions and are designed to determine, for example, moderators of the effects, such as breaking out the effects of (a) specific types of intervention within the broad intervention category that is the focus of the meta-analysis (e.g., Graham and Perin 2007); (b) variations of a particular intervention (e.g., Cepeda et al. 2006); (c) age or grade level subgroups (e.g., Wilson et al. 2003); and (d) the intervention for relevant population subgroups (e.g., Wilson et al. 2003). Meta-analyses of correlational relationships can be used to identify mediators that are most strongly associated with outcomes (e.g., Fan & Chen, 2001; La Paro & Pianta, 2000).[12]

In general, exploration projects are intended to *generate* hypotheses regarding the causal relations between malleable factors and education outcomes and to contribute to theories of change for education interventions. In contrast, the purpose of Goal Three (Efficacy/Replication) and Goal Four (Scale-up Evaluations) projects, as described below, is to *test* causal hypotheses about the effects of fully developed interventions on education outcomes. Applicants interested in, for example, secondary data analyses to determine the effect of an intervention (e.g., policy, program, practice) on education outcomes should apply to Goal Three. Under Goal One, however, the Institute does not intend to fund research to (a) test the efficacy of education interventions, (b) examine non-malleable factors, (c) explore malleable factors or interventions that are not under the control of the school system, or (d) draw conclusions about the efficacy or effectiveness of education interventions.

At the end of a Goal One project to explore underlying processes or to examine mediators and moderators of education interventions, the researcher should be able to use the results of their studies to generate a well explicated theory of action that can be used to inform the development or modification of an intervention under Goal Two. At the end of a Goal One project to identify promising interventions, the researcher should be able to use the results of their studies to support a subsequent application for an efficacy evaluation of the promising intervention under Goal Three.

b. Significance of the project
By addressing (a) the theoretical and empirical rationale for the study and (b) the practical importance of the variables (malleable factors, mediators, moderators) that will be examined, Goal One applicants are addressing the significance of their proposal.

c. Methodological requirements
For all applications, including those submitted under Goal One, the proposed research design must be appropriate for answering the research questions or hypotheses that are posed.

(i)   Research questions.

Applicants should pose clear, concise hypotheses or research questions.

(ii)   Data sources.

Applicants proposing secondary data analyses should describe clearly the database(s) to be used in the investigation including information on sample characteristics, variables to be used, and ability to ensure access to the database if the applicant does not already have access to it. The database should be described in sufficient detail so that reviewers will be able to judge whether or not the proposed analyses may be conducted with the database. If multiple databases will be linked to conduct analyses, applicants should provide sufficient detail for reviewers to be able to judge the feasibility of the plan. If the applicant does not currently have access to the databases needed for the study, the applicant should provide sufficient documentation (e.g., letters of

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[12] For further information, please see W. R. Shadish (1996). Meta-analyses and the exploration of causal mediating processes: A primer of examples, methods, and issues. *Psychological Methods, 1* (1), 47-65.

agreement) to assure reviewers that access can be obtained and the project can be carried out in a timely fashion.

The applicant should describe the primary outcome measures to be used, including their reliability and validity. In particular, applicants should provide sufficient information on the construct validity of the proposed measures. For example, if the applicant proposes to use a state database from which the primary outcome measure will be performance on a reading or mathematics achievement measure, the applicant should detail the standardized measure from which the reading or mathematics scores are derived so that reviewers can judge the adequacy of the measures for addressing the proposed hypotheses or questions.

Applicants proposing meta-analysis should describe clearly the criteria for including or excluding studies and their rationale, the search procedures for ensuring that a high proportion of the eligible published and unpublished studies will be located and retrieved, the coding scheme and procedures that will be used to extract data from the respective studies, and the procedures for ensuring the reliability of the coding. The applicant should demonstrate that sufficient numbers of studies are available to support the meta-analysis and that the relevant information is reported frequently enough and in a form that allows an adequate database to be constructed. The effect size statistics to be used should be clearly defined along with the associated weighting function, procedures for handling outliers, and any adjustments to be applied (e.g., reliability corrections).

Applicants may propose a Goal One project in which the primary focus is on the collection and analysis of original data. The applicant should carefully describe the sample, measures (including reliability and validity), procedures proposed for the primary data collection, and the design of the study. If observational data are collected, applicants should describe how the data would be collected (e.g., procedures for maintaining inter-observer reliability), coded, and quantified to allow quantitative analyses predicting the relation between what was observed and the outcomes of interest.

Applicants may also propose to collect original data as a supplement to be used with an existing database in order to answer the question of interest. In such cases, applicants should describe the sample and how the sample is related to or links to the proposed database, the measures to be used (including information on the reliability and validity of the proposed instruments), and data collection procedures.

(iii)   Data analysis.
The applicant must include detailed descriptions of data analysis procedures. Because predictor variables relevant to education outcomes (e.g., student, teacher, or district characteristics) often covary, the Institute expects investigators to utilize the most appropriate analytic techniques to isolate the possible effects of variables of interest. Analytic strategies should allow investigators to examine mediators and moderators of programs and practices. The relation between hypotheses, measures, and independent and dependent variables should be well specified. Strong applications will include an explicit discussion of how exclusion from testing, or missing data, will be handled within the statistical analyses. Strong applications will propose an approach for comparing hypotheses or models of relationships among variables.

d. Personnel
Competitive applicants will have research teams that collectively demonstrate expertise in the relevant content domain, the methodological expertise required for conducting this proposed study and, if applicable, for working with schools, or other education agencies. In the project narrative, applicants should briefly describe the qualifications, roles, responsibilities, and percent of time to be devoted to the project for key personnel

e. Resources
In competitive proposals, applicants will describe having access to institutional resources that adequately support research activities and access to schools in which to conduct the research.

f. Awards
For applicants proposing to do primarily secondary data analysis or meta-analysis, the maximum duration of the award is 2 years. Typical awards for such projects are $100,000 to $350,000 (total cost = direct + indirect costs) per year.

Applicants proposing to do primary data collection may request up to 4 years, but must justify the need for the number of years requested. Typical awards for such projects are $100,000 to $400,000 (total cost = direct + indirect costs) per year.

In all cases, the size of the award depends on the scope of the project.

C. REQUIREMENTS FOR GOAL TWO (DEVELOPMENT AND INNOVATION PROJECTS)

Because the requirements for Goal Two are essentially the same across the Institute's standing research grant programs, a generic description is used in the funding announcement. Consequently, the examples provided may not apply to a particular topic.

a. Purpose of Goal Two (Development and Innovation)
Through all of its research programs that include the Development/Innovation goal (Goal Two), the Institute intends to support development of and innovation in education interventions—curricula, instructional approaches, technology, policies, and programs. The Institute stresses that Goal Two applications are about development and *not* about demonstrations of the efficacy of an intervention. Under Goal Two, the Institute does *not* support applications that propose to allocate substantial resources for testing the effect of the proposed intervention. For example, under Goal Two, the Institute does not intend to support applications in which the researcher proposes to spend one year developing the intervention and the second and third years testing the effect of the intervention in a significant number of classrooms or schools. Instead, applicants who have an intervention that could be tested for efficacy should apply to Goal Three (Efficacy/Replication).

From the Institute's standpoint, a funded development project would be successful if at the end of the development award, the investigators had a well-specified (but untested) theory of change for the intervention, a fully developed version of the proposed intervention, including prototypes of all materials and products necessary for implementation of the intervention in authentic education delivery settings, data addressing the feasibility of its implementation in an authentic education delivery setting, and pilot data addressing the promise of the intervention for generating outcomes the intervention is designed to effect. Feasibility of implementation might be addressed, for example, with observational and survey data on the use of the fully developed intervention in a few test sites in authentic education delivery settings like those for which the intervention is intended. The promise of the intervention for achieving outcomes could be addressed, for example, by demonstrating better outcomes for participants with successive iterations of the intervention, better outcomes associated with more participant exposure to the intervention, normatively rare outcomes consistent with the goals of the intervention, post-intervention scores on an outcome measure that are substantially higher than pre-intervention scores on that measure, or data demonstrating that implementation of the intervention is associated with changes in activities and behaviors that are consistent with the theory of change underlying the intervention. The Institute anticipates that investigators with successful development projects would submit proposals to subsequent competitions for Goal Three (Efficacy/Replication) awards. The data on feasibility of implementation and pilot data on the promise of positive outcomes to be collected under a Goal Two

(Development) award are intended to help the Institute and its reviewers determine whether it would be appropriate to fund a subsequent proposal to examine the efficacy of the intervention.

b. Significance of the project

Under Goal Two, the Institute invites applications to develop new interventions or further develop interventions that are in the early stages of development (e.g., those that do not have an entire program or product ready to evaluate). It is important for applicants to provide a strong rationale to support the development of the proposed intervention. In essence, applicants are answering the question: *Why is the proposed intervention likely to produce better student outcomes relative to current education practices?*

By describing (a) the context for the proposed intervention; (b) the intervention (e.g., features, components), including its theory of change and the theoretical and empirical support for the proposed intervention; and (c) the practical importance of the intervention, Goal Two applicants are addressing aspects of the significance of their proposal.

(i) Context for the proposed intervention.

In strong applications, researchers provide context for the proposed intervention by including data on, or reviewing research describing, the attributes of typical existing practices. Understanding the shortcomings of current practice contributes to the rationale for the proposed intervention. In addition, researchers should provide some context for understanding how much of a change the proposed intervention is intended to achieve. For example, suppose a researcher proposes to develop an intervention that is intended to improve student learning over the course of a semester for students who are performing one year below grade-level expectations. The researcher might consider (a) how much learning one would typically expect to occur over an academic year and (b) how much learning one would need each quarter or semester to bring the students up to grade-level expectations by the end of the academic year.

(ii) Intervention, theory of change, and theoretical and empirical rationale.

Applicants should clearly describe the intervention and the theory of change for the intervention. For example, how do the features or components of the intervention relate to each other temporally (or operationally), pedagogically, and theoretically (e.g., why A leads to B)? Applicants should provide a strong theoretical and empirical justification for the design and sequencing of the features or components of the intervention. When applicants clearly describe the theory of change that guides the intervention and the specific features making up the intervention, reviewers are better able to evaluate (a) the relation between the intervention and its theoretical and empirical foundation (e.g., is the proposed intervention a reasonable operationalization of the theory?) and (b) the relation between the intervention and the outcome measures (e.g., do the proposed measures tap the constructs that the intervention is intended to address?).

Applicants should explain *why* the proposed intervention is likely to produce substantially better student outcomes relative to current practice. Applicants should contrast the proposed intervention to typical existing practices. A comparison of the proposed intervention with typical practice helps reviewers determine if the proposed intervention has the potential to produce substantially better student outcomes because it is sufficiently different from current practices and has "active ingredients" that appear on the basis of theoretical or empirical reasons to be powerful agents for improving the outcomes of interest.

(iii) Practical importance.

In the rationale to support the proposed intervention, applicants should address the *practical* importance of the proposed intervention. For example, when the proposed intervention is fully developed, will it have the potential to improve student outcomes in educationally meaningful

increments, if it were implemented over the course of a semester or school year? Would the proposed intervention be both affordable for and easily implemented by schools (e.g., not involve major adjustments to normal school schedules)?

c. Methodological requirements
For all applications, including those submitted under Goal Two, the proposed research design must be appropriate for answering the research questions or hypotheses that are posed.

The primary purpose of Goal Two projects is the development of interventions. For Goal Two projects, applicants must clearly address the proposed methods for developing the intervention and testing the feasibility of implementation of the prototype in an authentic education delivery setting. Applicants should describe the systematic process they will use to collect empirical data that will provide feedback for refining the intervention. A major objective of Goal Two projects is to refine and improve upon the initial version of the intervention by implementing it (or components of it), observing its functioning, and making necessary adjustments in the design of the intervention so that it functions more as intended.

Strong applications include clear descriptions of the development activities so that reviewers will understand (a) what will be developed, (b) how it will be developed, and (c) when the development will take place. Applicants should describe what they would measure or observe to determine whether the intervention is working as intended when they are testing the feasibility of successive versions of the intervention. A useful by-product of such testing is a set of fidelity of implementation measures that could be used if the intervention were evaluated in an efficacy trial (see Goal Three).

(i)   Sample.
The applicant should define, as completely as possible, the samples and settings that will be used to assess the feasibility of the intervention and for the pilot data assessing the promise of the intervention.

(ii)   Iterative development process.
Applicants should describe the iterative development process to be used in the design and refinement of the proposed intervention, and plans for acquiring evidence about the operation of the intervention according to the theory of change that they describe. The number of times a component or intervention is revised, implemented, observed, and revised depends on the complexity of the intervention and its implementation. Applicants should explain (a) how they define "operating as intended" for the proposed intervention; (b) what data they will collect to determine how the intervention (or component) is operating; (c) how they will use the data they collect to revise the intervention; and (d) what criteria they will use to determine if the intervention (or component) operates as intended.

A timeline that delineates the iterative process of drafting and revising the intervention (e.g., features or components of the intervention, procedures, training activities, and materials) is often a helpful way of showing reviewers how research activities will feed into subsequent development (refinement) activities, so that information can be used to make decisions and improvements. A variety of methodological strategies may be employed during this phase. For Development projects, reviewers need to understand the iterative development process to be used in the design and refinement of the proposed intervention.

(iii)   Feasibility of implementation.

By the end of a Goal Two project, the Institute expects investigators to have a fully developed intervention and data that address the feasibility of implementing the intervention in authentic education delivery settings as well as the promise of the intervention for generating outcomes the intervention is designed to effect. Feasibility of implementation might be addressed, for example, with evidence demonstrating that the intervention can be implemented with fidelity in a few authentic education delivery settings that represent the type of settings (e.g., classrooms) for which the intervention is intended. Feasibility should be demonstrated on a small sample of users (e.g., teachers, students) who are like those for whom the product is intended and should show that they can utilize or implement the intervention in the way that the developer intends the intervention to be implemented.

(iv) Pilot study.

By the end of a Goal Two project, the Institute also expects investigators to have evidence of the promise of the intervention for achieving the intended outcomes. Such evidence could include pilot data demonstrating that performance on outcome measures is progressing in the appropriate direction (e.g., students' post-intervention scores on a curriculum-based test are substantially higher than pre-intervention scores) or pilot data demonstrating that implementation of the intervention is associated with changes in activities and behaviors that are consistent with the theory of change underlying the intervention. Whatever pilot data are proposed, applicants should be aware that (a) no more than 30 percent of the funds may be used to support the collection of pilot data regarding the promise of the fully developed intervention and (b) the review of methodological requirements will focus on methods for developing the intervention as detailed below. The pilot data are not intended to be a test of the efficacy of the intervention.

(v) Measures.

Applicants should clearly describe procedures for collecting data as well as the measures that will be used (e.g., where appropriate, information on reliability and validity of instruments). Goal Two projects typically include the collection of process data to help the researcher refine the intervention and provide insight into the feasibility and usability of the proposed intervention in authentic education delivery settings. Applicants should clearly describe (a) what needs to be observed in order to determine if the intervention is operating as intended and (b) how those observations will be collected. Observational, survey, or qualitative methodologies are encouraged to identify conditions that hinder implementation of the intervention.

d. Personnel
Competitive applicants will have research teams that collectively demonstrate expertise in the relevant content domain, the methodological expertise required for conducting this proposed study, and experience working with schools or other education agencies. In the project narrative, applicants should briefly describe the qualifications, roles, responsibilities, and percent of time to be devoted to the project for key personnel

An applicant may be or may involve *for-profit entities* in the project. Involvement of the commercial developer or distributor must not jeopardize the objectivity of the research.

e. Resources
In competitive proposals, applicants will describe having access to institutional resources that adequately support research activities and access to schools in which to conduct the research.

f. Additional Considerations
The Institute expects developed interventions to move to efficacy evaluations. However, there are situations in which researchers may appropriately apply for a second development award to further develop or extend an intervention that was the focus of a previous development project, prior to the

intervention being evaluated through an efficacy evaluation. Applicants applying for a second development award to further develop an intervention should (a) justify the need for a second development award, (b) describe the results and outcomes of prior or currently held awards to support the development of the intervention, and (c) indicate whether what was developed has been (or is being) evaluated for efficacy (Goal Three) and if results are available, what the results of those efficacy evaluations have been.

Applicants who have previously received a development award and are applying for a grant to develop a *new* intervention should indicate whether the first intervention has been evaluated for efficacy (by themselves or another research team) and describe results, if available. Applications from researchers who have previously received an award to develop an intervention are strengthened when the researchers can demonstrate that data from their prior development award or other data indicate that their previous intervention improves or shows promise for improving education outcomes.

g. Awards
Typical awards for projects at this level are $150,000 to $500,000 (total cost = direct + indirect costs) per year. Development and Innovation projects are for a maximum of 3 years. Development costs vary according to the type of intervention that is proposed, therefore larger awards will be considered. In all cases, the size of the award depends on the scope of the project.

Under Goal Two, no more than 30 percent of the total funds may be used for collection of pilot data to demonstrate the promise of the intervention for achieving the desired outcomes.

D. REQUIREMENTS FOR GOAL THREE (EFFICACY AND REPLICATION PROJECTS)

Because the requirements for Goal Three are essentially the same across the Institute's standing research grant programs, a generic description is used in the funding announcement. Consequently, the examples provided may not apply to a particular topic.

Under Goal Three, the Institute requests proposals to test the efficacy of fully developed interventions. By *efficacy*, the Institute means the degree to which an intervention has a net positive impact on the outcomes of interest in relation to the program or practice to which it is being compared.

a. Purpose of Goal Three (Efficacy and Replication)
Through all of its research programs that include the Efficacy and Replication goal (Goal Three), the Institute intends to fund efficacy trials to determine whether or not fully developed interventions—programs, practices, and policies—are effective under specified conditions (e.g., urban schools with a high turnover rate among teachers), and with specific types of students (e.g., English language learners). Results from efficacy projects have less generalizability than results from scale-up evaluations under Goal Four. The limited generalizability can arise both from the lack of a full range of types of settings and participants in the study, as well as through the intensive involvement of the developers and researchers in the implementation of the intervention. A well-designed efficacy trial provides evidence on whether an intervention can work, but not whether it would work if deployed widely. Under Goal Three, applicants may propose an efficacy trial to determine if an intervention will work under specific conditions or a replication trial to determine if an intervention shown to produce a net positive impact in one setting will produce a net positive impact under different conditions (e.g., with a different population of students).

The Institute encourages proposals to compare the impact of two (or more) specific interventions, particularly interventions that are based on different theoretical models. In such cases, the purpose might be to compare the efficacy of two well-developed approaches to improving student learning. One advantage to this approach is that, relative to designs in which the comparison group experiences

whatever the school or district currently provides (but see the discussion of "business-as-usual" treatments below), the investigator should have better knowledge of the critical components of each intervention and can attempt to create two conditions in which, for example, instruction varies on a number of critical components.

From the Institute's standpoint, a funded Efficacy/Replication project would be *methodologically successful* if at the end of the grant period, the investigators had rigorously evaluated the impact of a clearly specified intervention on relevant student outcomes and under clearly described conditions using a research design that meets (without reservation) the Institute's What Works Clearinghouse standards (http://whatworks.ed.gov), whether or not the intervention is found to improve student outcomes relative to the comparison condition. The Institute would consider methodologically successful projects to be *pragmatically successful* if the rigorous evaluation determined that the intervention has a net positive impact on student outcomes in relation to the program or practice to which it is being compared. The Institute expects all methodologically successful projects to contribute to our theoretical understanding of education processes and procedures and to the advancement of education sciences.

The Institute recognizes that research on children with disabilities often utilizes alternative research designs for determining the causal impact of an intervention due to small populations of children with specific disabilities. In such cases, rigorous single-subject designs are appropriate. Requirements for single-subject designs are detailed in section III.13.D.c.x., Requirements for single-subject designs.

b. Significance of the project
Interventions appropriate for study under Goal Three are (a) interventions that are already widely used but have not been rigorously evaluated or (b) interventions that are fully developed, have evidence of their feasibility for use in authentic education delivery settings, and empirical evidence of the promise of the intervention but are not yet widely used. Also appropriate for Goal Three applications are proposals to *replicate* the efficacy of an intervention in a different setting. For instance, in a previous study, the applicant could have demonstrated the efficacy of an intervention in a small random assignment trial in an urban school district, and a reasonable next step would be to replicate these findings in a rural school district.

By describing (a) the fully developed intervention (e.g., features, components), (b) the rationale for evaluating the proposed intervention, and (c) the theory of change for the intervention, Goal Three applicants are addressing aspects of the significance of their proposal.

(i)   Interventions are ready to be evaluated.
Applicants must have an intervention that is fully developed and ready to be evaluated. Applicants may devote a short period of time (e.g., 6 to 9 months) to develop measures, supporting materials, or training manuals for the intervention. However, applicants who intend to devote a longer period of time to developing new components or materials for the intervention or new delivery approaches should apply to Goal Two. Goal Three projects are limited to those interventions that are fully developed. Applicants should clearly describe the intervention and provide evidence that it is fully developed and ready for evaluation.

(ii)   Rationale for interventions that are already in wide use.
Applicants should provide a compelling rationale that justifies the Institute's investment in the evaluation of the intervention. As justification for the evaluation of an intervention that is already in wide use, the Institute will accept conceptual arguments of the importance of evaluating the intervention because of its relevance to public policy or current education practice as would be judged by practitioners and policymakers. For example, the intervention may already be widely used but have not been rigorously evaluated (e.g., a commercially distributed program that is used in a number of states, a specific state education policy). To support this argument, applicants might include documentation of the widespread use of the program to justify the

proposed efficacy evaluation. By widespread use, the Institute means used across multiple states or in the majority of districts in a single large state or in the majority of schools in two or more large districts. Typically, interventions that fall in this category are commercially produced and distributed.

(iii) **Rationale for interventions that are not in wide use.**

Applicants should provide a compelling rationale that justifies the Institute's investment in the evaluation of the intervention. Applicants should provide evidence that the intervention can be implemented in authentic education delivery settings—that is, evidence of the feasibility and usability of the intervention in authentic education delivery settings. Applicants should provide a strong rationale of the promise of the intervention for improving education outcomes by including, for example, information on (a) the theoretical foundation on which the intervention was developed; (b) research on related interventions or components of the intervention; and (c) appropriate empirical evidence. Appropriate empirical evidence include, but are not limited to, evidence of the feasibility of implementation of the intervention and data on outcomes for participants in the intervention that are consistent with the intended effect of the intervention, for example, on a change in scores from pretest to posttest in the direction and magnitude that the intervention is designed to generate.

In essence, the applicant needs to address the question: Why is this intervention likely to produce better student outcomes relative to current practice? In addition, applicants should address the *practical* importance of the intervention. For example, is the intervention sufficiently comprehensive to improve student outcomes on end-of-year assessments? Is there evidence indicating that the intervention is sufficiently different from current practices to potentially improve student outcomes relative to current practices?

(iv) **Theory of change.**

Applicants should clearly present the theory of change for the intervention by describing the features or components of the intervention and how they relate to each other and to the intended outcomes both temporally (or operationally) and theoretically (e.g., why A leads to B). When applicants clearly describe the model that guides the intervention and the intervention itself (e.g., specific features or components of the intervention), reviewers are better able to evaluate the relation between the intervention and its theoretical and empirical foundation (e.g., is the proposed intervention a reasonable operationalization of the theory?). Reviewers are also better able to evaluate the relation between the intervention and the outcome measures (e.g., do the proposed measures tap the constructs that the intervention is intended to address?).

Some interventions are designed to *directly* affect the teaching and learning environment and indirectly affect student outcomes. In such cases, it is important for applicants to be clear in their theory of change to identify the mediators that the intervention is designed to affect and through which student outcomes are intended to be improved.

Strong applications will also include detailed descriptions of what the comparison group experiences. By clearly describing the intervention and the comparable treatment that the comparison group will receive, reviewers are better able to judge whether the intervention is sufficiently different from what the comparison group receives so that one might reasonably expect a difference in student outcomes. In addition, reviewers are better able to determine if the proposed fidelity measures and observations of the comparison group are sufficiently comprehensive and sensitive to identify and document critical differences between what the intervention and comparison groups receive.

c. Methodological requirements
For all applications, including those submitted under Goal Three, the proposed research design must be appropriate for answering the research questions or hypotheses that are posed.

(i)   Research questions.

Applicants should pose clear, concise hypotheses or research questions.

(ii)   Sample.

The applicant should define, as completely as possible, the sample to be selected and sampling procedures to be employed for the proposed study, including justification for exclusion and inclusion criteria. Additionally, the applicant should describe strategies to increase the likelihood that participants will remain in the study over the course of the evaluation (i.e., reduce attrition).

(iii)   Research design.

The applicant must provide a detailed research design. Applicants should describe how potential threats to internal and external validity would be addressed. Studies using random assignment to intervention and comparison conditions have the strongest internal validity for causal conclusions and thus are preferred whenever they are feasible. When a randomized trial is used, the applicant should clearly state the unit of randomization (e.g., students, classroom, teacher, or school); choice of randomizing unit or units should be grounded in a theoretical framework. Applicants should explain the procedures for assignment of groups (e.g., schools) or participants to intervention and comparison conditions.[13]

Applicants may propose a quasi-experiment rather than a randomized trial when randomization is not possible or when the external validity of the quasi-experiment provides valuable information that is not obtainable from a randomized counterpart. Acceptable quasi-experiments will substantially minimize selection bias or allow it to be modeled. Possible approaches include regression-discontinuity designs, use of instrumental variables, or matched comparison groups designs in which equivalence is demonstrated between the intervention and comparison groups at program entry on the variables that are to be measured as program outcomes (e.g., student achievement scores).[14] In all cases in which a quasi-experimental design is proposed, applicants should explicitly address the threats to internal validity that are not addressed convincingly by the design and how conclusions from the research will be tempered in light of these threats.

Efficacy studies can be based solely on secondary data analyses, provided researchers use an appropriate analytical approach for answering causal questions. Applicants proposing to primarily use existing data sets (e.g., state or local student achievement databases) or to incorporate existing datasets in their analyses should explicitly address how exclusion from testing, or missing data, will be handled within the statistical analysis. If multiple data sets will be linked for the proposed analyses, applicants should provide sufficient detail for reviewers to judge the feasibility of the plan.

(iv)   Power.

Applicants should clearly address the power of the evaluation design to detect a reasonably expected and minimally important effect. When justifying what constitutes a reasonably expected

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[13] For additional information on describing procedures for randomization, see the What Works Clearinghouse document, *Evidence Standards for Reviewing Studies* (p. 6), available at http://ies.ed.gov/ncee/wwc/pdf/study_standards_final.pdf.

[14] For more information, see Shadish, W. R., Cook, T. D., and Campbell, D. T. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. Boston: Houghton Mifflin Company.

effect, applicants should indicate clearly (e.g., by including the statistical formula) how the effect size was calculated.

Many evaluations of education interventions are designed so that clusters or groups of students, rather than individual students, are randomly assigned to intervention and comparison conditions. In such cases, the power of the design depends in part on the degree to which the observations of individuals within groups are correlated with each other on the outcomes of interest. For determining the sample size, applicants need to consider the number of clusters, the number of individuals within clusters, the potential adjustment from covariates, the desired effect, the intraclass correlation (i.e., the variance between clusters relative to the total variance between and within clusters), and the desired power of the design (note, other factors may also affect the determination of sample size, such as using one-tailed vs. two-tailed tests, repeated observations, attrition of participants, etc.).[15] Strong applications will include empirical justification for the intraclass correlation and anticipated effect size used in the power analysis.

(v) Measures.

Applicants should justify the appropriateness of the chosen measures. For example, are measures included that will be sensitive to the change in performance that the intervention is intended to bring about? Measures of student outcomes may include researcher developed measures and other measures that are closely aligned with the proposed intervention. However, applicants should also include relevant measures of student outcomes that are of practical interest to educators. For example, proposals to evaluate interventions to improve academic outcomes should include measures such as grades, standardized measures of student achievement, or state end-of-course exams. Proposals to evaluate interventions to improve behavioral outcomes should include practical measures of behaviors that are relevant to schools, such as attendance, tardiness, drop-out rates, disciplinary actions, or graduation rates.

The applicant should provide information on the reliability, validity, and appropriateness of the proposed measures. In strong applications, investigators will make clear how the skills or content the intervention is designed to address are captured in the various measures that are proposed.

Some interventions are designed to change directly the teaching and learning environment and indirectly affect student outcomes. In such cases, applicants must provide measures of student outcomes. In addition, applicants should include measures of the key mediators between the intervention and the target student outcomes.

(vi) Fidelity of implementation of the intervention.

The applicant should specify how the implementation of the intervention would be documented and measured. Investigators should make clear how the fidelity measures capture the critical features of the intervention. In strong applications, investigators will propose methods that permit the identification and assessment of factors associated with the fidelity of implementation.

If the applicant is proposing an efficacy study that relies on secondary data analyses of historical data that does not contain fidelity information, the applicant is *not* required to include fidelity data. The applicant should provide an explanation for why data on fidelity of implementation of the intervention will not be included in the project. The Institute recognizes that there may be some proposals that will rely on secondary analyses of administrative data (e.g., state assessment data) and include both historical data and future data (e.g., a comparative

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[15] For more information, see Donner, A., & Klar, N. (2000). *Design and Analysis of Cluster Randomization Trials in Health Research.* New York: Oxford University Press; Murray, D. M. (1998). *Design and Analysis of Group-Randomized Trials.* New York: Oxford University Press; W.T. Grant Foundation & University of Michigan, http://sitemaker.umich.edu/group-based/optimal_design_software.

interrupted time series design in which the time frame for the data goes from 2002 through 2012). In such cases, it may or may not be reasonable for the applicant to collect additional data on fidelity of implementation of the intervention. As with all methodological issues, applicants should provide a clear rationale for the decisions they make regarding the proposed research approach.

(vii) **Comparison group, where applicable.**

Comparisons of interventions against other conditions are only meaningful to the extent that one can tell what the comparison group receives or experiences. Applicants should compare intervention and comparison groups on the implementation of critical features of the intervention so that, for example, if there is no observed difference between intervention and comparison student outcomes, they can determine if key elements of the intervention were also provided in the comparison condition (i.e., a lack of distinction between the intervention treatment and the comparison treatment).

In evaluations of education interventions, individuals in the comparison group typically receive some kind of treatment; rarely is the comparison group a "no-treatment" control. For some evaluations, the primary question is whether the intervention treatment is more effective than a particular alternative treatment. In such instances, the comparison group receives a well-defined treatment that is usually an important comparison to the target intervention for theoretical or pragmatic reasons. In other cases, the primary question is whether the intervention treatment is more effective than what is generally available and utilized in schools. In such cases, the comparison group might receive what is sometimes called "business-as-usual." That is, the comparison group receives whatever the school or district is currently using or doing in a particular area. Business-as-usual generally refers to situations in which the standard or frequent practice across the district or region is a relatively undefined education treatment. However, business-as-usual may also refer to situations in which a branded intervention (e.g., a published curriculum or program) is implemented with no more support from the developers of the program than would be available under normal conditions. In either case, *using a business-as-usual comparison group is acceptable.* When business-as-usual is one or another branded intervention, applicants should specify the treatment or treatments received in the comparison group. In all cases, applicants should account for the ways in which what happens in the comparison group is important to understanding the net impact of the intervention treatment. As noted in the preceding paragraph, in strong applications, investigators propose strategies and measures for comparing the intervention and comparison groups on key features of the intervention treatment. The purpose here is to obtain information useful for *post hoc* explanations of why the intervention treatment does or does not improve student learning relative to the counterfactual.

The applicant should describe strategies they intend to use to avoid contamination between treatment and comparison groups. Applicants do not necessarily need to randomize at the school level to avoid contamination between groups. Applicants should explain and justify their strategies for reducing contamination.

(viii) **Mediating and moderating variables.**

In efficacy studies, the Institute expects researchers to examine relevant mediating and moderating factors. Observational, survey, or qualitative methodologies are encouraged as a complement to experimental methodologies to assist in the identification of factors that may explain the effect or lack of effect of the intervention. Mediating and moderating variables that are measured in the intervention condition that are also likely to affect outcomes in the comparison condition should be measured in the comparison condition (e.g., student time-on-task, teacher experience/time in position).

The evaluation should be designed to account for sources of variation in outcomes across settings (i.e., to account for what might otherwise be part of the error variance). Applicants should provide a theoretical rationale to justify the inclusion (or exclusion) of factors/variables in the design of the evaluation that have been found to affect the success of education programs (e.g., teacher experience, fidelity of implementation, characteristics of the student population). Efficacy and replication evaluations should demonstrate the conditions and critical variables that affect the success of a given intervention (e.g., what conditions support or hinder good implementation of the intervention). The most scalable interventions are those that can produce the desired effects across a range of education contexts.

(ix)   **Data analysis.**

All proposals must include detailed descriptions of data analysis procedures. For quantitative data, specific statistical procedures should be described. The relation between hypotheses, measures, and independent and dependent variables should be clear. For qualitative data, the specific methods used to index, summarize, and interpret data should be delineated.

Most evaluations of education interventions involve clustering of students in classes and schools and require the effects of such clustering to be accounted for in the analyses, even when individuals are randomly assigned to condition. Such circumstances generally require specialized multilevel statistical analyses. Strong applications will provide sufficient detail for reviewers to judge the appropriateness of the data analysis strategy. For random assignment studies, applicants need to be aware that typically the primary unit of analysis is the unit of random assignment.

(x)   **Requirements for single-subject designs.**

By single-subject designs, the Institute refers to experimental studies using reversal or multiple baseline or interrupted time series designs intended to demonstrate a causal relationship between two variables using a small number of participants or cases. The Institute is not referring to descriptive case studies.

(1) *Sample.* Applicants should define the criteria used for selecting participants, the process for selecting participants, and the critical features of the physical setting from which participants are recruited with sufficient detail to allow other researchers to identify similar individuals from similar settings. Defining selection criteria typically requires specifying a particular disability, the measurement instrument, and criterion used to identify the disability.

(2) *Intervention*. In addition to meeting the requirements for interventions listed above in section III.13.D.b.i-iv., *Significance of the project*, applicants should describe the intervention in sufficient detail to allow other researchers to reliably replicate the intervention. Applicants must clearly specify how, when, and under what conditions the intervention will be implemented to demonstrate how the intervention was systematically manipulated and under the control of the researcher.

(3) *Fidelity of implementation*. Applicants should describe how fidelity of implementation will be measured, the frequency of assessments, and what degree of variation in treatment fidelity will be accepted over the course of the study.

(4) *Baseline and comparison conditions*. The majority of single-subject research studies are likely to compare the effects of an intervention with performance during the baseline or comparison condition. Applicants should describe the baseline or comparison conditions in sufficient detail to document what can be characterized as a stable pattern of behavior and to allow other researchers to replicate the baseline condition.

(5) *Measures*. Measures of student outcomes may include researcher developed measures and other measures that are closely aligned with the proposed intervention. Applicants should identify and operationally describe the dependent variables (DVs) and outcome measures, provide technical information on the reliability and validity of the measures, detail procedures for collecting observations, and where applicable, specify procedures for determining inter-observer reliability or agreement (e.g., Kappa) associated with each DV and monitoring inter-observer reliability during the study and over both baseline and treatment conditions.

(6) *Design and analysis*. Applicants must provide a detailed research design and describe how the research design demonstrates experimental control and addresses common threats to internal and external validity. Applicants should consider the anticipated size of the intervention effect, variability in response to treatment within participants across time, variability in response to treatment between subjects, and the number of replications. In essence, what criteria will the applicant use to demonstrate a functional relationship between manipulation of the intervention and the change in the outcomes, and to determine if the response to the treatment is large enough and sufficiently replicated to support a causal conclusion. Furthermore, applicants should address how intervention effects would be generalizable. Applicants are expected to describe what statistical procedures (e.g., time series analyses), if any, will be employed to determine if the change is significant.

d. Personnel

Competitive applicants will have research teams that collectively demonstrate expertise in the relevant content domain, the methodological expertise required for conducting this proposed study, and experience working with schools or other education agencies. In the project narrative, applicants should briefly describe the qualifications, roles, responsibilities, and percent of time to be devoted to the project for key personnel

For Goal Three projects, an applicant may be or may involve developers or distributors (including *for-profit entities*) in the project, from having them as full partners in its proposal to using off-the-shelf training materials without involvement of the developer or distributor. Involvement of the developer or distributor must not jeopardize the objectivity of the evaluation.

e. Resources

In competitive proposals, applicants will describe having access to institutional resources that adequately support research activities and access to schools in which to conduct the research. Strong applications will document the availability and cooperation of the schools or other education delivery settings that will be required to carry out the research proposed in the application via a letter of support from the education organization.

f. Awards

Typical awards for projects at this level will be $250,000 to $750,000 (total cost = direct + indirect costs) per year for a maximum of 4 years. Larger budgets will be considered if a compelling case can be made for such support. The size of the award depends on the scope of the project.

E. REQUIREMENTS FOR GOAL FOUR (SCALE-UP EVALUATIONS)

Because the requirements for Goal Four are essentially the same across the Institute's standing education research grant programs, a generic description is used in the funding announcement. Consequently, the examples provided may not apply to a particular topic.

a. Purpose of Goal Four (Scale-up)

Through all of its research programs that include the Scale-up Evaluations goal (Goal Four), the Institute intends to support scale-up evaluations of interventions—programs, practices, and policies—to determine whether or not fully developed interventions are effective when they are implemented under conditions that would be typical if a school district or other education delivery setting were to implement them (i.e., without special support from the developer or the research team) across a variety of conditions (e.g., different student populations, different types of schools). The key differences between Scale-up Evaluations (Goal Four) and Efficacy/Replication evaluations (Goal Three), as the Institute uses these terms, have to do with the delivery of the intervention and the diversity of the sample. Scale-up Evaluations require that the intervention be implemented "at a distance" from the researcher/developer of the intervention. That is, the researchers should not be heavily involved in making the intervention work. *The intervention should be implemented in the school or other authentic education setting, as it would be if the school, or entity, had purchased and implemented the intervention on its own without any involvement in a research study.* Second, Scale-up Evaluations require sufficient diversity in the sample of schools, classrooms, or students to ensure appropriate generalizability. Scale-up Evaluations typically require a larger sample than an Efficacy/Replication evaluation. For Scale-up Evaluations, the primary question of interest is, "Does this intervention produce a net positive increase in student learning and achievement relative to the comparison group *under typical conditions?*" As is true for Goal Three studies, for Goal Four studies, depending on the research question of interest, the comparison group may receive a well-defined alternative treatment, or may receive whatever programs and practices are already currently available and utilized by schools (business-as-usual comparison group). Finally, the Institute invests in Scale-up Evaluations for interventions that have *strong prior evidence* of the efficacy of the intervention.

b. Significance of the project

To be considered for Goal Four awards, applicants must propose to evaluate a fully developed intervention that has strong evidence of efficacy when implemented on a limited scale.[16] By (a) clearly describing the intervention, (b) providing strong evidence of the educationally meaningful effects that are expected, (c) describing the intervention's theory of change, (d) addressing the feasibility of implementation of the intervention, and (e) detailing the conditions under which the intervention will be implemented, Goal Four applicants are addressing the significance of their project.

(i)   Description of the intervention.

All applicants should clearly describe the intervention (e.g., features, components). When applicants clearly describe the intervention, reviewers are better able to evaluate the relation between the intervention and the outcome measures (e.g., do the proposed measures tap the constructs that the intervention is intended to address?). Strong applications will also include detailed descriptions of what the comparison group experiences. By clearly describing the components of the intervention and the comparable treatment that the comparison group will receive, reviewers are better able to judge whether (a) the intervention is sufficiently different from the comparison treatment so that one might reasonably expect a difference in student outcomes, and (b) fidelity measures and observations of the comparison group are sufficiently comprehensive and sensitive to identify and document critical differences between the intervention and comparison conditions.

(ii)   Strong evidence of educationally meaningful effects.

Applicants should provide strong evidence of the efficacy of the program as implemented on a small scale to justify the proposal to conduct a large-scale evaluation of the effectiveness of the intervention. As an example of strong evidence of efficacy, an applicant might describe the

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[16] Applicants proposing to evaluate a widely used intervention for which there is little evidence of the efficacy of the intervention should refer to Goal 3 (Efficacy and Replication). The Institute encourages applicants to discuss the appropriate goal for a proposal with the cognizant program officer listed in Section 29.

results of two or more small scale, rigorously conducted evaluations using random assignment to intervention and comparison conditions in which the efficacy of the intervention is demonstrated with different populations (e.g., urban and rural school districts). Alternatively, a single efficacy evaluation might have involved schools from more than one district and included a diverse population of teachers and students and alone could constitute sufficient evidence of the efficacy of the intervention. Evidence of the efficacy of the intervention should be based on the results of rigorous randomized field trials, or well-designed quasi-experimental evaluations. To enable reviewers to judge the quality of the efficacy studies, applicants should clearly describe the research design and methodology of the efficacy studies, as well as the results of the studies.

Evidence for efficacy from single-subject experimental designs would involve multiple studies in different settings that demonstrate causal effects.

Strong applications will include information on the size and statistical significance of the effects that were obtained through efficacy trials. Effect sizes and confidence limits should typically be calculated based on a unit of analysis that is the same as the unit of random assignment. For example, the results of an efficacy trial in which classrooms were assigned to conditions should be analyzed based on classroom means rather than results from individual students. Applicants should indicate clearly (e.g., including the statistical formula) how the effect size was calculated when they use effect sizes as part of the rationale for justifying their intervention. Furthermore, information on effect sizes is more useful to reviewers when sufficient context for interpreting the effect sizes is provided.

(iii) Theory of change.

Applicants should clearly present the theory of change for the intervention by describing the features or components of the intervention and how they relate to each other and to the intended outcomes both temporally (or operationally) and theoretically (e.g., why A leads to B). When applicants clearly describe the model that guides the intervention and the intervention itself (e.g., specific features or components of the intervention), reviewers are better able to evaluate the relation between the intervention and the outcome measures (e.g., do the proposed measures tap the constructs that the intervention is intended to address?), to assess the proposed measures of the fidelity of the intervention, and to assess the degree to which the applicant has included measures of key mediators and moderators of the intervention.

(iv) Feasible and affordable implementation.

The materials, training procedures, organizational arrangements, and all other aspects of the intervention should be developed to the point where the intervention is ready to be implemented under real-world circumstances in a real-world way. Strong applications will provide reviewers with sufficient information to evaluate whether implementation of the intervention is feasible for schools and other education entities under normal conditions (i.e., without any support from the researchers or developers of the intervention that would not typically be available to entities wanting to implement the intervention outside of a research study). For example, applicants might include results from prior efficacy trials indicating the degree of support provided for the implementation of the intervention and the level of fidelity attained across classrooms or schools. In strong applications, researchers will include information indicating the affordability of the intervention for schools and other education entities.

(v) Conditions of implementation

One objective of scale-up evaluations of interventions is to determine if programs are effective when the developers of the program do not provide any more support than would be available under normal conditions. That is, the program should be implemented as it would be if the schools or other entities that are delivering the program were to obtain the program on their own

and decide to use it apart from participation in any research and evaluation study. A second goal is to determine if programs implemented under these conditions are effective in a variety of settings. Interventions that are effective at scale are those that can produce the desired effects across a range of education contexts. For Goal Four, the applicant should detail the conditions under which the intervention will be implemented—including explicitly detailing what involvement the researcher/developer will have in the implementation of the intervention and justifying this level of involvement—and include a method to document conditions and critical variables that affect the success of a given intervention.

c. Methodological requirements
For all applications, including those submitted under Goal Four, the proposed research design must be appropriate for answering the research questions or hypotheses that are posed.

For Goal Four projects, all of the methodological requirements listed under Goal Three apply to Goal Four projects. However, Goal Four does *not* allow scale-up studies based solely on secondary data analyses or scale-up studies that are single-subject experimental designs.

In addition to the Goal Three methodological requirements, for Goal Four projects, strong applications will include a Cost-Feasibility analysis to assess the financial costs of program implementation and assist schools in understanding whether implementation of the program is practicable given their available resources. Data should be collected on the monetary expenditures for the resources that are required to implement the program. Financial costs for personnel, facilities, equipment, materials, and other relevant inputs should be included. Annual costs should be assessed to adequately reflect expenditures across the lifespan of the program. The Institute is not asking applicants to conduct an economic evaluation of the program (e.g., cost-benefit, cost-utility, or cost-effectiveness analyses), although applicants may propose such evaluation activities if desired.[17]

d. Personnel
Competitive applicants will have research teams that collectively demonstrate expertise in the relevant content domain, the methodological expertise required for conducting this proposed study, and experience working with schools or other education agencies. In the project narrative, applicants should briefly describe the qualifications, roles, responsibilities, and percent of time to be devoted to the project for key personnel.

An applicant may involve developers or distributors (*including for-profit entities*) of the intervention in the project, from having the developers as full partners in its proposal to using off-the-shelf teacher training materials without involvement of the developer or publisher. However, involvement of the developer or distributor must not jeopardize the objectivity of the evaluation. Strong applications will carefully describe the role, if any, of the developer/distributor in the intervention. Developers may not provide any training or support for the implementation that is not normally available to users of the intervention. Applicants should describe how objectivity in the evaluation would be maintained. Strong applications will assign responsibility for random assignment to condition, data collection, and data analyses to individuals who were *not* involved in the development of the intervention and are not involved in the distribution of the intervention. Also, in strong applications, the role of Principal Investigator is assigned to someone other than individuals involved in the development or distribution of the intervention.

e. Resources
In competitive proposals, applicants will describe having access to institutional resources that adequately support research activities and access to schools in which to conduct the research. Strong applications

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[17] For additional information on how to calculate the costs of a program or conduct an economic evaluation, applicants might refer to Levin, H.M., & McEwan, P.J. (2001). *Cost-Effectiveness Analysis*. 2nd Ed. Thousand Oaks, CA: Sage Publications.

will document the availability and cooperation of the schools or other education delivery settings that will be required to carry out the research proposed in the application via a letter of support from the education organization.

f. Awards

The scope of Goal Four projects may vary. A smaller project might involve several schools within a large urban school district in which student populations vary in terms of SES, race, and ethnicity. A larger project might involve large numbers of students in several school districts in different geographical areas.

Typical awards for projects at this level will be $500,000 to $1,200,000 (total cost = direct + indirect costs) per year for a maximum of 5 years. Larger budgets will be considered if a compelling case can be made for such support. The size of the award depends on the scope of the project.

F. REQUIREMENTS FOR GOAL FIVE (MEASUREMENT PROJECTS)

The Institute's requirements for Goal Five projects are the same for all standing education research programs and are described in this section.

a. Purpose of Goal Five (Measurement)

Applications appropriate for consideration under Goal Five are (a) proposals to develop and validate new assessments; (b) proposals to validate existing assessments; (c) proposals to adapt and validate assessments originally designed and used for research purposes for broader use in instructional settings; (d) proposals to develop and test new techniques for assessment or analysis of assessment data in the context of state accountability standards and systems; and (e) proposals to develop assessments used to certify or assess education professionals (e.g., teachers, education leaders, related service providers) and validate these assessments or existing assessments against student outcomes. Proposed assessments must meet the specific requirements detailed under the topic to which the proposal is submitted.

Measurement development and refinement activities can be supported as part of projects submitted under the other Goals, particularly Goals Two and Three (e.g., development of fidelity instruments or development of an outcome measure that is aligned with the intervention). Goal Five applications are for research that focuses primarily on assessment development and validation.

Applicants should also be aware that under Goal Five the Institute does *not* accept applications to test whether or not the use of an assessment affects student outcomes. Applicants, for example, who are interested in testing whether or not using a progress-monitoring instrument improves student learning must apply under Goal 3 (Efficacy/Replication) or Goal 4 (Scale-up Evaluation). In all cases, the Institute encourages interested researchers to contact the relevant program officer for guidance on the appropriate Goal for a particular application.

Under Goal Five, the Institute supports research on assessments intended for use in education delivery settings for purposes such as, screening, diagnosis, progress monitoring, outcome assessment, assessment of teachers and other education professionals, and assessment of education systems.

b. Significance of the project

By describing (a) the theoretical rationale for the proposed assessment, (b) empirical evidence to support the proposed assessment, (c) the practical utility of the assessment, and (d) the components of the assessment, applicants are addressing aspects of the significance of their proposal.

(i) Rationale.

Applicants should provide a compelling rationale to support the development, refinement, and/or validation of the proposed assessment. Applicants should clearly describe the theoretical basis

for the constructs that are intended to be measured by the assessment and provide examples of items that are intended to operationalize each construct. Reviewers will consider (a) the strength of the theoretical foundation for the proposed assessment, (b) the existing empirical evidence supporting the proposed assessment, and (c) the practical need for the proposed work (e.g., whether the proposed assessment duplicates existing assessments). In developing or refining these assessments, researchers should keep in mind the pragmatic constraints (e.g., number of students, limited class time, time required to train teachers to use the assessments, costs) that teachers and administrators will consider to determine whether the instrument is a viable option for use in classrooms and other education delivery settings.

(ii)   Description of the assessment.

Applications should provide sufficient description of the proposed assessment and how it could be utilized within education delivery settings for reviewers to judge the practicality of the proposed assessment for instructional purposes. Applicants should describe the components of the assessment (e.g., specific knowledge and skills that the instrument is designed to tap) in sufficient detail to allow reviewers to evaluate relations between the theoretical and empirical foundations for the assessment and the assessment itself (e.g., does the proposed assessment capture critical skills?), and whether the proposed assessment will meet the needs for which it is intended. Applications to examine the use of assessments for accountability purposes should provide sufficient description of the proposed assessment instrument or technique in the context of state and federal accountability policies so that reviewers are able to judge the merits and feasibility of the proposed research on assessment for accountability.

c. Methodological requirements
For all applications, including those submitted under Goal Five, the proposed research design must be appropriate for answering the research questions or hypotheses that are posed.

Applicants proposing to develop a new assessment or refine an existing assessment should clearly address (a) the proposed methods for developing or refining the assessment, and (b) the proposed research methods for obtaining evidence of the *validity and reliability* of the instrument. Applicants proposing to validate an existing assessment without refining or modifying the assessment should clearly describe the proposed research methods for obtaining evidence of the *validity and reliability* of the instrument.

(i)   Assessment development.

Applicants should detail the proposed procedures for developing the assessment. Strong applications will include descriptions of (a) the procedures for determining the constructs that will be "tapped" by the instrument; (b) the procedures for developing and selecting items to be used in the assessment, including assessing difficulty of selected items, and obtaining representative responses to items; and (c) the process for determining the administrative procedures for conducting the assessment (e.g., mode of administration, inclusion/exclusion of individual test takers, and whether make-ups or alternative administrative conditions will be allowed). Applicants should describe the process they will use to collect empirical data that will provide feedback for refining specific components of the assessment. *Applicants should describe the iterative development process to be used in the design and refinement of the proposed measurement tool.*

(ii)   Assessment evaluation.

Applicants must clearly describe the research plans for determining the validity and reliability of the instrument. Applicants should describe the characteristics, size, and analytic adequacy of samples to be used in each study, including justification for exclusion and inclusion criteria.

Applicants should describe detailed planned analytic methods (e.g., statistical and/or psychometric models), plans for treatment of missing responses, and criteria for interpreting results.

Applicants proposing to use existing datasets (e.g., state or local student achievement databases) to validate an assessment should explicitly address how exclusion from testing, or missing data, will be handled within the statistical analysis. If multiple data sets will be linked for the proposed analyses, applicants should provide sufficient detail for reviewers to judge the feasibility of the plan.

Applicants proposing to collect original data should carefully describe the sample, measures (including reliability and validity), and procedures proposed for the primary data collection. If observational data are collected, applicants should describe how the data would be collected (e.g., procedures for maintaining inter-observer reliability), coded, and analyzed.

Applicants proposing research on assessments of teachers, education leaders, or education systems must validate the assessments against student outcomes.

d. Personnel
Competitive applicants will have research teams that collectively demonstrate expertise in (a) content area, (b) assessment, (c) implementation of, and analysis of results from, the research design that will be employed, and (d) working with teachers, schools, or other education delivery settings in which the proposed assessment might be used. In the project narrative, applicants should briefly describe the qualifications, roles, responsibilities, and percent of time to be devoted to the project for key personnel.

e. Resources
In competitive proposals, applicants will describe having access to institutional resources that adequately support research activities and access to schools in which to conduct the research. Applicants should also demonstrate access to statistical and measurement resources and technical expertise needed for developing and studying assessment instruments and techniques.

f. Additional considerations
Applicants who previously held or currently hold measurement (Goal Five) grants with the Institute should describe the results and outcomes of those grants to date. They should indicate whether what was developed has been (or is being) validated and if results are available, what the results of those studies have been.

The Institute recognizes that there are situations in which researchers may appropriately apply for a second measurement award to further develop or to continue to validate an instrument that was the focus of a previous measurement project. In such cases, the applicant should also provide a compelling rationale of the need for a second measurement award.

Finally, the Institute reiterates that the purpose of Goal Five grants is to develop and validate new instruments, to modify and validate existing instruments, or to validate existing instruments. Applicants who are interested in testing whether or not using an assessment improves student outcomes must apply under Goal 3 (Efficacy/Replication) or Goal 4 (Scale-up Evaluation). In all cases, the Institute encourages interested researchers to contact the relevant program officer for guidance on the appropriate Goal for a particular application.

g. Awards
Typical awards under Goal Five will be $150,000 to $400,000 (total cost = direct + indirect costs) per year for up to 4 years. Larger budgets will be considered if a compelling case can be made for such support. The size of the award depends on the scope of the project.

PART IV GENERAL SUBMISSION AND REVIEW INFORMATION

14. MECHANISM OF SUPPORT

The Institute intends to award grants pursuant to this request for applications. The maximum length of the award period varies by goal. The maximum award length for each goal ranges from two to five years. Please see details for each goal in Part III Requirements of the Proposed Research section of the announcement.

15. FUNDING AVAILABLE

The size of the award depends on the scope of the project. Please see specific details in Part III Requirements of the Proposed Research section of the announcement. Although the plans of the Institute include the research programs (topics) described in this announcement, awards pursuant to this request for applications are contingent upon the availability of funds and the receipt of a sufficient number of meritorious applications. The number of projects funded under a specific topic and goal depends upon the number of high quality applications submitted to that topic and goal. The Institute does not have plans to award a specific number of grants under each particular topic and goal.

16. ELIGIBLE APPLICANTS

Applicants that have the ability and capacity to conduct scientifically valid research are eligible to apply. Eligible applicants include, but are not limited to, non-profit and for-profit organizations and public and private agencies and institutions, such as colleges and universities.

17. SPECIAL REQUIREMENTS

Research supported through this program must be relevant to U.S. schools.

Recipients of awards are expected to publish or otherwise make publicly available the results of the work supported through this program. Institute-funded investigators should submit final, peer-reviewed manuscripts resulting from research supported in whole or in part by the Institute to the Educational Resources Information Center (ERIC, http://eric.ed.gov) upon acceptance for publication. An author's final manuscript is defined as the final version accepted for journal publication, and includes all graphics and supplemental materials that are associated with the article. The Institute will make the manuscript available to the public through ERIC no later than 12 months after the official date of publication. Institutions and investigators are responsible for ensuring that any publishing or copyright agreements concerning submitted articles fully comply with this requirement.

Applicants must budget for one meeting each year in Washington, DC, with other grantees and Institute staff for a duration of up to three days of meetings. At least one project representative must attend the three-day meeting.

The Institute anticipates that the majority of the research funded under this announcement will be conducted in field settings. Hence, the applicant is reminded to apply its negotiated off-campus indirect cost rate, as directed by the terms of the applicant's negotiated agreement.

Research applicants may collaborate with, or be, for-profit entities that develop, distribute, or otherwise market products or services that can be used as interventions or components of interventions in the proposed research activities. Involvement of the developer or distributor must not jeopardize the objectivity of the evaluation.

Applicants may propose studies that piggyback onto an existing study (i.e., requires access to subjects and data from another study). In such cases, the principal investigator of the existing study must be one of the members of the research team applying for the grant to conduct the new project.

The Institute strongly advises applicants to establish a written agreement among all key collaborators and their institutions (e.g., principal and co-principal investigators) regarding roles, responsibilities, access to data, publication rights, and decision-making procedures within three months of receipt of an award.

18. DESIGNATION OF PRINCIPAL INVESTIGATOR

The applicant institution is responsible for identifying the Principal Investigator. The Principal Investigator is the individual who has the authority and responsibility for the proper conduct of the research, including the appropriate use of federal funds and the submission of required scientific progress reports. An applicant institution may elect to designate more than one principal investigator. In so doing, the applicant institution identifies them as individuals who share the authority and responsibility for leading and directing the research center intellectually and logistically. All principal investigators will be listed on any grant award notification. However, institutions applying for funding must designate a single point of contact for the center. The role of this person is primarily for communication purposes on the scientific and related budgetary aspects of the center and should be listed as the Principal Investigator. All other principal investigators should be listed as Co-Principal Investigators.

19. LETTER OF INTENT

The Institute asks all applicants to submit a Letter of Intent by 4:30 p.m. Washington D.C. time on the relevant due date for the competition to which they plan to submit. The information in the Letters of Intent enable Institute staff to identify the expertise needed for the scientific peer review panels and secure sufficient reviewers to handle the anticipated number of applications. The Institute encourages all interested applicants to submit a Letter of Intent, even if they think that they might later decide not to submit an application.   The letter of intent is not binding and does not enter into the review of a subsequent application. The letter of intent form must be submitted electronically using the instructions provided at: https://ies.constellagroup.com. Receipt of the letter of intent will be acknowledged via email.

A. Content

The letter of intent should include:
  a. Descriptive title
  b. Topic and goal that the applicant will address
  c. Brief description of the proposed project
  d. Name, institutional affiliation, address, telephone number and e-mail address of the principal investigator(s)
  e. Name and institutional affiliation of any key collaborators and contractors
  f. Duration of the proposed project
  g. Estimated total budget request (The estimate need only be a rough approximation.)

B. Format and Page Limitation

Fields are provided in the letter of intent form for each of the content areas described above. The project description should be single-spaced and should not exceed one page (about 3,500 characters).

20. MANDATORY SUBMISSION OF ELECTRONIC APPLICATIONS

Grant applications must be submitted electronically through the Internet using the software provided on the Grants.gov Web site: http://www.grants.gov/. Applicants must follow the application procedures and submission requirements described in the Institute's Grants.gov Application Submission Guide and the instructions in the User Guide provided by Grants.gov.

Applications submitted in paper format will be rejected unless the applicant (a) qualifies for one of the allowable exceptions to the electronic submission requirement described in the Federal Register notice announcing the Special Education Research Grant (CFDA Number 84.324A) competitions described in this Request for Applications and (b) submits, no later than two weeks before the application deadline date, a

written statement to the Institute that documents that the applicant qualifies for one of these exceptions. For more information on using Grants.gov, applicants should visit the Grants.gov web site.

21. APPLICATION INSTRUCTIONS AND APPLICATION PACKAGE

A. Documents Needed to Prepare Applications
To complete and submit an application, applicants need to review and use three documents: the Request for Applications, the IES Grants.gov Application Submission Guide, and the Application Package.

- The *Request for Applications* for the Special Education Research Grant Program (CFDA 84.324A) describes the substantive requirements for a research application.

✓ Request for Applications   http://ies.ed.gov/funding/

- The *IES Grants.gov Application Submission Guide* provides the instructions for completing and submitting the forms.

✓ IES Grants.gov Application Submission Guide   http://ies.ed.gov/funding/

Additional help navigating Grants.gov is available in the Grants.gov User Guide:

✓ Grants.gov User Guide   http://www.grants.gov/help/user_guides.jsp

- The *Application Package* provides all of the forms that need to be completed and submitted. The application form approved for use in the competitions specified in this RFA is the government-wide SF424 Research and Related (R&R) Form (OMB Number 4040-0001). The applicant must follow the directions in section C below to download the Application Package from Grants.gov.

B. Date Application Package is Available on Grants.gov
The application package will be available on http://www.Grants.gov/ beginning on the following date:

June Application Package Available on	April 27, 2009
October Application Package Available on	August 3, 2009

C. Download Correct Application Package

a. CFDA number
Applicants must first search by the CFDA number for each IES Request for Applications *without* the alpha suffix to obtain the correct downloadable Application Package. For the Special Education Research Request for Applications, applicants must search on: **CFDA 84.324**.

b. Special Education Research Application Package
The Grants.gov search on CFDA 84.324 will yield more than one application package. For the Special Education Research Request for Applications (i.e., the research topics listed in this Request for Applications), applicants must download the package for the appropriate deadline marked:

June Application Package: **CFDA 84.324A-June Special Education Research Application Package**

October Application Package: **CFDA 84.324A-October Special Education Research Application Package**

In order for the application to be submitted to the correct grant competition, applicants must download the Application Package that is designated for the grant competition and competition deadline. Using a different Application Package, even if that package is for an Institute competition, will result in the application being submitted to the wrong competition.

22. SUBMISSION PROCESS AND DEADLINE

Applications must be submitted **electronically by 4:30 p.m**., **Washington, DC time** on the application deadline date, using the standard forms in the Application Package and the instructions provided on the Grants.gov website.

Potential applicants should check this site for information about the electronic submission procedures that must be followed and the software that will be required.

23. APPLICATION CONTENT AND FORMATTING REQUIREMENTS

A. Overview
In this section, the Institute provides instructions regarding the content of the (a) project summary/abstract, (b) project narrative, (c) bibliography and references cited, (d) Appendix A, and (e) Appendix B. Instructions for all other documents to be included in the application (e.g., forms, budget narrative, human subjects narrative) are provided in the IES Grants.gov Application Submission Guide.

B. General Format Requirements
Margin, format, and font size requirements for the project summary/abstract, project narrative, bibliography, Appendix A, and Appendix B are described in this section. To ensure that the text is easy for reviewers to read and that all applicants have the same amount of available space in which to describe their projects, applicants must adhere to the type size and format specifications for the entire narrative including footnotes.

a. Page and margin specifications
For the purposes of applications submitted under this RFA, a "page" is 8.5 in. x 11 in., on one side only, with 1 inch margins at the top, bottom, and both sides.

b. Spacing
Text must be single spaced in the narrative.

c. Type size (font size)
Type must conform to the following three requirements:

- The height of the letters must not be smaller than a type size of 12 point.
- Type density, including characters and spaces, must be no more than 15 characters per inch (cpi).
- For proportional spacing, the average for any representative section of text must not exceed 15 cpi.
- Type size must yield no more than 6 lines of type within a vertical inch.

Applicants should check the type size using a standard device for measuring type size, rather than relying on the font selected for a particular word processing/printer combination. The type size used must conform to all three requirements. Small type size makes it difficult for reviewers to read the application; consequently, the use of small type will be grounds for the Institute to return the application without peer review.

Adherence to type size and line spacing requirements is necessary so that no applicant will have an unfair advantage, by using small type or by providing more text in their applications. **Note, these requirements apply to the PDF file as submitted**. As a practical matter, applicants who use a 12-point Times New Roman font without compressing, kerning, condensing or other alterations typically meet these requirements.

Figures, charts, tables, and figure legends may be in a smaller type size but must be readily legible.

d. Graphs, diagrams, tables
Applicants must use only black and white in graphs, diagrams, tables, and charts. The application must contain only material that reproduces well when photocopied in black and white.

C. Project Summary/Abstract

a. Submission
The project summary/abstract will be submitted as a .PDF attachment.

b. Page limitations and format requirements
The project summary/abstract is limited to one single-spaced page and must adhere to the margin, format, and font size requirements above.

c. Content
The project summary/abstract should include:
- (1)   Title of the project;
- (2)   The RFA topic and goal under which the applicant is applying (e.g., Teacher Quality, Goal 2);
- (3)   Brief description of the purpose (e.g., to develop and document the feasibility of an intervention);
- (4)   Brief description of the setting in which the research will be conducted (e.g., rural school districts in Alabama);
- (5)   Brief description of the population(s) from which the participants of the study(ies) will be sampled (age groups, race/ethnicity, SES);
- (6)   If applicable, brief description of the intervention or assessment to be developed or evaluated or validated;
- (7)   If applicable, brief description of the control or comparison condition (e.g., what will participants in the control condition experience);
- (8)   Brief description of the primary research method;
- (9)   Brief description of measures and key outcomes; and
- (10)   Brief description of the data analytic strategy.

Please see the website http://ies.ed.gov/ncser/projects/ for examples of project summaries/abstracts.

D. Project Narrative

a. Submission
The project narrative will be submitted as a .PDF attachment.

b. Page limitations and format requirements
The project narrative is limited to **25 single-spaced pages** for all applicants. The 25-page limit for the project narrative does not include any of the SF424 forms, the one-page summary/abstract, the appendices, research on human subjects information, bibliography and references cited, biographical sketches of senior/key personnel, narrative budget justification, subaward budget information or certifications and assurances.

Reviewers are able to conduct the highest quality review when applications are concise and easy to read, with pages numbered consecutively using the top or bottom right-hand corner.

c. Format for citing references in text
To ensure that all applicants have the same amount of available space in which to describe their projects in the project narrative, applicants should use the author-date style of citation (e.g., James, 2004), such as that described in the *Publication Manual of the American Psychological Association, 5th Ed.* (American Psychological Association, 2001).

d. Content
To be compliant with the requirements of the Request for Applications, the project narrative must include four sections: (a) Significance, (b) Research Plan, (c) Personnel, and (d) Resources. Information to be included in each of these sections is detailed in **Part III: Requirements of the Proposed Research** and in specific requirements subsections for each research topic in **Part II: Research Grant Topics**. Incorporating the requirements outlined in these sections provides the majority of the information on which reviewers will evaluate the proposal.

E. Bibliography and References Cited

a. Submission
The section will be submitted as a separate .PDF attachment.

b. Page limitations and format requirements
There are no limitations to the number of pages in the bibliography. The bibliography must adhere to the margin, format, and font size requirements described in section IV.23.B. General Format Requirements.

c. Content
Applicants should include complete citations, including the names of all authors (in the same sequence in which they appear in the publication), titles (e.g., article and journal, chapter and book, book), page numbers, and year of publication for literature cited in the research narrative.

F. Appendix A

a. Submission
Appendix A should be included at the end of the Project Narrative and submitted as part of the same .PDF attachment.

b. Page limitations and format requirements
Appendix A is limited to 15 pages. It must adhere to the margin, format, and font size requirements described in section IV.23.B., General Format Requirements.

c. Content

(i)   Purpose.
The purpose of Appendix A is to allow the applicant to include any figures, charts, or tables that supplement the research text, examples of measures to be used in the project, and letters of agreement from partners (e.g., schools) and consultants. In addition, in the case of a resubmission, the applicant may use up to 3 pages of the appendix to describe the ways in which the revised proposal is responsive to prior reviewer feedback. These are the only materials that may be included in Appendix A; all other materials will be removed prior to review of the application. Narrative text related to any aspect of the project (e.g., descriptions of the proposed

sample, the design of the study, or previous research conducted by the applicant) must be included in the research narrative.

(ii)   Letters of agreement.

Letters of agreement should include enough information to make it clear that the author of the letter understands the nature of the commitment of time, space, and resources to the research project that will be required if the application is funded. The Institute recognizes that some applicants may have more letters of agreement than will be accommodated by the 15-page limit. In such instances, applicants should include the most important letters of agreement and may list the letters of agreement that are not included in the application due to page limitations.

G. Appendix B (Optional)

a. Submission
If applicable, Appendix B should be included at the end of the Project Narrative, following Appendix A, and submitted as part of the same .PDF attachment.

b. Page limitations and format requirements
The appendix is limited to 10 pages. The Appendix B must adhere to the margin, format, and font size requirements described in section IV.23.B., General Format Requirements.

c. Content
Appendix B applies to applications under all topics in this RFA. The purpose of Appendix B is to allow applicants who are proposing to develop, evaluate, or validate an intervention or assessment to include examples of curriculum material, computer screens, test items, or other materials used in the intervention or assessment. These are the only materials that may be included in Appendix B; all other materials will be removed prior to review of the application. Narrative text related to the intervention (e.g., descriptions of research that supports the use of the intervention/assessment, the theoretical rationale for the intervention/assessment, or details regarding the implementation or use of the intervention/assessment) must be included in the 25-page research narrative.

24. APPLICATION PROCESSING
Applications must be received by **4:30 pm, Washington, D.C. time** on the application deadline date listed in the heading of this request for applications. Upon receipt, each application will be reviewed for completeness and for responsiveness to this request for applications. Applications that do not address specific requirements of this request will be returned to the applicants without further consideration.

25. PEER REVIEW PROCESS
Applications that are compliant and responsive to this request will be evaluated for scientific and technical merit. Reviews will be conducted in accordance with the review criteria stated below by a panel of scientists who have substantive and methodological expertise appropriate to the program of research and request for applications.

Each application will be assigned to one of the Institute's scientific review panels. At least two primary reviewers will complete written evaluations of the application, identifying strengths and weaknesses related to each of the review criteria. Primary reviewers will independently assign a score for each criterion, as well as an overall score, for each application they review. Based on the overall scores assigned by primary reviewers, an average overall score for each application will be calculated and a preliminary rank order of applications will be prepared before the full peer review panel convenes to complete the review of applications.

The full panel will consider and score only those applications deemed to be the most competitive and to have the highest merit, as reflected by the preliminary rank order. A panel member may nominate for

consideration by the full panel any proposal that he or she believes merits full panel review but would not have been included in the full panel meeting based on its preliminary rank order.

26. REVIEW CRITERIA FOR SCIENTIFIC MERIT

The purpose of Institute-supported research is to contribute to the solution of education problems and to provide reliable information about the education practices that support learning and improve academic achievement and access to education for all students. Reviewers for all applications will be expected to assess the following aspects of an application in order to judge the likelihood that the proposed research will have a substantial impact on the pursuit of that goal. Information pertinent to each of these criteria is also described above in Part III Requirements of the Proposed Research and in the section of the relevant research grant topic.

A. Significance
Does the applicant provide a compelling rationale for the significance of the project as defined in the Significance of Project section for the Goal under which the applicant is submitting the proposal?

B. Research Plan
Does the applicant meet the requirements described in the methodological requirements section for the Goal under which the applicant is submitting the proposal?

C. Personnel
Does the description of the personnel make it apparent that the principal investigator, project director, and other key personnel possess appropriate training and experience and will commit sufficient time to competently implement the proposed research?

D. Resources
Does the applicant have the facilities, equipment, supplies, and other resources required to support the proposed activities? Do the commitments of each partner show support for the implementation and success of the project?

27. RECEIPT AND START DATE SCHEDULE

A. Letter of Intent Receipt Dates:
Summer Application Letter of Intent   April 27, 2009
Fall Application Letter of Intent   August 3, 2009

B. Application Deadline Dates:
Summer Application Deadline Date   June 25, 2009
Fall Application Deadline Date   October 1, 2009

C. Earliest Anticipated Start Date:
For Summer Application   March 1, 2010
For Fall Application   July 1, 2010

28. AWARD DECISIONS
The following will be considered in making award decisions:
- Scientific merit as determined by peer review
- Responsiveness to the requirements of this request
- Performance and use of funds under a previous Federal award
- Contribution to the overall program of research described in this request
- Availability of funds

29. INQUIRIES MAY BE SENT TO:

A. Early Intervention and Early Childhood Special Education
Dr. Joan McLaughlin
Institute of Education Sciences
555 New Jersey Avenue, NW
Washington, DC 20208

Email: Joan.McLaughlin@ed.gov
Telephone: (202) 219-1309

B. Reading, Writing, and Language Development
Dr. Kristen Lauer
Institute of Education Sciences
555 New Jersey Avenue, NW
Washington, DC 20208

Email: Kristen.Lauer@ed.gov
Telephone: (202) 219-0377

C. Mathematics and Science Education
Dr. Rob Ochsendorf
Institute of Education Sciences
555 New Jersey Avenue, NW
Washington, DC 20208

Email: Robert.Ochsendorf@ed.gov
Telephone: (202) 219-2234

D. Social and Behavioral Outcomes to Support Learning
Dr. Jacquelyn Buckley
Institute of Education Sciences
555 New Jersey Avenue, NW
Washington, DC 20208

Email: Jacquelyn.Buckley@ed.gov
Telephone: (202) 219-2130

E. Transition Outcomes for Special Education Secondary Students
Dr. Rob Ochsendorf
Institute of Education Sciences
555 New Jersey Avenue, NW
Washington, DC 20208

Email: Robert.Ochsendorf@ed.gov
Telephone: (202) 219-2234

F. Cognition and Student Learning in Special Education

Dr. Celia Rosenquist
Institute of Education Sciences
555 New Jersey Avenue, NW
Washington, DC 20208

Email: Celia.Rosenquist@ed.gov
Telephone: (202) 219-2024

G. Teacher Quality

Dr. Rob Ochsendorf
Institute of Education Sciences
555 New Jersey Avenue, NW
Washington, DC 20208

Email: Robert.Ochsendorf@ed.gov
Telephone: (202) 219-2234

H. Related Services

Dr. Jacquelyn Buckley
Institute of Education Sciences
555 New Jersey Avenue, NW
Washington, DC 20208

Email: Jacquelyn.Buckley@ed.gov
Telephone: (202) 219-2130

I. Special Education Policy, Finance, and Systems

Dr. Kristen Lauer
Institute of Education Sciences
555 New Jersey Avenue, NW
Washington, DC 20208

Email: Kristen.Lauer@ed.gov
Telephone: (202) 219-0377

J. Autism Spectrum Disorders

Dr. Celia Rosenquist
Institute of Education Sciences
555 New Jersey Avenue, NW
Washington, DC 20208

Email: Celia.Rosenquist@ed.gov
Telephone: (202) 219-2024

30. PROGRAM AUTHORITY

20 U.S.C. 9501 et seq., the "Education Sciences Reform Act of 2002," Title I of Public Law 107-279, November 5, 2002. This program is not subject to the intergovernmental review requirements of Executive Order 12372.

31. APPLICABLE REGULATIONS

The Education Department General Administrative Regulations (EDGAR) in 34 CFR parts 74, 77, 80, 81, 82, 84, 85, 86 (part 86 applies only to institutions of higher education), 97, 98, and 99. In addition 34

CFR part 75 is applicable, except for the provisions in 34 CFR 75.100, 75.101(b), 75.102, 75.103, 75.105, 75.109(a), 75.200, 75.201, 75.209, 75.210, 75.211, 75.217, 75.219, 75.220, 75.221, 75.222, and 75.230.

32. REFERENCES

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